

Business Review

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Gas + New Energy



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"To meet the growing demand as economies reopened in 2021, Gas + New Energy (G+NE) adapted to the changing landscape to deliver flexible and tailored solutions for our customers. This resulted in G+NE recording a solid financial and operational performance in 2021, backed by favourable Liquefied Natural Gas (LNG) and sales prices.

We achieved this by fulfilling our role as a one-stop centre for cleaner energy solutions, providing customers with a reliable supply of LNG, renewables, and hydrogen. Additionally, we are accelerating digitalisation to provide optimised and efficient solutions across our integrated gas value chain. G+NE plays a pivotal role in delivering low-to-zero carbon energy that enables sustainable business growth for our customers while progressing with the decarbonisation of our operations."

Gross LNG sales of

32.7 MMT



Close to

1 GW

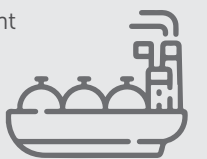
of solar capacity in
operation and under
development



Overall Overall Equipment
Effectiveness (OEE) of

98.1%

for onshore gas and
offshore floating LNG plants



Delivered

**5 Carbon
Neutral**

LNG cargoes to China and Japan



Completed **960** Virtual Pipeline
System and LNG bunkering deliveries across
Malaysia and

2,026

LNG in ISO tanks to China



6.69 MTPA

of LNG sales concluded



697 MMscfd

of natural gas deals secured



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What We Do

G+NE's portfolio underscores our commitment as a cleaner energy solutions partner. It reflects our support for the global energy transition that has accelerated the shift from fossil-based to lower carbon-based sources. As part of the Group's aspirations to meet the growing demand for cleaner energy and realise a low carbon future, G+NE provides a wide range of low-to-zero carbon-based energy sources. In this regard, G+NE powers businesses while ensuring a sustainable future for customers and society at large by growing our position in the natural gas, renewables, and hydrogen businesses. This allows PETRONAS to be a partner in enabling our customers to undertake their energy transition plan.

With the increased momentum of the energy transition, G+NE aims to provide long-term value creation and profitable growth for PETRONAS and its partners by focusing on sustainability, customer-centricity, operational and commercial excellence, supported by the right talent, culture and digital innovations.

With business presence across 12 countries and over 4,000 employees globally, G+NE serves as PETRONAS' one-stop centre for cleaner energy solutions and is a crucial enabler in realising PETRONAS' net zero carbon emissions by 2050 (NZCE 2050) aspiration.

Our Businesses and Key Focus Areas

LNG

- Expand and create markets through customer-centric solutions.
- Maximise production from existing assets through East Malaysia gas development.
- Expand footprint by securing new markets for North America supply portfolio.

Gas and Power

- Maximise position in domestic market.
- Sustain operational excellence.
- Pursue growth in domestic and emerging markets.

Hydrogen

- Capture opportunities to generate revenue streams.
- Co-create the market for hydrogen as the future fuel of choice.

New Energy

- Expand business presence in Malaysia.
- Enter and expand the Asia Pacific portfolio in solar and wind.
- Enhance our business presence in India by developing new solutions and securing contracts for energy storage/hybrid solutions.





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Key Priorities and Results

Key Priorities




Operational Excellence

- Provide reliable gas supply through top quartile operational performance.
- Strengthen position as a one-stop centre for cleaner energy solutions.

Capitals Deployed:   

Customer-Centricity

- Provide innovative and customised solutions to meet customers' energy demand.
- Collaborate with industry players to explore possibility in co-creating innovative and customer-centric solutions.
- Pursue integrated small-scale solutions in Southeast Asia to enhance accessibility of natural gas to various industries.

Capitals Deployed:   

Results

- Achieved Gross LNG sales of 32.7 MMT.
- Achieved overall OEE of 98.1 per cent for onshore gas and offshore floating LNG plants in Malaysia.
- Gas processing business achieved OEE of 99.7 per cent for ethane, propane and butane respectively.
- Emerged as the first global energy company to produce LNG from two floating facilities – first LNG production and cargo delivery by PFLNG Dua.
- PETRONAS' first FLNG, PFLNG Satu, produced its 50th LNG cargo.

