



Core Business

More Energy, Less Emissions

Focus Areas

Core Business remains an important and substantial pillar in our portfolio, serving as a primary source of cash generation, funding present commitments and future investments in New Business, to support energy security. PETRONAS' Core Business encompasses of Upstream, Gas and Maritime, and Downstream, through which, we aim to serve the growing global needs for energy and solutions. Our Core Business also supports the vibrancy of Malaysia's oil and gas value chain. We strive to execute our Core Business safely, reliably and sustainably.

Upstream

Our focus is to increase Malaysia's oil and gas production by replenishing resources and accelerating the monetisation of discovered fields. To support this, we actively promote investment opportunities, prioritise commercial viability, and maximise value from existing assets to ensure long-term supply security.

Internationally, we continue to optimise our Upstream portfolio and pursue selective growth opportunities to generate competitive returns.

Gas and Maritime

We are leveraging our strong gas position, which accounts for two-thirds of PETRONAS' hydrocarbon portfolio, to support rising energy demand while progressing the energy transition. Our focus is growing liquefied natural gas (LNG) sales volume, particularly in Asia by maximising the value of our existing assets, pursuing new opportunities to secure long-term contracts, diversifying our portfolio, integrating our gas operations and strengthening maritime capabilities as a key differentiator in delivering reliable and competitive solutions.

Downstream

We are strengthening our Downstream assets to capitalise on favourable commodities outlook, enhance operational and commercial excellence, and expand product offerings and solutions to meet evolving customer preferences.

Upstream

Malaysia Bid Round Sets Record with 14 New Production Sharing Contracts

Malaysia continues to be a top-tier destination for upstream investment, offering extensive opportunities for industry players to expand their portfolios. The 14 PSCs awarded under MBR 2024 and MBR+ reinforces Malaysia's competitive edge and reflects strong investor confidence in the country as a leading Advantaged Energy hub.

Datuk Ir. Bacho Pilon
Senior Vice President Malaysia Petroleum Management

Malaysia's upstream sector continues to gain momentum, reinforcing our role as a reliable energy hub. Through the Malaysia Bid Round 2024, including Malaysia Bid Round Plus, 14 new Production Sharing Contracts were signed, the highest in the past decade. These were awarded to 12 operators, encompassing 11 Discovered Resource Opportunities and three exploration blocks.

With energy demand rising, exploration and development activity remained active. In 2024, 80 exploration and development wells were drilled, over 600 million barrels of oil equivalent (boe) resources were discovered and 17 projects achieved first hydrocarbon, supporting domestic needs and long-term industry growth.

Point of Interest

Malaysia reached a new production milestone, achieving 2 million barrels of oil equivalent per day.



Scan the QR code to read more about Malaysia Bid Round Plus, which complements the annual Malaysia Bid Round licensing, providing an additional avenue for investors to participate in Discovered Resource Opportunities and Late Life Assets in Malaysia.

Activating Exploration Across Five Frontier Basins

We are activating exploration across five frontier basins in Malaysia with an annual investment of RM500 million, expanding 3D seismic coverage from under 15 per cent to 50 per cent by 2030. This is equivalent to mapping 50,000 sq km of unexplored terrain. This deeper data coverage will reduce exploration risks and provide valuable insights for smarter investment decisions. The effort is already gaining traction with the new approach of Technical Evaluation Agreements signed for the Langkasuka Basin in the Straits of Malacca and the Layang-Layang Basin off the coast of Sabah. These agreements have attracted new entrants such as bp and Eni, and enabled partners to conduct detailed studies leveraging PETRONAS' 2D seismic data and future 3D seismic acquisitions, both fully funded by Malaysia Petroleum Management.

We are strengthening our global Upstream operations through targeted exploration achievements and collaborative ventures, diversifying our resource base across conventional and unconventional plays alongside sustainable development initiatives.

Mohd Jukris Abdul Wahab

Executive Vice President and Chief Executive Officer, Upstream

Unlocking New Resources

We achieved major exploration successes in Malaysia and Suriname. In Peninsular Malaysia, the Bekok Deep-1 discovery revealed a previously unexplored oil and gas play, with strong hydrocarbon flow rates confirming significant untapped potential and making it the most promising find in this mature basin in over a decade.

Internationally, we attained a series of exploration successes with three consecutive discoveries in Block 52 offshore Suriname. The Sloanea-2 appraisal well validated earlier finds and demonstrated potential for a Floating Liquefied Natural Gas development, while the Fusaea-1 well confirmed our third hydrocarbon discovery. Building on insights from Roystonea-1 and Sloanea-1, we are now evaluating an integrated development strategy that could unlock the block's full potential. These successes demonstrate PETRONAS' unique capability to uncover new resources across both established and emerging basins.

A Double Upstream Boost

We are expanding Upstream's global footprint with new exploration concessions in Abu Dhabi, Indonesia and Papua New Guinea, strengthening our presence in key energy markets. In Abu Dhabi, we secured 100 per cent equity and operatorship in Onshore Block 2, further enhancing our portfolio in the Al Dhafra region alongside Unconventional Blocks 5 and 1. In Indonesia, we acquired the Bobara Working Area as part of our expansion into Eastern Indonesia.

Meanwhile, we made a new entry into Papua New Guinea by acquiring a 50 per cent share of the Papua New Guinea Petroleum Prospecting License.

Point of Interest

PETRONAS' acquisition of the Bobara Working Area is our first-ever operated deepwater block in Indonesia, creating new opportunities in one of the country's most promising offshore basins.

Hidayah Field Development



PETRONAS reached a final investment decision for the Hidayah field in East Java, advancing our Upstream growth strategy in Indonesia. The development includes oil production wells, an unmanned wellhead, a central processing platform and a Floating Storage and Offloading unit to support efficient and reliable operations.

This project builds on our 2021 oil discovery in the North Madura II Contract Area and reflects our commitment to responsible resource development. Indonesia serves as an integrated growth market for PETRONAS, where we continue to strengthen our activities in Upstream, LNG and lubricants to deliver long-term value and support the country's energy aspirations.

The Hidayah field represents strategic asset development, leveraging innovative technology to maximise resource potential and strengthen PETRONAS' position in the Indonesian energy market.



Core Business

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On-Target Delivery through Innovation-led Execution

PETRONAS' Project Delivery and Technology team ensures capital projects are executed safely, efficiently and on schedule. In 2024, we managed 444 projects with an annual capital expenditure of RM13.3 billion, achieving 38.13 million hours worked across operations. Key milestones include first gas from Kasawari Gas Development Project and Gansar Gas Field Development, and progress on PETRONAS' Shore-based Floating LNG project.



Key Project Highlights

Kasawari Gas Development Project

- Heaviest offshore structure platform built in Malaysia, with gas processing capacity of 900 million standard cubic feet per day (MMscf/d)
- Features the largest acid gas removal system on a topside
- Achieved Ready for Start-Up on 17 May 2024
- First gas exported via Trunk Line 1 to PETRONAS LNG Complex on 12 August 2024

Gansar Gas Field Development

- Developed to unlock 22.94 million boe recoverable resources for Upstream
- Achieved First Gas on 7 October 2024
- Ensures continuous gas supply to meet Peninsular demand

ZLNG Project

- Construction of the Shore-based Floating Liquefied Natural Gas plant strengthens our gas extraction capabilities
- Achieved steel-cutting milestone on 16 February 2024

PROTEAN: Revolutionising Equipment Reliability

PETRONAS' Predictive Rotating Equipment Analytics (PROTEAN) digital solution is now deployed across Upstream operations covering Malaysia and international assets, including Turkmenistan, Indonesia, and Canada. It is also applied in Gas and Maritime business assets, including both floating liquefied natural gas facilities and PETRONAS LNG Complex.

