

## Business Review



# Downstream



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Executive Vice President  
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Downstream

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

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

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

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

**89.0%**

petrochemical plant utilisation (Nexant).



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

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



**24.9**

billion litres of overall marketing sales volume.



**85.9%**

Overall Equipment Effectiveness.



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

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



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

into the specialty chemicals industry to capture new growth opportunities.

# Business Review

## Creating Stakeholder Value

### Stakeholder Expectations

### Value Created in 2022

#### Shareholder

Deliver profits and dividends

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

#### Customers

Introduce sustainable and innovative products

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

**Note:**

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

#### Communities

Enrich the lives of people in our operational areas

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

**Creating Stakeholder Value**

**Stakeholder Expectations**

**Value Created in 2022**

**Communities**

Enrich the lives of people in our operational areas

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

**Employees**

Create a better working environment

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

**Creating Stakeholder Value**

**Stakeholder Expectations**

**Value Created in 2022**

**Government and Regulations**

Improve governance and industry standards compliance

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

## Business Review

### Key Focus Areas and Results

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

##### What We Did in 2022

##### Results

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

#### New Business – Capturing New Growth Opportunities

<ul style="list-style-type: none"> <li>➤ Charted our course into biofuels</li> </ul>	<ul style="list-style-type: none"> <li>➤ Ongoing development of a greenfield biorefinery as well as co-processing at existing facilities. The biorefinery will be positioned to produce Sustainable Aviation Fuel (SAF) with operational flexibility to generate Hydrogenated Vegetable Oil (HVO) or renewable diesel with expected commencement in 2025. By 2027, it is anticipated that SAF will be produced at our current facilities through co-processing. In the interim, Phase 1 of co-processing will produce SAF by the end of 2023 (before further expansion under Phase 2 in 2027), giving PDB and PETCO volume to trade and sell SAF in the domestic and export markets, respectively.</li> <li>➤ In June 2022, PDB in partnership with PETCO Trading (UK) Ltd, PETRONAS' marketing and trading arm based in Europe and Neste fuelled the first Malaysia Airlines passenger flight using SAF, travelling from Kuala Lumpur to Singapore. The SAF is produced from 100 per cent renewable waste and residue raw materials, such as animal fat waste.</li> <li>➤ PETRONAS will continue to be the Title and Technical Partner with Mercedes-AMG PETRONAS Formula One Team from the 2026 season onwards, signalling our commitment towards a sustainable future with the use of 100 per cent advanced sustainable fuel for next-generation power units. With our extensive experience in formulating the Fluid Technology Solutions™ for the team, we have the capacity and capability to perfect the technology to produce and supply this fuel to the F1 team.</li> </ul>
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**Key Focus Areas and Results**

**New Business – Capturing New Growth Opportunities**

**What We Did in 2022**

**Results**

➤ Strengthened position in specialty chemicals to future-proof business and capture new growth opportunities

➤ Completed the acquisition of Perstorp Group, a global leader in sustainable specialty chemicals, bringing PCG closer to realising its mid-term goal of 30 per cent additional revenue from non-traditional business by 2030. With Perstorp Group’s revenue now contributing to the Group, we achieved a significant increase of 26 per cent in revenue, from RM23.0 billion to RM29.0 billion in 2022.

➤ Expanded our presence in Echt, Netherlands with the launch of BRB International BV’s (BRB) new lube oil additives manufacturing facility to meet evolving customer demand in the region.

➤ Accelerated the transition towards a circular economy

➤ Signed an MoU with KDEB Waste Management, One Biosys Sdn Bhd, Alam Flora Environmental Solutions Sdn Bhd and E-Idaman to obtain plastic waste which will be reprocessed to produce circular polymers for food packaging, healthcare and industrial applications, in addition to identifying potential for waste segregation facilities development in Malaysia.

➤ Signed an MoU with ExxonMobil to assess the potential for large-scale implementation of advanced plastic recycling technology at a PETRONAS-owned facility.