- Concluded five carbon-neutral LNG deals with China's Shenergy Group Company Limited (Shenergy) and Japan's Hiroshima Gas and Shikoku Electric.
- Completed 960 Virtual Pipeline System (VPS) and LNG bunkering deliveries across Malaysia and 2,026 cryogenic-fitted ISO tanks of LNG to off-grid customers in China and enabled access to clean energy.
- Performed the first LNG bunkering operation via LNG Bunker Vessel, MV Avenir Advantage, in Port Klang, Selangor. Conducted the first LNG bunkering operation in Sabah for HL Green, the world's largest 180,000-tonne LNG-powered vessel.
- Introduced Canada Alberta Energy Company (AECO) Index to offer customers a competitive pricing structure.

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Key Priorities and Results

Key Priorities

Growth Delivery Excellence

- Explore opportunities to increase LNG market share.
- Develop new LNG projects.
- Expand supply nodes to strengthen ability to serve market demands.
- Strengthen position as the nation's leading gas infrastructure and centralised utility company.
- Strengthen New Energy's business presence in renewable energy internationally and domestically.
- Offer flexible generation and delivery solutions to strengthen our position as an end-to-end renewable energy solutions provider.
- Collaborate with industry players and government agencies to build nationwide hydrogen supply chain capabilities, capacity and infrastructure.
- Capture opportunities to emerge as a hydrogen producer through critical projects.

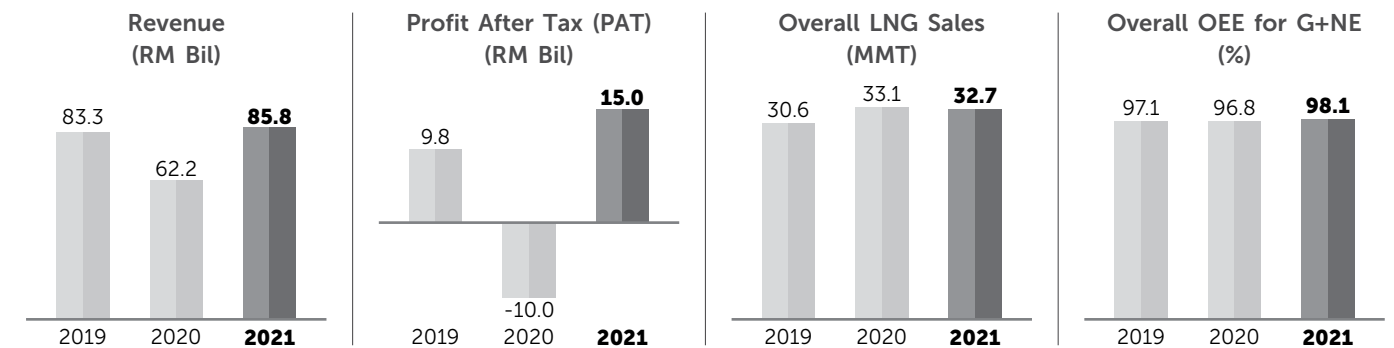
Capitals Deployed: 