Designed to enhance rotating equipment reliability through predictive analytics covering more than 500 critical rotating equipment, PROTEAN has issued 1,800 alerts to date, helping to prevent RM250 million in potential unplanned production deferment losses and major maintenance cost avoidance. With its adoption across the entire fleet, this solution is poised to drive rotating and equipment operational excellence throughout PETRONAS' assets.



AI-Driven Precision towards Operational Efficiency

PETRONAS' Enhanced Resource Monetisation Artificial Intelligence (ERMAI) is revolutionising petrophysical analysis. The ERMAI Real-Time Petrophysics suite was built upon hundreds of well logging data, both raw and interpreted petrophysical analysis, to generate objective and robust automated interpretation.

Its web-based machine learning platform delivers lithology, porosity, permeability and fluid saturation interpretations in real-time, reducing drilling and completion costs while ensuring objective petrophysical analysis imbued with artificial intelligence or machine learning.

In 2024, ERMAI saved 82 rig hours in Baram and Kumang Cemumar platforms, and added 2.07 million boe to Besar Project reserves. This technology helps accelerate optimal decision-making and drives value creation from additional reserves and resources addition.

Well Intervention Fluid Innovation Solving Industry Challenges

A successful pilot deployment of Well Intervention Fluid-Friction Modifier at the Baram platform in Sarawak enabled a gas lift valve change in a highly deviated well. This intervention extended the well's depth by 2,470 feet, supporting the gas lift deepening programme. A similar deployment at the Temana production facility further enabled us to unlock 400 barrels of oil per day.



Key Highlights

- Increased oil production by 190 barrels per day
- Generated about RM7.3 million in additional value

Membrane Contactor Technology Reaches Maturity

In March 2024, PETRONAS successfully tested the multi-cartridge membrane contactor system for natural gas at Terengganu Gas Terminal, advancing this technology to enhance the CCS value chain. Building on this success, we expanded its potential for post-combustion carbon dioxide capture through a demonstration plant at PETRONAS Energy Canada Ltd, supporting our efforts to decarbonise operations.





Core Business

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Gas and Maritime

Strengthening Global Supply Security for LNG

PETRONAS has signed a 15-year agreement with Abu Dhabi National Oil Company for the Ruwais LNG project, securing the supply of 1 million tonnes per annum (MTPA) of LNG. This strategic partnership enhances our global LNG portfolio, strengthening security of supply for our customers, as well as fostering deeper government-to-government collaboration. The project, which is currently under development in Al Ruwais Industrial City, Abu Dhabi reflects our expanding presence in the growing LNG market. Deliveries are set to begin in 2028.

Securing reliable, long-term LNG supply through strategic partnerships position us to better serve our customers while reinforcing our role in supporting energy security through a diversified and competitive portfolio.

Datuk Adif Zulkifli

Executive Vice President and Chief Executive Officer, Gas and Maritime Business

Expanding Maritime's South American Footprint



Under Maritime, we achieved first oil for the Marechal Duque de Caxias Floating Production Storage and Offloading (FPSO), which is a significant milestone in our deepwater operations. This accomplishment showcases our ability to deliver complex deepwater offshore projects. It highlights our technical expertise and strengthens our position in the global deepwater FPSO market. Now fully operational in the Santos Basin, the FPSO expands our offshore presence in Brazil.

Point of Interest

FPSO Marechal Duque de Caxias is engineered to operate in water depths of approximately 2,000 metres. It boasts a production capacity of 180,000 barrels of oil per day, a storage capacity of 1.4 million barrels and a total gas handling capacity of 440 million standard cubic feet per day (MMscfd).

The facility is equipped with Water Alternating Gas reinjection technology, as well as efficient stripping and reinjection of carbon dioxide from fuel gas production. It has the capacity to compress up to 48 MMscfd of carbon dioxide, minimising impact to the environment.

Enhancing Malaysia's Energy Security

We have reached a final investment decision for a 100 megawatt power plant in Kimanis, Sabah, strengthening the state's energy security aligned with the Sabah Energy Roadmap and Master Plan 2040. Developed in collaboration with Yayasan Sabah Group, this RM700 million project enhances energy security in Malaysia and represents a significant milestone in our expansion into adjacent gas value pools.

Downstream

Melaka's Energy Evolution



The rebranding of the Melaka Refinery Complex to Melaka Energy Park signals a bold transformation. The energy park will focus on further expanding capabilities to fulfil the needs for cleaner and more efficient energy. This will fuel industries across borders, from aviation to manufacturing, and strengthen our role in shaping the future of energy with scale, adaptability and innovation.

Expanding Global Footprint

Revving Up in Brazil

We are making our mark in South America through our first brand licensing initiative in Brazil. Partnering with SIM Distribuidora, it is rolling out three pilot fuel retail stations, bringing PETRONAS Primax™ fuel and further extending PETRONAS Syntium™ lubricants availability to drivers in Brazil.

Powering Precision in China

With the launch of the PETRONAS New Energy Technical Service Centre in Jiaxing, China, PETRONAS Lubricants International is deepening its commitment to the Chinese market. The centre delivers customised technical services to Original Equipment Manufacturers and auto parts suppliers, ensuring innovative solutions that drive sustained growth and innovation in the region.

Sustainable Performance Unleashed

PETRONAS Lubricants International (PLI) and Stellantis N.V. introduced Selenia SUSTAINera, a high-performance engine oil designed with sustainability in mind and formulated using premium recycled base oils. It delivers top-tier engine protection while reducing environmental impact. The packaging is fully recyclable and made with 50 per cent recycled plastics.

Using 30 per cent recycled base oils, Selenia SUSTAINera offers the same exceptional engine protection as lubricants made with virgin base oils. This innovation demonstrates that high-performance lubricants can be both powerful and more sustainable.

Stronger Operations, Smarter Petrochemicals Growth

PETRONAS Chemicals Group Berhad demonstrated operational excellence with plant utilisation improvements for both its olefins and derivatives segments, as well as fertilisers and methanol segments, reflecting heightened reliability and reduction in unplanned shutdowns.

PETRONAS Chemicals Group Berhad's operational strength was further supported by increased sales volume in both segments, underpinned by operational efficiency efforts and its highest-ever strategic sourcing volume to date.

In meeting evolving customer needs, PETRONAS Chemicals Group Berhad introduced a new olefins and derivatives product, HL701, a high Renewable Carbon Index surfactant, aligning with the industry's shift towards sustainable solutions.



