

Business Review



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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. 	<ul style="list-style-type: none"> Increased the awareness of policymakers and legislators resulting in the enhancement of the "Pelan Tindakan" to build up CCS as a new business in Malaysia. 	<p>FG SG</p>
	<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>
NZCE Pathway	<p>Digital Transformation</p> <ul style="list-style-type: none"> Implemented digital solutions to enhance operational efficiency and emissions reporting. 	<ul style="list-style-type: none"> Enabled seamless Greenhouse Gas (GHG) reporting for PETRONAS Carigali's operated blocks in Malaysia with the deployment of the Upstream GHG Digital Platform as part of its first phase with plans to expand to all assets by 2025. Optimised maintenance and asset integrity activities through Asset Performance Management (APM) with eight projects at the Dulang, Samarang and Kumang pilot sites. Operationalised Wells Integrated Operations and scaled to five projects in Malaysia Assets, contributing to more than a 30 per cent increase in Process Cycle Efficiency (PCE) for design and execution. 	<p>C CN E</p>

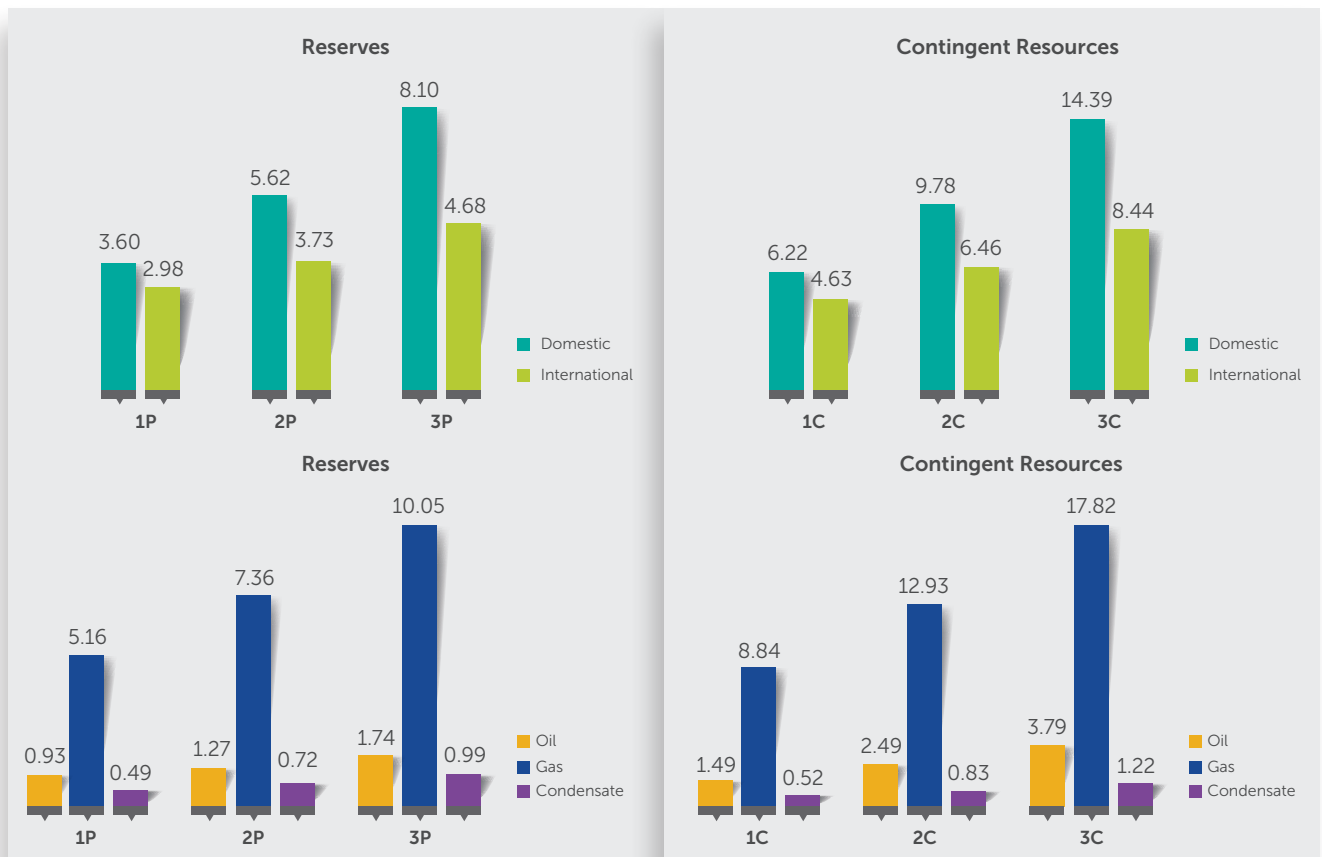
Governance and Disclosure (Reserves and Resources)

