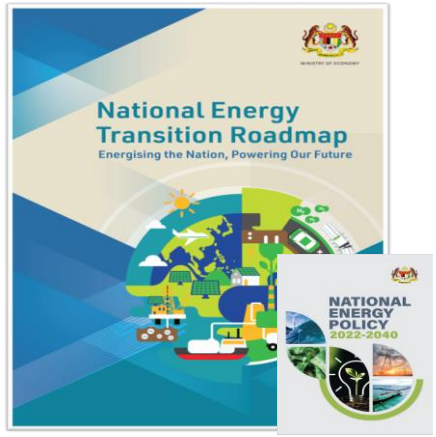
[Open]

Malaysia Carbon Capture Storage (CCS) :
PETRONAS CCS Outlook in Positioning for the Region Decarbonisation Solutions

[Open]

Malaysia and PETRONAS has recognized CCS amongst the main decarbonization levers

National Energy Transition Roadmap (NETR)



- CCUS is 1 of the **10 flagship catalyst projects** in the NETR roadmap.
- By 2030:
  - 3 CCUS hubs (2 in Peninsular Malaysia, 1 in Sarawak)
- By 2050:
  - 3 carbon capture hubs
  - Storage capacity between 40 to 80 MTPA
- The NETR is build upon the National Energy Policy (NEP) 2022-2040

New Industrial Master Plan 2030

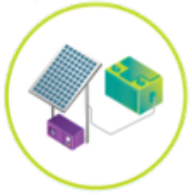
- Deploy large scale CCUS solutions to decarbonize hard-to-abate sectors
- Focus on **4 key** components:
  - Capture CO_2 from industrial processes
  - Transport by ship, pipeline and land transport
  - CO_2 storage in depleted oil fields
  - Utilization of captured CO_2 and aligned with circular economy principles
- CCUS framework and regulations is key to execute Mission Based Project (MBP) 3.3 in pushing for net zero

Net Zero Emission by 2050

Achieving Net Zero Carbon Emissions by 2050 is a core part of PETRONAS' strategic vision**. CCS plays a crucial role in this journey**, as it enables the capture and storage of CO_2 emissions from industrial sources, directly contributing to our overall decarbonisation goals. By investing in CCS, PETRONAS is actively working to reduce its carbon footprint and help its clients achieve similar outcomes.

NET ZERO 2050

Zero Routine Flaring and Venting



Energy Efficiency

Electrification

Carbon Capture and Storage (CCS)

