

Business Review

Business Review



# Downstream



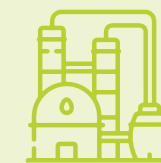
**Datuk Sazali Hamzah**  
Executive Vice President and  
Chief Executive Officer,  
Downstream

"In 2021, Downstream business continued to be challenged by a rapidly evolving industry, shaped by the onset of digitalisation, disruption from new technologies and economic uncertainties. Against this backdrop, we took decisive and strategic measures to ensure the resilience of our business, guided by our strategic pillars: Operational Excellence, Commercial Excellence and Growth Delivery.

We executed our strategies in an agile manner, improving overall efficiency to further unlock value from our core business while innovating sustainable and customer-centric solutions to generate new revenue streams. We optimised on the interplay between various technologies to sharpen our competitive advantage, while closely monitoring changes within the volatile industry. Overall, I am grateful for our team's resilience amid new challenges and their dedication in sharing their unique talents to support the growth of the business."

Downstream Overall Equipment Effectiveness (OEE)

**93.3%**



Downstream Reliability

**96.6%**



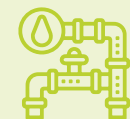
Petrochemical Plant Utilisation (PU) (Nexant)

**92.6%**



Achieved petroleum product sales volume of

**262.4**  
million barrels



## Business Review

### What We Do

PETRONAS' Downstream businesses encompass a diverse set of activities to enhance the value of our petroleum resources, transforming it into high-quality, value-added products available in over 90 markets across Asia-Pacific, Central Asia, the Middle East, Africa, Europe and the Americas.

Downstream's activities include:

- Refining with a capacity of 700 kilobarrels per day (kbpd).
- Marketing and trading of crude oil and petroleum products.
- Manufacturing and marketing of petrochemical products including polymers, fertilisers, methanol, other specialty chemicals and derivative products.
- Supplying marine solutions including LNG bunkering, sulphur fuel oils, marine gas oil and lubricants.



Leveraging digital technology, advanced infrastructure and robust strategies, the Downstream business remains committed to continue providing innovative, sustainable and customer-centric products and services. We will continue to enhance our operational and commercial excellence while simultaneously diversifying and expanding our portfolio towards becoming an agile business and preferred solutions partner worldwide.

### Key Priorities and Results

#### Key Priorities




##### Operational Excellence

- Sustained safe, stable, and efficient operations at all operating units.

Capitals Deployed:   

##### Commercial Excellence

- Increased efficiency and captured bigger margins by optimising delivery.
- Expanded core business to create long-term value and new revenue streams.

Capitals Deployed:   

#### Results

- Achieved an Overall Equipment Effectiveness (OEE) rate of 93.3 per cent for Downstream business.
- Maintained petrochemicals Plant Utilisation (PU) (Nexant) rate at 92.6 per cent.
- Recorded annual petrochemicals production volume of 10.4 million metric tonnes.

- Achieved petrochemicals product sales volume of 8.2 million metric tonnes, sustaining the achievement from the previous year.
- Achieved petroleum product sales volume of 262.4 million barrels, a 0.6 million barrel increase from 2020.
- Achieved overall marketing sales volume of 21.2 billion litres from PETRONAS Dagangan Berhad (PDB), Engen Petroleum and PETRONAS Lubricants International (PLI), a 200 million litre increase from 2020.
- Reshaped portfolio mix to ensure high value returns with focus on non-fuel business and specialty chemicals.

## Business Review



### Key Priorities and Results

#### Key Priorities

##### Portfolio Expansion



- Identified and ventured into new businesses with high growth potential.
- Expanded non-fuel business in domestic marketing.
- Strengthened position in sustainable solutions for greener mobility and commercial aviation.
- Continued growth in specialty chemicals segment.

- Explored opportunities in bio-based chemicals to increase the revenue stream.
- Captured bunkering solutions market and positioned Malaysia as an LNG bunkering Hub.
- Enhanced value creation for local paddy farming communities through the introduction of innovative agricultural solutions and methodologies.

Capitals Deployed:  

##### Health and Safety

- Sustained a culture of health and safety awareness at all businesses and operations, including consumer touchpoints.