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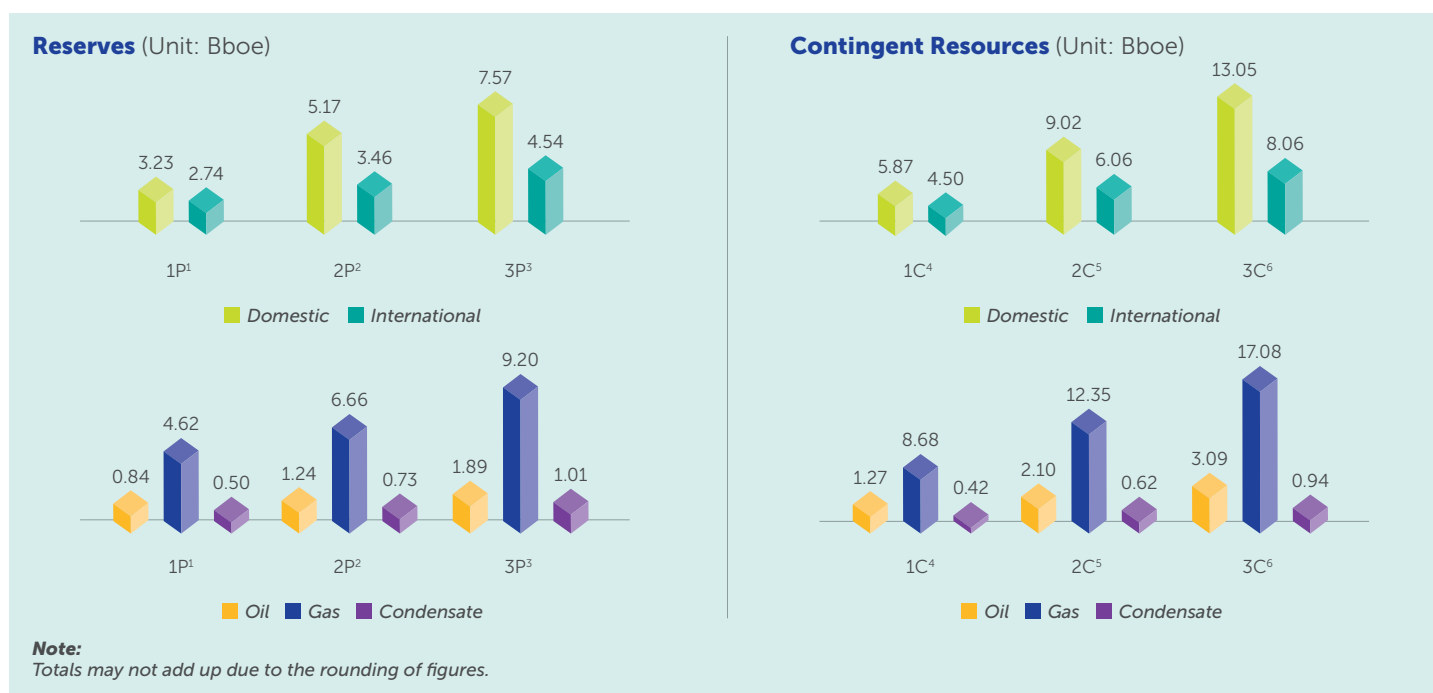
Performance in 2024

Upstream

Governance and Disclosure (Reserves and Resources)

As of 1 January 2025, our total petroleum 2P² net entitlement Reserves stood at 8.64 billion barrels of oil equivalent (boe), a decrease of 8 per cent compared to 2023. For our Contingent Resources, the total net entitlement 2C⁵ stood at 15.08 billion boe, a decrease of 7 per cent from 2023. This signifies a challenging Upstream performance, but with a focus on value enhancement through project deferments. We expect the negative movements will be reversed upon the sanctioning of new projects.

(i) Annual Review of Petroleum Resources 1 January 2025 Reserves and Contingent Resources



(ii) Reserves and Resources Performance Indicators



Notes:

1. 1P Denotes low estimate of Reserves (i.e. Proved Reserves). Equal to P1.
2. 2P Denotes the best estimate of Reserves. The sum of Proved plus Probable Reserves.
3. 3P Denotes high estimate of Reserves. The sum of Proved plus Probable plus Possible Reserves.

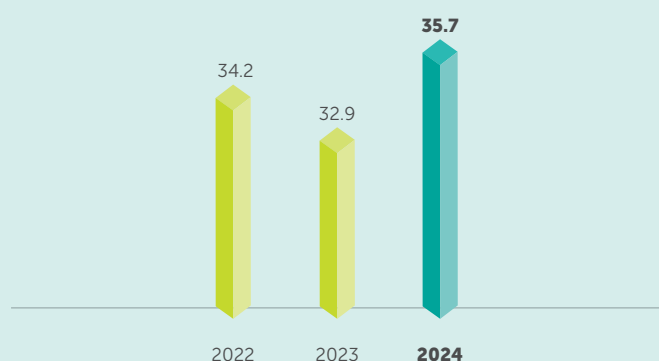
4. 1C Denotes low estimate of Contingent Resources.
5. 2C Denotes best estimate of Contingent Resources.
6. 3C Denotes high estimate of Contingent Resources.

Gas and Maritime

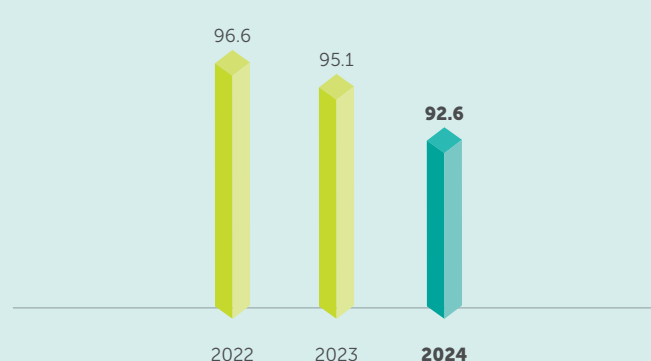
Gas and Maritime recorded an Overall Equipment Effectiveness of 92.6 per cent. Despite a lower Overall Equipment Effectiveness compared to 2023, we achieved a higher sales volume of 35.7 million metric tonnes in 2024, reflecting an 8.5 per cent increase. This growth was driven by sustained production, improved trading and optimisation opportunities, as well as stronger customer demand.

We delivered LNG globally, with significant volumes from the PETRONAS LNG Complex in Bintulu and floating LNG facilities, PFLNG SATU and PFLNG DUA, while sustaining steady sales gas supply in Peninsular Malaysia. Our Maritime fleet was further expanded with new charter contracts, complementing the existing diverse portfolio of LNG, petroleum and product vessels, as well as offshore floating production systems.

Gross LNG Sales (million metric tonnes)



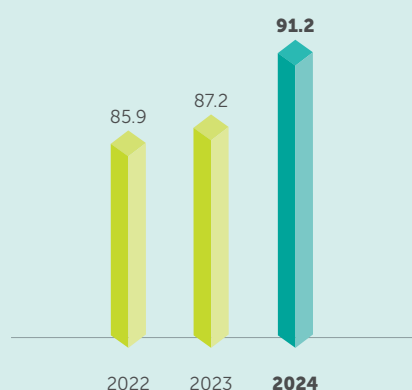
Gas Overall Equipment Effectiveness (%)



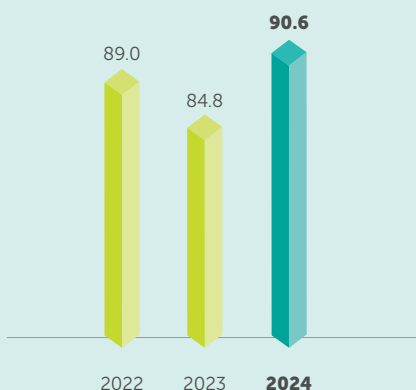
Downstream

Downstream delivered a strong performance in 2024 with improved Overall Equipment Effectiveness and higher sales volumes across our businesses. The petrochemicals segment saw increased production, contributing to overall sales growth, while the lower Overall Marketing Sales Volume was the result of the divestment of Engen Limited and its subsidiaries (Engen Group), a South African-based downstream petroleum company in which we had held a majority stake since 1998. Meanwhile, PETRONAS Dagangan Berhad achieved its highest-ever annual sales volume.

