

Business Review



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

Upstream business faced a volatile year in 2023, with fluctuating oil and gas prices, increasing demand amid geopolitical tensions and the global push towards energy transition. Despite these challenges, we remain steadfast in our commitment towards the energy security for Malaysia and our customers worldwide. We responded by focusing on sustainable supply, cost optimisation and emissions reduction.

Throughout the year, we made successful exploration discoveries through an innovative “clustered exploration” approach, a unique prospecting style suited for highly matured geological provinces, which grew Malaysia’s resource base. We continue to utilise seismic surveys to explore and map the hydrocarbon potential of a new area of exploration to attract future prospective investors. Focused execution in delivering key projects and activities continues to safeguard energy security and guarantee the vibrancy of our oil and gas industry. Internationally, we continuously improve our portfolio as we undertake a series of high-grading efforts, driven by a focus on superior value and delivering differentiated barrels that are cost efficient and lower carbon.

We continue to make strides in developing carbon capture and storage (CCS) projects as a key solution to support sustainable energy security, aligned with national and regional goals while creating new economic opportunities in the process. Significant advancements have been made in CCS, particularly with projects like Kasawari CCS, to help deliver the energy security needed in a sustainable manner. We have also forged partnerships to advance CCS and progressed into the next phase through Development Agreements and other similar arrangements related to technological development and aspects of the value chain, like liquefied carbon dioxide carriers and storage capacity. These partnerships are instrumental in delivering our energy transition and achieving Net Zero Carbon Emissions by 2050 Pathway.



Upstream



Recorded a total daily production average of
2,431
thousand barrels of oil equivalent (boe) per day.



10.9
3-year average 1P Reserve Life Index (RLI).



Achieved 1st hydrocarbon for **28** projects.



Reached final investment decision for **21** projects.



Made **24** exploration discoveries.



Advanced to **3** definitive CCS hubs in Malaysia.

Key Focus Areas and Results

Focus Area	What We Did in 2023	Results	Stakeholders
<p>Core Business</p>	<p>Sustainable Supply</p> <ul style="list-style-type: none"> Intensified oil and gas exploration, development and production to meet energy security needs and replenish reserves for future demand. Strengthened collaboration with East Malaysian state governments to develop the local energy sector. 	<ul style="list-style-type: none"> Produced 2,431 thousand barrels of oil equivalent (boe) per day. Achieved first hydrocarbon in 28 projects. Reached final investment decisions (FID) on 21 projects. Signed nine exploration blocks and three discovered resource opportunities as part of Malaysia Bid Round 2022. Kicked off the development of an integrated sour gas evacuation facility in Sarawak. 	
	<p>Portfolio Expansion, High-Grading and Diversification</p> <ul style="list-style-type: none"> Targeted international growth and local portfolio expansion through acquisitions, new discoveries and decommissioning of current facilities. 	<ul style="list-style-type: none"> Signed petroleum arrangements in Angola, Indonesia, Brazil and Oman. Secured two exploration blocks in Suriname. Made 24 exploration discoveries, domestically and globally. Decommissioned six facilities in Malaysia safely. Completed the portfolio high-grading exercise for Myanmar and Chad while advancing discussions on South Sudan exit with the host government. 	
	<p>Health and Safety</p> <ul style="list-style-type: none"> Fostered Generative HSE Culture at all our areas of operations. 	<ul style="list-style-type: none"> Completed two national level emergency exercises in collaboration with <i>Majlis Keselamatan Negara</i> (National Security Council) and <i>Angkatan Tentera Malaysia</i> (Malaysian Armed Forces), in ensuring continuous crisis and emergency preparedness. Organised 75 Upstream Leadership visits reaching over 1,500 Upstream staffs. Developed the Barrier Risk Centralised Solution (BRiCS) online system which provides a clear line of sight to the Safety Critical Elements (SCE) integrity status for each location and facilities and coordinated its rollout to over 1,000 staff. Heightened Process Safety Compliance through 28 sessions, reaching 2,000 staff in facilities. 	

Upstream

Key Focus Areas And Results			
Focus Area	What We Did in 2023	Results	Stakeholders
New Business	<p>Advancements in Carbon Capture and Storage</p> <ul style="list-style-type: none"> Progressed carbon capture and storage (CCS) projects as part of our commitment to emissions reduction. 	<ul style="list-style-type: none"> Advanced to three definitive hubs in Malaysia. Initiated five efforts with like-minded partners to progress the advancement of the full CCS value chain for PETRONAS. Inked an MoU with ExxonMobil to develop the offshore pipelines and facilities for the Northern hub pre-feed. 	<p>FG SG IO</p> <p>GIP M</p>
	<p>CCS Advocacy with Lawmakers</p> <ul style="list-style-type: none"> Engaged in extensive advocacy efforts to establish carbon capture and storage as a viable business in Malaysia. 		
NZCE Pathway	<p>Zero Routine Venting</p> <ul style="list-style-type: none"> Emissions reduction efforts implemented to achieve Zero Routine Venting (ZRV) of hydrocarbon by 31 December 2023. 	<ul style="list-style-type: none"> Achieved 100 per cent Zero Routine Venting in 22 identified oil facilities in Malaysia. 	<p>FG SG IO</p>
	<p>Digital Transformation</p> <ul style="list-style-type: none"> Implemented digital solutions to enhance operational efficiency and emissions reporting. 		

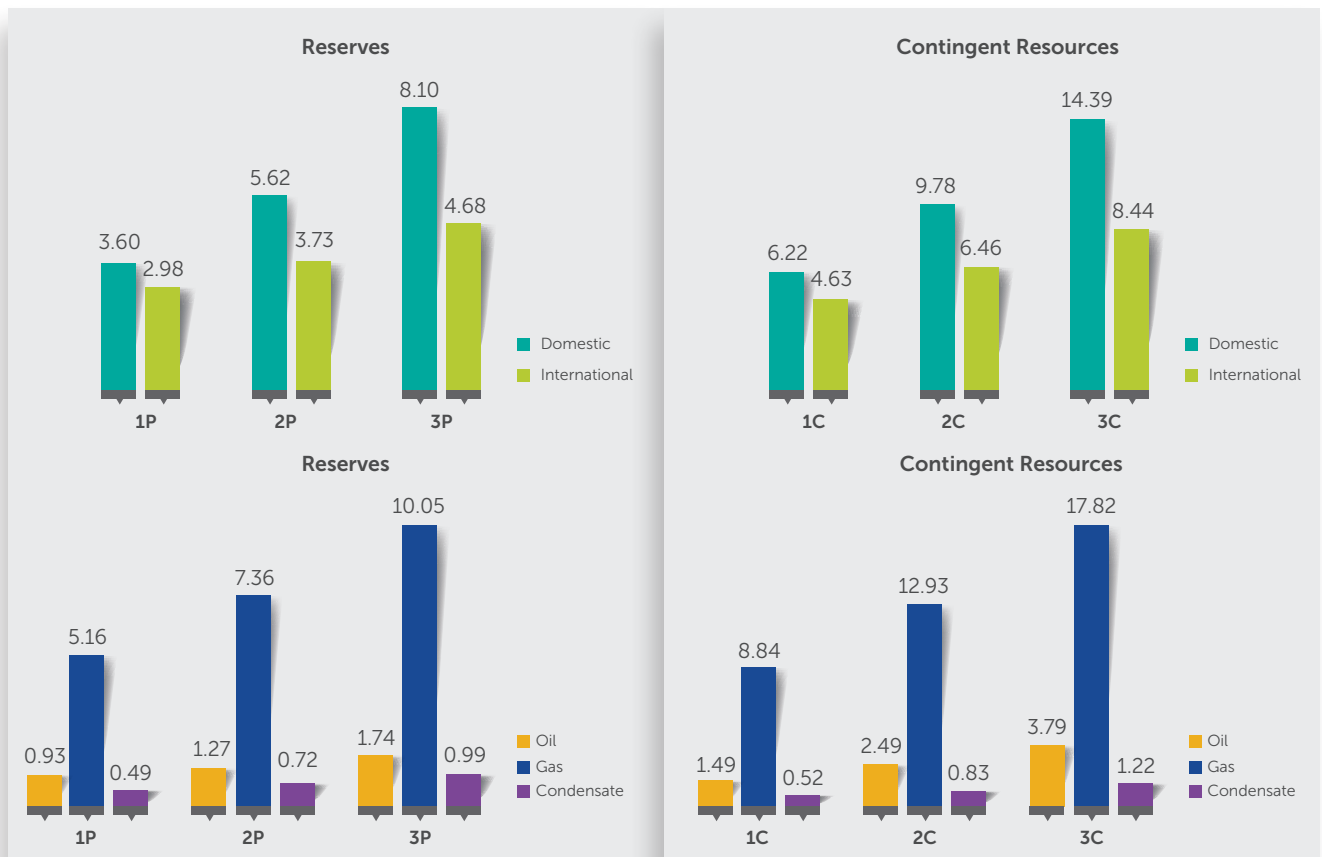
Governance and Disclosure (Reserves and Resources)

As at 1 January 2024, PETRONAS' total petroleum 2P Reserves stood at 9.35 Bboe, an increase of one percent from 2022. The improvement in Reserves performance was primarily due to the maturation of Contingent Resources (CR) to Reserves. PETRONAS' total 2C Contingent Resources stood at 16.25 Bboe, an increase of five percent from 2022, primarily contributed by the successful exploration discoveries that added 1.49 Bboe of 2C to our portfolio, and supported by our expansion internationally in Angola and Indonesia. Our strong business performance reflected positively in all key performance Reserves and Resources indicators.