Capitals Deployed:  

#### Results

- Acquired D-Two Couriers Sdn Bhd in a move to accelerate PDB's strategic expansion into e-commerce delivery service.
- Launched Segar@Mesra in collaboration with the Ministry of Domestic Trade and Consumer Affairs, and Ministry of Agriculture and Food Industries to bring locally farmed fresh produce to *Kedai Mesra* at affordable prices.
- Signed an MoU with Mercedes-Benz Malaysia and EV Connection Sdn Bhd to deploy DC Fast electric vehicle (EV) chargers at five PETRONAS stations by 1H2022, providing faster EV charging coverage in strategic locations for long distance travel.
- Achieved milestone with first Malaysia Airlines flight fuelled by sustainable aviation fuel (SAF), supplied by PDB in collaboration with PETCO Trading (UK) Ltd, Malaysia Aviation Group and Neste.
- Established the largest and most accessible network for Euro 5 compliant diesels in Malaysia with three biodiesel blends of PETRONAS Dynamic Diesel Euro 5 with Pro-Drive to provide drivers access to cleaner fuel options with a smaller carbon footprint.
- Commenced construction on new oxyalkylates plant at the Kerteh Integrated Petrochemical Complex, Terengganu via PETRONAS Chemicals Group Berhad (PCG)'s PCC Oxyalkylates Sdn Bhd to produce ethoxylates and polyether polyols, with commissioning scheduled for 2023.
- Commenced commercial operations at BRB International's 8,000 tonnes per year silicone blending facility in Gebeng, Pahang, to manufacture cosmetic grade silicone gum blend, as well as technical and food grade silicone emulsion and silicone antifoam for the Asia-Pacific and Middle East-Africa regions.
- Invested in the world's first direct conversion of high-purity Bio-Monoethylene Glycols (Bio-MEG), a by-product of palm biomass.
- Conducted PETRONAS Marine's first LNG bunkering in Port Klang, Selangor and Port of Sandakan, Sabah to provide cleaner source of fuel in support of the International Maritime Organization's sulphur limit for ships' fuel oil (IMO 2020).
- Doubled the paddy yield and income of 68 farmers in Kedah through the Paddy Integrated Smart Farming Project in collaboration with National Farmers Organisation, Braintree Technologies Sdn Bhd and Social Enterprise Education Lab (SEEd.Lab), an innovation hub powered by PETRONAS Downstream. The project introduced the new Enhanced Efficiency Fertiliser (EEF), drone technology and paddy planting standard operating procedures to deliver the improved results.

- Recorded zero major fire incidents and fatalities across Downstream's operations.
- Advocated a safety-first mindset to consumers via PDB's Consumer Safety Campaign in collaboration with the Ministry of Domestic Trade and Consumer Affairs.
- Promoted the Setel@ app to encourage safer transactions among customers with minimal physical touchpoints.

