



LRQA Group Independent Assurance Statement

Relating to Petroliaam Nasional Berhad (PETRONAS) Greenhouse Gas (GHG) emissions - Limited Level of Assurance using operational control and equity share approach for Scope 3 Category 11 for years 2019-2023

This Assurance Statement has been prepared for Petroliaam Nasional Berhad (PETRONAS) in accordance with our contract.

Terms of Engagement

LRQA INSPECTION MALAYSIA SDN. BHD. (LRQA) was commissioned by PETRONAS to provide independent assurance of its Scope 3 greenhouse gas (GHG) emissions inventory for Category 11 – Emissions due to use of sold products in the PETRONAS Integrated Report 2024 (“the Report”) for the years 2019-2023 against the assurance criteria below to a limited level of assurance and materiality of the professional judgement of the verifier using LRQA’s verification procedure that is in accordance with ISO 14064 - Part 3: Specification with guidance for the verification and validation of greenhouse gas statements.

Our assurance engagement covered PETRONAS’ entities related to its Upstream¹, Gas and Downstream businesses and covered all operations globally that are under PETRONAS’ operational control and equity share (refer Annex A). Our assurance engagement excludes PETRONAS’ KLCC (Property) and MISC Group (Shipping) businesses. Our engagement specifically covered the following:

- Verifying conformance of the selected datasets with:
 - PETRONAS Technical Standards (PTS) 18.72.05 Greenhouse Gas (GHG) Emissions Management, March 2023.
 - Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) for the GHG emissions data² and GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.
- Reviewing whether the Report has taken account of:
 - The Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry issued by American Petroleum Institute (API), 2021³.
 - The Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions, 2nd Edition, 2011 issued by IPIECA⁴, API and the IOGP⁵.
- Evaluating the accuracy and reliability of data and information for only the selected GHG emissions scopes listed below:
 - Other Indirect GHG Emissions (Scope 3 Category 11: Use of Sold Products) expressed in tonnes CO₂e for operational control and equity share.

Our assurance engagement excluded the data and information of PETRONAS suppliers, contractors and any third parties mentioned in the Report

LRQA’s responsibility is only to PETRONAS. LRQA disclaims any liability or responsibility to others as explained in the end footnote. PETRONAS’ responsibility is for collecting, aggregating, analysing and presenting all the data and

¹ excludes exploration and decommissioning activities

² <https://www.ghgprotocol.org/corporate-standard>

³ <https://www.api.org/>

⁴ <https://www.ipieca.org/resources/sustainability-reporting-guidance> - Petroleum industry guidelines for reporting greenhouse gas emissions - 2nd edition issued by the International Petroleum Industry Environmental Conservation Association (IPIECA)

⁵ International Association of Oil & Gas Producers



information within the Report and for maintaining effective internal controls over the systems from which the Report is derived. Ultimately, the Report has been approved by, and remains the responsibility of PETRONAS.

LRQA's Opinion

Based on LRQA's approach nothing has come to our attention that would cause us to believe that PETRONAS has not, in all material respects:

- met the requirements of the criteria listed above; and
- disclosed accurate and reliable performance data and information as summarized in Table 1 below.

The opinion expressed is formed on the basis of a limited level of assurance⁶ and at the materiality of the professional judgement of the verifier.

LRQA's Approach

LRQA's assurance engagements was carried out in accordance with our verification procedure. The following tasks were undertaken as part of the evidence gathering process for this assurance engagement:

- conducting a strategic analysis and risk analysis to identify sample products and entities for verification:
 - Sampled products included crude oil, natural gas, processed gas, liquified natural gas (LNG), liquified petroleum gas (LPG), jet fuel, diesel, fuel oil, motor gasoline, petroleum waxes, heavy naphtha, and other petroleum products;
 - Sampled entities included PETRONAS Trading Corporation Sendirian Berhad, Malaysia LNG Sdn. Bhd., PETRONAS Dagangan Berhad, PETRONAS Energy & Gas Trading Sdn. Bhd., PETRONAS Carigali (Turkmenistan) Sdn. Bhd., Mesra Retail & Cafe Sdn. Bhd., PETRONAS Australia Pty. Ltd., PETRONAS LNG 9 Sdn. Bhd., PETRONAS Energy Canada Ltd., PICL (Egypt) Corp Ltd, PETRONAS E&P Argentina S.A, PETRONAS Petróleo Brasil Ltda. and PC Oman Ventures Ltd.
- cross-referencing relevant finance documents related to the sale of products in years 2019, 2020, 2021, 2022 and 2023;
- reviewing processes related to the control of fuel sale data and records in years 2019, 2020, 2021, 2022 and 2023;
- interviewing relevant employees of the organization responsible for managing fuel sale data and records;
- interviewing relevant employees of the organization responsible for calculating GHG emissions and collating the data;
- assessing the appropriate use of GHG emission factors for various fuels from API Compendium of Greenhouse Gas Emission Methodologies for the Natural Gas and Oil Industry, 2021;
- verifying GWPs⁷ aligned with IPCC AR4⁸;
- verifying the operational control and equity share of various entities having relationship with PETRONAS;
- assessing PETRONAS' data management systems and tools to confirm they are designed to prevent significant errors, omissions or mis-statements in the Report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal quality control;
- verifying historical GHG emissions data and records for fuel sales at an aggregated level for the years 2019, 2020, 2021, 2022 and 2023.