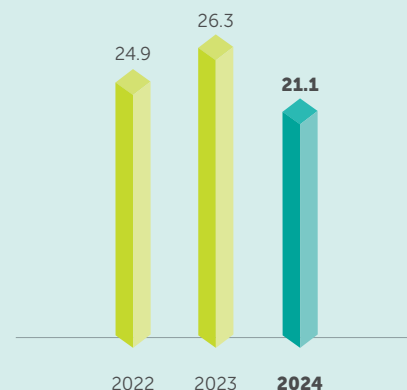
Downstream Overall Equipment Effectiveness (%)



Petrochemicals Plant Utilisation (Nexant) (%)



Overall Marketing Sales Volume (billion litres)





Core Business
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Challenges, Mitigation and Opportunities

We continue to face fluctuating material prices and inflationary pressures. To navigate rising industry costs and supply chain complexities, we will leverage advanced analytics and strategic forecasting, optimise resources and strengthen project execution.

Malaysia’s undiscovered oil reserves in deepwater areas require advanced technology and strategic investment to unlock their full potential. We are addressing this by expanding exploration efforts and leveraging the Malaysia Bid Round to attract global expertise. These efforts aim to strengthen Malaysia’s position as a competitive energy investment hub, while securing the nation’s long-term production capacity.

Safety and environmental excellence is essential to our operations. We strive to foster a proactive safety culture, empowering frontline teams through relevant programmes, real-time surveillance and best-in-class health, safety and environment practices. By embedding a safety-first mindset across our workforce, we continue to strengthen operational integrity.

Outlook and Priorities

Upstream

Short-term

Our focus remains on resource replenishment and integrated value chain optimisation to meet Malaysia’s growing energy demand. This includes accelerating exploration and development activities to ensure long-term supply security.

To enhance value and support Malaysia’s decarbonisation agenda, we aim to reduce emissions across Malaysian exploration and production operations while strengthening overall asset performance.

Internationally, we will high-grade our Upstream portfolio by monetising high-value and low-carbon intensity resources and expanding our unconventional gas presence in Canada and Abu Dhabi. These efforts are aimed at reinforcing long-term value creation and energy resilience.

Commitment to sustaining production continues, with a focus on high-value, lower-carbon barrels and maintaining cost-efficient operations across our portfolio.

Medium- to long-term

We continue to create and maximise value for our shareholders while emphasising emissions reduction efforts across our value chain. This includes deploying innovative technology with industry partners in Malaysia and abroad.

In strengthening our Upstream business, the focus remains on delivering operational excellence and driving continuous emissions reduction to ensure safe, cost-efficient and lower-emissions operations.

Gas and Maritime

Short-term

We are expanding our LNG supply portfolio with a focus on identified growth projects in Canada and Malaysia, while maximising value from existing assets.

Under our Maritime segment, efforts will centre on strengthening core operations, expanding into new energy solutions and enhancing our emissions reduction efforts. This includes rejuvenating our fleet with more efficient vessels, such as LNG and ammonia dual-fuel vessels, and expanding into carbon, offshore wind and future fuels value chains.

Medium- to long-term

Over the medium to long term, as global demand continues to grow, we remain focused on maintaining LNG market leadership while offering a suite of energy solutions tailored to customer needs.

In the Maritime business, our strategic priorities include identifying new opportunities to expand our business and asset portfolio, capitalising on the global energy transition as the world evolves towards a circular economy.

Downstream

Short-term

We are enhancing operational efficiency and reliability to capitalise on the recovery in the global petroleum market and to ensure resiliency in an uncertain petrochemical industry. Despite volatile markets, we work to enhance our competitiveness by focusing our efforts on optimising production, improving supply chain resilience and expanding product offerings to meet evolving customer needs.

Medium- to long-term

We are committed to strengthening operational and commercial excellence of our refineries and petrochemical plants to deliver safe and reliable operations. In ensuring a more diversified and resilient energy mix, investments in advanced processing technologies and infrastructure growth will support the transition towards future energy solutions, enabling PETRONAS to adapt to changing market dynamics while securing leadership in the downstream sector.



New Business

Capturing New Growth Opportunities

Focus Areas

PETRONAS' New Business strategy focuses on pursuing new businesses to future-proof our portfolio while addressing evolving customer needs and delivering cleaner, more affordable energy solutions. To deliver sustainable results for New Business, we pursue both organic and inorganic growth. We seek collaborations with partners, deploy new technologies and synergies within the Group, leverage existing expertise as well as develop new capabilities to manage new ventures.

Specialty Chemicals

We continue to expand our footprint in specialty chemicals to reduce exposure to industry cycles of the broader petrochemical industry. Our focus is on expanding the value chain to unlock new capabilities and markets, support long-term growth and strengthen our existing product portfolio.

Bio-based Value Chain

We are positioning PETRONAS firmly in the sustainability space to meet the growing demand for bio-based products and offerings. Our efforts in this regard are accelerated by leveraging integration with our existing assets.

Carbon Capture and Storage

Carbon capture and storage (CCS) is a key lever to reduce emissions from PETRONAS' portfolio. It is designed to meet regional demand and position Malaysia as a leading CCS hub by leveraging our technological strengths, strategic location and skilled talent.

Renewable Energy

We aim to capitalise on the large and fast-growing market, driven by the rising share of renewables in the global energy mix, seizing opportunities to operate at scale while enabling integrated solutions, including hydrogen.

Hydrogen

We are expanding into emerging lower-carbon solutions by leveraging our core capabilities and existing value chain to support the decarbonisation of hard-to-abate sectors.

Green Mobility

We capture opportunities in the accelerated growth of electric vehicle adoption by offering integrated cleaner energy solutions, including electric vehicle charging infrastructure, Vehicle-as-a-Service and digital platforms that support lower-carbon transport.

Specialty Chemicals

Perstorp Opens New Penta Plant in India

PETRONAS Chemicals Group Berhad, through its subsidiary Perstorp, has inaugurated a state-of-the-art pentaerythritol plant in Bharuch, India. The plant produces pentaerythritol, calcium formate and International Sustainability and Carbon Certification PLUS-certified Voxtar™ M40, catering to the growing demand in Asia Pacific.

Point of Interest

The pentaerythritol produced at Perstorp's new plant is a component of everyday products such as high-performance alkyd-based coatings, hot-melt adhesives and synthetic lubricants.



Bio-based Value Chain

PETRONAS in Partnership with Enilive and Euglena to Build First Biorefinery

This collaboration brings together the strengths of three industry leaders to accelerate the production of sustainable fuels in the region. With this biorefinery, we are solidifying our standing in the biofuels value chain beyond trading, paving the way for the establishment of a bio-based ecosystem in Malaysia and beyond.