(i) ARPR 1.1.2024 Reserves and Contingent Resources

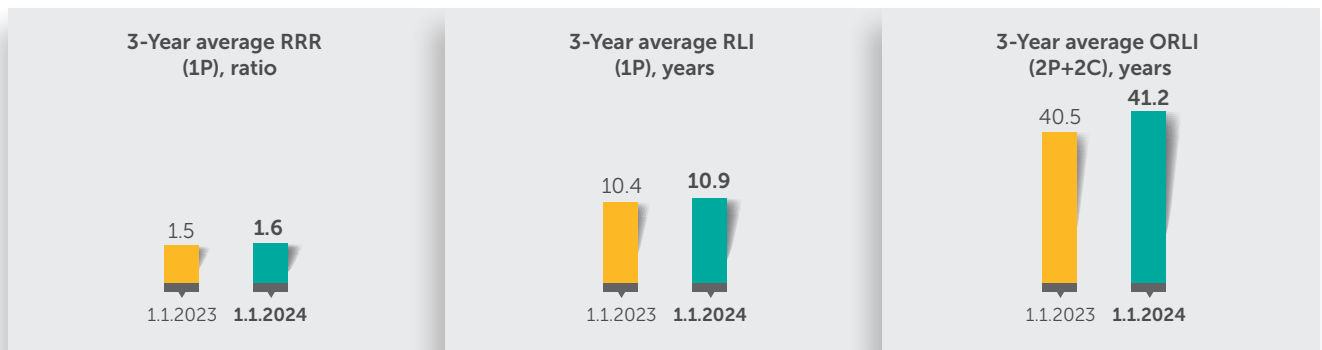
Unit: Bboe

Unit: Bboe



Note: Totals may not add up due to the rounding of figures.

(ii) Reserves and Resources Performance Indicators



Upstream

Highlights and Achievements

Highlights	What We Achieved
<p>Targeted international portfolio expansion</p>	<ul style="list-style-type: none"> ➔ Inked key agreements in Angola, Indonesia, Brazil and Oman ➔ Expanded presence in Suriname through two Production Sharing Contracts (PSC)
<p>Increased Malaysia’s attractiveness as an investment destination among global players</p>	<ul style="list-style-type: none"> ➔ Signed nine exploration blocks and three discovered resource opportunities in Malaysia Bid Round 2022 ➔ Offered ten exploration blocks and two clusters of Discovered Resource Opportunities as part of Malaysia Bid Round 2023
<p>Increased prospect of reserves</p>	<ul style="list-style-type: none"> ➔ Made 24 exploration discoveries, the highest over the last five years
<p>Reduced Upstream’s emissions by 17 per cent in Malaysia-operated assets</p>	<ul style="list-style-type: none"> ➔ Completed six emissions reduction projects
<p>Increased efforts to reduce emissions through the development of the carbon capture and storage sector</p>	<ul style="list-style-type: none"> ➔ Advanced to three definitive CCS hubs in Malaysia



Challenges

Challenge	Mitigation Action	Results
<p>Health, Safety, Security and Environment (HSSE) Threats</p> <p>Sustaining effective HSE and security practices to deliver a sustainable business performance.</p>	<ul style="list-style-type: none"> • PETRONAS Upstream Generative HSE Culture (GC): Charted and propagated pervasive culture through reinforcement of leadership roles and inculcated personal accountability and behaviour at all levels. • Enhancement of Security Practices: Minimised exposure to critical plant disruptions, civil unrest, extremist and maritime threats, among others. 	<ul style="list-style-type: none"> • Generative Culture initiatives: Introduced new initiatives under GC Leadership Programme (establishment GC Shaping HSE Culture Playbook, GC Guidebook and GC in Me), intensified Upstream Process Safety Culture and developed Lateral Learning (LAT) module. • Security Contingency Plan (SCP): Established SCP to enhance the information in hand with regards to the country's latest situation in addressing security threats including intrusions.
<p>Delivering GHG Reduction Targets</p> <p>Delivery of Upstream emissions reduction efforts is crucial in meeting greenhouse gas targets.</p>	<ul style="list-style-type: none"> • Greenhouse Gas (GHG) Emissions Reduction: Operationalised efforts in meeting emissions reduction targets. 	<ul style="list-style-type: none"> • Energy Intensity (EI): Completed strategy, targets and plans on the summary of individual's energy consumption for a facility in effort to reduce the combustion emissions. • Structured Energy Trending and Performance Assessment for Combustion Engine (SETPACE): Improved GHG emissions accuracy in performance planning through SETPACE assessment. • Physical Emissions Reduction and Carbon Capture and Storage Projects: Intensified efforts in delivering physical emissions reduction and carbon capture and storage projects.
<p>Project Delivery Challenges</p> <p>Increasing challenges in executing capital projects safely, on time, on budget, on schedule, on volume.</p>	<ul style="list-style-type: none"> • Project Delivery Excellence: Elevated performance conversations, identification of quick wins and structural changes to support effective delivery of planned projects. 	<ul style="list-style-type: none"> • Global Portfolio Valuation: Undertook annual project rationalisation in matching company's priorities and work programme with available resources. • Vessel Resources Management: Established line of sight through resource planning and optimisation base on project vessel demand and availability outlook.
<p>Geopolitical Instability</p> <p>Growing geopolitical threats continues to influence business operations.</p>	<ul style="list-style-type: none"> • Strengthened Business Disruption Preparedness: Rigorously reviewed geopolitical landscape and monitored escalation of pervasive threats to ensure business resiliency. 	<ul style="list-style-type: none"> • Signpost Monitoring Process: Continued to improve streamlined efforts and strengthen collaboration on monitoring possible geopolitical threats. • Security Contingency Plan (SCP) and Business Continuity Plan (BCP): Reviewed and assessed the adequacy of both plans for selected countries.

Opportunities

- **Growing Exploration:** PETRONAS Upstream is focused on efforts to revitalise Malaysia's exploration landscape with timely maturation of resources and development of reserves.
- **Sustaining Production Opportunities:** Sustaining domestic production with focus on superior value from producing assets to generate competitive returns.
- **Strengthen Global Portfolio:** Internationally, PETRONAS Upstream remains focused in sustaining production in a differentiated manner by delivering barrels that are cost efficient and lower carbon.
- **Intensify Carbon Capture and Storage (CCS) Solution:** PETRONAS Upstream is committed to initiatives to position Malaysia as a regional carbon capture and storage hub and unlocking the potential of high carbon dioxide gas fields.

Upstream

Our Approach to Sustainability

Upstream recognises its role in delivering PETRONAS Energy Transition Strategy, emphasising value creation, energy security, and meeting global energy demand by leveraging its gas-dominant portfolio to enable the transition to a lower-carbon economy. We are committed to sustainable practices, including GHG emissions reduction, social progress, and preserving nature and biodiversity. This commitment is underscored by an emphasis on ethical conduct and strong governance to ensure long-term resilience and stakeholder trust.

Throughout 2023, Upstream implemented a range of impactful initiatives across Upstream’s areas of operations domestically and globally. Below are some examples of the efforts:

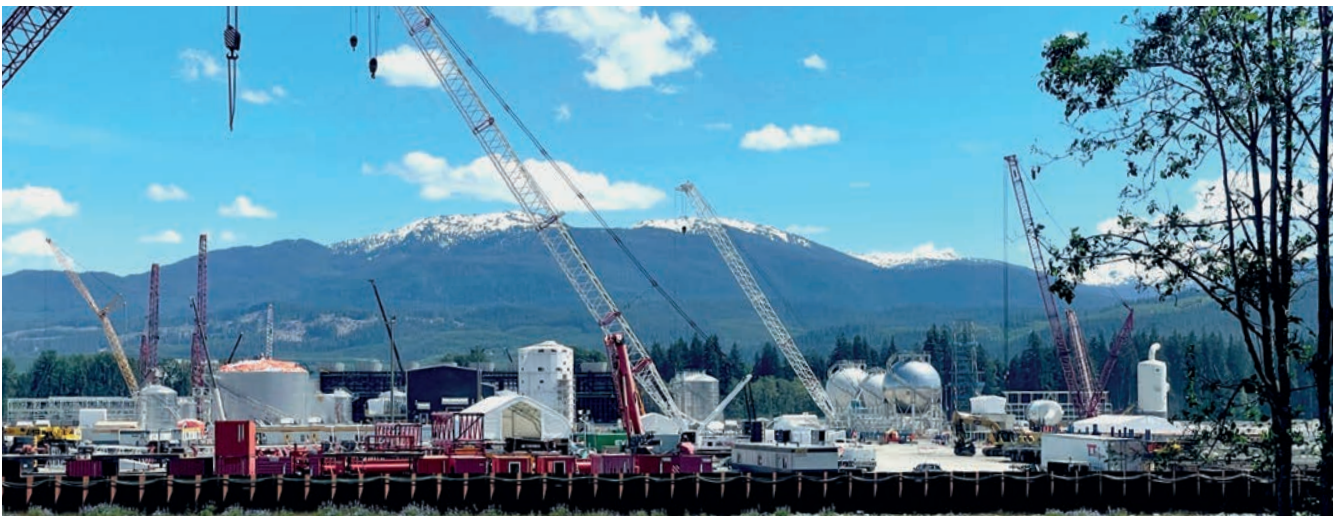
➔ Uplifting Lives Programme



Distributed Fish Aggregating Devices (anchored or floating devices that are placed strategically at sea to create an artificial concentration point for a variety of fishes) to 1,650 beneficiaries from fisherman communities in Sabah and Terengganu which has reduced encroachment incidents at our offshore facilities by 67 per cent compared to 2019.

➔ Responsibly Sourced Gas certification

PETRONAS Canada’s natural gas assets are now 100 per cent certified as responsibly sourced through Equitable Origin’s EO100™ Standard for Responsible Energy Development. The RSG certification reaffirms that PETRONAS Canada is well-positioned to provide global markets with the responsible and secure energy the world needs – now and for the long-term.



For more information on our sustainability contributions, please refer to pages 108-197.

► Our Outlook

Short-Term Outlook

In Malaysia, to contribute towards the security of supply, our approach includes intensifying exploration activities of new plays and matured areas while expediting appraisal programmes to replenish our resources to sustain production and provide optionality.

Upstream is focused on growing resources and meeting production targets at lower costs and lower emissions, and addressing energy demands while positioning carbon capture and storage (CCS) as a pivotal business.