## Business Review

### Key Priorities and Results

#### Key Priorities

##### Digitalisation

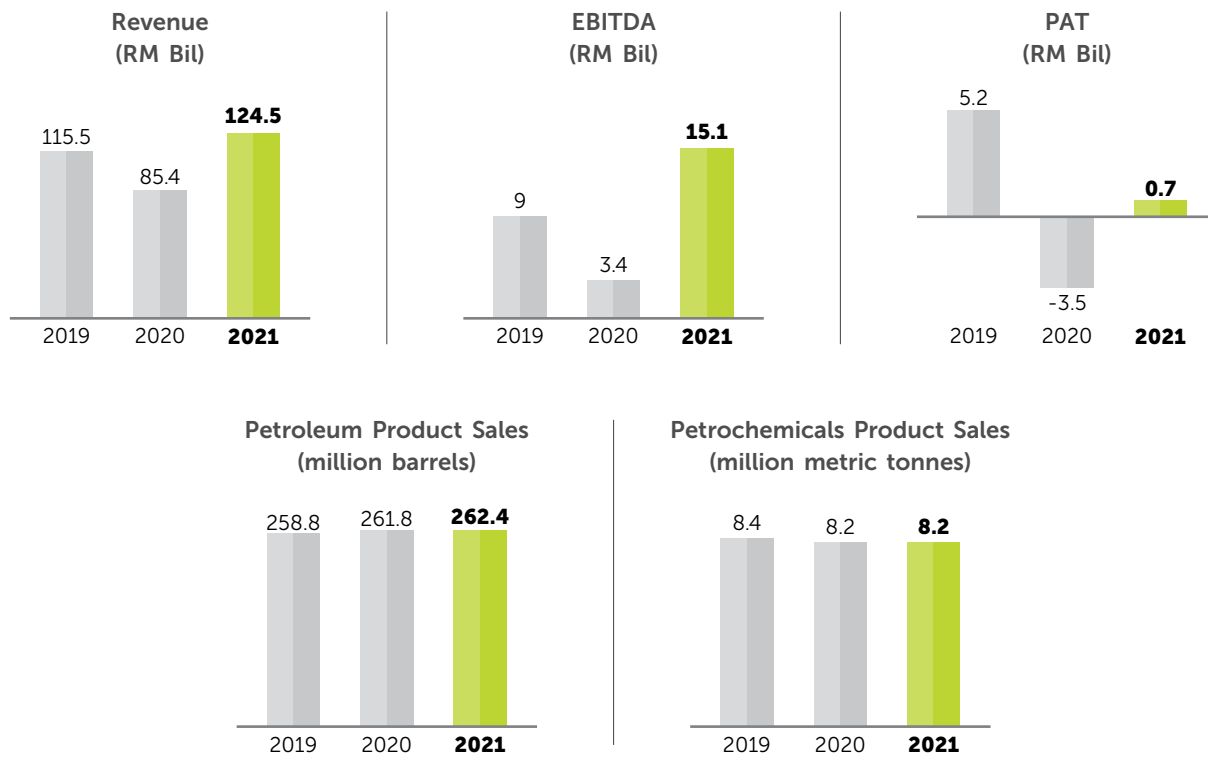
- Institutionalised a culture of innovation.
- Promoted enterprise-wide technology-digital transformation.

Capitals Deployed: 

#### Results





- Collaborated with Amazon Web Services (AWS) to customise Innovation Engine programmes to drive innovation.
- Harnessed data, advanced artificial intelligence (AI), analytics and machine learning technologies to inspire innovation, experimentation and scaled solutions.
- Enhanced end-to-end data visibility across the value chain via Enterprise Data Hub, with 70 Downstream operating units (OPUs) signing the Group Data Liberalisation Agreement.

### Performance Highlights and Achievements



## Business Review

### Value Created for Stakeholders

Stakeholder	Expectations	Value Created
 <b>Customers</b>	<ul style="list-style-type: none"> <li>• Products and solutions that are sustainable and innovative.</li> </ul>	<ul style="list-style-type: none"> <li>• Introduced sustainable and innovative solutions via Setel@ and the greater Setel@ ecosystem, ROVR, Segar@Mesra, Makan@Mesra, EV chargers and e-fluids (PETRONAS iona) and sustainable aviation fuel (SAF).</li> <li>• Expanded into specialty chemicals.</li> <li>• Diversified product offerings with bio-based and circular economy portfolios, such as Bio-MEG.</li> <li>• Enhanced packaging design for marketing products to use 15 per cent less plastic.</li> </ul>
 <b>Employees</b>	<ul style="list-style-type: none"> <li>• Relevant training and capability development opportunities.</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced Agile practices through new training modules, coaching enablement and Agile Enterprise team setup.</li> <li>• Developed PETRONAS Working Backwards in collaboration with AWS to enhance innovation capabilities.</li> </ul>
 <b>Government and Regulators</b>	<ul style="list-style-type: none"> <li>• Adhere to rules and regulations set by local and foreign authorities in countries we operate in.</li> <li>• Ensure zero non-compliances to laws and regulations.</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthened regulatory collaborations for better market growth.</li> <li>• Ensured good governance in the local oil and gas industry.</li> </ul>
 <b>General Public</b>	<ul style="list-style-type: none"> <li>• Social impact initiatives to support community operations.</li> <li>• Platforms and support for education and career enhancement.</li> </ul>	<ul style="list-style-type: none"> <li>• Provided platform for social enterprises to address social pain points via SEEd.Lab to positively impact communities.</li> <li>• Amplified Food Bank Programme at over 400 PETRONAS stations to benefit Malaysians affected by the COVID-19 pandemic.</li> <li>• Championed the Love Local programme to create greater awareness of local brands in support of small and medium enterprises (SMEs) with <i>Kedai Mesra</i> as a platform.</li> <li>• Conducted nine webinar sessions nationwide through the Plastic, Sustainability &amp; You Education (PSYE) programme, involving 130,000 teachers, students, government officers, industry players, the public and internal PETRONAS employees. The webinars aim to accelerate circular economy in Malaysia and educate the audience on sustainable and responsible plastic production and consumption.</li> <li>• Supported the Imbumba Foundation's Caring4Girls initiative which saw 11,402 sanitary towels distributed to female learners in 22 schools located close to Engen's facilities in Mpumalanga, Limpopo, North West Province, Free State and KwaZulu-Natal.</li> </ul>

