

As a result of our enhanced emissions accounting practices, which includes a change in organisational boundary, we have adjusted our 2019 baseline reference to 54.87 Million tCO₂e via equity share approach.

The Pathway has short-term and mid-term targets focusing on absolute GHG and methane emissions. The short-term target is to cap Scope 1 and Scope 2 emissions to 49.5 Million tCO₂e by 2024 for PETRONAS operated assets in Malaysia.

We have set a mid-term target to reduce 25 per cent GHG emissions for Scope 1 and Scope 2 under equity share approach by the year 2030.

A key area of our net-zero efforts is to reduce methane emissions. Methane is a primary component of natural gas and a more potent GHG than carbon dioxide. Thus, we have specified targets for methane emissions reduction as part of our broader GHG targets.

The target is to reduce methane emission groupwide by 50 per cent by 2025 and by 70 per cent by 2030. Additionally, we are committed to drive down methane emissions beyond PETRONAS' own operations within our industry. To this aim, we have established a 50 per cent methane emissions reduction target for Malaysia's natural gas value chain by 2030. The methane emissions reduction targets will support Malaysia's commitment to the Global Methane Pledge of reducing national methane emissions by 30 per cent by 2030.

Moving forward, PETRONAS is updating internal standards and procedures, and building capabilities in GHG and methane emissions management. Commencing in 2023, PETRONAS will commission third party assurance of Scope 1 and Scope 2 GHG emissions.

Footnote:

CO₂e = carbon dioxide equivalent. This unit converts all other GHGs into the common dominator of CO₂e using Global Warming Potential (GWP) factors following Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report (AR4).

Guided by international principles, frameworks and standards

- Greenhouse Gas Protocol Corporate Accounting and Reporting Standard
- Ipieca/API/IOGP Sustainability Reporting Guidance for the Oil and Gas Industry
- Ipieca Climate Change Reporting Framework
- ISO 14064-1:2018; ISO 14064-2:2019; ISO 14064-3:2019
- Methane Guiding Principles
- United Nations Environmental Programme (UNEP) Oil and Gas Methane Partnership 2.0 (OGMP2.0) Reporting Framework
- American Petroleum Institute (API) Compendium of GHG Emissions Methodologies for the Natural Gas and Oil Industry (2021)

Safeguard the Environment

2022 Greenhouse Gas (GHG) Emissions Management

As part of the embedment process and to ensure sustainable GHG management practice across PETRONAS operations, several initiatives were undertaken during 2022:

1 Enhancement of GHG Management System

Following the mainstreaming of GHG Management as part of PETRONAS HSE Mandatory Control Framework (MCF) in January 2022, PETRONAS has conducted four internal assurance activities – second line assurance and internal reviews – based on a risk-based approach. This activity helped to identify key gaps and enablers to improve GHG accounting and reporting.

2 GHG Digital Tools

PETRONAS has improved and automated the quantification of Scope 1 and Scope 2 GHG emissions in Gas business by linking activity data from plant information systems to the calculation tool, eliminating the need for human intervention in the process.

3 GHG Capability

PETRONAS has identified GHG Management as a crucial skill set to be developed as an enabler to realise our NZCE 2050 Pathway. A new discipline has been established under the HSE skill group with a set of competency requirements, recommended trainings and required resources across corporate and business functions.

4 Physical Impacts of Climate Change

A vulnerability assessment was conducted on PETRONAS' assets covering 1,140 locations in Upstream, Gas and Downstream in Malaysia as part of Malaysia's Fourth National Communication Report (NC4) to the United Nations Framework Convention on Climate Change (UNFCCC). Through this assessment populated in a Geographic Information System (GIS) system, climate hazards data such as sea level rise, coastal floods, river floods, droughts and temperature rise were gathered and forecasted up to year 2100 for Peninsular Malaysia, Sabah and Sarawak. This initiative has created value by identifying high risk assets and serves as an input to our adaptation strategy.

PETRONAS also has completed vulnerability assessments in South Africa for Downstream refinery and retail operations. Key climate hazards are floods and storms. A training and upskilling session was conducted for Engen staff to enable them to develop and maintain an adaptation plan.

Accelerating Methane Emissions Management in PETRONAS

We align our methane emissions management with the Methane Guiding Principles (MGP) that prioritise key actions along the natural gas supply chain.

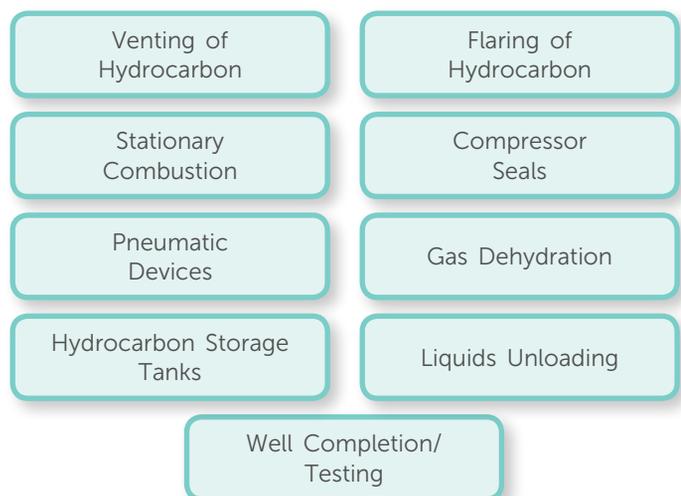
As a signatory member of the Methane Guiding Principles, we commit to advancing robust performance across gas value chains, enhancing the accuracy and quality of methane emissions data, advocating best practices, sound policies, and regulations on methane emissions, capability building and increasing the transparency of methane emissions to better manage them.

In 2022, PETRONAS became a member of the United Nations Environment Programme (UNEP) Oil and Gas Methane Partnership 2.0 (OGMP2.0) Reporting Framework, a multi-stakeholder initiative established by UNEP and the Climate and Clean Air Coalition (CCAC). OGMP2.0 provides a comprehensive, measurement-based reporting framework that improves the accuracy and transparency of methane emissions reporting in the energy sector.

1 Advancing Techniques for Methane Measurement

Acknowledging the importance of reporting accurate methane emissions to facilitate effective reduction, PETRONAS is improving our quantification beyond the main emissions sources of flaring, venting and combustion. Rigorous efforts were made throughout 2022 to improve methane data accuracy for PETRONAS' natural gas value chain covering 11 common sources below:

Intended Releases:



Unintended Releases:

