



VERIFICATION STATEMENT

Verification on Greenhouse gas emission intensity of oil and gas exploration and production activities for the year 2022

VERIFIER	CLIENT
RINA Brasil Serviços Técnicos Ltda Avenida Presidente Juscelino Kubitscheck, 2041- Vila Olímpia, CEP 04543-011. Complexo JK, Torre B, 5º andar, sala 5010, São Paulo, SP - Brazil	Petróleo Brasileiro S.A – PETROBRAS Avenida Henrique Valadares - 28 - 15º andar - Centro - Rio de Janeiro - RJ -20031-030- Brazil

RINA Brasil Serviços Técnicos Ltda was hired by PETROBRAS to verify the Greenhouse Gas (GHG) Emission Intensity of the Oil and Gas Exploration and Production (E&P) activities for the 2022 period in accordance with the verification criteria of ISO 14064-3: 2007.

RINA conducted the verification of Greenhouse Gas (GHG) Emission Intensity of the Oil and Gas Exploration and Production (E&P) activities for 2022 through calculation spreadsheets, Petrobras KPI Metrics Report and other related evidences provided by PETROBRAS and interview with the people involved.

First version 19.07.2023

Eng. Natal Vasconcelos

(Diretor)

Date 19.07.2023

RINA Brasil Serviços Técnicos Ltda
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Therefore, based on the verification made by technical staff of RINA Brasil Serviços Técnicos Ltda., in accordance with ISO 14064-3, ISO 14065, it is hereby certified that the result of the Greenhouse Gas (GHG) Emission Intensity of the Oil and Gas Exploration and Production (E&P) activities for 2022 prepared by Petróleo Brasileiro S.A. – PETROBRAS:

- is essentially correct and a fair representation of the data and information on the Greenhouse Gas (GHG) Emission Intensity of the Oil and Gas Exploration and Production (E&P) activities;
- was prepared in accordance with the pertinent international standards on quantification, monitoring and reporting of Greenhouse Gas (GHG) Emission Intensity and with the pertinent national standards or practices.

It is also certified that the calculation of the Greenhouse Gas (GHG) Emission Intensity was developed based on the guidelines of the ISO 14064-1 Standard “Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals” and attributes level of confidence limited to the verification process.

First version 19.07.2023

Date 19.07.2023

Eng. Natal Vasconcelos
(Diretor)

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The verification confirms that the Oil and Gas Exploration and Production (E&P) activities presented, in the 2022 period, as reported by Petrobras in the KPI Metrics Report, the following result of Greenhouse Gas (GHG) Emission Intensity:

IGEE-E&P	15.0 kg CO ₂ e/boe
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Note: The indicator encompasses Scope 1 and Scope 2 emissions (market based approach)

It can be concluded that the data informed above in this Statement do not contain omissions, non-conformities, errors of any kind which could lead to erroneous statements with respect to the Organization's result of Greenhouse Gas (GHG) Emission Intensity of the Oil and Gas Exploration and Production (E&P) activities.

First version 19.07.2023

Eng. Natal Vasconcelos

(Diretor)

Date 19.07.2023

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VERIFICATION STATEMENT

Verification on Greenhouse gas emission intensity of the electricity generation segment in the year 2022

VERIFIER	CLIENT
RINA Brasil Serviços Técnicos Ltda Avenida Presidente Juscelino Kubitschek, 2041- Vila Olímpia, CEP 04543-011. Complexo JK, Torre B, 5º andar, sala 5010, São Paulo, SP - Brazil	Petróleo Brasileiro S.A – PETROBRAS Avenida Henrique Valadares - 28 - 15º andar - Centro - Rio de Janeiro - RJ -20031-030- Brazil

RINA Brasil Serviços Técnicos Ltda was hired by PETROBRAS to verify the Greenhouse Gas (GHG) Emission Intensity of the electricity generation segment in the year 2022 in accordance with the verification criteria of ISO 14064-3: 2007.

RINA conducted the verification of Greenhouse Gas (GHG) Emission Intensity of the electricity generation segment in the year 2022 through calculation spreadsheets and other related evidences provided by PETROBRAS and interview with the people involved.