PETRONAS

The CCUS Act and what is happening next

Status

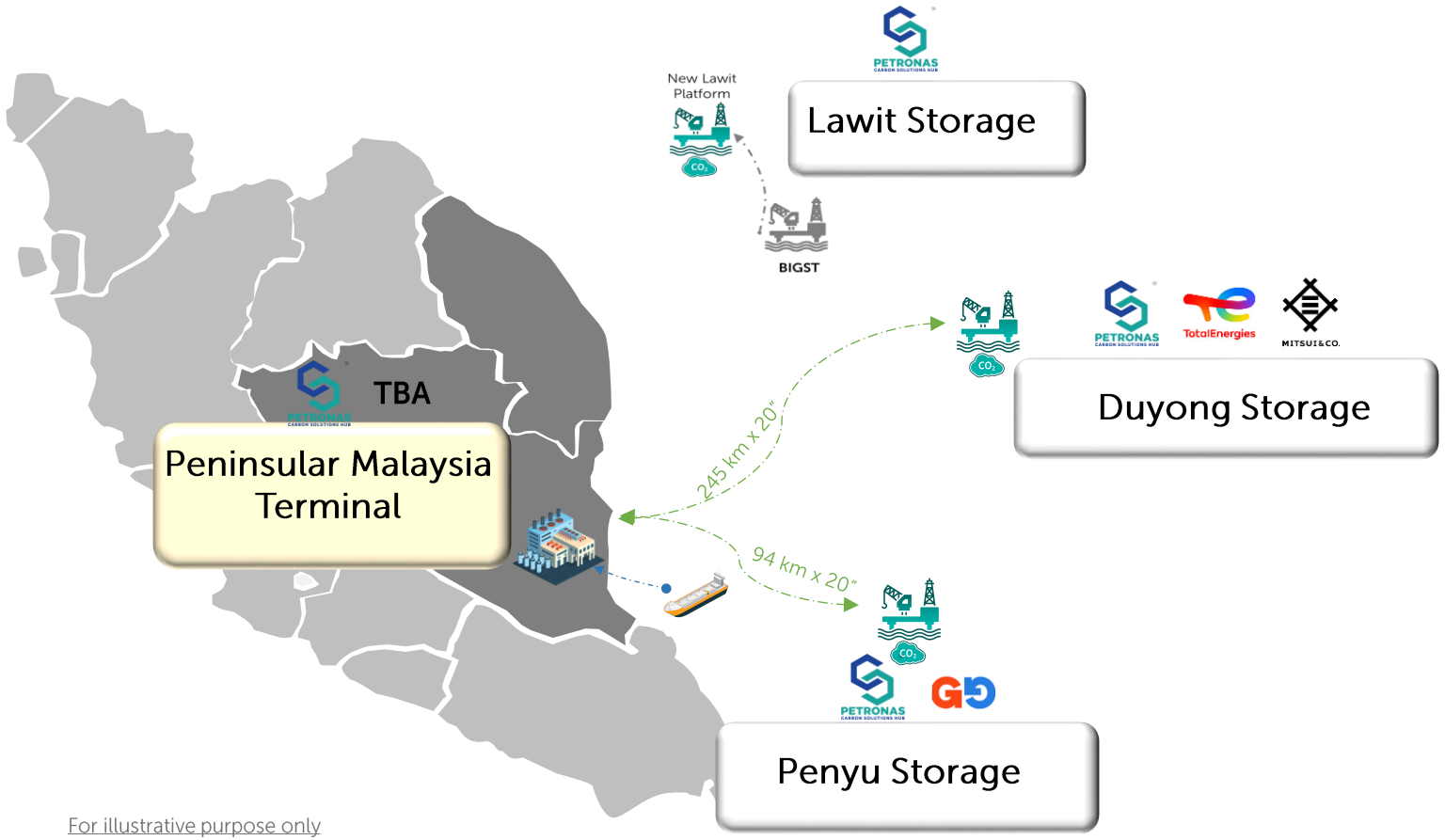
- On 5 March 2025, the first reading of the CCUS Bill was tabled in Malaysian Parliament's House of Representatives (Dewan Rakyat), with the second and third readings on 5 – 6 March 2025. The CCUS Bill was passed with a majority voice vote in Dewan Rakyat on 6 March 2025.
- On 10 March 2025, the CCUS Bill was tabled for first reading in the Senate (Dewan Negara), with the second and third readings on 25 March 2025. The CCUS Bill was unanimously passed in Dewan Negara on 25 March 2025.
- On 22 July 2025, the Bill received Royal Assent and subsequently was gazetted as the "Act 870 Carbon Capture, Utilization and Storage Act 2025" (**CCUS Act**) on 1 August 2025.

What is next

- The CCUS Act was enforceable on 1st October 2025.
- More granular details about the permitting and licensing regime will be spelled out in the Regulations, which are expected to be gazetted and visible after the Act has come into force.
- The Ministry of Economy has commenced discussions for bilateral arrangements with MTI Singapore in April 2025 and is progressing discussions with MOTIE South Korea. The MOC with METI Japan was signed on 17th October 2025

[Open]

Overview of Malaysia CCS Hubs



For illustrative purpose only

jules nautica

LCO_2 Carrier

Jules Nautica a strategic Joint Venture (JV) between PCCSV, MOL & MISC is incorporated to lead the development and act as the ultimate owner of Liquefied Carbon Dioxide (LCO_2) carriers, which are critical for transporting LCO_2 to designated storage sites as part of advancing carbon capture and storage (CCS) solutions.

- Mar 2023 — FEL 1 Approval
- Q1 2025 — Start Terminal and Offshore Facilities FEED study
- Q1 2026 — Terminal and Offshore Facilities FID
- 2030 onwards — 1ST Injection

PETRONAS

 |

[Open]

The LCO_2 carrier plays a crucial role in CCS transportation. With advanced features designed for competitive unit costs and flexible provisions like Onboard CCS (OCCS), paving the way for Green Port attainment.

Key Innovative Features

Fit for Purpose CO_2 Transportation Solutions

1) Low Pressure Low Temperature (LPLT) : Innovations in large-scale CO_2 transportation to enable more competitive unit cost.
2) Medium Pressure Medium Temperature (MPMT): Available to accommodate various volumes and distances.

Innovative Low Carbon Features

1) LNG as primary alternative fuel
2) Efficient Reliquefaction System
3) Energy saving devices
4) Efficient hull design and propulsion system

Options for Low Carbon Strategies

Onboard Carbon Capture Storage (OCCS)