Datuk Sazali Hamzah

Executive Vice President and Chief Executive Officer, Downstream

PETRONAS, Enilive S.p.A. and Euglena Co., Ltd. have established a joint venture company and reached a final investment decision to construct our first biorefinery at PETRONAS' Pengerang Integrated Complex in Johor, Malaysia. The joint venture, Pengerang Biorefinery Sdn Bhd, with PETRONAS Mobility Lestari Sdn Bhd and Enilive S.p.A. as majority shareholders, will develop the biorefinery, which is set to begin operations in the second half of 2028. Designed to process 650,000 tonnes of raw materials annually, the biorefinery will produce Sustainable Aviation Fuel, Hydrogenated Vegetable Oil and bio-naphtha, supporting the rising global demand for low-carbon aviation and transportation fuels.

Advancing Bio-based Innovation

A bio-based emollient co-developed by PETRONAS Research Sdn Bhd and PETRONAS Chemicals Group Berhad, and marketed by BRB International B.V., Emfinity® CGSA 200B offers superior product benefits and texture, making it ideal for skincare, suncare, and makeup applications. The product was pre-launched at the premier 'in-cosmetics Global' exhibition in Paris, France, where it received strong engagement from industry leaders, generating significant interest in sampling and incorporating Emfinity® CGSA 200B into their formulations.

Carbon Capture and Storage

Global Partnerships for Advancing CCS



In 2024, PETRONAS signed 11 agreements and Memoranda of Understanding with key players, including Abu Dhabi National Oil Company, Storegga Limited and JERA Co., Inc, to advance carbon dioxide storage solutions, infrastructure, value chain development and regulatory compliance. These partnerships strengthen our operational capacity and lay the foundation for large-scale CCS deployment.

Progressing CCS Hub in Peninsular Malaysia

PETRONAS CCS Solutions Sdn Bhd signed a land rental agreement with Kuantan Port Consortium Sdn Bhd to advance its Southern CCS hub in Pahang, Malaysia. The hub, expected to begin its first injection by 2029, will help reduce emissions for hard-to-abate industries in Malaysia and internationally while creating new economic opportunities.

PETRONAS and DNV Partner to Certify Carbon Dioxide Storage Sites for CCS Projects in Malaysia

PETRONAS CCS Ventures Sdn Bhd and DNV have signed a Master Price Agreement to certify carbon dioxide storage sites and associated facilities for CCS projects in Malaysia. This certification will ensure the emerging Malaysian CCS industry meets international standards and best practices.



New Business

Capturing New Growth Opportunities

Renewable Energy

Unlocking Hydropower Synergies with Floating Solar

Our partnership with Masdar and Sarawak Energy unites leading global stakeholders in a shared vision to drive progress in clean energy adoption, optimising technological advancements to more effectively integrate renewables into our energy systems.

Sushil Purohit

Chief Executive Officer, Gentari



Gentari Renewables Sdn Bhd, a wholly-owned subsidiary of Gentari Sdn Bhd (Gentari) signed a Joint Study Agreement with SEB Power Sdn Bhd and Abu Dhabi Future Energy Company PJSC (Masdar) to explore a groundbreaking 1,000 megawatts floating solar project at the Murum Hydroelectric Plant. This large-scale initiative has significant potential to expand Sarawak's renewable energy capacity while contributing to Malaysia's low-carbon ambitions. Floating solar solutions optimise land use, reduce water evaporation and offer potential synergies with existing hydroelectric infrastructure.

PETRONAS and Petrovietnam to Advance Cross-border Renewable Energy

PETRONAS and Vietnam National Industry - Energy Group (Petrovietnam) signed a Memorandum of Cooperation on renewable energy to strengthen regional energy connectivity. The agreement facilitates the export of renewable energy from Vietnam to Malaysia and Singapore, contributing to ASEAN's goal of an integrated power grid and a more resilient, lower-carbon energy future.

Connecting India's Renewable Energy to Demand Centres

Gentari through its subsidiary, Amplus Energy Solutions Pte. Ltd., or Amplus, successfully commissioned its first Interstate Transmission System-connected solar project in India, with a total capacity of approximately 363 megawatts. The Interstate Transmission System is a national grid in India that links power generation sources across state boundaries, enabling efficient transmission of electricity from surplus regions to areas with higher demand and is crucial for transmitting renewable energy from remote wind and solar parks to consumption centres.

Innovative Pathway to a Renewable Future with CEFORE

PETRONAS, supported by Universiti Malaysia Terengganu as well as Arema Energies, Schneider Electric, Citaglobal and Honeywell, is establishing the Centre for Offshore Renewable Energy (CEFORE) in Terengganu, Malaysia. CEFORE aims to provide clean, reliable and continuous power by leveraging a mix of offshore and onshore renewable energy sources, such as solar, wind and wave, with on-site energy storage and management systems. CEFORE also supports edu-tourism, infrastructure development, and economic opportunities for local communities, including local fishing communities, which can benefit from renewable energy-powered cold storage and ice-making equipment provided at no cost. In 2024, CEFORE completed the Floating Lidar Photovoltaic assembly.

Hydrogen

Sarawak Hydrogen Hub with SEDC Energy: Scaling Up Clean Energy in Malaysia

Gentari, through its wholly-owned subsidiary, Gentari Hydrogen Sdn Bhd is developing the Sarawak Hydrogen Hub in partnership with SEDC Energy Sdn Bhd. The Hub is designed as a modular, plug-and-play solution that makes large-scale hydrogen production more efficient and investment-ready. This milestone initiative aligns with Sarawak's vision of becoming a commercial hydrogen powerhouse by 2027, driving the region's transition towards cleaner energy.



* Image is for illustration purposes only.

Driving Clean Ammonia Solutions

Gentari, through its wholly-owned subsidiary, Gentari Hydrogen Sdn Bhd and MISC Berhad are collaborating to explore the development of integrated shipping and floating solutions for clean ammonia with the aim of delivering end-to-end solutions that streamline the clean ammonia value chain.

Point of Interest

Ammonia has long been used in fertiliser production and refrigeration, with established global logistics infrastructure - making clean ammonia a viable energy carrier in the energy transition.

Partnering with AM Green to Deliver Global Green Ammonia

Gentari International Renewables Pte. Ltd., a wholly owned subsidiary of Gentari and AM Green BV, have joined forces to drive large-scale green hydrogen production, unlocking new possibilities for global energy supply. Their joint investment into AM Green Ammonia Holdings BV (AM Green Ammonia), a green ammonia platform, aims to produce up to 5 million tonnes per annum of green ammonia by 2030, by leveraging round-the-clock renewable energy to deliver hydrogen in its most stable and transportable form. AM Green Ammonia has achieved the final investment decision for its first million-tonne green ammonia project in India.



From left: Sushil Purohit, Chief Executive Officer of Gentari; Michèle Azalbert, Chief Hydrogen Officer of Gentari; Mahesh Kolli, Founder of Greenko Group and AM Green; M Shahrulikraam M Yassin, Head of Commercial, Gentari India; and Low Kian Min, Chief Renewables Officer of Gentari, following the signing of a Power Purchase Agreement between Gentari (via its subsidiary Gentari Renewables India Castor One Private Limited) and AM Green Ammonia India Private Limited.



New Business

Capturing New Growth Opportunities

Powering Singapore's Hydrogen Future

Gentari's wholly owned subsidiary, Gentari Hydrogen Sdn Bhd and Senoko Energy Pte. Ltd. are exploring the importation of hydrogen gas from Malaysia to Singapore. This partnership aims to boost efficiency while significantly cutting emissions by integrating hydrogen into Senoko Energy's existing and new combined cycle gas turbine assets. In its first phase alone, this initiative could reduce 18,000 tonnes of carbon dioxide equivalent (CO₂e), which is equivalent to removing 4,000 cars from the roads.