Business Review

Risks and Opportunities

Risks	Actions Taken	Results
<ul style="list-style-type: none"> <li>Energy transition accelerated by the COVID-19 pandemic.</li> <li>Continued challenging outlook in the energy industry.</li> <li>Need to future-proof business through diversification of portfolios in view of continued challenging outlook in the energy industry.</li> </ul>	<ul style="list-style-type: none"> <li>Commenced commercial operations for BRB International (a wholly-owned subsidiary of PCG's silicone blending plant in the vicinity of PCG's petrochemical complex in Gebeng, Pahang, to strengthen our footing in specialty chemicals.</li> <li>Incorporated LG PETRONAS Chemicals Malaysia Sdn Bhd for nitrile butadiene latex (NBL) plant in Pengerang, Johor; began business and operation readiness activities, as well as ongoing recruitment.</li> <li>Invested in the world's first direct conversion of high-purity Bio-MEG, a renewable by-product of palm biomass.</li> </ul>	<ul style="list-style-type: none"> <li>BRB became the first and only producer of silicone antifoam in Southeast Asia. Targeted to achieve 8,000 tonnes per year production capacity for cosmetic grade silicone gum blend, as well as technical and food grade silicone emulsion and silicone antifoam for the Asia-Pacific and Middle East-Africa regions.</li> <li>Expected annual NBL capacity to reach 200,000 tonnes upon plant completion in 2023 to capture increased demand for medical, critical appliances, and Personal Protective Equipment (PPE).</li> <li>Achieved first drop of Bio-MEG product from the pilot plant and continued to evaluate the technology for commercial scale.</li> <li>Paved the way to provide sustainable solutions for customers in packaging, textile, automotive and electronics industries.</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Growing middle income market segment in the Asia-Pacific region.</li> <li>Increased demand for lower carbon solutions as international organisations and nations commit to net zero goals.</li> <li>Increased demand for petrochemical products post-pandemic for economic recovery.</li> <li>Increased demand for customer-centric and innovative products for a more seamless customer experience.</li> </ul>	<ul style="list-style-type: none"> <li>Advanced sustainability impact in the aviation industry via a collaboration between PDB and the Malaysia Aviation Group.</li> <li>Provided access to the Virtual Pipeline System (VPS) for industries in Peninsular Malaysia.</li> <li>Expanded Setel@ ecosystem and other non-fuel offerings by PDB.</li> </ul>	<ul style="list-style-type: none"> <li>Achieved aviation historic milestone with the first Malaysia Airlines flight using a blend of approximately 38 per cent sustainable aviation fuel (SAF) made from used cooking oil as well as conventional jet fuel, travelling successfully from Amsterdam to Kuala Lumpur International Airport.</li> <li>Planned greenfield biorefinery/co-processing plant targeted for 2025 and positioned to supply SAF with operational flexibility to also produce Hydrogenated Vegetable Oil (HVO) or renewable diesel.</li> <li>Commemorated PDB's 1,000<sup>th</sup> VPS delivery.</li> <li>Served 3.5 million motorists and counting with Setel@, with over 46 million transactions and 1.9 billion Mesra points redeemed on the app.</li> <li>Enhanced offerings with Setel@ Share, Malaysia's first e-wallet sharing feature.</li> <li>Utilised Setel@ as an important tool/enabler to provide basic necessities for the needy through the Food Bank Programme.</li> <li>Mobilised ROVR as part of the emergency rescue team during floods in Malaysia.</li> </ul>
	<ul style="list-style-type: none"> <li>Initiated discussions between PETRONAS Lubricants International (PLI) and industry players on e-mobility via an Electric Vehicle Fluids Webinar.</li> <li>Developed safe, high-performing and dependable fluids specifically for electric powered trains via a collaboration between PLI and Imperial College London, FEV Group, IAV and other additive companies.</li> </ul>	<ul style="list-style-type: none"> <li>Attended by 150 participants comprising industry experts, Original Equipment Manufacturer (OEM) partners, academia and suppliers from around the world to discuss opportunities for collaboration to co-engineer EV solutions.</li> <li>Introduced the latest range of Iona EV fluids, designed for OEM first-fill applications in November 2021.</li> </ul>
	<ul style="list-style-type: none"> <li>Offered a wide range of marine solutions via PETRONAS Marine including a selection of marine and LNG bunker fuels.</li> </ul>	<ul style="list-style-type: none"> <li>Strengthened Malaysia's position as an LNG bunkering hub in the region with successful LNG bunkering operations in Pasir Gudang, Johor; Port Klang, Selangor and Port of Sandakan, Sabah.</li> </ul>