In the short term, from 2024 to 2025, we will continue to revitalise the Malaysian exploration and production (EP) landscape.

Timely maturation of resources and development of reserves and optimum recovery from our producing assets remain vital to deliver base production. Key projects like Kasawari, Rosmari and Majoram are critical for energy security in key demand centres.

We are making progress in decarbonising our operations aligned with our Net Zero Carbon Emissions (NZCE) by 2050 Pathway. Advancement in carbon capture and storage, particularly with the Kasawari CCS project, is aimed at decarbonising our operations and unlocking gas resources to meet the demand center. Another two projects are in the pipeline to unlock significant investments and contribute to environmental goals. We aim to position Malaysia as a regional centre for CCS solutions, fostering collaborative partnerships.

Internationally, our focus is on sustaining production in a differentiated manner and generating competitive returns. This includes monetising high-value oil resources in our focused regions namely the Americas, Middle East and Southeast Asia. We are working to unlock value from Abu Dhabi's hydrocarbon resources and execute low-carbon production in S epia, Brazil. We are also leveraging gas resources in Canada and potentially in Argentina and Indonesia to deliver enterprise value upsides through an integrated liquefied natural gas (LNG) business model.

Medium- to Long-Term Outlook

Looking forward, Upstream is committed to safeguarding production supply by meeting production targets and maximising shareholder value by decarbonising our value chain. We are committed to delivering this through innovation and technology deployment and close collaboration with industry partners in Malaysia and our international operations.

We aim to open up more fields in Malaysia, to pursue our ambition of being a regional centre for CCS solutions through the Lang Lebah field in Sarawak and the Bujang, Inas, Guling, Sepat and Tujoh (BIGST) fields in Peninsular Malaysia. The Lang Lebah field is expected to capture approximately 2 million tonnes CO₂e annually, which will be stored in the Golok Cluster depleted field. The gas supply from the BIGST fields, the first carbon capture and storage project in Peninsular Malaysia, is another key project for energy security, given the significant potential that exists within the cluster.

Internationally, we will continue to manage our portfolio by focusing on superior value and quality resources. Our strategy includes delivering cost efficient and lower carbon barrels with environmental, social and governance (ESG) considerations integral to our operations and decision-making processes.



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

Gas business achieved significant milestones and demonstrated resilience in 2023. We continued to strengthen our position as a one-stop-centre for lower carbon energy solutions and a reliable provider of natural gas.

We capitalised on favourable market conditions to increase our liquefied natural gas (LNG) sales volume and value. We also demonstrated our unwavering commitment to our customers by navigating operational challenges with resilience to fulfill our delivery commitments.

Leveraging on our robust LNG portfolio, we overcame obstacles and continued delivering stable LNG supply, going above and beyond to fulfil our commitments. Internationally, we made progress with the completion of Phase 1 of our LNG project in Canada and locally, with the development of Malaysia's first nearshore floating LNG facility in Sabah. In the longer term, we will continue to mature opportunities to grow our supply nodes in other regions of the world to ensure a robust portfolio.

Most importantly, we recorded zero fatalities in occupational health and safety, an improvement from the previous year and a testament to our commitment to protect the well-being of our workforce.

In line with PETRONAS' Net Zero Carbon Emissions by 2050 Pathway, we remain committed to reducing greenhouse gas (GHG) emissions across our natural gas value chain. We aim to reduce emissions from our operations, focusing on decarbonisation and electrification initiatives while ensuring natural gas continues to provide energy security as the world shifts toward cleaner energy sources.

Gas



Delivered **403** LNG cargoes from PETRONAS LNG Complex and **38** LNG cargoes from PFLNG SATU and PFLNG DUA to meet customers' energy needs.



Completed **2,214** million standard cubic feet per day (MMscfd) of average sales gas volume delivered in Peninsular Malaysia.



Achieved Overall Equipment Effectiveness (OEE) of **95.1%** across all business segments under Gas business.



Achieved gross LNG sales of **32.9** million metric tonnes (MMT) while driving for commercial excellence.

Key Focus Areas and Results

Focus Area	What We Did in 2023	Results	Stakeholders
Core Business	<p>Secured Natural Gas and LNG Sales</p> <ul style="list-style-type: none"> Sustained our position as a preferred and leading natural gas and LNG producer and supplier. <hr style="border-top: 1px dotted #ccc;"/> <p>Achieved World-Class Operational Efficiency and Portfolio Growth</p> <ul style="list-style-type: none"> Ensured safe and reliable natural gas and LNG production while pursuing growth projects. <hr style="border-top: 1px dotted #ccc;"/> <p>Leveraged Digitalisation for New Value Creation</p> <ul style="list-style-type: none"> Unlocked additional value from existing natural gas production through plant modernisation initiatives. <hr style="border-top: 1px dotted #ccc;"/> <p>Delivered Innovative and Accessible LNG Solutions</p> <ul style="list-style-type: none"> Ensured reliable supply of LNG deliveries to customers in Malaysia and across the globe while in line with our pursuit of commercial excellence. 	<ul style="list-style-type: none"> Achieved gross LNG sales of 32.9 MMT. Delivered 2,214 MMscfd of average sales gas volume in Peninsular Malaysia. <hr style="border-top: 1px dotted #ccc;"/> <ul style="list-style-type: none"> Overall Equipment Efficiency (OEE) of 99.7 per cent for PETRONAS Gas Berhad (PGB) and 93.5 per cent for PETRONAS LNG Complex (PLC). Developing Malaysia's first nearshore LNG production facility, located at the Sipitang Oil and Gas Park in Sabah. <hr style="border-top: 1px dotted #ccc;"/> <ul style="list-style-type: none"> Introduced the first Enterprise Private 5G ecosystem at PETRONAS Gas Berhad's Regasification Terminal in Sungai Udang, with subsequent installations at Gas Processing Kertih, PETRONAS Petroleum Industries Complex and Malaysia LNG. Implemented PETRONAS LNG Complex (PLC) Project ARIES and Gas Processing and Utilities Playbook, leading to improvements in Recovery Factor (RF) and additional sales gas production respectively. Ensured reliable and uninterrupted gas supply across Peninsular Malaysia through live monitoring of the gas network at the PETRONAS Gas Control Centre. <hr style="border-top: 1px dotted #ccc;"/> <ul style="list-style-type: none"> Delivered more than 12,900 LNG cargoes from PETRONAS LNG Complex to date, whilst sustaining contribution margins across the value chain. Completed 6,322 Virtual Pipeline System (VPS) and LNG bunkering deliveries, in line with commitment to promote greater usage of lower carbon energy. 	<div style="margin-bottom: 20px;"> FG C </div> <hr style="border-top: 1px dotted #ccc;"/> <div style="margin-bottom: 20px;"> FG C SIC </div> <hr style="border-top: 1px dotted #ccc;"/> <div style="margin-bottom: 20px;"> C E </div> <hr style="border-top: 1px dotted #ccc;"/> <div style="margin-bottom: 20px;"> C CN </div>

Gas

Key Focus Areas and Results			
Focus Area	What We Did in 2023	Results	Stakeholders
New Business	<p>Grew CO₂ Business</p> <ul style="list-style-type: none"> Unlocked new value from the by-products of natural gas, achieved through sales of piped CO₂ from Gas Processing Plant in Kertih, Terengganu, to customers' plants in the vicinity. 	<ul style="list-style-type: none"> Secured 189,538 metric tonnes (MT) sales volume in 2023. 	<p>FG C SIC</p>
Net Zero Carbon Emissions	<p>Achieved Reduction in GHG Emissions</p> <ul style="list-style-type: none"> Reduced the GHG emissions of the LNG production process through fuel gas consumption optimisation and utilised digital solutions to monitor and reduce emissions. 	<ul style="list-style-type: none"> Conducted real-time monitoring of GHG emissions at our Gas Processing and Utility plants. 	<p>FG C SIC</p>

Highlights and Achievements

Highlights	What We Achieved
Zero Fatalities	<ul style="list-style-type: none"> Maintained the highest standards in Occupational Health and Safety with zero fatalities.
Financial Resilience	<ul style="list-style-type: none"> Surpassed revenue and profitability targets despite downward price challenges, demonstrating strong financial performance.
Portfolio Growth	<ul style="list-style-type: none"> Progressed ahead of schedule for the development of Malaysia's first nearshore LNG facility located in Sabah, which is planned for completion by the second half of 2027. Completed Phase 1 of LNG Canada with the plant startup planned to take place middle of 2025. Strengthened LNG trading capabilities by growing LNG storage capacity via an LNG floating storage unit (FSU) located at the PETRONAS LNG Regasification Terminal in Pengerang, Johor, Malaysia.

Challenges

Challenge	Mitigation Action	Results
<p>Managing Supply Ensuring sustainability of feedstock supply and plant performance affecting LNG production.</p>	<ul style="list-style-type: none"> • Stakeholder Engagement: Managed stakeholders and customers through courtesy calls and management visits. • Maintenance and Inspection Enhancement: Improved maintenance plans and intensified inspections at the LNG facility. • Continuous Refinement of Marketing Strategies: Optimised effectiveness of marketing efforts to secure sales. 	<ul style="list-style-type: none"> • Successfully delivered all LNG cargoes despite the affected supply from the Sabah-Sarawak Gas Pipeline. • Achieved higher revenue and profitability than budgeted. • Enhanced value from the LNG chain by leveraging on analytics and trading capabilities.
<p>Managing Domestic Demand Managing gas demands in Peninsular Malaysia and elevated gas costs affecting profitability.</p>	<ul style="list-style-type: none"> • Proactive Demand Handling: Handled feedgas demand effectively, especially from power sector customers. • Continuous Contract Negotiations: Engaged in ongoing contract discussions for price and volume offtake. 	<ul style="list-style-type: none"> • Streamlined and optimised gas and LNG production across all assets to mitigate production shortfalls and fulfil customer needs.
<p>Growth Risk Expanding supply nodes and entering new markets.</p>	<ul style="list-style-type: none"> • Investment Due Diligence: Instilled investment discipline with a robust stage approach. • Commercial Term Exploration: Ensured attractive commercial terms via bespoke customer value propositions. 	<ul style="list-style-type: none"> • Completed the Project Delivery of LNG Canada Phase I. • Progressed ahead of schedule for Malaysia's first nearshore LNG facility in Sabah. • In pursuit of new LNG supply nodes globally.


