

Parex Resources Colombia AG Sucursal

Independent practitioner's reasonable assurance report on the Greenhouse Gas (GHG) Statement for the period ended December 31, 2022.

(Free translation from the original in Spanish)



Independent practitioner's reasonable assurance report on Parex Resources Colombia AG Sucursal's Greenhouse Gas (GHG) statement

(Free translation from the original in Spanish)

To the Board of Directors and Management of
Parex Resources Inc. and its Subsidiaries

Report on GHG Statement

We have undertaken a reasonable assurance engagement of the accompanying GHG statement of Parex Resources Colombia AG Sucursal, (hereinafter "Parex" or the "Company") for the year ended on December 31, 2022, comprising the Emissions Inventory and the Explanatory Notes. This engagement was conducted by a multidisciplinary team including assurance practitioners, engineers and environmental scientists.

Parex's responsibility for the GHG statement

Parex Resources Colombia AG Sucursal is responsible for the preparation of the GHG statement in accordance with the criteria included on Annex II (Reasonable assurance criteria regarding the compliance of Parex Resources Colombia AG Sucursal with the criteria included on the Greenhouse Gas Inventory Report and the results obtained), applied as explained in Note "P" to the GHG statement.

This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation of a GHG statement that is free from material misstatement, whether due to fraud or error.

As discussed in Note "P" to the GHG statement, GHG quantification is subject to inherent uncertainty because of incomplete scientific knowledge used to determine emissions factors and the values needed to combine emissions of different gases.

Our independence and quality management

We have complied with the independence and other ethical requirements of the International Code of Ethics for Professional Accountants (including International Independence Standards) issued by the International Ethics Standards Board for Accountants (IESBA Code), which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

The firm applies International Standard on Quality Management 1, which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

PwC Contadores y Auditores S.A.S., Calle 100 No. 11A-35, Bogotá, Colombia Tel: (60-1) 7431111,
www.pwc.com/co



Parex Resources Colombia AG Sucursal
Independent practitioner's reasonable assurance report

Our responsibility¹

Our responsibility is to express an opinion on the GHG statement based on the evidence we have obtained. We conducted our reasonable assurance engagement in accordance with International Standard on Assurance Engagements 3410, *Assurance Engagements on Greenhouse Gas Statements* ('ISAE 3410'), issued by the International Auditing and Assurance Standards Board. That standard requires that we plan and perform this engagement to obtain reasonable assurance about whether the GHG statement is free from material misstatement.

A reasonable assurance engagement in accordance with ISAE 3410 involves performing procedures to obtain evidence about the quantification of emissions and related information in the GHG statement. The nature, timing and extent of procedures selected depend on the practitioner's judgment, including the assessment of the risks of material misstatement, whether due to fraud or error, in the GHG statement. In making those risk assessments, we considered internal control relevant to Parex Resources Colombia AG Sucursal's preparation of the GHG statement. A reasonable assurance engagement also includes:

- assessing the suitability in the circumstances of Parex Resources Colombia AG Sucursal's use of the criteria included on Annex II (Reasonable assurance criteria regarding the compliance of Parex Resources Colombia AG Sucursal with the criteria included on the Greenhouse Gas Inventory Report and the results obtained), applied as explained in Note "P" to the GHG statement, as the basis for preparing the GHG statement.
- evaluating the appropriateness of quantification methods and reporting policies used, and the reasonableness of estimates made by Parex Resources Colombia AG Sucursal; and
- evaluating the overall presentation of the GHG statement.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Opinion

In our opinion, the GHG statement of Parex Resources Colombia AG Sucursal for the year ended on December 31, 2022 is prepared, in all material respects, in accordance with the criteria included on Annex II (Reasonable assurance criteria regarding the compliance of Parex Resources Colombia AG Sucursal with the criteria included on the Greenhouse Gas Inventory Report and the results obtained), attached to this report, applied as explained in Note "P" to the GHG statement.

¹ The maintenance and integrity of the Parex Resources Inc. website (www.parexresources.com/en/), repository of the PDF version of the GHG statement, is the responsibility of the Company's Administration. The work carried out by PwC does not involve the consideration of these matters and, accordingly, PwC accepts no responsibility for any differences between the information presented on the website and in the 2022 GHG statement issued by the Company on which said assurance was made and the opinion was issued.



Parex Resources Colombia AG Sucursal
Independent practitioner's reasonable assurance report

Restriction on distribution and use

Our report has been prepared solely for the Board of Directors and Management of Parex Resources Inc. and its Subsidiaries for its presentation by the Management of Parex Resources Colombia AG Sucursal and is not to be used for any other purpose or to be distributed to any other parties. We permit the disclosure of this report within the 2022 GHG Statement, to enable the directors to demonstrate they have discharged their governance responsibilities by commissioning an independent assurance report in connection with the 2022 GHG Statement. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Board of Directors as a body of governance and the Management of Parex Resources Inc. for our work or this report save where terms are expressly agreed and with our prior consent in writing.

(Original in Spanish signed by:)

PricewaterhouseCoopers

A handwritten signature in black ink, appearing to read 'Jhon Alexander Pineda Mejía'.

Jhon Alexander Pineda Mejía
Accountant
Professional License No. 79093-T
PwC Contadores y Auditores S. A. S.
June 29, 2023



Greenhouse Gas (GHG) Emissions Inventory of Parex Resources Colombia AG Sucursal for the year ended on December 31, 2022

This statement contains the inventory of Greenhouse Gas (GHG) emissions or Carbon Footprint of the operations of Parex Resources Colombia AG Sucursal and Verano Energy (Switzerland) AG Branch (hereinafter the "Reporting Companies"), in accordance with the guidelines established in the Colombian Technical Standard ISO 14064-1:2006 "Greenhouse gases. Part 1: Specification with guidance, at the organization level, for the quantification and reporting of greenhouse gas emissions and removals".

GHG Emissions Inventory 2022	Emissions [tCO ₂ e]
Scope 1: Direct GHG emissions	180.136,44
Scope 2: Indirect GHG emissions	634,57
Scope 3: Other Indirect GHG emissions	3.659.267,35

The study includes production operations, drilling, civil works, facilities, marketing, administrative activities (Bogotá and Calgary), work-over and completion (WO_CO), seismic, environmental feasibility, and transportation of personnel and cargo (land and air) for the year ended on December 31, 2022.

Quantification criteria

The consolidation of the GHG inventory was carried out through the operational approach, in which all GHG emissions from operations over which the organization has total or partial control during execution are quantified. Thus, all locations that the reporting companies operate are included.

Scope

Direct and indirect emissions associated with the activities and facilities (offices and blocks) of the reporting companies are quantified, considering the following sources in each scope:

Scope 1 – Direct GHG emissions

- Electricity generation: fuel burning (diesel, gas, LPG, and crude oil)
- Land fuel burning for personnel – security area
- Gas leaks from operations refrigeration systems
- Flaring: tea gas
- Venting
- Other fugitive emissions: associated with leaks in valves and connection points.
- Refrigeration and stationary air conditioning.
- Fire extinguishers
- Fugitive emissions from oil and gas transportation in flow lines



Parex Resources Colombia AG Sucursal

Greenhouse Gas (GHG) Emissions Inventory of Parex Resources Colombia AG Sucursal
for the year ended on December 31, 2022

Scope 2 – Indirect GHG emissions

- Energy use of the Colombian interconnected system and Canadian energy system

Scope 3 – Other indirect GHG emissions

- Power generation plants
- Fuel transportation: Oil and gas
- Ground transportation of machinery
- Ground transportation of personnel.
- Air transport of personnel.
- Use of sold products
- Oil refining
- Pulp and paper industry
- Managed solid waste disposal sites.
- Wastewater treatment and disposal
- Fugitive emissions: transportation of crude oil
- Fugitive emissions: transportation of gas
- Refrigeration and stationary air conditioning.

Reasonable assurance criteria regarding the compliance of Parex Resources Colombia AG Sucursal with the criteria included on the Greenhouse Gas Inventory Report and the results obtained – 31 December 2022

Subject matter indicators (selected information)	Criteria
<p>Direct GHG emissions - Scope 1</p>	<p>The Company's Management includes in its Greenhouse Gas Inventory 2022 (hereinafter Inventory), the result of the quantification of its scope 1 GHG emissions generated within the framework of its activities, for the period covered from January 1 to December 31, 2022 (hereinafter, the year under review or the year under assurance), for the companies Parex Resources Colombia Ltd. Sucursal and Parex Verano Limited Sucursal (hereinafter the reporting companies), according to the methodology for estimating GHG emissions of the IPCC (2006) and under the guidelines of the Colombian Technical Standard ISO 14064-1, as presented below:</p> <p>Scope 1 of the inventory refers to the direct emissions generated by the production and administrative activities of the facilities within the organizational boundaries of the companies, reporting information on the operational areas (extraction blocks) and offices, in which activities associated with the emission of Greenhouse Gases (GHG) scope 1 of the reporting companies during the year under review are carried out, as follows:</p> <ul style="list-style-type: none"> • Oficina Yopal • Oficina Tame • Oficina Saravena • Oficina Bogota • Ofincina Tauramena • Bloque Cabrestero • Bloque Capachos • Bloque Los Ocarros • Bloque VIM-1 • Bloque Aguas Blancas • Bloque Llanos 26 • Bloque Llanos 30 • Bloque Llanos 32 • Bloque Llanos 40 • Bloque Fortuna • Bloque Boranda • Bloque Arauca

Subject matter indicators (selected information)	Criteria
	<p>This value is obtained by calculating the total direct GHG emissions, generated by the reporting companies, of Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O) and Hydrofluorocarbons (HCF), including R-22, R-410a and R4-22d, as established in the document "Informe Parex 2022.pdf", provided by the Sustainability Area. To calculate the emissions associated with each gas, the method is used which consists of combining the information on the extent to which a human activity takes place (called activity data or AD) with the coefficients that quantify the emissions or removals per unit activity, called emission factors (EF). Thus, the basic equation is:</p> <p style="text-align: center;">Emissions = AD * EF</p> <p>According to the above, Scope 1 emissions are calculated according to the following formula:</p> <p>Direct GHG emissions (Scope 1) in Tons of CO₂e = tons of CO₂ equivalent emissions from fuel combustion activities for electricity generation + tons of CO₂ equivalent emissions from emissions associated with gas flaring + tons of CO₂ equivalent emissions from emissions associated with venting + tons of CO₂ equivalent emissions from other fugitive emissions associated with leaks in valves and connection points + tons of CO₂ equivalent emissions from fugitive emissions from stationary refrigeration and air conditioning systems + tons of CO₂ equivalent emissions from fugitive emissions from crude oil and gas transportation in flow pipes.</p> <p>The elements included in the above formula are detailed below:</p> <ul style="list-style-type: none"> • Tons of CO₂ equivalent emissions from fuel burning activities for electricity generation: corresponds to the fuel consumption (diesel, crude oil, COESGEN, LPG and natural gas) used in the aforementioned operating areas, during the period under review, multiplied by the density, calorific value and emission factors included in Tables 2 and 4 presented in this criterion, as needed. These values have been defined by the Intergovernmental Panel on Climate Change (hereinafter IPCC, 2006) and the Colombian Fuel Emission Factors FECOC (2016) for each type of fuel. The emission factors are expressed in mass units per volumetric unit and are converted using the International Metric System and the references of the metrology unit of the Superintendence of Industry and Tourism of Colombia. The above information is established as presented in the documents "Informe Parex 2022.pdf" and "20230329 Calculos Inventario GEI 2022.xlsx", both managed by the Sustainability Area. <ul style="list-style-type: none"> • Oficina Tame • Bloque Cabrestero • Bloque Capachos • Bloque Aguas Blancas • Bloque Arauca • Bloque Llanos 26 • Bloque Llanos 30 • Bloque Llanos 32 • Bloque Llanos 40 • Bloque Los Ocarros • Bloque VIM 1 • Bloque Fortuna • Bloque Boranda

Subject matter indicators (selected information)	Criteria
	<p>The following formula is used to consolidate emissions from fuel combustion activities for energy generation in tons of CO2:</p> $\text{Tons of CO2 equivalent emissions} = \text{Ton CO2} + (\text{Ton CH4} * \text{PCG}) + (\text{Ton N2O} * \text{PCG})$ <ul style="list-style-type: none"> • Ton of CO2 equivalent emissions due to fugitive emissions from refrigeration and air conditioning systems corresponds to the values of leaks in refrigeration and air conditioning equipment used in production activities in the blocks concessioner to the reporting companies, which are mentioned below: <ul style="list-style-type: none"> • Oficina Yopal • Oficina Saravena • Bloque Llanos 26 • Bloque Llanos 30 • Bloque Llanos 32 • Bloque Llanos 40 • Bloque Cabrestero • Bloque Los Ocarros • Bloque Capachos • Bloque VIM 1 • Bloque Llanos 134 • Bloque Fortuna <p>For the estimation of emissions associated with refrigeration and air conditioning equipment, the average leakage of refrigerant gas reported by equipment manufacturers is considered, which corresponds to about 3% per year in commercial equipment with capacity between 0.5 and 100 kilograms of refrigerant, according to the IPCC 2016 guidelines. The calculation of emissions includes the number of equipment used in the aforementioned operational areas and corresponds to the leakage of each gas multiplied by the global warming potentials of each gas, as reported by the IPCC 2007, Dupont 2022 and the GHG Protocol, included in Table 4 presented in this criterion.</p> <p>For the consolidation of emissions in tons of CO2 equivalent, the following formula is applied:</p> $\text{Tons of CO2 equivalent emissions} = \text{Ton CO2} + (\text{Ton HFC R-22} * \text{PCG}) + (\text{Ton HFC R-410a} * \text{PCG}) + (\text{Ton HFC R-422d} * \text{PCG})$ <ul style="list-style-type: none"> • Ton of CO2 equivalent emissions associated with gas flaring: corresponds to the values of emissions from the flaring of the gas generated (in m3) in the extraction of crude oil, recorded in the COREX platform in the following fields:

Subject matter indicators (selected information)	Criteria
	<ul style="list-style-type: none"> • Bloque Llanos 26 • Bloque Llanos 30 • Bloque Llanos 32 • Bloque Llanos 40 • Bloque Aguas Blancas • Bloque Capachos • Bloque Boranda • Bloque Fortuna • Bloque VIM 1 • Bloque Los Ocarros <p>The calculation of emissions corresponds to the amount of gas flared multiplied by the emissions factor determined for each gas, included in Table 3, provided by the IPCC (2006) for the categories associated with fugitive emissions, as established in the documents "Informe Parex 2022.pdf" and "20230329 Calculos Inventario GEI 2022.xlsx", both managed by the Sustainability Area.</p> <p>For consolidation in tons of CO2 equivalent, the following formula is applied, using the global warming potentials established by the IPCC 2007, Dupont 2022 and the GHG Protocol, included in Table 4 presented in this criterion.</p> $\text{Tons of CO2 equivalent emissions} = \text{Ton CO2} + (\text{Ton CH4} \times \text{PCG}) + (\text{Ton N2O} \times \text{PCG})$ <ul style="list-style-type: none"> • Ton of CO2 equivalent emissions associated with venting: refers to the values of gas (m3) released into the atmosphere in the following blocks/fields of operation: <ul style="list-style-type: none"> • Bloque Capachos • Bloque Los Ocarros • Bloque VIM 1 • Bloque Aguas Blancas • Bloque Llanos 26 • Bloque Llanos 30 • Bloque Llanos 32 • Bloque Llanos 40 • Bloque Fortuna • Bloque Boranda • Bloque Cabrestero <p>The calculation of emissions corresponds to the annual values released of natural gas in the aforementioned operating areas, during the period under review, calculated using the API 2009 and EPA 2020 methodologies described in Resolution No. 40066 of February 11, 2022 by the Ministry of Mines and Energy of Colombia. Under these methodologies, only methane (CH4) emissions are considered as they are the most significant in quantity. The above is established in the documents Informe Parex 2022.pdf" and "20230329 Calculos Inventario GEI 2022.xlsx" managed by the Sustainability Area.</p>

Subject matter indicators (selected information)	Criteria
	<p>For consolidation in tons of CO2 equivalent, the following formula is applied, using the global warming potentials established by the IPCC 2007, Dupont 2022 and the GHG Protocol, included in Table 4 presented in this criterion.</p> $\text{Tons of CO2 equivalent emissions} = (\text{Ton CH4} \times \text{PCG})$ <ul style="list-style-type: none"> • Ton of CO2 equivalent emissions associated with leaks in valves and connection points (other process fugitive emissions): refer to leaks that occur in equipment, valves and seals during the production of gas and crude oil. The calculation corresponds to the amount of crude oil and gas produced (without taking into account consumed or burned quantities) that forego the productive processes and through the process plants as per the companies activities, as established in the documents "Informe Parex 2022.pdf" and "20230329 Calculos Inventario GEI 2022.xlsx", both managed by the Sustainability Area. <p>The blocks included in the calculation were the following:</p> <ul style="list-style-type: none"> • Bloque Capachos • Bloque Los Ocarros • Bloque Cabrestero • Bloque Boranda • Bloque VIM 1 • Bloque Aguas Blancas • Bloque Llanos 26 • Bloque Llanos 30 • Bloque Llanos 32 • Bloque Llanos 40 • Bloque Fortuna <p>To calculate leak emissions, the OGI and QOGI technologies described in Resolution No. 40066 of February 11, 2022 by the Colombian Ministry of Mines and Energy were used. Under these methodologies, only methane (CH4) emissions are considered, as they are the most significant in quantity. The foregoing as established in the documents "EMI_Reporte de inspección_PAREX_16FEB23.pdf", "Informe Parex 2022.pdf" and "20230329 GEI Inventory Calculations 2022.xlsx", managed by the Sustainability Area.</p> <p>For consolidation in tons of CO2 equivalent, the following formula is applied, using the global warming potentials established by the IPCC 2007, Dupont 2022 and the GHG Protocol, included in Table 4 presented in this criterion.</p> $\text{Tons of CO2 equivalent emissions} = \text{Ton CO2} + (\text{Ton CH4} \times \text{PCG})$ <ul style="list-style-type: none"> • Ton of CO2 equivalent emissions associated with the transportation of crude oil and gas in flow lines: refers to the values of leaks that occur in lines during the transportation of gas and crude oil from the production activities of the reporting companies.

Subject matter indicators (selected information)	Criteria																																			
	<p>The IPCC (2006) emission factors for gases associated with fugitive emissions presented in Table 3 of this criterion were used to estimate fugitive emissions. The blocks included in the calculation were the following:</p> <ul style="list-style-type: none"> • Bloque Aguas Blancas • Bloque Capachos • Bloque VIM 1 • Bloque Cabretero • Bloque Llanos 32 • Bloque Los Ocarros <p>This pending Include the source of emissions Diesel Mobile from land transport in the security area.</p> <p>The calculation of fugitive emissions generated in the transportation of crude oil and gas in flow lines corresponds to the multiplication of the determined emissions factor by the amount of gas (m3) or crude oil (barrels) transported. For the consolidation in tons of CO2 equivalent, the following formula is applied, using the global warming potentials established by the IPCC 2007, Dupont 2022 and the GHG Protocol, included in Table 4 presented in this criterion.</p> $\text{Tons of CO2 equivalent emissions} = \text{Ton CO2} + (\text{Ton CH4} * \text{PCG})$ <p>Considering all the emission sources described above, the gases included in the calculation correspond to the following:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #f4a460;">Emission source</th> <th style="background-color: #f4a460;">CO₂</th> <th style="background-color: #f4a460;">CH₄</th> <th style="background-color: #f4a460;">N₂O</th> <th style="background-color: #f4a460;">Refrigerant gases</th> </tr> </thead> <tbody> <tr> <td>Fuel combustion for electricity generation</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>Gas flares</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>Venting</td> <td></td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> <tr> <td>Fugitive emissions associated with leaks in valves and connection points</td> <td></td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> <tr> <td>Fugitive emissions from transport of crude oil and gas in flow lines</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> <tr> <td>Fugitive emissions from stationary refrigeration and air conditioning systems</td> <td></td> <td></td> <td></td> <td style="text-align: center;">✓</td> </tr> </tbody> </table> <p>Table 1. Greenhouse gases included in the calculations by source. * Refrigerant gases correspond to HFC M029, R-22 y R410a.</p>	Emission source	CO ₂	CH ₄	N ₂ O	Refrigerant gases	Fuel combustion for electricity generation	✓	✓	✓		Gas flares	✓	✓	✓		Venting		✓			Fugitive emissions associated with leaks in valves and connection points		✓			Fugitive emissions from transport of crude oil and gas in flow lines	✓	✓			Fugitive emissions from stationary refrigeration and air conditioning systems				✓
Emission source	CO ₂	CH ₄	N ₂ O	Refrigerant gases																																
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Fugitive emissions from stationary refrigeration and air conditioning systems				✓																																