Generating Turquoise Hydrogen Without Carbon Dioxide Emissions

PETRONAS Research Sdn Bhd advanced its hydrogen ambitions by successfully producing turquoise hydrogen, a low-carbon solution derived from natural gas without carbon dioxide emissions. By leveraging methane pyrolysis combined with proprietary molten catalytic technology, the process generates hydrogen and converts carbon into solid form, preventing greenhouse gas emissions. A milestone was reached with the first successful production of hydrogen gas on 17 December 2024.

Green Mobility

Gentari Go: Turning Cleaner Energy into Everyday Rewards

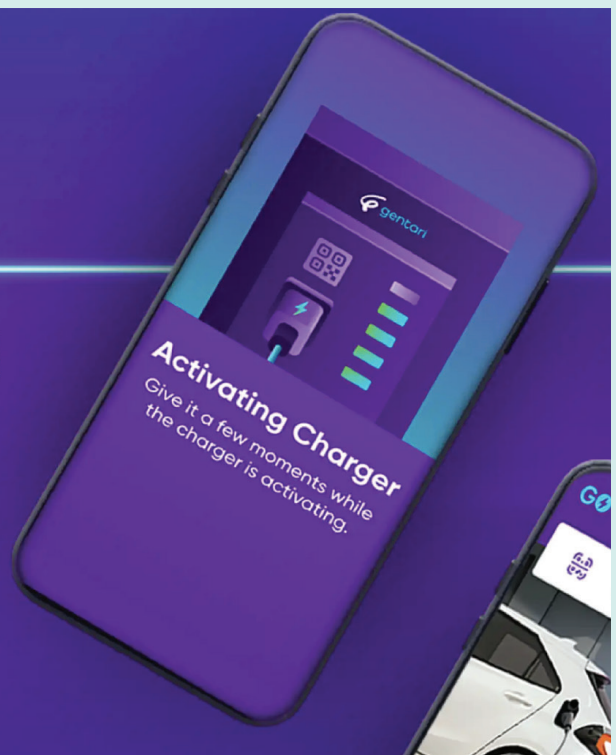
Gentari, through its subsidiary Gentari Green Mobility Sdn Bhd, has launched Gentari Go - a digital platform that simplifies the transition to more sustainable choices across Asia Pacific. Whether it is electric vehicle charging or green mobility services, Gentari Go users can adopt sustainable solutions while earning incentives. Businesses, including fleet operators, charging point providers and automotive companies, can also leverage the platform to enhance their offerings and drive the shift toward a clean energy future.



Ready set, Gentari Go!

Take your sustainable lifestyle anywhere

Download the Gentari Go app today and access a wide network of charging points across Malaysia, India, Thailand, and Singapore!



Paving the Way for Electric Vehicle Adoption and Charging in Sabah

Gentari Green Mobility Sdn Bhd, a wholly-owned subsidiary of Gentari and EV Connection Sdn Bhd have made history as the first charging point operators in Sabah to receive licences for public installation of electric vehicle charging systems from the Energy Commission of Sabah. This milestone not only expands Sabah's electric vehicle infrastructure but also ensures that every installation meets strict safety standards.

Strategic MoUs with Financial Institutions and Insurance Companies to Expand Green Mobility

Gentari Green Mobility Sdn Bhd, a wholly-owned subsidiary of Gentari, is accelerating green mobility through key partnerships with financial institutions and insurance companies including CIMB Group Holdings Bhd, Mastercard, Malayan Banking Berhad (Maybank) and Zurich Malaysia.

CIMB Partnership

Facilitating electric vehicle adoption with value-added services and financing solutions.



Mastercard Partnership

Driving electric vehicle adoption in public transportation through marketing, promotions and secure digital payments.



Maybank Partnership

Facilitating easier access to green mobility and renewable energy solutions, starting with the installation of charging points at select Maybank branches in Malaysia.



Zurich Malaysia Partnership

Promoting electric vehicle adoption via installation of electric vehicle charging infrastructure and value-added services at its premises and public locations.

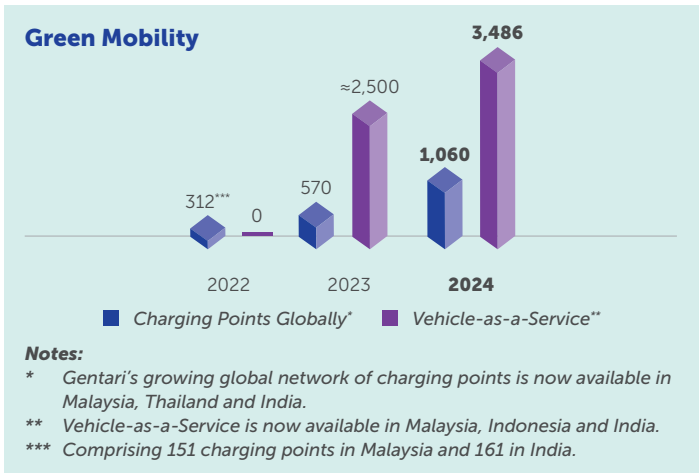
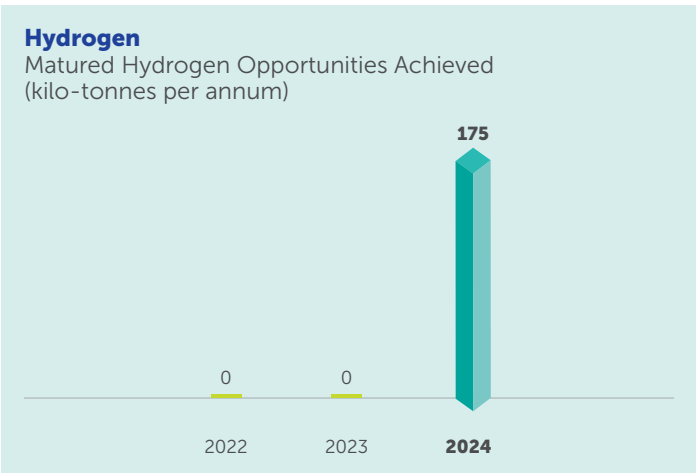
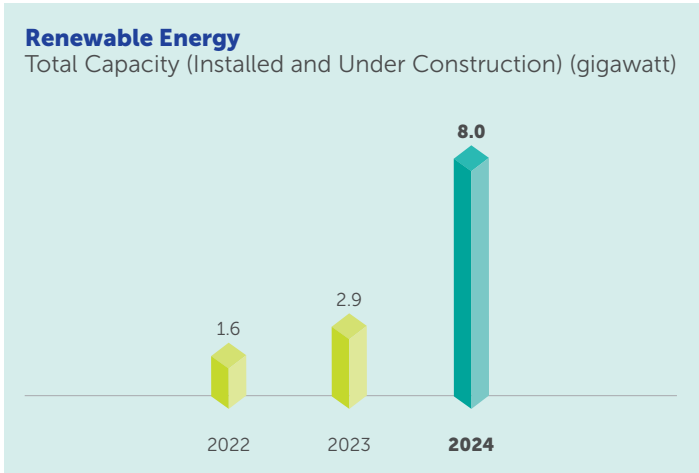
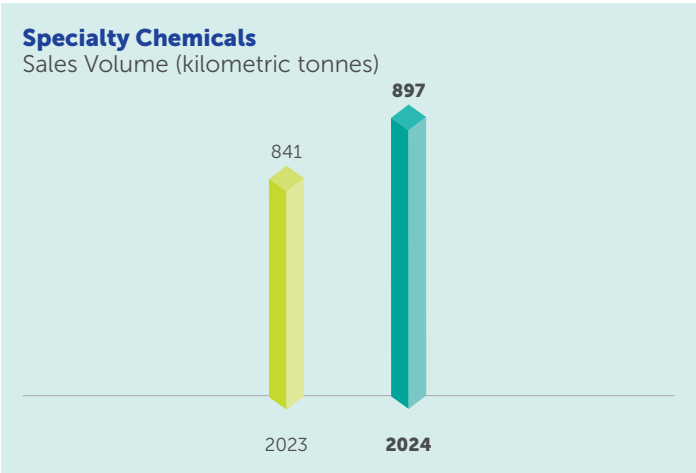




New Business

Capturing New Growth Opportunities

Performance in 2024



Our specialty chemicals business recorded a notable rise in sales volume compared to 2023, supported by stronger market demand and improved cost competitiveness from lower raw material prices.