Opportunities

- **Expansion through New Supply Nodes:** Continue to progress on the joint feasibility study for an integrated LNG project in Argentina.
- **Leveraging Carbon Capture and Storage (CCS):** The National Energy Transition Roadmap (NETR) includes carbon capture, utilisation, and storage (CCUS) as a key component of Malaysia's energy transition strategy. PETRONAS' Gas Business is also actively shaping the energy transition landscape by looking into feasible opportunities for carbon abatement at our LNG production and gas processing facilities.

Gas

Our Approach to Sustainability

- **Decarbonisation Efforts:** Reduced GHG emissions from Gas operations through:
 - Flaring reduction.
 - Optimisation of fuel gas consumption through digital initiative.
 - Simulation modelling for efficient plant operations.
 - Reduce emissions from LNG cargo ships through fuel optimisation.
-
- **Operational Excellence:** Sustained world-class operational excellence to deliver reliable lower carbon energy.
 - **Customer-Centric Solutions:** Provided solutions to increase accessibility to lower-carbon energy to support the energy transition.

 For more information on our sustainability contributions, please refer to pages 108-197.



► **Our Outlook**

Short-Term Outlook

In the current challenging energy landscape, coupled with geopolitical uncertainties, Gas business is focused on reinforcing its role as a reliable and customer-centric provider of lower carbon energy solutions. By embracing innovation and new technologies, we are committed to growing our supply portfolio while maximising the value of our existing assets and infrastructures.

Key focus areas for the short-term

Asset Value Maximisation

LNG Supply Expansion

Customised Market Solutions

Details

Enhancing the value of our assets through operational and commercial excellence, with a strong emphasis on health, safety, security and environment (HSSE).

Efforts are underway to expand our LNG portfolio, which include growth projects like LNG Canada Phase 1, and the nearshore LNG facility in Sabah.

Actively exploring new business opportunities by tailoring solutions to meet customer needs, expanding our market reach.

Medium- to Long-Term Outlook

As we look towards the medium- and long-term future, the demand for gas and LNG is expected to remain robust across various energy transition scenarios. This sustained demand, supported by resilient prices, is likely to drive new investments and growth in the sector.

Key focus areas for the medium- to long-term

Global LNG Portfolio Growth

Expansion into Adjacent Gas Value Pools

Emissions Reduction Solutions

Details

Anticipating continued growth in global LNG demand, we aim to maintain market leadership by enhancing our customer-centricity and by leveraging on our robust LNG track record in reliability and commercial excellence.

With the growth in gas-based power generation, we are expanding our power generation business and exploring opportunities emerging from the energy transition.

Initiatives to decarbonise our operations are underway, with various carbon abatement solutions being explored to future-proof our business.



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

Downstream business showcased resilience, driving operational excellence and maximising resources across our value chain. We navigated challenges and seized opportunities in a recovering market, with demand nearing pre-COVID-19 levels across all units. Our production volumes in petroleum and petrochemical products saw an uptick due to stable plant operations and reliability. Significantly, our marketing arm recorded a rise in sales volume for the retail and commercial segments, fuelled by economic recovery.

Looking forward, our commitment is to strengthen our foothold into specialty chemicals, expand convenience business such as Café Mesra and Setel, and grow our presence in the Asian lubricant market, focusing on customer-centric solutions to drive long-term value creation in a changing world. We are also actively exploring growth opportunities in cleaner energy solutions, including biofuels, circular economy and next-generation fluids with the PETRONAS Iona range, aligning with the evolving global energy demands.

Downstream



26.3 billion
litres of overall marketing
sales volume.



87.2%
Overall Equipment
Effectiveness (OEE).







Sanctioned the construction
of an **advanced
chemical recycling
plant** in Pengerang, Johor.



Achieved **final
investment decision
(FID) to fully acquire
maleic anhydride
plant** in Gebeng, Pahang
from BASF PETRONAS
Chemicals Sdn Bhd.

Key Focus Areas and Results

Focus Area	What We Did in 2023	Results	Stakeholders
Core Business	<p>Stable and Efficient Operations</p> <ul style="list-style-type: none"> Sustained safe, stable and efficient operations across all units, meeting energy security needs. 	<ul style="list-style-type: none"> Improved Overall Equipment Effectiveness (OEE) to 87.2 per cent from 85.9 per cent last year. Enhanced operational efficiency and reliability. 	
New Business	<p>Biofuels Development</p> <ul style="list-style-type: none"> Partnered with Idemitsu Kosan Co., Ltd. to explore co-marketing including sales and delivery of produced Sustainable Aviation Fuel (SAF) to the aviation industry overseas. Initiated a Used Cooking Oil (UCO) collection drive in selected regions to promote responsible waste management and circular economy practices. Signed Memorandum of Understanding (MoU) with The Malaysian Palm Oil Board to study the viability and accessibility of domestic UCO and palm waste as feedstocks for the production of SAF. 	<ul style="list-style-type: none"> Initiated collaboration with Idemitsu Kosan Co., Ltd. to establish a robust SAF sales and distribution network, ensuring SAF accessibility to airlines. Collected 137.95 tonnes of UCO nationwide at selected retail stations and refining plants, through collaboration with the Ministry of Plantation and Commodities to supply feedstock for SAF production. This initiative enhanced public awareness of waste management and circular economy through ongoing UCO collection campaigns. 	
	<p>Specialty Chemicals Division</p> <ul style="list-style-type: none"> Established a dedicated division for specialty chemicals to strategically drive growth. 	<ul style="list-style-type: none"> Perstorp completed the construction of Sayakha plant in India in 2023 for the production of Pentaerythritol and ISCC PLUS certified Voxtar™ M40 to strengthen its market position in the Asia Pacific region. BRB significantly expanded its global footprint and capabilities in 2023, achieving key certifications for food safety in Malaysia and started full operations of its new Linde Ammonia Concept plant in the Netherlands, while strengthening its market presence in the UK and South Korea. 	
	<p>Circular Economy Advancement</p> <ul style="list-style-type: none"> Reached a final investment decision for the construction of an advanced chemical recycling plant in Pengerang, Johor, set for operation by the first half of 2026. 	<ul style="list-style-type: none"> Initiated the construction phase of the plant that will enable PETRONAS Chemicals Group Berhad to convert end-of-life plastics into pyrolysis oil, which can be used as chemical feedstock in the production of sustainable plastics. 	

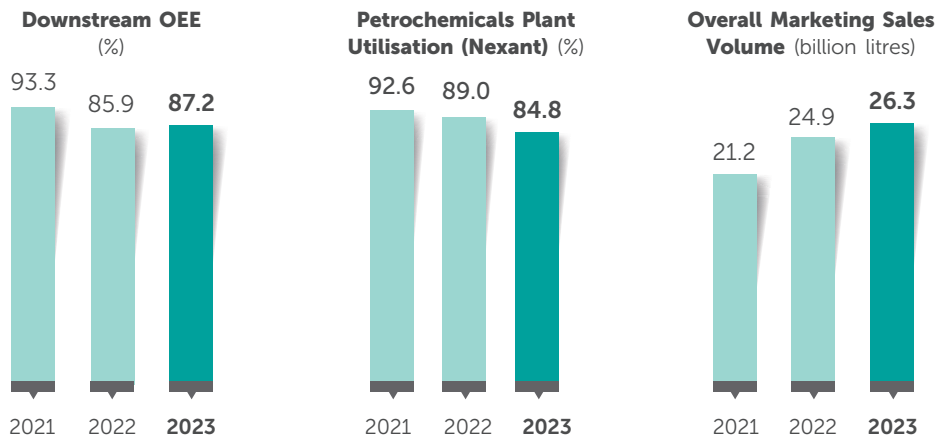
Downstream

Key Focus Areas and Results			
Focus Area	What We Did in 2023	Results	Stakeholders
New Business	<p>Convenience Business Expansion</p> <ul style="list-style-type: none"> Expanded the convenience business to cater to customer's needs through diversified product and service offerings at PETRONAS fuel retail stations and beyond. 	<ul style="list-style-type: none"> Operated 97 Cafe Mesra outlets as of December 2023 in strategic locations nationwide including PETRONAS fuel retail stations and beyond, bringing its product and service offerings closer to customers for greater convenience. Launched Setel Lite and integrated DuitNow QR in the Setel app, strengthening Setel's position as a preferred e-wallet for motorists, bringing convenience through motorist-centric features beyond fuel. 	<p>FG C</p>
Net Zero Carbon Emissions	<p>Emissions Reduction Initiatives</p> <ul style="list-style-type: none"> Implemented various Scope 1 and Scope 2 emissions reduction initiatives, including optimisation of fuel burning equipment and combustion process, generation and utilisation of renewable electricity sources, and energy efficiency enhancement. 	<ul style="list-style-type: none"> Reduced GHG emissions from Downstream operations to support PETRONAS' target of capping emissions to 49.5 million tonnes carbon dioxide equivalent (CO₂e) by 2024. 	<p>FG C</p>

Highlights and Achievements

We have maintained stable OEE but recorded a reduction in petrochemicals plant utilisation (Nexant) for the past three years due to planned turnaround and maintenance activities, as well as unscheduled plant shutdowns. Retail and Commercial segments meanwhile boosted overall marketing sales volume on the back of economic recovery.

Performance Highlights for 2023



Challenges

Challenge

Evolving Customer Preferences

Shifts in customer's preferences towards sustainably produced products and offerings.

Geopolitical Instability

Geopolitical tensions leading to supply disruptions, volatility of commodity prices and increased scrutiny on sanction laws.

Mitigation Action

- **Sustainability Initiatives:** Implementing initiatives in line with the Net Zero Carbon Emissions by 2050 Pathway, focusing on operational emissions reduction and cleaner energy solutions.
- **Business Future-Proofing:** Diversifying into high-margin products and offerings to meet stakeholder demands.