Subject matter indicators (selected information)	Criteria					
	The emission factors, global warming potentials and conversion factors used in the calculations correspond to:					
	Fuel type	Density (Kg/L)	Net Calorific Value (TJ/Kg)	F.E. CO ₂ (Kg/Gal)	F.E. CH ₄ (g/Gal)	F.E. N ₂ O (g/Gal)
	Crude	0,94	0,0000406	11,282	0,030	0,006
	Diesel	0,86	42,149.66 KJ/Kg	10,277	0,010	0,06
	Gas	0,78 kg/m ³	35.65 MJ/m ³	1,980 kg/m ³	0,036 g/m ³	0,004 g/m ³
	GLP	0,54	99,22 MJ/m ³	4,692 kg/m ³	0,009 g/m ³	0,10 g/m ³
	Table 2. Emission factors, density and calorific value per fuel for stationary sources.					
	Category	FE CH ₄	FE CO ₂	FE N ₂ O	Unit	
	Transportation of crude oil in pipeline	0,0000054	0,00000049	N/A	Gg per 1.000 m3 oil transported through pipelines	
	Pipeline gas transportation	0,0000166	0,00000088	N/A	Gg per 1,000,000 m3 of marketable gas	
	Gas flaring	0.012	2	0,000023	Gg per 1,000,000 m3 of flared Gas	
	Table 3. Emission factors for fugitive emissions associated with flaring and oil and gas production and transportation.					

Subject matter indicators (selected information)	Criteria																										
	<table border="1"> <thead> <tr> <th style="background-color: #f4a460;">Gas</th> <th style="background-color: #f4a460;">Global warming potential</th> </tr> </thead> <tbody> <tr> <td>CO₂</td> <td>1 (IPCC, 2007)</td> </tr> <tr> <td>CH₄</td> <td>25 (IPCC, 2007)</td> </tr> <tr> <td>N₂O</td> <td>298 (IPCC, 2007)</td> </tr> <tr> <td>HFC: R-410a</td> <td>1725 (GHG Protocol, versión 1.0)</td> </tr> <tr> <td>HCFC: R-22</td> <td>1760 (GHG Protocol, versión 1.0)</td> </tr> <tr> <td>HFC: M029 (R-422D)</td> <td>2230 (GHG Protocol, versión 1.0)</td> </tr> </tbody> </table> <p>Table 4. Global warming potentials due to greenhouse gases.</p> <table border="1"> <thead> <tr> <th style="background-color: #f4a460;">Units</th> <th style="background-color: #f4a460;">Conversion</th> </tr> </thead> <tbody> <tr> <td>Gallon to liter</td> <td>3,78541</td> </tr> <tr> <td>KPC to m³</td> <td>28,31685</td> </tr> <tr> <td>Barrel to gallon</td> <td>42</td> </tr> <tr> <td>SPC to m³</td> <td>0,02831685</td> </tr> <tr> <td>Barrel to m³</td> <td>0,1589873</td> </tr> </tbody> </table> <p>Table 5. Unit conversion factors used in calculations.</p> <p>Additionally, the reporting of biogenic CO₂ emissions corresponds to the tons of CO₂ equivalent from the combustion of biofuels. These emissions are also reported separately from the gross value of emissions (in addition to being included in the total), as established by the IPCC (2006), and biogenic emissions of other types of GHGs (such as CH₄ and N₂O) are excluded. In this case, diesel and gasoline are marketed in Colombia with an approximate 10% biofuel content, so the calculation of biogenic emissions corresponds to the total emissions from burning CO₂ in fuels for energy generation, multiplied by 10% as established in the documents "Informe Parex 2022.pdf" and "20230329 Calculos Inventario GEI 2022.xlsx", both managed by the Sustainability Area.</p>	Gas	Global warming potential	CO ₂	1 (IPCC, 2007)	CH ₄	25 (IPCC, 2007)	N ₂ O	298 (IPCC, 2007)	HFC: R-410a	1725 (GHG Protocol, versión 1.0)	HCFC: R-22	1760 (GHG Protocol, versión 1.0)	HFC: M029 (R-422D)	2230 (GHG Protocol, versión 1.0)	Units	Conversion	Gallon to liter	3,78541	KPC to m ³	28,31685	Barrel to gallon	42	SPC to m ³	0,02831685	Barrel to m ³	0,1589873
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Barrel to m ³	0,1589873																										