Meanwhile, our subsidiary, Gentari, continued to scale its operations across its three core pillars in 2024, securing a total of 8 gigawatts in installed and under-construction renewable energy capacity. This growth was supported by its entry into utility-scale projects in India and the expansion of commercial and industrial solutions in key markets.

The business matured 175 kilo-tonnes per annum of hydrogen opportunities and progressed several collaborations across the region. In Green Mobility, Gentari expanded its reach with 1,060 electric vehicle charging points and a fleet of 3,486 electric vehicles deployed across Malaysia, Indonesia and India, as it continues to build the foundations for long-term growth in Asia Pacific.

Challenges, Mitigation and Opportunities

Volatile market conditions, geopolitical tensions and inflationary pressures continue to impact the specialty chemicals market, affecting product demand. PETRONAS remains agile by focusing on portfolio diversification, cost optimisation and strategic partnerships to strengthen our market position.

Scaling electric mobility, renewable energy and hydrogen requires overcoming challenges such as consumer adoption, land scarcity and the need for competitively priced solutions. Simplifying the electric vehicle charging and payment experiences, developing innovative and space-efficient infrastructure, and fostering industry collaboration are key to accelerating the transition. We are addressing these barriers by enhancing accessibility, refining cost structures, forging industry alliances and advancing scalable business models for sustainable energy. With growing demand for longer-duration power solutions to address industrial decarbonisation needs, including from data centres, electric vehicle manufacturers and other hard-to-abate sectors, we are strengthening our cleaner energy value chain and are well-positioned to capitalise on these emerging opportunities.

Outlook and Priorities

Specialty Chemicals

Short-term

PETRONAS will focus on strengthening the specialty chemicals portfolio by maximising value from BRB and Perstorp, identifying key growth areas and innovating new products to meet evolving market demands.

Medium- to long-term

We aim to expand beyond our current footprint through strategic acquisitions, delivering key growth projects and implementing targeted market expansion to enhance our competitive edge and drive sustainable growth in the specialty chemicals sector.

Bio-based Value Chain

Short-term

We are set to accelerate the development of our bio-based ecosystem, focusing on strategic partnerships to secure feedstock and establish market channels ahead of the completion of PETRONAS' first biorefinery. We strengthen our presence in key markets to meet the increasing demand for lower-carbon fuels, particularly in aviation and transportation that are subject to emission standards or controls.

Carbon Capture and Storage

Short-term

We will enhance our CCS business by advancing domestic projects and engaging with potential emitters. The focus will be on establishing a solid commercial and regulatory investment foundation as PETRONAS plans to provide cost-effective CCS solutions to industrial emitters in the Asia Pacific region. By leveraging our storage capacity and infrastructure, we aim to be a regional decarbonisation partner, assisting neighbouring countries in achieving climate goals through reliable carbon storage in Malaysia.

Medium- to long-term

To support a scalable CCS value chain, we will expand our portfolio. This will include international ventures, strategic partnerships and technology integration. Our efforts aim to improve storage efficiency and lower costs per tonne of sequestered carbon dioxide. Developing reliable and multi-user CCS hubs is key to building long-term customer trust. These initiatives will create new business models, diversify revenue streams and speed up decarbonisation in hard-to-abate sectors in Malaysia, the region and beyond.

Renewable Energy

Short-term

Gentari will continue expanding its renewable energy portfolio across core markets, with a focus on integrating renewable power with hydrogen production to enhance efficiency and scalability. Gentari aims to create a more flexible and transportable energy supply by leveraging solar and wind energy for green hydrogen production.

Medium- to long-term

Moving forward, energy storage technologies will be a key enabler, ensuring longer-duration value, and strengthening the resilience of the renewable energy ecosystem to support the growing demand for lower-carbon solutions.

Hydrogen

Short-, medium- to long-term

Gentari will drive the development of green hydrogen and ammonia projects, focusing on securing early offtake agreements and delivering cost-competitive solutions. Strategic partnerships and breakthrough technologies will play a key role in strengthening Gentari's market position and accelerating the adoption of hydrogen as a viable lower-carbon energy source.

Green Mobility

Short-, medium- to long-term

Gentari will continue advancing the green mobility transition by expanding electric vehicle charging networks, scaling Vehicle-as-a-Service solutions and enhancing cross-border roaming across Asia Pacific. These efforts will strengthen infrastructure, improve accessibility and support the region's shift towards sustainable transportation growth.



Net Zero Carbon Emissions

Pathway to Net Zero

Focus Areas

We continue to advance four main abatement levers, focusing on practical and scalable solutions to reduce emissions and enhance long-term operational resilience.

Zero Routine Flaring and Venting

This measure will systematically eliminate routine flaring and venting in existing and new production sites. We aim to avoid routine flaring in new field developments and seek solutions to end routine flaring at existing production sites by 2030.

Energy Efficiency

We optimise energy use across operations, including operational excellence, digital solutions, process and equipment optimisation.

+ The following pages provide a snapshot of our efforts. For a detailed breakdown of our Net Zero Carbon Emissions by 2050 Pathway and progress, please refer to pages 92 to 175.

Electrification

We invest in and develop renewable energy infrastructure to electrify our operations. This encompasses asset modification, infrastructure development and sourcing, where feasible.

Carbon Capture and Storage

We are advancing carbon capture and storage deployment to reduce carbon emissions at identified assets.

Zero Routine Flaring and Venting

Monetising Flared Gas

Through cross-division collaboration, we have transformed previously flared and combusted hydrocarbons into additional sales gas at the Terengganu Gas Terminal. This initiative reduces greenhouse gas emissions by 0.36 million tonnes of carbon dioxide equivalent (CO₂e) per year mainly from carbon dioxide flaring, while lowering utility costs by an average of 25 per cent per month. It also strengthens our cash flow through reduced operational expenditure and increased sales for Upstream.



Terengganu Gas Terminal.

Cutting Carbon, One Project at a Time

We deployed 41 emissions reduction projects across our operations in Malaysia, successfully lowering approximately 1.3 million tonnes CO₂e. This has advanced our emissions reduction efforts across the Group. Key initiatives include reducing acid gas at the Terengganu Gas Terminal, curbing flaring at Erb West and minimising venting at Miri Crude Oil Terminal.