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

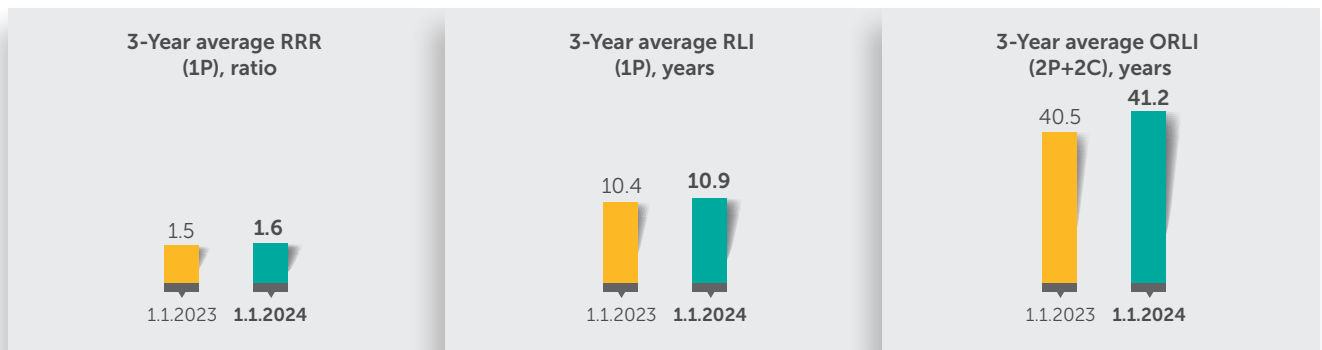
Unit: Bboe

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:

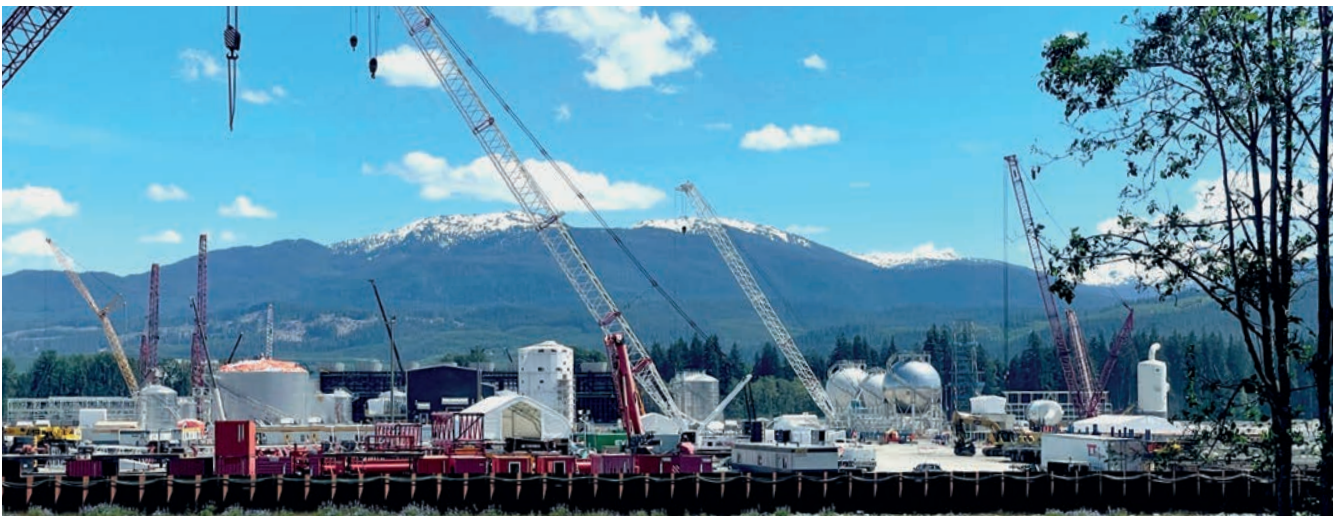
→ Uplifting Lives Programme




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.