Subject matter indicators (selected information)	Criteria																
	<p>The base year for the calculation is 2019, a decision made by the company in order to have a reference year for the future. In addition, it is understood that there were no significant changes that imply new calculations of the base year emissions.</p> <p>The reporting company considers operational control as an approach to consolidate emissions. Such operational limits are defined in the table below and are related to the sources of emissions described above, as established in the document "Informe Parex 2022.pdf", managed by the Sustainability Area.</p> <table border="1" data-bbox="744 500 2204 1338"> <thead> <tr> <th data-bbox="744 500 1473 558">Activities of the organization</th> <th data-bbox="1473 500 2204 558">Associated emission source</th> </tr> </thead> <tbody> <tr> <td data-bbox="744 558 1473 797" rowspan="4">Administrative activities</td> <td data-bbox="1473 558 2204 617">Air conditioning in operations</td> </tr> <tr> <td data-bbox="1473 617 2204 675">Fire extinguishers</td> </tr> <tr> <td data-bbox="1473 675 2204 734">Gas consumption</td> </tr> <tr> <td data-bbox="1473 734 2204 792">Diesel Mobile Consumption</td> </tr> <tr> <td data-bbox="744 797 1473 1338" rowspan="8">Oil and gas production</td> <td data-bbox="1473 797 2204 855">Stationary diesel consumption</td> </tr> <tr> <td data-bbox="1473 855 2204 914">Gas consumption</td> </tr> <tr> <td data-bbox="1473 914 2204 972">Crude oil consumption</td> </tr> <tr> <td data-bbox="1473 972 2204 1031">LPG consumption</td> </tr> <tr> <td data-bbox="1473 1031 2204 1089">Flaring</td> </tr> <tr> <td data-bbox="1473 1089 2204 1148">Venting</td> </tr> <tr> <td data-bbox="1473 1148 2204 1206">Fugitive emissions from gas and crude oil production (valves and connection points)</td> </tr> <tr> <td data-bbox="1473 1206 2204 1338">Fugitive emissions from gas and crude oil pipe transportation</td> </tr> </tbody> </table> <p data-bbox="744 1338 1857 1373">Table 6. Activities and emission sources associated with the organization's direct, or Scope 1, emissions.</p>	Activities of the organization	Associated emission source	Administrative activities	Air conditioning in operations	Fire extinguishers	Gas consumption	Diesel Mobile Consumption	Oil and gas production	Stationary diesel consumption	Gas consumption	Crude oil consumption	LPG consumption	Flaring	Venting	Fugitive emissions from gas and crude oil production (valves and connection points)	Fugitive emissions from gas and crude oil pipe transportation
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	Fugitive emissions from gas and crude oil production (valves and connection points)																
	Fugitive emissions from gas and crude oil pipe transportation																

Subject matter indicators (selected information)	Criteria
	<p>Finally, in relation to the uncertainty calculation associated with the source, the methodology of the IPCC 2006 is used according to the Conceptual Basis for Uncertainty Analysis and the uncertainties associated with the default values reported for each data (data generated in other investigations) that were used. The total uncertainty for the total inventory was estimated according to the following equation (IPIECA 2011):</p> $= \frac{\sqrt{(A \times a)^2 + (B \times b)^2 + \dots + (N \times n)^2}}{T}$ <p>Where: t: Total uncertainty T: Total greenhouse gas emissions. A=category A emissions, a=uncertainty of category A emissions, b=uncertainty of category B emissions. B=category B emissions, b=uncertainty of category B emissions, N=emissions of category N, n=uncertainty of category N emissions</p> <p>The scope of the assurance work is limited to the cross-checking of the information reported in the GHG Inventory, in relation to the sources mentioned in the criterion, provided by the Sustainability Area (which consolidates this information from the records and reports of the other areas of the companies); to the validation, on a sample basis, of the existence of source data for the calculation; and the recalculation of the final values according to the formulas established in the criterion and based on the information included in said sources, for the selected samples; and does not include the evaluation of the reasonableness or suitability of the sources, emission factors, calorific values, densities and global warming potentials mentioned in the criterion, the evaluation of the integrity of the information sources used for the calculation in the year under review, nor the evaluation of the occurrence of the events that gave rise to the report.</p>

Subject matter indicators (selected information)	Criteria
<p>Indirect GHG emissions - Scope 2</p>	<p>The Company's Management includes in its Greenhouse Gas Inventory 2021 (hereinafter Inventory), the result of the quantification of its scope 2 GHG emissions generated in the framework of its activities, for the period from January 1 to December 31, 2020 (hereinafter, the year under review or the year under assurance), for the Companies Parex Resources Colombia Ltd. Sucursal, Parex Verano Limited Sucursal and Parex Resources Inc. (hereinafter the reporting companies), according to the methodology for estimating GHG emissions of the IPCC (2006), under the guidelines of the Colombian Technical Standard ISO 14064-1, and complemented with the definitions established by management, as presented below:</p> <p>Scope 2 of the inventory refers to indirect emissions from the external generation of electricity that is consumed within the organization, as part of the operational and administrative activities of the facilities within the boundaries of the reporting companies. The following emission sources are identified:</p> <ul style="list-style-type: none"> • Colombia's National Interconnected System: corresponds to energy consumption in kWh from the electricity grid, which is generated mainly in hydroelectric and thermoelectric plants, for the following locations in Colombian territory. Emissions due to energy losses in the electric power transmission network are not included. <ul style="list-style-type: none"> a. Oficina Bogotá b. Oficina Yopal c. Oficina Tame d. Oficina Tauramena e. Oficina Barrancabermeja f. Oficina Saravena g. Bloque Aguas Blancas h. Bloque Capachos i. Bloque Arauca j. Bloque Cabrestero • National Energy System of Canada: corresponds to energy consumption in kWh from the electricity grid, which is generated mainly in thermoelectric plants, for the following locations in the city of Calgary. Emissions from energy losses in the power transmission grid are not included. <ul style="list-style-type: none"> a. Oficina Calgary <p>The total value of scope 2 GHG emissions corresponds to the sum of the total indirect GHG emissions calculated for each emission source through the application of the following formula:</p> $\text{Indirect GHG emissions (Scope 2) in tons of CO}_2\text{e} = \text{tons of CO}_2\text{ equivalent emissions from electricity consumption of the National Interconnected System of Colombia} + \text{tons of CO}_2\text{ equivalent emissions from electricity consumption of the National Energy System of Canada}$ <p>The gases included in the calculation of direct GHG emissions are: Carbon Dioxide (CO₂) and, additionally, for the case of Canada, Methane (CH₄) and Nitrous Oxide (N₂O). In the GHG estimation, the emission factors provided by the entities responsible for such information were used. In the case of Colombia, the emission factor corresponds to that reported by the Mining and Energy Planning Unit (UPME) in 2020 for the National Interconnected System. In the case of the Calgary office, the emission factors correspond to those reported by the Canadian Government in the National Greenhouse Gas report. This information is presented in the following table:</p>

Subject matter indicators (selected information)	Criteria			
		Emission factor CO ₂	Emission factor CH ₄	Emission factor N ₂ O
National Interconnected System of Colombia (UPME)	0,126 kg CO ₂ /kWh	-	-	
National Energy System of Canada (Canadian Government)	140 gr CO ₂ /kWh	0,01 gr CH ₄ /kWh	0,003 gr N ₂ O/kWh	

Table 7. Emission factors associated with electric power consumption by country used in the calculations

The calculation of the emissions generated corresponds, then, to the multiplication of the emissions factor determined for each gas by the value of electric energy consumption. For the consolidation in tons of CO₂ equivalent, the emissions generated for each gas are added once each of these is multiplied by the Global Warming Potential (GWP) of the gas. The potentials for each gas are presented in Table 4 of this document.