- **Sourcing strategy:** Accelerate nearshoring sourcing strategy and global sourcing partnership to reduce geographic dependence, ensuring security of supply and cost competitiveness.
- **Compliance Review:** Rigorous review of counterparties to ensure compliance to relevant sanction laws.

Results

- **Biofuel in Formula One:** Collaborated with Mercedes-AMG PETRONAS Formula One Team using biofuel in its fleet across nine races, leading to savings of 339 tonnes CO₂e and a 67 per cent emissions reduction during the Formula One European Season.
- **Electric Vehicle Charging Expansion:** Grew the number of Gentari-branded electric vehicle chargers to 51, strategically placed at PETRONAS fuel retail stations to enhance customers' accessibility.
- **PETRONAS Syntium Hybrid Launch:** Met the increasing demand for sustainable vehicle solutions with the hybrid engine fluids, PETRONAS Syntium Hybrid.
- **AireBlue™ Launch:** Offered road users access to a cleaner diesel exhaust alternative through the Kedai Mesra network.
- **PETRONAS Iona and thermal management fluid enhancement:** Increased engine energy efficiency without compromising performance while delivering sustainable mobility for consumers.
- **Lubricant:** Increased supplier base with competitive prices.
- **Counterparty Screening:** Conducted additional screening methodology in determining the 'Ultimate Beneficial Owner' of counterparties as an added safeguard to the existing practices.

Opportunities

- **Innovative Energy Solutions Demand:** Downstream is poised to meet the rising demand for innovative energy solutions, tapping into the growing global trend towards sustainable energy practices.
- **Retail Market Expansion:** With the retail market rebounding, Downstream is well-positioned to capitalise on the increased demand for diverse convenience business products and services.
- **Shift Towards Green Mobility:** Downstream will continue to expand strategic collaborations with Gentari and other industry players to enhance the eco-friendly transportation ecosystem in the country, making electric vehicle adoption more affordable and accessible.

Downstream

Our Approach to Sustainability

- **Mangrove Conservation Programme:** PETRONAS Refinery and Petrochemicals Corporation Sdn Bhd, in partnership with Pengerang Terminals (Two) Sdn Bhd and PETRONAS Chemicals Group Berhad has planted an additional 15,500 mangrove trees to reach the target of 30,000 trees in Pulau Tanjung Surat, Johor, contributing to reforestation and shoreline protection.
- **Be Green Initiative Expansion:** PETRONAS Chemicals Group Berhad expanded Be Green, its flagship social impact programme, internationally for the first time starting with Indonesia, to drive awareness on responsible waste management and the practice of 3R (Reduce, Reuse and Recycle).
- **4R (Reduce, Reuse, Recover, Recycle) Initiative:** PETRONAS Lubricants Brazil recycled eight tonnes of label liner waste per month to produce 180 recycled paper towel rolls (equivalent to 706 kilograms) for use in its blending plant in Contagem, Brazil.
- **Social Enterprise Education Lab (SEEd.Lab):** SEEd.Lab, which has impacted over 15,000 lives since 2020, launched Cohort 3 with 50 social entrepreneurs to address societal and environmental challenges.
- **ESG Performance Recognition:** PETRONAS Chemicals Group Berhad and PETRONAS Dagangan Berhad's high rating on the FTSE4Good Bursa Malaysia Index and top 25 per cent ESG ranking in the FTSE Bursa Malaysia EMAS Index demonstrate a strong commitment to environmental, social, and governance excellence.



For more information on our sustainability contributions, please refer to pages 108-197.



► Our Outlook

Short-Term Outlook

Our focus is on agility and alignment with the broader PETRONAS organisation. We are committed to creating long-term value while addressing today's global energy demands and preparing for future needs.

Our targeted investments leverage our unique business strengths, future-proofing our portfolio and creating new revenue streams. Our strategy involves strengthening operational and commercial excellence and extending value to fully capture the market, especially in key growth areas in the new energy solutions space. These include:

- Advancing into biofuels to be supported by our upcoming first biorefinery in Pengerang, Johor
- Maximising value through asset-backed trading
- Delivering innovative solutions through the expansion of PETRONAS Iona range while enhancing product performance to promote the shift towards e-mobility
- Growing our convenience business to diversify product offerings beyond fuel.
- Strengthening our foothold in specialty chemicals as part of our portfolio diversification strategy.
- Advancing towards circular economy through the New Plastics Economy initiatives; and
- Driving growth and maximising the potential of the Pengerang Integrated Complex (PIC) through strategic partnerships and investments.

Medium- to Long-Term Outlook

At Downstream, we aim to drive business value through the development of sustainable solutions. Our priority is to align with new policy developments, increased private sector commitment, rising consumer awareness, technological advancements in the societies we serve and address the energy transition in a just and responsible manner. We are committed to measuring, reducing and offsetting our carbon emissions to realise our Net Zero Carbon Emissions by 2050 Pathway and meeting the climate goals set out under the Paris Agreement. We will continue to reduce emissions from our operations through decarbonisation levers in support of PETRONAS' target of a 25 per cent reduction by 2030.



Project Delivery and Technology

Completed the **largest offshore installation** in Malaysia for Kasawari Gas Field Development.

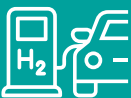


RM3.3 billion



realised value creation through the delivery of projects, technical and digital solutions.

Progressed deployment of our proprietary Proton Exchange Membrane (PEM) electrolyser for **hydrogen production**.



Crowdsourced over **1,500 ideas**



through the global **Race2Decarbonise** hackathon towards meeting enterprise short-term abatement target.



Ir. M Yusri M Yusof
Senior Vice President*,
Project Delivery and Technology



With innovation being integral to the energy landscape amid accelerated global energy transition, PETRONAS' Project Delivery and Technology (PD&T) Division has been pivotal in driving our groupwide business and sustainability ambitions.

PD&T as PETRONAS' Centre of Excellence is the technology and engineering nexus offering deep expertise and innovative solutions to advance the Group's core business and growth areas.

As a safe, reliable and progressive solutions partner, PD&T recorded transformative growth while shaping and safeguarding operations across the value chain towards realising the aspirations of the enterprise and its stakeholders.

This achievement is due to the visionary leadership of Datuk Ir Bacho Pilog who led PD&T previously.

The division delivered notable milestones in line with PETRONAS' Energy Transition Strategy demonstrating passion and commitment towards making impact in the energy landscape through our expanding innovation ecosystem.

In 2023, we pushed for wider adoption of PETRONAS' proprietary solutions through commercialisation. The efforts to create value and touch lives with our technology were intensified through the formation of Group Technology and Commercialisation.

Meanwhile, the deployment of key technology and delivery of capital projects, together with our pursuit of active collaborations to foster innovation, have propelled us along the pathway to a lower carbon future.

Note:

* Appointment as at 1 January 2024.

Key Focus Areas and Results

Focus Area	What We Did in 2023	Results	Stakeholders
Core Business	Key Strategic Value Projects <ul style="list-style-type: none"> Spearheaded significant advancements in key technology and capital projects. 	<ul style="list-style-type: none"> Completed the largest offshore installation for the Kasawari Gas Field Development Project. 	C GIP
	Project Delivery Excellence <ul style="list-style-type: none"> Continued delivering projects on time, on budget, on scope. 	<ul style="list-style-type: none"> Managed 830 projects valued at RM12.3 billion annual CAPEX. 	C
	Operational Excellence <ul style="list-style-type: none"> Spurred innovation via digital and technology advancement to improve efficiency, productivity and operational excellence. 	<ul style="list-style-type: none"> Piloted Malaysia's first 5G private network to enable advanced digital initiatives and optimise operational performance. Achieved significant enterprise value creation through AlphaLNG, for gas and LNG production, cargo scheduling, price and cost optimisation. 	C
	Hydrogen Innovation <ul style="list-style-type: none"> Progressed in-house hydrogen technology. 	<ul style="list-style-type: none"> Progressed deployment of PETRONAS' proprietary Proton Exchange Membrane (PEM) electrolyser for hydrogen production. 	GIP
New Business	Strategic Carbon Capture and Storage Implementation <ul style="list-style-type: none"> Deployed innovative carbon capture and storage (CCS) technologies for effective carbon management. 	<ul style="list-style-type: none"> Achieved successful Factory Acceptance Testing for Rotating Packed Bed for Integrated Cryomin Onshore Plant. 	C GIP
	Specialised Product Innovation <ul style="list-style-type: none"> Developed specialty chemicals and circular economy technology for businesses. 	<ul style="list-style-type: none"> Achieved end-to-end R&D capabilities ranging from innovative chemistry creation and technology piloting such as graphene and high performance catalysts for sustainable aviation fuel. 	C

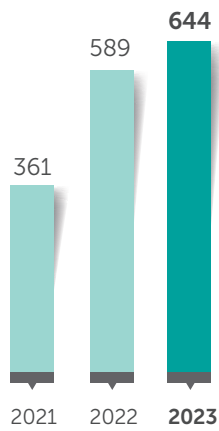
Project Delivery and Technology

Key Focus Areas and Results			
Focus Area	What We Did in 2023	Results	Stakeholders
New Business	<p>Technology Commercialisation</p> <ul style="list-style-type: none"> Commercialised technology and digital solutions. 	<ul style="list-style-type: none"> Transformed refinery waste by-products into premium materials such as graphene used for coating (ProShield+), composite and battery (ProCharge+). Commercialised digital solutions such as VOLANT, a unique integrated setup to facilitate high speed connectivity; and STEAR, an AI-powered logistic solution for business efficiency and GHG emissions reduction. 	GIP
Net Zero Carbon Emissions	<p>Enterprise Decarbonisation Focus</p> <ul style="list-style-type: none"> Accelerated asset decarbonisation through initiatives towards flaring or venting reduction, energy efficiency and emissions accounting by leveraging technology. 	<ul style="list-style-type: none"> Deployed Structured Energy Trending and Performance Assessment for Combustion Engine, a decarbonisation programme through fuel gas optimisation for stationary combustion; and a vent-to-flare conversion project to achieve zero routine venting at the Temana platform. Crowdsourced 1,500 innovative decarbonisation ideas worldwide through PETRONAS' first decarbonisation hackathon, Race2Decarbonise. 	C GIP
	<p>Methane Emission Management</p> <ul style="list-style-type: none"> Strengthened methane emissions management in line with international principles and collaborations, including ASEAN initiatives and partnerships for methane emissions reduction. 	<ul style="list-style-type: none"> Achieved the United Nations Environmental Programme Oil and Gas Methane Partnership 2.0 Gold Standard on methane emissions management pathway. 	
	<p>CCS Innovation</p> <ul style="list-style-type: none"> Defined CCS hubs development and technology milestones in line with the National Energy Transition Roadmap. 	<ul style="list-style-type: none"> Advanced the development of three CCS hubs in Malaysia. Achieved commercial readiness for flue gas membrane contactor. 	