➤ Improved access to green mobility

➤ In keeping with PDB’s commitment to our approach to sustainability and enhancing customer experience, PDB is actively exploring collaborations with prominent players in the electric vehicle industry. In this pursuit, PDB entered into two tripartite Memoranda of Understanding (MoU) with Gentari Green Mobility Sdn Bhd, EP Blueshark Sdn Bhd, Blueshark Holding Limited and Handal Indah Sdn Bhd for the installation of battery swap stations for electric two-wheelers and charging infrastructure for electric buses at PETRONAS stations.

➤ Launched the first EV charging hub at PETRONAS Station Bandar Baru Ayer Hitam along the North-South Expressway. Its strategic location makes it well-positioned for multiple EV users travelling south- or north-bound to access charging facilities simultaneously.

➤ Continued innovating next-generation e-fluids with the PETRONAS Iona range after we took a pioneering step in the industry to introduce a range of automobile fluids for electric vehicles.

➤ PRPC signed an MoU with Gentari to collaborate on the deployment of a zero emissions vehicle fleet supported by EV charging points, and explore the potential for hydrogen fuel cell vehicles in PIC, in line with PETRONAS’ groupwide decarbonisation efforts.

**NZCE – Pathway to Zero**

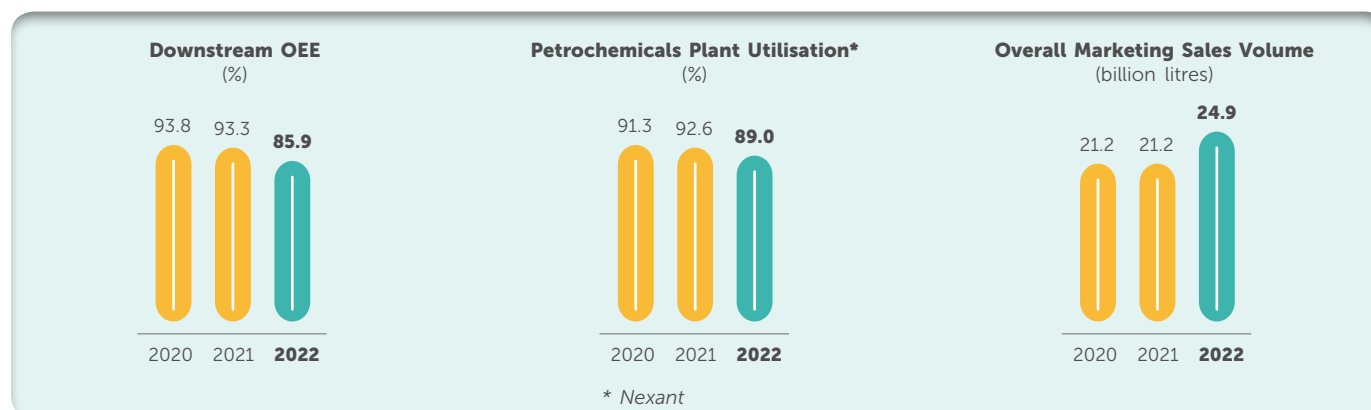
➤ Achieved GHG emissions reductions from our operations

➤ Ramped up efforts to reduce GHG emissions from our operations through several key Scope 1 and 2 reduction initiatives, such as conversion to high performance catalyst, implementing Single/Zero Boiler Operations, electricity use from renewable sources (solar) and implementation of energy efficiency measures (e.g. enhancement of steam trap management and condensate heat integration).

## Business Review

### Operational Highlights

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



### Key Risks and Challenges

#### Risks and Challenges

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

#### Mitigation Strategies

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

### Growth Opportunities

#### Opportunities

- Rising demand for innovative energy solutions

#### Our Approach

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

## Growth Opportunities

### Opportunities

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

### Our Approach

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

## Outlook

### Short Term (2022-2027)

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

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

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

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

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

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

### Medium to Long Term

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

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