Business Review



Moving Forward

The Downstream business will continue to sustain operational excellence as well as seize new opportunities in key growth markets in Malaysia and around the world. Given the increasing focus on decarbonising our operations, we have taken a holistic approach to drive operational excellence guided by economic, environmental, social and governance (EESG) standards.

Moving into 2022, we will continue to focus on growing our sales volume through competitive pricing strategies, revolutionising customer experience and delivering high-value products in a sustainable manner. Anchored on our net zero carbon emissions aspiration, we will improve energy efficiency for manufacturing and reduce emissions by shifting towards lower carbon sources. To this end, the Downstream business is well-positioned to capture new offerings in the non-fuel segment to maximise our growth potential, expand our portfolio, and optimise value across our entire value chain as we shape future growth.

Moving forward into 2022, our key focus areas include:

- **Continued expansion and diversification** into derivatives, specialty chemicals and solutions to sustain our position as one of the largest integrated chemicals producers in Southeast Asia.
- **Sustain operational and commercial excellence** in petrochemicals to deliver value with PU above 90 per cent, production volume above 10 million tonnes per annum and sales volume above 8 million tonnes per annum.
- **Startup of the Pengerang Integrated Complex** targeted for 2H2022 to maximise growth potential and capture new opportunities further downstream.
- **Strengthen presence in the biofuels space** through a planned greenfield biorefinery/co-processing plant targeted for 2025. The facility will be positioned to supply SAF with operational flexibility to also produce HVO, also known as renewable diesel.
- **Execute Refinery-to-Terminal Project** to convert Engen's refinery in Durban into a world-class import and storage facility to capture new profit opportunities and safeguard against market threats in a challenging refining environment.
- **Continued expansion of non-fuel business in domestic marketing** to increase retail market share and future-proof business.
- **Growth of Setel@ ecosystem** to deliver more innovative and customer-centric solutions in a single app, with features including e-Wallets, parcel delivery services, and vehicle insurance purchase.
- **Innovate solutions in sustainable mobility** through providing faster charging facilities for EVs in Malaysia via PDB's strategic network of stations, innovating next-generation EV fluids via the Iona range and harnessing the power of collaboration through EV symposiums and webinars.
- **Expand lubricants market share in the industrial segment** to capture opportunities from construction, agriculture, mining, power generation and other industries
- **Establish stronger foothold in the Asia-Pacific lubricants market** leveraging Fluid Technology Solutions™ to capture opportunities from the growing middle-class population in the region.
- **Strengthen PETRONAS Marine** as a one-stop marine solutions provider and establish Malaysia as a regional LNG bunkering hub.