Energy Efficiency

Driving Energy Efficiency

By taking measures to optimise fuel burning, integrating renewable electricity and enhancing energy efficiency, we have successfully reduced Scope 1 and Scope 2 greenhouse gas emissions across our activities. The K30 compressor replacement in PFLNG SATU alone has helped reduce over 10,000 tonnes of CO₂e in 2024.

Notes:

Scope 1: Direct emissions from company-owned or controlled facilities and operations.

Scope 2: Indirect emissions from energy we purchase.



PETRONAS Floating LNG.

Point of Interest

Floating LNG (FLNG) plants eliminate the need for long pipelines. This means every efficiency upgrade, such as the K30 compressor replacement, has a multiplier effect on emissions reduction.

Electrification

Enterprise Electrification

We are accelerating our electrification strategy through the installation of rooftop and ground-mounted solar panels at PETRONAS' assets. This initiative allows our facilities to transition from grid-based electricity to on-site renewable energy solutions.



Installing rooftop solar panels at Universiti Teknologi PETRONAS.

Leveraging Innovative Solutions

As one of our material topics, Innovation and Technology is central to improving operational performance, driving cost efficiency and reducing emissions. Our approach is anchored on four focus areas that collectively enhance performance and resilience: delivering projects with excellence, operating smarter, advancing sustainable energy solutions and powering progress through strong partnerships.

In 2024, we invested RM562.2 million in technology, compared to RM644 million in 2023. This investment was channeled to 166 research and development initiatives, and 39 technology pilot projects. A significant portion of this investment was directed toward technologies to advance the PETRONAS Energy Transition Strategy and support our commitment to deliver net zero carbon emissions by 2050. This includes allocations to seven focus areas: carbon capture, utilisation and storage, specialty chemicals, hydrogen, renewable oil, fluid technology solutions, renewable energy, advanced materials and subsea technologies.

Several targeted programmes are being implemented, which includes our research and development in carbon capture, utilisation and storage aimed at developing technology solutions to reduce Groupwide greenhouse gas emissions. Our hydrogen and renewable energy initiatives aim to lower the levelised cost of energy, enabling more cost-efficient operations. Additionally, through our work in advanced materials and subsea technologies, we deliver complete subsea solutions and extend the life of facilities and fields to support operational excellence. The streamlined allocation reflects greater delivery efficiency and a continued emphasis on solutions with clear value potential.

Innovation with Impact

At our state-of-the-art research centre in Bangi, PETRONAS Research Sdn Bhd is advancing technologies that solve operational challenges while shaping the Group's long-term competitiveness.

Anchored by the PETRONAS Technology Agenda, the research centre focuses on translating research into practical solutions that support PETRONAS' core business and create pathways for growth in new areas, while aligning with our net zero carbon emissions by 2050 commitment. PETRONAS strategically advanced multiple innovative technologies, progressing them towards market readiness and delivering business impact.

The multi-cartridge membrane-based contactor system for natural gas, successfully tested at the Terengganu Gas Terminal, is now poised for broader applications, including post-combustion carbon dioxide capture. Further development is underway to support emissions reduction efforts at PETRONAS Energy Canada Ltd.

In the specialty chemicals space, PETRONAS introduced Emfinity® CGSA 200B, a patented, bio-based emollient developed from renewable, biodegradable sources. It offers hydration and protective features for skin, as well as enhances shine for hair, and can be easily incorporated into various types of personal care formulations.

Complementing these commercialisation milestones, we also delivered immediate business impact through targeted technology deployments. The Well Intervention Fluid-Friction Modifier increased production at key Upstream assets. Meanwhile, the application of Well-to-Seismic Data Reconstruction (RESEIS), using deep learning, redefined field potential by generating high fidelity subsurface insights and uncovering previously untapped opportunities within existing fields in Malaysia.

PETRONAS Iona Tera, a liquid coolant designed specifically for data centres to accelerate efficiency across the high-performance computing industry, was launched to explore opportunities in the growing immersive cooling market.

In addition, the practical application of functionalised graphene oxide (F-GO) as a rust converter paint achieved notable cost avoidance. These efforts demonstrate our commitment to translating technological advancements directly into operational excellence and sustained value creation.

Next-Generation Project Management for Faster Decision-Making

The PETRONAS Project Command Centre is transforming project management with real-time data, artificial intelligence and digital tools. This central hub enhances visibility, transparency and efficiency for faster decision-making. Piloted at selected key projects, it streamlines our operations, ensuring proactive solutions and seamless execution.

Enhancing Asset Reliability and Integrity to Unlock Value

We ensure regulatory compliance, safety and asset continuity through risk-based approaches. In collaboration with the Department of Occupational Safety and Health, the Risk-Based Certificate of Fitness enables us to strengthen operational efficiency and safety across PETRONAS' assets.

Fit-for-Purpose Technical Standards to Unlock Value

To ensure consistency and efficiency, the Portfolio Based Technical Requirements streamline PETRONAS Technical Standards with the International Association of Oil & Gas Producers' Joint Industry Programme 33 specifications and international standards. We have delivered RM35.3 million in savings for pipeline projects by implementing the Portfolio Based Technical Requirements 4.0 Pipeline and Riser in 14 projects.

Powering Progress through Partnerships

At PETRONAS, we harness the power of innovation and technology to achieve marked progress through seamless project delivery and smarter operations, while ensuring a resilient energy future. We are steadfast in pursuing these towards meeting evolving energy demands under a concerted effort, especially through building purposeful partnerships.

Ir. Mohd Yusri Mohamed Yusof
Senior Vice President, Project Delivery and Technology

PETRONAS and Sinopec Driving Innovation

PETRONAS and China Petrochemical Corporation (Sinopec) joined forces to drive innovation, growth and emissions reduction across the energy value chain. From specialty chemicals to cleaner energy solutions, this strategic collaboration aims to reduce carbon footprint and enhance industry competitiveness.

Powering Exploration with Intelligence and Innovation

We continued to push the boundaries of digital innovation in Upstream activities through strategic collaborations and cutting-edge technology. In partnership with Earth Science Analytics and Amazon Web Services, we integrated artificial intelligence and machine learning into PETRONAS' myPROdata platform to accelerate exploration in the Malay Basin and deliver advanced, data-driven insights to users. To further strengthen digital capabilities, PETRONAS signed Memoranda of Understanding with Schlumberger WTA (Malaysia) Sdn Bhd, Velesco Drilling Sdn Bhd and NOV Inc. to enhance subsurface data management and introduce drilling automation and robotics. These are key innovations toward optimising rig operations and expanding the use of advanced technologies across our exploration and production activities.

Collaborating for a Smarter, Lower-carbon Future

We are deepening our collaborations with Telekom Malaysia Berhad (TM) and CelcomDigi Berhad to accelerate digitalisation and enable lower-carbon solutions across sectors. Through a partnership with TM, we are working to strengthen data centre infrastructure, scale advanced cloud capabilities and enhance connectivity to support Malaysia's digital growth. The collaboration also explores the integration of cleaner energy solutions, with Gentari Renewables Sdn Bhd, a wholly-owned subsidiary of Gentari, deploying solar power and electric vehicle charging stations at TM facilities. Meanwhile, PETRONAS and CelcomDigi Berhad are advancing the use of 5G to enable smarter operations and sustainability-focused enterprise offerings. Building on the successful rollout of 5G private network in 2023, PETRONAS has extended implementation to two additional facilities in 2024, reinforcing our drive for efficiency and future-ready operations.