First emission 26.07.2023

Eng. Natal Vasconcelos
(Diretor)

Date 26.07.2023

RINA Brasil Serviços Técnicos Ltda
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Therefore, based on the verification made by technical staff of RINA Brasil Serviços Técnicos Ltda., in accordance with ISO 14064-3, ISO 14065, it is hereby certified that the result of the Greenhouse Gas (GHG) Emission Intensity of the electricity generation segment in the year 2022 prepared by Petróleo Brasileiro S.A. – PETROBRAS:

- is essentially correct and a fair representation of the data and information on the Greenhouse Gas (GHG) Emission Intensity of the electricity generation segment;
- was prepared in accordance with the pertinent international standards on quantification, monitoring and reporting of Greenhouse Gas (GHG) Emission Intensity and with the pertinent national standards or practices.

It is also certified that the calculation of the Greenhouse Gas (GHG) Emission Intensity was developed based on the guidelines of the ISO 14064-1 Standard “Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals” and attributes level of confidence limited to the verification process.

First emission 26.07.2023

Eng. Natal Vasconcelos

(Diretor)

Date 26.07.2023

RINA Brasil Serviços Técnicos Ltda
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The verification confirms that the electricity generation segment, in the 2022 period, the following result of Greenhouse Gas (GHG) Emission Intensity (IGEE-EE):

IGEE-EE	0.329 tCO ₂ e/MWh
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Note: The indicator only considers emissions related to the generation of electricity (it does not include the portion related to heat generation in plants that operate with cogeneration)

It can be concluded that the data informed above in this Statement do not contain omissions, non-conformities, errors of any kind which could lead to erroneous statements with respect to the Organization's result of Greenhouse Gas (GHG) Emission Intensity of the electricity generation segment (IGEE-EE)

First emission 26.07.2023

Eng. Natal Vasconcelos
(Diretor)

Date 26.07.2023

RINA Brasil Serviços Técnicos Ltda
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VERIFICATION STATEMENT

Verification of greenhouse gas emission intensity of refining activities for the year 2022

VERIFIER	CLIENT
RINA Brasil Serviços Técnicos Ltda Avenida Presidente Juscelino Kubitschek, 2041- Vila Olímpia, CEP 04543-011. Complexo JK, Torre B, 5º andar, sala 5010, São Paulo, SP - Brazil	Petróleo Brasileiro S.A – PETROBRAS Avenida Henrique Valadares - 28 - 15º andar - Centro - Rio de Janeiro - RJ -20031-030- Brazil

RINA Brasil Serviços Técnicos Ltda was hired by PETROBRAS to verify the Greenhouse Gas (GHG) Emission Intensity of the Refining activities for the 2022 period in accordance with the verification criteria of ISO 14064-3: 2007.

RINA conducted the verification of Greenhouse Gas (GHG) Emission Intensity of the Refining activities for 2022, through calculation spreadsheets, Petrobras KPI Metrics Report and other related evidences provided by PETROBRAS and interview with the people involved.

First emission 19.07.2023

Eng. Natal Vasconcelos

(Diretor)

Date 19.07.2023

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Therefore, based on the verification made by technical staff of RINA Brasil Serviços Técnicos Ltda., in accordance with ISO 14064-3, ISO 14065, it is hereby certified that the result of the Greenhouse Gas (GHG) Emission Intensity of the Refining activities for 2022 prepared by Petróleo Brasileiro S.A. – PETROBRAS:

- is essentially correct and a fair representation of the data and information on the Greenhouse Gas (GHG) Emission Intensity of the Refining activities;
- was prepared in accordance with the pertinent international standards on quantification, monitoring and reporting of Greenhouse Gas (GHG) Emission Intensity and with the pertinent national standards or practices.

It is also certified that the calculation of the Greenhouse Gas (GHG) Emission Intensity was developed based on the guidelines of the ISO 14064-1 Standard “Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals” and attributes level of confidence limited to the verification process.

First emission 19.07.2023

Eng. Natal Vasconcelos

(Diretor)

Date 19.07.2023

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The verification confirms that the Refining activities presented, in the year 2022, as reported by Petrobras in the KPI Metrics Report, the following result of Greenhouse Gas (GHG) Emission Intensity:

IGEE-REFINO	37.9 kg CO ₂ e/CWT
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Note: The indicator encompasses Scope 1 and Scope 2 emissions (market based approach)

It can be concluded that the data informed above in this Statement do not contain omissions, non-conformities, errors of any kind which could lead to erroneous statements with respect to the Organization's results of Greenhouse Gas (GHG) Emission Intensity of the Refining activities.