Results




- Entered into a 10-year deal with CNOOC Gas and Power Trading & Marketing, a subsidiary of CNOOC, to supply 2.2 MTPA of LNG.
- Concluded a 0.36 MTPA of LNG deal with Mercuria.
- Awarded Front End Engineering Design (FEED) contracts for the development of nearshore LNG project in Sabah.
- Initiated the following growth projects:
 - 42 km lateral gas pipeline extension project to the new power plant in Pulau Indah, Selangor.
 - Project to expand Southern Peninsular Gas Utilisation (PGU) delivery capacity through the installation of gas compressor station in Kluang, Johor.
 - Executed the Southern PGU debottlenecking exercise to meet higher pressure requirements in Segamat, Johor.
- Successfully commissioned the following solar projects:
 - MMHE in April 2021 with 8.3 MW capacity.
 - Lotus's Phase 1 in December 2021 with 10.8 MW capacity.
 - Project Neo (India) in January 2021 with 75 MW capacity.
 - Project Matahari (India) in July 2021 with 48 MW capacity.
 - Expanded our footprint in the Middle East with successful and timely commissioning of the first Commercial and Industrial (C&I) project in Dubai.
- Pursued collaboration with the following partners to grow RE industry:
 - Signed Memorandum of Understanding (MoU) with Institut Teknologi Petroleum PETRONAS (INSTEP) in March 2021.
 - Expanded partnership in Asia Pacific via signing of MoU with Abu Dhabi National Oil Company (ADNOC) and Masdar in March 2021.
- Delivered PETRONAS' first Battery Energy Storage System (BESS) with 1 MW standalone storage for Amazon (India).
- Project Yelo, powered by Amplus, expanded its fleet of electric vehicles (EV) for cargo delivery to two more cities, Hyderabad and Pune. Currently, it has 14 hubs across India that provide EVs for clients such as Amazon, Flipkart, and Big Basket.
- Embarked on a technical-commercial joint-study of a hydrogen supply chain to explore other hydrogen opportunities via a partnership with ENEOS Corporation.
- Entered into an MoU with JERA Co., Inc. to collaborate on ammonia and hydrogen supply chains.
- Participated in the Government's initiative through collaboration with the Economic Planning Unit (EPU) to develop clear targets and policies for the National Energy Policy and the Natural Gas Roadmap, which aim to provide the optimal balance of energy equity, security and sustainability for Malaysia.

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Performance Highlights and Achievements



Value Created for Stakeholders

Stakeholder	Expectations	Value Created
 Customers	<ul style="list-style-type: none"> • Reliable, affordable and customer-centric solutions that contribute to their green agenda. 	<ul style="list-style-type: none"> • Delivered more than 12,000 LNG cargoes to customers around the world from PETRONAS LNG Complex (PLC). • Delivered innovative solutions such as VPS and ISO tanks to off-grid customers in Malaysia and China to enable greater access to cleaner energy. • Offered carbon-neutral LNG as part of cleaner energy solutions to help customers achieve their sustainability aspirations. • First in Southeast Asia to offer LNG as a cleaner marine fuel via LNG bunkering solution.
 Government and Regulators	<ul style="list-style-type: none"> • Security and reliability of gas supply to power the nation. • Safety and reliability of gas and power plant operations and impact on the surrounding communities. • Promote usage and provide greater access to renewables to support the country's sustainability agenda. 	<ul style="list-style-type: none"> • Continued to expand natural gas delivery network throughout Peninsular Malaysia. • Ensure safe, reliable and efficient operations across all facilities. • Collaborated with government agencies to build Malaysia's Hydrogen and RE industry as well as reduce carbon dioxide (CO₂) emissions domestically.
 Communities	<ul style="list-style-type: none"> • Corporate Social Responsibility (CSR) initiatives that will create positive impact to the environment and community at large. 	<ul style="list-style-type: none"> • Implemented Rays of Hope, a G+NE Signature CSR project to power homes of <i>Orang Asli</i> (indigenous peoples of Malaysia) and community centres with clean energy. • Introduced CSR initiatives focusing on education, environment and community outreach: <ul style="list-style-type: none"> – Back-to-School programmes under PETRONAS Sentuhan Ilmu. – Sayangi Sungai Lato mangrove planting in Johor under PETRONAS Sentuhan Alam. – Outreach programmes to foster good relationship with the community.