The reporting company considers operational control as an approach to consolidate emissions. The above is presented in accordance with the provisions of the Greenhouse Gas Inventory 2022 of the reporting companies, which can be found in the document "Informe Parex 2022.pdf", as well as the detail of the calculations presented in the file "20230329 Calculos Inventario GEI 2022.xlsx", where the Emission Factors (EF), Global Warming Potentials and consumption data and other data used for the estimation of emissions can be found. Both documents are managed by the Sustainability Area.

The scope of the assurance work is limited to cross-checking the information reported in the Inventory against the sources mentioned in the criterion, provided by the Sustainability Area, to the validation and recalculation of the formulas established in the criterion based on the information included in those sources, and does not include the evaluation of the reasonableness of the recalculation of the sources mentioned in the criterion, nor the evaluation of the occurrence of the events that gave rise to the report.

Subject matter indicators (selected information)	Criteria
Other indirect GHG emissions - Scope 3	<p>The Company's Management includes in its Greenhouse Gas Inventory 2021 (hereinafter Inventory), the result of the quantification of its scope 3 GHG emissions generated within the framework of its activities, for the period from January 1 to December 31, 2020 (hereinafter, the year under review or the year under assurance), for the Companies Parex Resources Colombia Ltd. Sucursak, Parex Verano Limited Sucursal and Parex Resources Inc. (hereinafter the reporting companies), according to the methodology for estimating GHG emissions of the IPCC (2006) and under the guidelines of the Colombian Technical Standard ISO 14064-1, as presented below:</p> <p>Scope 3 of the inventory refers to other indirect emissions included based on the needs of the reporting companies and are directly related to their operations in the areas of production, drilling, civil works, facilities, seismic, environmental impact studies, workover-completion (WO/CO), marketing, transportation and administrative offices in Colombia and Canada. These locations are detailed below:</p> <ul style="list-style-type: none"> • Oficina Bogotá • Oficina Yopal • Oficina Tame • Oficina Barrancabermeja • Oficina Tauramena • Oficina Saravena • Oficina Calgary • Bloque Aguas Blancas • Bloque Arauca • Bloque Boranda • Bloque Cabrestero • Bloque Capachos • Bloque Fortuna • Bloque Llanos 122 • Bloque Llanos 134 • Bloque Llanos 16 • Bloque Llanos 24 • Bloque Llanos 26 • Bloque Llanos 30 • Bloque Llanos 32 • Bloque Llanos 40 • Bloque Llanos 81 • Bloque Llanos 94 • Bloque Los Ocarros • Bloque Sogamoso • Bloque VIM 43 • Bloque VIM 1 • Bloque VSM 37

Subject matter indicators (selected information)	Criteria
	<p>The total value of scope 3 GHG emissions corresponds to the sum of the total of other indirect GHG emissions calculated for each emission source through the application of the following formula:</p> <p>Other indirect GHG emissions (Scope 3) in tons of CO₂e = Ton of CO₂ equivalent emissions from fuel combustion activities of third parties + Ton of CO₂ equivalent emissions from fugitive emissions from refrigeration and air conditioning systems of third parties + Ton of CO₂ equivalent emissions from fuel transportation + Ton of CO₂ equivalent emissions from air transportation of personnel + Ton of CO₂ equivalent emissions from ground transportation of personnel + Ton of CO₂ equivalent emissions from transportation of machinery + Ton of CO₂ emissions equivalent for the use of paper + Ton of CO₂ emissions equivalent for the treatment and disposal of wastewater + Ton of CO₂ emissions equivalent for the handling and treatment of solid waste + Ton of CO₂ emissions equivalent for fugitive emissions associated with the transport of crude oil + Ton of CO₂ emissions equivalent for fugitive emissions associated with the transport of gas + Ton of CO₂ emissions equivalent for the refining of the crude oil produced + Ton of CO₂ emissions equivalent for the use of sold products</p> <p>The elements included in the above formula are detailed below:</p> <p>I. Third party fuel combustion: corresponds to the consumption of fuel (Diesel) used in Workover/Completion (WO/CO) activities, Facilities, drilling and administrative offices belonging to the reporting companies during the period under review, the detail of such facilities is presented below:</p> <ul style="list-style-type: none"> • WO/CO: <ul style="list-style-type: none"> a. Bloque Aguas Blancas b. Bloque Boranda c. Bloque Cabrestero d. Bloque Capachos e. Bloque Fortuna f. Bloque Llanos 26 g. Bloque Llanos 32 h. Bloque Llanos 40 i. Bloque Llanos 94 j. Bloque Los Ocarros k. Bloque VIM1

Subject matter indicators (selected information)	Criteria
	<ul style="list-style-type: none"> • Facilites: <ul style="list-style-type: none"> a. Bloque Cabrestero b. Bloque Capachos c. Bloque Llanos 40 d. Bloque VIM 1 • Drilling: <ul style="list-style-type: none"> a. Bloque Arauca b. Bloque Boranda c. Bloque Cabrestero d. Bloque Capachos e. Bloque Fortuna f. Bloque Llanos 134 g. Bloque Llanos 26 h. Bloque Llanos 40 i. Bloque Llanos 94 j. Bloque VIM 43 k. Bloque VIM 1 • Administrative: Oficina Calgary (Emissions associated with the administrative charge for the use of Gas for Heating) <p>The gases included in the calculation of indirect GHG emissions from fuel combustion are: Carbon Dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O). In the estimation, CO₂ emission factors, density and caloric values provided by IPCC (2006) and FECOC (2016) fuel emission factors for each type of fuel were used as a basis for calculation.</p> <p>The calculation of the value of indirect emissions from the combustion of third-party fuels corresponds to the multiplication of the emissions factor determined for each gas by the fuel consumption value. For the consolidation in tons of CO₂ equivalent, the emissions generated for each gas are added once each of these is multiplied by the Global Warming Potential (GWP) of the gas. The factors and potentials used are included in Tables 2 and 4 presented in the Scope 1 indicator criteria.</p> II. Fugitive emissions from third party refrigeration and air conditioning systems: refers to leakage values in refrigeration and air conditioning equipment used in Workover/Completion (WO/CO) activities, drilling and administrative offices belonging to the reporting companies during the period under review, the detail of such facilities is presented below:

Subject matter indicators (selected information)	Criteria
	<ul style="list-style-type: none"> • Drilling: <ul style="list-style-type: none"> a. Bloque Cabrestero b. Bloque VIM 1 c. Bloque Fortuna d. Bloque Capachos e. Bloque Llanos 134 • Administrative: <ul style="list-style-type: none"> a. Oficina Saravena b. Oficina Yopal <p>The gases included in the calculation of indirect GHG emissions associated with refrigeration and air conditioning equipment are hydrofluorocarbons (HFCs) and hydrochlorofluorocarbons (HCFCs), including refrigerants R-22, R-410a and R-422d. To estimate emissions, the average leakage of refrigerant gas reported by equipment manufacturers was considered, where it is averaged that about 3% of the gas is lost each year in commercial equipment with capacity between 0.5 and 100 kilograms of refrigerant. The number of equipment and type of gas used in the above activities during the period under review is considered. For the calculation, corresponding to the multiplication of the factor determined for each gas by the amount of gas leakage to obtain the CO2e value, the global warming potential data included in Table 4 of the Scope 1 indicator criteria were used.</p> <p>III. Fuel transportation (crude oil and gas): refers to the fuel consumption of vehicles used by third parties to transport crude oil and gas produced by the reporting companies during the period under review, calculated based on the performance values according to the type of vehicle and kilometers traveled. The areas that report and are included in the calculation are as follow:</p> <ul style="list-style-type: none"> • Production: <ul style="list-style-type: none"> a. Bloque Aguas Blancas b. Bloque Boranda c. Bloque Cabrestero d. Bloque Capachos e. Bloque Fortuna f. Bloque Llanos 122 g. Bloque Llanos 26 h. Bloque Llanos 30 i. Bloque Llanos 32 j. Bloque Llanos 40 k. Bloque Los Ocarros l. Bloque VIM 1

Subject matter indicators (selected information)	Criteria																																										
	<p>The gases included in the calculation of indirect GHG emissions associated with fuel transportation are: Carbon Dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O). CO₂ emission factors, density and calorific values from FECOC (2016) for diesel and natural gas were used to estimate emissions. Methane and nitrous oxide emission factors were taken from IPCC (2006) for diesel and jet fuel, which are presented in the following table:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #f4a460;">Fuel Type</th> <th style="background-color: #f4a460;">Density (Kg/l)</th> <th style="background-color: #f4a460;">Net calorific value (TJ/Kg)</th> <th style="background-color: #f4a460;">FE CO₂ (Kg/Gal)</th> <th style="background-color: #f4a460;">FE CH₄ (g/Gal)</th> <th style="background-color: #f4a460;">FE N₂O (g/Gal)</th> </tr> </thead> <tbody> <tr> <td>Diesel B10 / mobile (light vehicle)</td> <td>0,86</td> <td>42.149,66 KJ/kg</td> <td>10,27 Kg/Gal</td> <td>0,037 g/Gal</td> <td>0,037 g/Gal</td> </tr> <tr> <td>Diesel B10 / Mobile (heavy vehicle)</td> <td>0,86</td> <td>42.149,66 KJ/kg</td> <td>10,27 Kg/Gal</td> <td>0,037 g/Gal</td> <td>0,037 g/Gal</td> </tr> <tr> <td>Gasoline / Mobile (light vehicle)</td> <td>0,74</td> <td>0,000045329 TJ/Kg</td> <td>8,808 Kg/Gal</td> <td>0,293 g/Gal</td> <td>0,028 g/Gal)</td> </tr> <tr> <td>Gasoline / Mobile (heavy vehicle)</td> <td>0,74</td> <td>0,000045329 TJ/Kg</td> <td>8,808 Kg/Gal</td> <td>0,293 g/Gal</td> <td>0,028 g/Gal)</td> </tr> <tr> <td>JET fuel A1 / mobile</td> <td>0,83</td> <td>3,55769E-05 TJ/Kg</td> <td>9,84 Kg/Gal</td> <td>0,5 kg/TJ</td> <td>2 kg/TJ</td> </tr> <tr> <td>Natural gas vehicle</td> <td>-</td> <td>-</td> <td>1,98 kg/m³</td> <td>3,28 g/m³</td> <td>0,107 g/m³</td> </tr> </tbody> </table> <p style="text-align: center;">Table 8. Emission factors, fuel density and calorific value per fuel for mobile sources.</p> <p>For consolidation in tons of CO₂ equivalent, the emissions generated for each gas are summed once each of these is multiplied by the Global Warming Potential (GWP) of the gas. The potentials for Carbon Dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O) are previously mentioned in Table 4 presented in the Scope 1 indicator criteria.</p> <p>IV. Air and ground transportation of personnel: refers to fuel consumption of vehicles used for ground and air transportation of personnel of the reporting companies during the period under review. Emissions from private or public ground transportation of employees in Bogotá were not calculated. The values reported are grouped under the following categories presented below:</p> <ul style="list-style-type: none"> • (This is from scope 1) Ground transportation of personnel from all fields in operation in buses and vans. • Ground transportation associated with the mobilizations to carry out environmental feasibility activities in the blocks: <ol style="list-style-type: none"> a. Bloque Fortuna b. Bloque Llanos 40 c. Bloque VIM 43 d. Bloque Cabrestero e. Bloque Llanos 26 f. Bloque VIM 1 g. Bloque VSM 37 h. Bloque Llanos 16 i. Bloque Llanos 122 	Fuel Type	Density (Kg/l)	Net calorific value (TJ/Kg)	FE CO ₂ (Kg/Gal)	FE CH ₄ (g/Gal)	FE N ₂ O (g/Gal)	Diesel B10 / mobile (light vehicle)	0,86	42.149,66 KJ/kg	10,27 Kg/Gal	0,037 g/Gal	0,037 g/Gal	Diesel B10 / Mobile (heavy vehicle)	0,86	42.149,66 KJ/kg	10,27 Kg/Gal	0,037 g/Gal	0,037 g/Gal	Gasoline / Mobile (light vehicle)	0,74	0,000045329 TJ/Kg	8,808 Kg/Gal	0,293 g/Gal	0,028 g/Gal)	Gasoline / Mobile (heavy vehicle)	0,74	0,000045329 TJ/Kg	8,808 Kg/Gal	0,293 g/Gal	0,028 g/Gal)	JET fuel A1 / mobile	0,83	3,55769E-05 TJ/Kg	9,84 Kg/Gal	0,5 kg/TJ	2 kg/TJ	Natural gas vehicle	-	-	1,98 kg/m ³	3,28 g/m ³	0,107 g/m ³
Fuel Type	Density (Kg/l)	Net calorific value (TJ/Kg)	FE CO ₂ (Kg/Gal)	FE CH ₄ (g/Gal)	FE N ₂ O (g/Gal)																																						
Diesel B10 / mobile (light vehicle)	0,86	42.149,66 KJ/kg	10,27 Kg/Gal	0,037 g/Gal	0,037 g/Gal																																						
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Natural gas vehicle	-	-	1,98 kg/m ³	3,28 g/m ³	0,107 g/m ³																																						