First emission 19.07.2023

Eng. Natal Vasconcelos

(Diretor)

Date 19.07.2023

RINA Brasil Serviços Técnicos Ltda
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VERIFICATION STATEMENT

Verification on methane emission intensity of the upstream segment (oil and gas exploration and production activities and gas treatment units) for the year 2022

VERIFIER	CLIENT
RINA Brasil Serviços Técnicos Ltda Avenida Presidente Juscelino Kubitscheck, 2041- Vila Olímpia, CEP 04543-011. Complexo JK, Torre B, 5º andar, sala 5010, São Paulo, SP - Brazil	Petróleo Brasileiro S.A – PETROBRAS Avenida Henrique Valadares - 28 - 15º andar - Centro - Rio de Janeiro - RJ -20031-030- Brazil

RINA Brasil Serviços Técnicos Ltda was hired by PETROBRAS to verify the methane emission intensity of the upstream segment (oil and gas exploration and production activities and gas treatment units) for the 2022 period in accordance with the verification criteria of ISO 14064-3: 2007.

RINA conducted the verification of the methane emission intensity of the upstream segment for 2022 through calculation spreadsheets, Petrobras KPI Metrics Report and other related evidences provided by PETROBRAS and interview with the people involved.

First version 19.07.2023

Eng. Natal Vasconcelos

(Diretor)

Date 19.07.2023

RINA Brasil Serviços Técnicos Ltda
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Therefore, based on the verification made by technical staff of RINA Brasil Serviços Técnicos Ltda., in accordance with ISO 14064-3, ISO 14065, it is hereby certified that the result of the methane emission intensity of the upstream segment for 2022 prepared by Petróleo Brasileiro S.A. – PETROBRAS:

- is essentially correct and a fair representation of the data and information on the methane emission intensity of the upstream segment (oil and gas exploration and production activities and gas treatment units);
- was prepared in accordance with the pertinent international standards on quantification, monitoring and reporting of Greenhouse Gas (GHG) Emission Intensity and with the pertinent national standards or practices.

It is also certified that the calculation of the methane emission intensity of the upstream segment was developed based on the guidelines of the ISO 14064-1 Standard “Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals” and attributes level of confidence limited to the verification process.

First version 19.07.2023

Eng. Natal Vasconcelos

(Diretor)

Date 19.07.2023

RINA Brasil Serviços Técnicos Ltda
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The verification confirms that the upstream segment (oil and gas exploration and production activities and gas treatment units) presented, in the 2022 period, as reported by Petrobras in the KPI Metrics Report, the following result:

ICH4_IOGP	0.25 t CH ₄ / thousands t HC
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It can be concluded that the data informed above in this Statement do not contain omissions, non-conformities, errors of any kind which could lead to erroneous statements with respect to the Organization's result of methane emission intensity of the upstream segment (oil and gas exploration and production activities and gas treatment units).

First version 19.07.2023

Eng. Natal Vasconcelos

(Diretor)

Date 19.07.2023

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VERIFICATION STATEMENT

Verification report of Petrobras System emissions inventory for the year 2022

VERIFIER	CLIENT
RINA Brasil Serviços Técnicos Ltda Avenida Presidente Juscelino Kubitscheck, 2041- Vila Olímpia, CEP 04543-011. Complexo JK, Torre B, 5º andar, sala 5010, São Paulo, SP - Brazil	Petróleo Brasileiro S.A – PETROBRAS Avenida Henrique Valadares - 28 - 15º andar - Centro - Rio de Janeiro - RJ -20031-030- Brazil

RINA Brasil Serviços Técnicos Ltda was hired by PETROBRAS to verify the emissions inventory of Petrobras System for the reference period that runs from 01/01/2022 to 31/12/2022 in accordance with the identified verification criteria. RINA is accredited by General Coordination of Accreditation (CGCRE) of the Brazilian National Institute of Metrology, Quality and Technology (INMETRO) for the verification of greenhouse gases inventories in general and specifically in the sectors of oil and gas extraction, production and refining, including petrochemical products and power generation.