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Risks and Opportunities

Risks	Opportunities	Actions Taken	Results
<ul style="list-style-type: none"> Energy transition accelerated by COVID-19. Highly volatile and competitive market. 	<ul style="list-style-type: none"> Collaborate with key stakeholders and customers to maintain our business competitiveness and ensure business goals are achieved. Leverage digital and technology to enhance business operations and innovate to meet customers' demands. 	<ul style="list-style-type: none"> Offered a suite of customer-centric offerings to meet customers' differing needs. Focused on cost optimisation for CAPEX and OPEX to maintain our business' resilience and competitiveness. Embarked on new projects to strengthen our position as a global LNG producer and natural gas supplier in Peninsular Malaysia. Continued to expand our RE business to provide greater access to clean energy in support of energy transition. Pursued collaboration with potential partners to offer hydrogen as an alternative form of clean energy. 	<ul style="list-style-type: none"> Concluded 6.69 MTPA of new LNG sales to customers in Japan, South Korea, China and Indonesia. Deployed large-scale LNG ISO Tank deliveries to inland China by working with our partner, Tiger Clean Energy, to enable greater access to inland China. Achieved Profit After Tax (PAT) of RM15 billion and maintained high level of OEE at 98.1 per cent. Dual FEED contracts for Sabah nearshore LNG were awarded timely and received full support and commitment from Sabah State agencies for the project to further mature. Development of 42 km gas pipeline project in Pulau Indah, Selangor. Debottlenecking of Southern gas pipeline in Peninsular Malaysia to meet increasing demand. Construction of a new gas compressor station in Johor. Expanded utilities contract to supply electricity to KANEKA, renewed contact with PETRONAS Chemicals Group Berhad (PCG) and its subsidiaries for the next 20 years. Strengthened NE portfolio with the commissioning of four new Amplus projects. Diversified revenue to the Middle East with the first RE project. Delivered PETRONAS' first Battery Energy Storage System (BESS) with 1 MW standalone storage for Amazon (India). Secured two new contracts in Malaysia and expanded into new cities in India (Hyderabad and Pune) via Yelo. Initiated four Hydrogen projects in Malaysia (Kerteh, Terengganu and Bintulu, Sarawak) which are currently in FEL studies. Signed MoUs with key partners in Japan (ENEOS and JERA) and domestically (Sarawak Energy Berhad).

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Moving Forward

As the world moves towards a low carbon future, natural gas and LNG continue to play an important role within the energy mix, alongside renewable energy. It provides a reliable and flexible lower carbon energy supply, thus complementing renewable energy. As PETRONAS' one-stop-centre for cleaner energy solutions, G+NE is well-positioned to meet the changing energy demands by providing a diverse range of cleaner energy solutions.

Key focus areas for G+NE in 2022:

- **Maximise value via LNG and domestic gas sales**

With the expected increase in global demand for LNG and domestic gas, G+NE seeks to maintain market leadership by leveraging its global LNG portfolio, world-class operations and customer-centric solutions. G+NE continues to build its LNG portfolio through LNG Canada and Sabah's first nearshore LNG facility. For domestic gas, G+NE is engaging various government agencies and authorities to secure the approval of Regulatory Period 2 (RP2) tariffs for PGU and regasification terminals (RGT) to ensure sustainable returns for our assets.

- **Expand market reach through customised solutions**

G+NE seeks to meet growing demand from new customer segments and smaller-scale natural gas customers. In this regard, G+NE is expanding its VPS, LNG bunkering and LNG in ISO tanks solutions to increase accessibility to natural gas. Plans are also in place to venture into the power generation business in emerging markets.

- **Pursue lower carbon customised solutions**

G+NE continues to expand in renewable energy spaces, focusing on solar, wind and energy storage. Furthermore, G+NE is also building its Hydrogen business with the aspiration to make Malaysia an important hydrogen energy hub within the region.

- **Advocate for the benefits of gas and renewable energy**

In supporting Malaysia's energy transitions target, we worked closely with policymakers to create the right regulatory environment, backed by a proper fiscal regime. Given our long-standing experience in the industry, we will continue to support Government initiatives such as Malaysia's Natural Gas Roadmap, and the Malaysia Gas Hub Study.