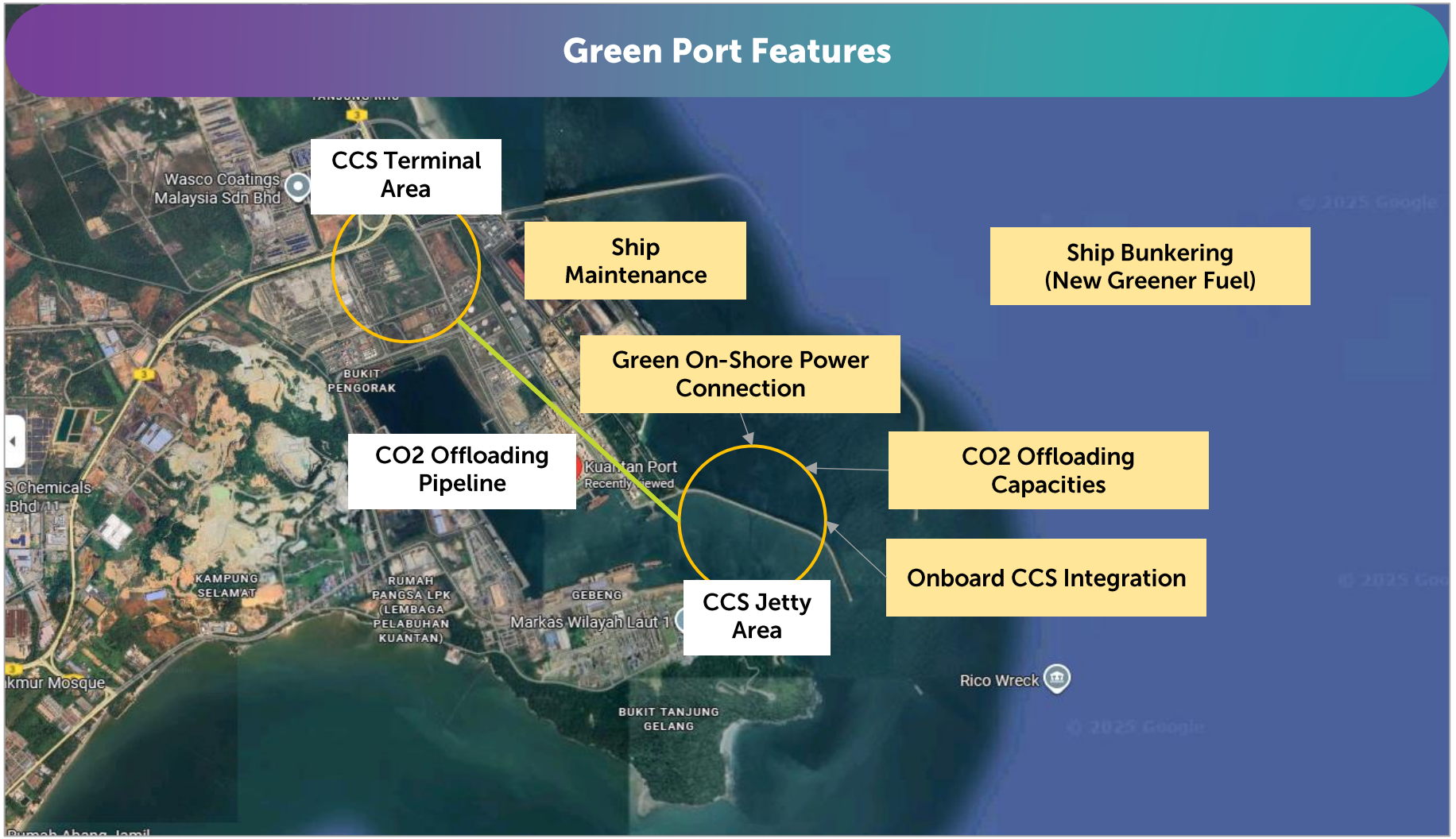
LCO_2 carrier has design with provision of OCCS. This allows capture of CO_2 emissions from the ship's propulsion system and capable to be offloaded at CCS Receiving Terminal.

Green Onshore Power Connection

Option to be connected to onshore power is available. This provides the capability for the ship to connect to green onshore power systems, reducing emissions while the vessel is at berth.

PETRONAS

Aspiration towards CCS Hub Development future business expansion in Kuantan Port of Pahang,Malaysia



[Open]

The ecosystems development are as critical as the infrastructure development in ensuring the delivery of CCS Development at the right pace.

POLICY & REGULATION

Industry-led policy and regulatory actions that create certainty, open markets, and strengthen the legal foundations needed for bankable CCS investments.

TECHNICAL & TECHNOLOGY

Advancing proven and innovative CCS technologies to enhance efficiency, reduce costs, and improve long-term project viability.

SUPPLY CHAIN

Building a competitive, CCS-ready supply chain to lower execution risk, ensure quality, and improve investment returns.

COMMUNICATIONS & ADVOCACY

Shaping public, industry, and investor perception to build confidence, accelerate adoption, and attract market participation in CCS.

FUNDING

Mobilising diverse financing solutions and partnerships to unlock capital, share risks, and sustain large-scale CCS deployment.

Together, these efforts not only contribute to the climate impact mitigation but also new industries creation that will spur economic growth for the future

[Open]

PETRONAS
Passionate about Progress