Observations and recommendations were provided to PETRONAS management, intended for internal use only. These do not affect our opinion.

⁶ The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a limited assurance engagement is lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

⁷ Global Warming Potentials

⁸ Intergovernmental Panel on Climate Change Fourth Assessment Report



LRQA's Standards, Competence and Independence

LRQA implements and maintains a comprehensive management system that meets accreditation requirements for ISO 14065 Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition and ISO/IEC 17021 Conformity audit – Requirements for bodies providing audit and certification of management systems that are at least as demanding as the requirements of the International Standard on Quality Control and comply with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants.

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification audits is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

We conducted gap analyses in previous years for PETRONAS on their methodology of reporting Scope 1 and Scope 2 GHG emissions under equity share and Scope 3 Category 11 (GHG emissions from sold products) for 2019-2022. The verification audits are the only work undertaken by LRQA for PETRONAS and as such does not compromise our independence or impartiality.

Signed

Dated: 13 December 2024

A handwritten signature in black ink, appearing to read 'K Deshmukh', is written over a light blue horizontal line.

Ketan Deshmukh

LRQA GROUP LIMITED Lead Verifier

A handwritten signature in black ink, appearing to read 'Sew Shuh Ping', is written over a light blue horizontal line.

Sew Shuh Ping

LRQA GROUP LIMITED Verifier

On behalf of LRQA INSPECTION MALAYSIA SDN. BHD., Level 25, Naza Tower, Platinum Park, No.10, Persiaran KLCC, 50088 Kuala Lumpur

LRQA GROUP LIMITED reference: KLR00000809

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Table 1: GHG Emissions from sale of products using operational control and equity share approach

Operational Control Emissions

Products sold	2019 (tCO ₂ e)	2020 (tCO ₂ e)	2021 (tCO ₂ e)	2022 (tCO ₂ e)	2023 (tCO ₂ e)
Fuels own manufactured	150,589,249	131,222,283	163,305,221	181,254,400	180,675,404
Fuels traded	98,190,585	109,379,929	83,454,841	74,739,647	87,027,567
Crude oil own manufactured	29,772,385	30,973,394	20,279,474	31,471,878	36,314,654
Crude oil traded	16,870,788	10,782,328	10,004,058	4,622,047	8,107,169
Total	295,423,007	282,357,934	277,043,593	292,087,972	312,124,794

Equity Share Emissions

Products sold	2019 (tCO ₂ e)	2020 (tCO ₂ e)	2021 (tCO ₂ e)	2022 (tCO ₂ e)	2023 (tCO ₂ e)
Fuels own manufactured	131,210,844	115,805,142	149,010,670	165,574,654	164,985,684
Fuels traded	90,778,808	102,925,737	76,956,385	67,543,562	79,895,525
Crude oil own manufactured	37,872,360	48,113,374	36,769,120	47,984,146	44,930,669
Crude oil traded	16,870,788	10,782,328	9,805,500	4,561,686	8,107,169
Total	276,732,800	277,626,581	272,541,675	285,664,047	297,919,048

Notes:

- Fuels include natural gas, processed gas, LNG, LPG, jet fuel, diesel, fuel oil, motor gasoline, petroleum waxes, heavy naphtha, and other petroleum products.
- Fuels sold implies fuels manufactured and retailed by PETRONAS
- Fuels traded implies fuels traded by PETRONAS
- Crude oil sold implies crude oil manufactured and retailed by PETRONAS
- Crude oil traded implies crude oil traded by PETRONAS
 - It is assumed that the crude oil sold and retailed is completely combusted, although crude oil may be transformed to other products such as chemicals.



Annex A

PETRONAS entities covered under operational control & equity share

Business Divisions	List of Entities Covered
Upstream	• Petroliam Nasional Berhad • PETRONAS Carigali Sdn Bhd • PETRONAS Carigali (Turkmenistan) Sdn Bhd • PC Vietnam Limited • PETRONAS Energy Canada Ltd • PETRONAS E&P Argentina S.A • PETRONAS Petroleo Brasil Limitada • PETRONAS Carigali (Jabung) Ltd • Natuna 1 BV • PC Madura Ltd • PC Oman Ventures Ltd • PETRONAS Carigali Brunei Ltd • PETRONAS Carigali Nile Ltd • PC Muriah Ltd
Gas	• Petroliam Nasional Berhad • PETRONAS Australia PTY Ltd • PICL (Egypt) Corp Ltd • PETRONAS Energy and Gas Trading Sdn Bhd • PETRONAS Energy Trading Ltd • Malaysia LNG Sdn Bhd • Malaysia LNG Tiga Sdn Bhd • PETRONAS LNG Ltd • PETRONAS LNG (UK) Ltd
Downstream	• PETRONAS Dagangan Berhad • PETRONAS NGV Sdn Bhd • PETRONAS Trading Corp Sdn Bhd • Mesra Retail & Café Sdn Bhd • Engen Limited