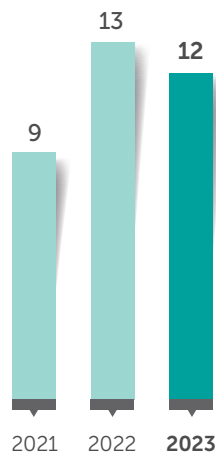
Highlights and Achievements

Performance Highlights for 2023

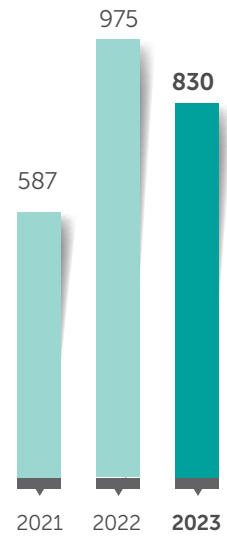
Investment in Technology
(RM Mi)



Portfolio Size (including CAPEX and OPEX)
(RM Bil)



Number of Projects



Project Delivery and Technology

Challenges		
Challenge	Mitigation Action	Results
<p>Volatility, Uncertainty, Complexity and Ambiguity</p> <p>Conditions that impact the ability to deliver business commitments.</p>	<ul style="list-style-type: none"> • Delivery Structure Review and Agile Processes: Enhanced efficiency and responsiveness through comprehensive review of our delivery structure. Enhancements included implementing agile business processes for adaptability and facilitating changes to meet commitments. • Opportunities from Trades Agreement: Capitalised on opportunities to strengthen and diversify vendor network, optimise fabricators, streamline supply chain and foster growth of local contractors' ecosystem. 	<ul style="list-style-type: none"> • Established an optimised approach with phased planning for enhanced delivery. • Revised critical cross-functional work processes for data and target adaptability. • Collaborated on a study to understand the impact of free trade agreements groupwide. • Initiated a comprehensive study to enhance the project delivery ecosystem encompassing market consolidation.
<p>Talent Development</p> <p>Managing capability and capacity gaps.</p>	<ul style="list-style-type: none"> • Talent Improvement Programme: Developed a programme aimed at building a workforce with a broad range of skills and perspectives. • Conscious Inclusion Programme: Implemented a Diversity and Inclusion awareness programme; and conducted a benchmarking study on neurodiverse capability development to build skills and encourage intentional inclusion. 	<ul style="list-style-type: none"> • Executed a comprehensive Talent Reshaping Programme. • Completed a conscious inclusion programme and benchmarking study to establish a capability framework and identified partner for collaboration. • Pilot programme for neurodivergent talents.
<p>Cyber Security</p> <p>Managing exposure to cyber security threats in digital activities.</p>	<ul style="list-style-type: none"> • Cross-Unit Cyber Security Collaboration: Strengthened collaboration for an integrated defence against cyber threats. • Robust ICT Business Continuity Measures: Implemented business continuity measures and conducted tabletop exercises for cyber security scenario evaluation. 	<ul style="list-style-type: none"> • Deployed Enterprise Cyber Security Governance Framework in the operational technology environment. • Implemented Ransomware Crisis Process.

Opportunities
<ul style="list-style-type: none"> • Technology Stewardship in Energy Transition: PD&T is advancing technologies required to deliver the PETRONAS Energy Transition Strategy. • Diverse Talent Utilisation: PD&T will continue to develop a diverse workforce with the talents and expertise necessary to create value and unlock opportunities. • Strategic Collaborations for Growth: PD&T will actively foster more significant synergies with strategic partners to propel PETRONAS' Core and New Business growth.

Our Approach to Sustainability

- **Eco-Conscious Initiatives:** Reduced single-use plastics in PD&T projects and facilities, avoiding 67 tonnes of plastic waste. Additionally, PD&T conducted 39 community and environmental conservation programmes. These social impact programmes reached 4,748 people, collected 924 kilograms of waste, released 650 turtles and planted 569 trees.
- **Social Performance Enhancement:** Improved technical capabilities and internal controls focusing on forced labour and social risk assessment for vendors and partners in PD&T’s managed projects in alignment with national regulations and plans.



For more information on our sustainability contributions, please refer to pages 108-197.

► Our Outlook

Short-Term Outlook

At PD&T, we aim to advance PETRONAS’ Core Business and New Business growth by excelling in project delivery and asset operations, providing expertise leadership, technological and engineering advancements, and sustaining and scaling up our digital ecosystem.

Our primary focus in the short term includes:

- Intensifying and accelerating decarbonisation by taking comprehensive measures to progress the energy transition.
- Ensuring that technology investments support key business growth priorities in CCS, renewable energy, hydrogen and advanced materials.
- Driving the commercialisation of matured technologies and digital solutions.

Among the key projects in our pipeline are the Kasawari Gas Field Development and the Kasawari CCS project. We will also scale up proprietary technologies and advance PETRONAS’ hydrogen plans.

Medium- to Long-Term Outlook

As PETRONAS’ Centre of Excellence and preferred solutions partner for the energy industry and beyond, we will continue identifying innovative solutions to maintain our competitive edge. We will leverage our expertise in project delivery, technology, technical and digital solutions, while ensuring safe and efficient operations throughout the value chain.

We will also promote, advocate and oversee enterprise decarbonisation and enterprise electrification to support PETRONAS in achieving its emissions reduction targets.

In accelerating our energy transition journey, we have fortified our Five-Year Strategic Plan 2024-2028 to drive sustainable growth, focusing on three key thrusts:

- Ensure continuous safety, reliability and efficiency improvements through distinctive technology solutions.
- Unlocking and accelerating commercialisation opportunities to generate new revenue for the Group.
- Intensifying research advancements supporting PETRONAS’ Energy Transition Strategy in the identified focus areas:
 - i) **Driving renewables:** Supporting the growth of hydrogen to fast-track the energy transition.
 - ii) **CCS:** Advancing engineering for carbon capture technologies.
 - iii) **Circular economy:** Repurposing waste into new products.
 - iv) **Advanced materials:** Strengthening asset integrity, extending service life and reducing overall carbon footprint.
 - v) **Improving decarbonisation:** Managing and reducing greenhouse gas emissions from assets.
 - vi) **Advancing specialty chemicals:** Ensuring progress in producing and utilising specialty chemicals beyond oil and gas into everyday consumer products.

Moving forward, we will continue to pursue technological and digital advancement throughout our value chain to ensure we meet the Group’s business goals and realise our Net Zero Carbon Emissions by 2050 Pathway.



Sushil Purohit
Chief Executive Officer,
Gentari

The energy transition's accelerated pace in 2023, supported by a diverse coalition of stakeholders, underscores a unified commitment to sustainable energy. Poised to amplify PETRONAS' ambitions in renewable energy, hydrogen and green mobility, we are contributing to the PETRONAS Energy Transition Strategy and the Net Zero Carbon Emissions by 2050 Pathway.

We aspire to be the leading next-generation commercial and industrial, and utility-scale renewable energy developer, a scale hydrogen producer and go-to industry partner, and to be Asia Pacific's leading green mobility solutions partner.

Our initiatives and collaborations in 2023 have been positive. We have achieved a total of 2.9 gigawatt installed and under construction global renewable energy capacity, marked our entry into Australia and the offshore wind segment, and significantly enhanced our green mobility footprint in Malaysia, India and Thailand. This progress is a testament to Gentari's dedication to advancing cleaner energy solutions and playing a pivotal role in the global pursuit of a net zero future.

Gentari

First entry into Australia through the acquisition and rebranding of **Gentari Solar Australia**, and the offshore wind segment via the **Hai Long project** off the Changhua coast.

2.9
gigawatt (GW)

installed and under construction global renewable energy capacity.



Progressing towards actual hydrogen assets, with approximately **200 KTPA of hydrogen opportunities** that have advanced beyond the feasibility stage.



Cumulative installation of close to 570 charging points globally and deployment of more than

2,500 EVs

under Vehicle-as-a-Service (VaaS)

Key Focus Areas and Results







Gentari is set to amplify PETRONAS' ambitions in renewable energy, hydrogen and green mobility, contributing to the PETRONAS Energy Transition Strategy and the Net Zero Carbon Emissions by 2050 Pathway.

Focus Area	What We Did in 2023	Results	Stakeholders
<p>Renewable Energy</p>	<p>Acquisition of Gentari Solar Australia</p> <ul style="list-style-type: none"> Acquired and rebranded WIRSOL Energy to Gentari Solar Australia, adding 422 megawatt of gross capacity to Gentari's overall renewables portfolio. <hr style="border-top: 1px dotted #ccc;"/> <p>Acquired Stake in Hai Long</p> <ul style="list-style-type: none"> Completed the acquisition of 49 per cent ownership in Northland Power Inc.'s stake of the Hai Long project located off the Changhua coast. <hr style="border-top: 1px dotted #ccc;"/> <p>Project Commissioning with Amplus</p> <ul style="list-style-type: none"> Achieved final investment decision of more than 300 megawatt. <hr style="border-top: 1px dotted #ccc;"/> <p>Partnership with ReNew</p> <ul style="list-style-type: none"> Explored the development of 5 gigawatt in renewable assets including solar, wind and energy storage. Investment for a 49 per cent equity stake in ReNew's 403 megawatt project. <hr style="border-top: 1px dotted #ccc;"/> <p>Cross-border Project via Vanda RE</p> <ul style="list-style-type: none"> Received conditional approval for a new cross-border renewable energy project from Singapore's Energy Market Authority to establish a green electricity trading corridor between Singapore and Indonesia. 	<ul style="list-style-type: none"> Achieved a total of 2.9 gigawatt installed and under construction global renewable energy capacity – of which 1.6 gigawatt is installed capacity – marking significant growth globally with entry into new markets. 	<p>Stakeholders</p> <div style="display: flex; gap: 10px;"> <div style="background-color: #ffc107; border-radius: 50%; width: 25px; height: 25px; display: flex; align-items: center; justify-content: center; font-weight: bold; font-size: 10px;">FG</div> <div style="background-color: #ffc107; border-radius: 50%; width: 25px; height: 25px; display: flex; align-items: center; justify-content: center; font-weight: bold; font-size: 10px;">C</div> </div>

Gentari

Key Focus Areas and Results			
Focus Area	What We Did in 2023	Results	Stakeholders
Hydrogen	<p>JFSA with Tenaga Nasional Berhad</p> <ul style="list-style-type: none"> Commenced Joint Feasibility Study Agreement (JFSA) to advance studies for hydrogen business development. 	<ul style="list-style-type: none"> Approximately 200 kilotonnes per annum (KTPA) of hydrogen opportunities have progressed beyond the feasibility stage. Strengthened Gentari's position in the hydrogen industry through seven key partnerships. 	E GIP
	<p>JFSA with City Energy</p> <ul style="list-style-type: none"> Commenced JFSA to supply hydrogen to Singapore via pipeline. 		E GIP
	<p>MoU with Sembcorp Energy</p> <ul style="list-style-type: none"> Accelerated the expansion of renewable energy and the supply of low-carbon hydrogen in Southeast Asia. 		E GIP
	<p>MoU with IHI Corporation</p> <ul style="list-style-type: none"> Collaborated on piloting a 100 per cent ammonia-powered gas turbine in Malaysia. 		FG GIP
	<p>Partnership with Asahi Kasei and JGC</p> <ul style="list-style-type: none"> Received approval from Japan's Ministry of Economy, Trade and Industry (METI) on New Energy and Industrial Technology Development Organization (NEDO) funding in joint venture with Asahi Kasei and JGC for production of green hydrogen with 60 megawatt alkaline water electrolyser. 		FG GIP
	<p>Investment Agreement with AM Green</p> <ul style="list-style-type: none"> Entered into strategic partnership to produce up to 5 metric tonnes per annum (MTPA) of green ammonia in India for export to key markets. 		FG E GIP
	<p>Feasibility Study Grant in Alberta, Canada</p> <ul style="list-style-type: none"> Received a CAD2 million grant for project feasibility studies in Alberta Industrial Heartland. 		HG CN

Key Focus Areas and Results

Focus Area	What We Did in 2023	Results	Stakeholders
Green Mobility	<p>Modular Electric Vehicle Charging Station</p> <ul style="list-style-type: none"> Launched Malaysia’s first modular and portable electric vehicles (EV)s fast charging station in collaboration with EV Connection Sdn Bhd (EV Connection) with battery energy storage system (BESS) at PLUS Highway. 	<ul style="list-style-type: none"> Achieved cumulative installation of close to 570 total charging points globally and deployed more than 2,500 EVs under the Vehicle-as-a-Service (VaaS) offering, enhancing green mobility footprint regionally. 	
	<p>Collaboration with KPJ Healthcare</p> <ul style="list-style-type: none"> Promoted sustainable transportation in the Malaysian healthcare sector through the installation of electric vehicle charging facilities at 10 KPJ Healthcare premises. 		
	<p>MoU with Evolt Technology</p> <ul style="list-style-type: none"> Explored green mobility infrastructure collaborations in Southeast Asia. 		
	<p>Tripartite Roaming Agreement</p> <ul style="list-style-type: none"> Activation of a roaming network with EV Connection and Yinson GreenTech to enable cross platform access electric vehicle charging on Setel, JomCharge and chargEV. 		
	<p>Partnerships for Decarbonisation in India</p> <ul style="list-style-type: none"> Initiated a collaboration with MoEVing Urban Technology and Gati Ltd to support decarbonisation of India’s transportation sector. Additionally, collaborating with Amazon to decarbonise its Indian transportation network through electrification of its third party delivery service partners’ transport vehicles. 		
	<p>MoUs for Green Mobility Infrastructure</p> <ul style="list-style-type: none"> Partnered with JLand Group, Lotus Cars Malaysia, Sunway Group, Sarawak Energy Berhad, and BMW Malaysia. 		

Gentari

Highlights and Achievements

Renewable Energy

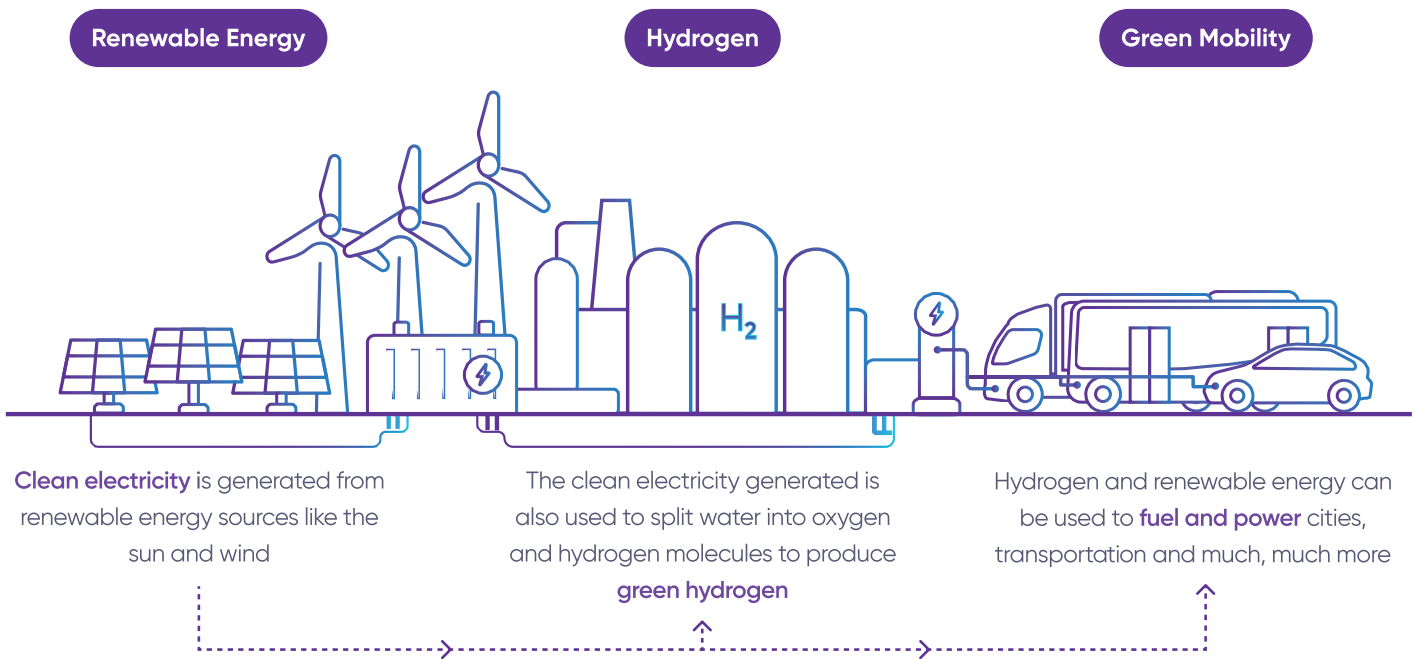
Through the addition of 0.5 gigawatt installed capacity in 2023, we have brought our total installed capacity to 1.6 gigawatt. Our renewable energy portfolio reflects an optimistic outlook with a robust pipeline of 1.3 gigawatt under-construction projects spanning solar and wind technologies. We continue to expand and diversify our portfolio in 2023 by entering the Australian market through Gentari Solar Australia and venturing into the offshore wind segment by completing the acquisition of 49 per cent ownership in Northland Power Inc.'s stake of the Hai Long project off the Changhua coast.

Hydrogen

In 2023, the emphasis was on developing projects for hydrogen supply and securing early commitments from customers. Locally, we are forming strategic partnerships in Sarawak to pave the way towards Malaysia's first green hydrogen hub. On a regional scale, we have advanced projects converting renewable energy to hydrogen in India and established key partnerships across the Asia Pacific region. Currently, we have progressed around 200 KTPA of hydrogen opportunities beyond the feasibility stage.

Green Mobility

Gentari is a key green mobility player in the region as evidenced by its significant achievements in 2023. We have become Malaysia's leading on-the-go DC charging point player and secured the top position in the three-wheeler VaaS segment in India. Through 21 MoUs and agreements, we fostered partnerships with major vehicle OEMs and charging point providers.