The verification of the emissions inventory for 2022 included operations in Brazil, Bolivia and Colombia.

RINA conducted the verification through document review, site audits and verification of the resolution of identified nonconformities.

Primeira emissão 13.07.2023

Data 13.07.2023

Eng. Natal Vasconcelos

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RINA conducted the verification audits on PETROBRAS operational units previously selected. The operational units chosen accounted for approximately 34% (thirty four percent) of the total greenhouse gases (GHG) emissions in the year 2022 (Scopes 1 and 2).

The following units were audited on site: Capuava Refinery (RECAP); Paulínia Refinery (REPLAN); Henrique Lage Refinery (REVAP); Sul Capixaba Gas Treatment Unit (UTGSul); Cubatão Thermoelectric Plant (UTE-CBT); Termobahia Thermoelectric Plant (UTE-TBA) and São Caetano do Sul Terminal. The Libra Exploration and Production Business Unit (UN-LIBRA), Santos Basin Exploration and Production Business Unit (UN-BS) and the Cacimbas Gas Treatment Unit (UTGC) were audited in the sites responsible for emissions data consolidation. Emission data for units not audited onsite were verified based on sampling in the Atmospheric Emissions Management System (SIGEA) during an audit at Petrobras' corporate headquarters. Therefore, based on the verifications conducted by technical staff of RINA Brasil Serviços Técnicos Ltda., in accordance with ISO 14064-3, ISO 14065 and Verification Specification of the GHG Protocol Brazilian Program, it is hereby certified that the emissions inventory of the Petrobras System for the year 2022 prepared by Petróleo Brasileiro S.A. – PETROBRAS:

- It is essentially correct and a fair representation of the data and information on the Organization's emissions inventory;
- It was prepared in accordance with the pertinent international standards on quantification, monitoring and reporting of emissions inventory and with the pertinent national standards or practices.

Primeira emissão 13.07.2023

Data 13.07.2023

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It is also certified that the inventory was developed based on the guidelines of the ISO 14064-1 Standard “Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals” and attributes level of confidence limited to the verification process.

The direct and indirect emissions (scopes 1, 2 and 3) of the Petrobras System covered by the scope of this verification are listed below:

Emissions	GHG Emissions 2022 tCO₂e (AR4)	GHG Emissions 2022 tCO₂e (AR5)
Scope 1	47,642,781.244	47,745,898.319
Scope 2 (location based)	156,456.921	156,456.921
Scope 2 (market based)	157.159	157.159
Scope 3	443,154,053.793	443,283,846.857

Primeira emissão 13.07.2023

Data 13.07.2023

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GHG emissions 2022 (tonnes)										
	CO ₂	CH ₄	N ₂ O	HFC-32	HFC-125	HFC-134	HFC-134a	HFC-143a	H-152a	SF ₆
Scope 1	45,964,198.292	49,783.275	1,378.756	1.284	2.704	0.129	3.042	1.522	0.008	0.066
Scope 2 (location based)	156,456.921	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Scope 2 (market based)	157.159	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Scope 3	442,040,936.460	43,869.229	54.989	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Emissions 2022 (tonnes)						
	NO _x	CO	MP	SO _x	HCNM	HCT
Scope 1	198,621.990	77,478.804	10,989.160	84,581.147	170,587.250	218,281.677
Scope 2	-	-	-	-	-	-

It can be concluded that the data informed above in this Statement do not contain omissions, nonconformities, errors of any kind which could lead to erroneous statements with respect to the Organization's total amount of atmospheric emissions.

Primeira emissão 13.07.2023

Data 13.07.2023

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Annex

Technical team

Role	Name and surname	Qualification	Country
Team Leader and expert	Thaís de Lima Carvalho	Specialist in GHG projects for more than 10 years. Has participated in more than 150 validation and verification of carbon credit projects and verification of GHG inventories.	Brazil
Verifier	Patrícia Perini	Specialist in GHG projects for more than 10 years. Has participation in several verifications of GHG inventories.	Brazil
Technical Reviewer	Marcell De Carvalho	Specialist in the sector of oil and gas extraction, production and refining, including petrochemical products. Has participated in GHG inventory verifications of PETROBRAS group.	Brazil

Primeira emissão

13.07.2023

Eng. Natal Vasconcelos

(Diretor)

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13.07.2023

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