Challenges

Challenge	Mitigation Action	Results
<p>Policy and Regulations Dynamic and changing policies and regulations.</p>	<ul style="list-style-type: none"> • Stakeholder Engagement and Policy Influence: Mobilised local teams for stakeholder management and actively participated in shaping policy. • Strategic Local Partnerships: Partnered with influential local entities to navigate regulatory landscapes. 	<ul style="list-style-type: none"> • Strategic Partnerships: Established partnerships domestically and internationally across businesses and government entities for shared value.
<p>Macro Environment Uncertainties in the evolving cleaner energy landscape, including green financing availability and interest rate fluctuations.</p>	<ul style="list-style-type: none"> • Risk and Portfolio Management: Monitored and rebalanced portfolio risks, advocated for green financing access. • Geopolitical Strategy: Established signposts for geopolitical developments to navigate macro uncertainties. 	<ul style="list-style-type: none"> • Provided cleaner energy solutions to our customers with the facilitation of innovative green financing. Through balanced debt and equity financing, up to 1.3 gigawatt renewable energy capacity was successfully funded and deployed. • Undertook robust portfolio management to address geographical and technological risks.
<p>Capturing Synergies Challenges in realising synergistic benefits amidst fast-changing market dynamics.</p>	<ul style="list-style-type: none"> • Comprehensive Value Creation and Resource Allocation: Formed value creation plans and allocated resources for effective synergy capture. • Post-Acquisition Excellence: Institutionalised processes to ensure post-acquisition success. 	<ul style="list-style-type: none"> • Business Growth: Positioned businesses to advance our mission of becoming the leading next-generation C&I and utility-scale renewables developer, a scale hydrogen producer and go-to industry partner, and the leading green mobility solutions partner in Asia Pacific.
<p>Building Talents Acquiring the right capabilities in an evolving cleaner energy landscape.</p>	<ul style="list-style-type: none"> • Talent Development and Attraction: Focused on building core capabilities and attracting niche talents for global operations. • Competency and Culture Integration: Developed key competencies and institutionalised a cohesive culture. 	<ul style="list-style-type: none"> • Workforce Strengthening: Grew workforce from 330 to 601, with diverse expertise across multiple industries.

Opportunities

Gentari is scaling its business verticals through targeted growth vehicles, focusing on core markets, early investments, and building local teams.

- **Renewables:** Emphasising expansion in Asia Pacific, Gentari aims to grow and capture value accretive renewable energy projects and explore BESS opportunities.
- **Hydrogen:** The focus is on advancing supply-side hydrogen projects as well as customer commitments to offtake hydrogen.
- **Green Mobility:** Gentari seeks to strengthen market leadership and expand services in key markets across Asia Pacific, including our current core markets of Malaysia and India.

Gentari

Our Approach to Sustainability

Contributions

- **PETRONAS Electrification:** Achieved installation of 62.6 MWp across PETRONAS assets, contributing to the Group’s increasing use of sustainable energy sources.

- **Efficient Governance Practices:** Established robust and efficient governance practices aimed at upholding integrity.

- **Fleet Electrification:** Approximately 110 EVs delivered for PETRONAS operations, contributing to the reduction of carbon footprint in transportation.

- **Hydrogen as Clean Fuel:** Explored the use of green hydrogen and ammonia, including co-combustion, to expand the use of sustainable fuel alternatives within PETRONAS.



For more information on our sustainability contributions, please refer to pages 108-197.

▶ Our Outlook

Short-Term Outlook

In renewable energy, Gentari focuses on expanding commercial and industrial projects across Asia Pacific, with plans to grow utility-scale solar and wind projects in Malaysia and the region. These plans include embarking on offshore wind projects and developing energy storage capabilities for reliable supply.

The hydrogen business is developing projects in Malaysia, India, Canada and other competitive locations, targeting early adopters and expanding through strategic partnerships. Advocacy for supportive hydrogen industry policies and regulations is also a key focus.

In green mobility, Gentari aims to expand charging points in Malaysia, India, Thailand and potentially Indonesia while establishing a strong VaaS fleet in these regions. Enhancing value-added services for customers is also part of the strategy.

Medium- to Long-Term Outlook

Gentari is poised to amplify PETRONAS’ ambitions in renewable energy, hydrogen and green mobility, contributing to the PETRONAS Energy Transition Strategy and Net Zero Carbon Emissions by 2050 Pathway. Central to this strategy is a commercial and industrial, and utility-scale renewable energy business, supplying green electrons to the grid and supporting clean hydrogen production.

Gentari’s expansion in the electron value chain will offer comprehensive green mobility solutions backed by a network of public charging points, solidifying Gentari’s role as a key player in the cleaner energy sector.



Other Businesses




PETRONAS' other businesses, including MISC Group and KLCCP Stapled Group, stayed resilient and steadfast in contributing to PETRONAS' overall financial performance despite market volatility and high inflation in 2023.

As a key solutions provider to PETRONAS, MISC is committed to providing sustainable maritime transportation solutions and contributing to the PETRONAS Net Zero Carbon Emissions by 2050 Pathway.

MISC recorded a 2.9 per cent increase in revenue at RM14.27 billion compared to RM13.87 billion in 2022. The increase is mainly due to higher progress in both new and ongoing projects in the Marine and Heavy Engineering segment and benefitting from elevated charter rates in the Petroleum and Product Shipping, and Gas Assets and Solutions segments. We deployed excess cash to support projects under construction, optimising financing costs while maintaining liquidity.

In 2023, MISC achieved a 24 per cent reduction in its fleet average GHG intensity (for gas and petroleum fleets) compared to 2008 levels and a 7 per cent reduction from its 2022 performance. This improvement resulted from a decrease in GHG emissions intensity to 5.84 grammes carbon dioxide equivalent over tonne nautical mile (gCO₂e/t-nm) in 2023 from 6.30 gCO₂e/t-nm in 2022. The reduction was achieved mostly due to new higher efficiency vessels introduced to its fleet, and ongoing commercial and operational efficiency interventions on its existing fleet. During the year, MISC introduced two new eco-efficient liquefied natural gas carriers (LNGCs), Seri Damai and Seri Daya, recognised with the prestigious Green Ship status. The company also introduced two new LNG dual-fuel very large crude carriers (VLCCs), Eagle Ventura and Eagle Vellore, into its petroleum fleet.

In their steady progression towards sustainability, MISC was also recognised with the "Sustainability-Linked Deal of the Year for Asia" by Marine Money, for its USD527 million Senior Secured Term Loan for six very large ethane carriers. Other notable achievements include The Edge ESG Award 2023 – Silver Award in the Equities Category (Transport & Logistics) and The Star ESG Positive Impact Awards 2022 in the Large Companies Tier for the Environmental Category: Sustainable Ecosystems, both acknowledging MISC's excellence in ESG, along with PwC's "The Building Trust Awards 2023" recognition for outstanding efforts in building stakeholder trust.

Meanwhile KLCCP Stapled Group has produced solid results with profits going up by 17 per cent to RM1.1 billion from RM0.9 billion in 2022 due to the improved performance across all business segments. Notably, all segments have surpassed expectations, driven by increased footfall and consumer spending in our malls, higher hotel occupancy, and the expansion of operations in car park and facilities management.

Other Businesses

Maritime and Logistics

MISC Group is a world leader in international energy-related maritime solutions and services, playing a pivotal role in the energy value chain by efficiently transporting gas and petroleum products and supplying maritime assets for offshore extraction activities related to oil and gas resources. It maintains its position as one of the highest-rated shipping companies, with holdings ratings by Moody's Ratings of Baa2 and S&P Global Ratings of BBB+. In its commitment to provide sustainable maritime transportation solutions, MISC is actively increasing its use of cleaner energy solutions to minimise emissions and ensure alignment with evolving local and international maritime regulations.

Highlights and Achievements

Highlights	What We Achieved
Sustainability	➔ Achieved 24 per cent reduction in our fleet average GHG intensity compared to 2008.
	➔ Continued its efforts to give back to the community through the cadet sponsorship programme at <i>Akademi Laut Malaysia</i> (ALAM,) with an investment of RM29.6 million for 829 cadets in 2023.
	➔ Completed supply chain ESG self-assessment for 55 per cent of its critical suppliers.
Talent Excellence	➔ Invested RM54.9 million in continuous learning and development programmes for its employees.
	➔ Recorded 92.6 per cent high-performing talent retention.

► Our Outlook

MISC is dedicated to building a supportive ecosystem through collaborations for a lower carbon future. This includes exploring innovative solutions such as zero-carbon emission vessels, carbon capture and storage technologies, liquefied carbon dioxide (LCO₂) and ammonia carriers, floating CO₂ storage units (FCSU) and FCSU-I and other cleaner energy solutions.

Our short-term strategy includes:

- Expanding our conventional business operations responsibly.
- Optimising portfolio returns.
- Capitalising on selected asset monetisation opportunities.
- Emissions reductions of existing assets.
- Facilitating a transition into the cleaner energy sector.

For short- and medium-term goals, MISC aims to deliver sustainable financial returns while reducing GHG emissions. Our key targets include:

- 50 per cent improvement in cash flows from operations (compared to 2022 baseline of approximately USD1.2 billion).
- 25 per cent of cash flows from operations from cleaner energy solutions.
- An overall 50 per cent reduction in GHG emissions in shipping operations.

We aim to mobilise our workforce to pivot for a sustainable future aligned with the MISC 2050 Vision, aiming to advance towards a net zero and circular economy.

Property

KLCCP Stapled Group is a PETRONAS subsidiary, comprising KLCC Property Holdings and KLCC Real Estate Investment Trust (REIT). It owns, manages, develops and invests in a portfolio of premium assets comprising office, retail and hotel properties in the heart of Kuala Lumpur. This is complemented by asset management services such as facilities management and car park management. The KLCCP Stapled Group generates additional revenue streams for PETRONAS, diversifies its business portfolio beyond oil and gas, and aligns its properties with PETRONAS' Net Zero Carbon Emissions by 2050 Pathway.

Highlights and Achievements

- ➔ **Office:** Premium Grade-A office with **100 per cent** occupancy.
- ➔ **Retail:** Brought in **35** new tenants adding to the almost **600** tenants introduced since the mall opened in 1998.
- ➔ **Hotel:** Attained the **highest revenue per available room** since the hotel opened in 1998.
- ➔ **Management Services:** KLCC Parking secured the operations of additional **1,680** car parking bays.
- ➔ **Awards and Recognitions:** Conferred **23** awards and accolades, solidifying our leadership position in the industry.

▶ Our Outlook

KLCCP Stapled Group is focused on strengthening its operational and commercial excellence, and elevating the customer experience. Anchoring on its strategic framework, the Group will drive progress in exploring opportunities and accelerating its growth while remaining committed to its sustainability agenda and net zero carbon emissions by 2050 aspiration.