Subject matter indicators (selected information)	Criteria
	<ul style="list-style-type: none"> • Consolidation of national air transport under the Bogota Office (Commercial and private charter and helicopter flights). • Consolidated international air transport under the Calgary Office <p>The gases included in the calculation of indirect GHG emissions associated with the transportation of personnel by land and air are: Carbon Dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O). CO₂ emission factors, density, and caloric values from FECOC (2016) were used to estimate emissions. Methane and nitrous oxide emission factors were taken from IPCC (2006) for each type of fuel (diesel and aviation fuel), which are presented in Table 8 of numeral III of this criterion.</p> <p>Specifically, for emissions related to airflights attributed to the Calgary and Bogotá Offices, the volumetric consumption of aviation fuel pertaining to the number of Parex passengers in the flight, and calculated as the amount of gallons consumed in the flight (from the total flight kilometers, divided by a fuel efficiency of 2,92 km/gal), multiplied by the proportion of Parex passengers in the flight.</p> <p>The calculation of the value of indirect GHG emissions from the transportation of personnel took into account the record of kilometers traveled, flight hours and air tickets purchased (origin and destination) and the associated fuel gallon consumption. For the consolidation in tons of CO₂ equivalent, the emissions generated for each gas are added once each of these is multiplied by the Global Warming Potential (GWP) of the gas. The potentials for Carbon Dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O) are previously mentioned in Table 4 presented in the Scope 1 indicator criteria.</p> <p>V. Transportation of machinery: refers to the fuel consumption of vehicles used in the transportation of machinery during the period under review. The areas and facilities that report and are included in the calculation are presented below:</p> <ul style="list-style-type: none"> • Production, are categorized by vehicles and machinery • WO/CO on the following blocks: <ul style="list-style-type: none"> a. Bloque Cabrestero b. Bloque Llanos 26 c. Bloque Llanos 32 d. Bloque Llanos 40 e. Bloque Los Ocarros • Drilling on the following: <ul style="list-style-type: none"> a. Bloque Arauca b. Bloque Boranda c. Bloque Cabrestero d. Bloque Capachos e. Bloque Fortuna f. Bloque Llanos 134 g. Bloque Llanos 26 h. Bloque Llanos 40 i. Bloque Llanos 94 j. Bloque VIM 43 k. Bloque VIM 1

Subject matter indicators (selected information)	Criteria
	<ul style="list-style-type: none"> • Civil works on the following: <ul style="list-style-type: none"> a. Bloque Arauca b. Bloque Boranda c. Bloque Cabrestero d. Bloque Capachos e. Bloque Aguas Blancas f. Bloque Fortuna g. Bloque Llanos 122 h. Bloque Llanos 134 i. Bloque Llanos 26 j. Bloque Llanos 30 k. Bloque Llanos 32 l. Bloque Llanos 40 m. Bloque Llanos 94 n. Bloque Los Ocarros o. Bloque Sogamoso p. Bloque VIM 1 q. Bloque VIM 43 • Facilities in the following: <ul style="list-style-type: none"> a. Bloque Cabrestero b. Bloque Capachos c. Bloque Llanos 40 d. Bloque VIM 1 • Environmental feasibility activities in the blocks: <ul style="list-style-type: none"> a. Bloque Cabrestero b. Bloque Fortuna c. Bloque Llanos 122 d. Bloque Llanos 134 e. Bloque Llanos 16 f. Bloque Llanos 26 g. Bloque Llanos 40 h. Bloque VIM 43 i. Bloque VIM 1 j. Bloque VSM 37 • Seismic in the blocks: • Bloque VIM 43 <p>The gases included in the calculation of indirect GHG emissions associated with the transportation of are: Carbon Dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O). CO₂ emission factors, density and caloric values from FECOC (2016) were used to estimate emissions. Methane and nitrous oxide emission factors were taken from IPCC (2006) for diesel fuel, which are presented in Table 8 of numeral III of this criterion.</p>

Subject matter indicators (selected information)	Criteria																
	<p>The calculation of the value of indirect GHG emissions from machinery transport takes into account the performance values according to the type of vehicle and the kilometers traveled to obtain the gallons of fuel used. For the consolidation in tons of CO2 equivalent, the emissions generated for each gas are added once each of these is multiplied by the Global Warming Potential (GWP) of the gas. The potentials for Carbon Dioxide (CO2), Methane (CH4) and Nitrous Oxide (N2O) are previously mentioned in Table 4 presented in the Scope 1 indicator criteria.</p> <p>The fuel efficiencies of the different vehicles included in the calculation correspond to:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #f4a460;">Vehicle type</th> <th style="background-color: #f4a460;">Performance (km/galón)</th> </tr> </thead> <tbody> <tr> <td>Truck</td> <td>35</td> </tr> <tr> <td>Lorry</td> <td>11</td> </tr> <tr> <td>Tanker</td> <td>7</td> </tr> <tr> <td>Bus</td> <td>17,7</td> </tr> <tr> <td>Commercial aircraft (A320)</td> <td>4,13</td> </tr> <tr> <td>Loader</td> <td>14,5</td> </tr> <tr> <td>Crane</td> <td>14,5</td> </tr> </tbody> </table> <p style="text-align: center;">Table 9. Vehicle fuel efficiencies.</p> <p>VI. Use of paper: refers to the amount of paper (in kilograms) used for the administrative activities of the reporting companies during the period under review, the facilities included in the calculation are presented below:</p> <ul style="list-style-type: none"> • Oficina Bogotá • Oficina Calgary <p>The GHG estimate for paper use was calculated with the records of paper purchases made during the period considered in this inventory. In this case, the Bogotá office is the one that consolidates the total paper consumption for the different offices located in the country.</p> <p>The emission factor used in the calculation of indirect GHG emissions from the use of paper is 1.05 t CO2e per ton of paper. This value corresponds to the EF reported for a paper production industry that is supplied from forests planted for this purpose (Silva et al, 2015). The calculation of the value of emissions associated with the use of paper corresponds to the multiplication of the emissions factor indicated by the total amount of paper purchased in the administrative offices during the period under review.</p>	Vehicle type	Performance (km/galón)	Truck	35	Lorry	11	Tanker	7	Bus	17,7	Commercial aircraft (A320)	4,13	Loader	14,5	Crane	14,5
Vehicle type	Performance (km/galón)																
Truck	35																
Lorry	11																
Tanker	7																
Bus	17,7																
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Crane	14,5																

Subject matter indicators (selected information)	Criteria
	<p>VII. Wastewater treatment and disposal: refers to the total volume of wastewater generated in the production areas, administrative activities, drilling, WO/CO, facilities and civil works of the reporting companies during the period under review.</p> <p>To estimate the total volume of wastewater (industrial and domestic) produced, the wastewater delivery record (barrels) for treatment and final disposal in the fields that have such records is considered. In the other fields and administrative offices, the volume of wastewater generated is calculated based on the number of workers in each area, the number of days worked and the averages of daily protein consumption and generation of degradable organic matter reported by the IDEAM (2015) for the population of Colombia.</p> <p>The details of these facilities are presented below:</p> <ul style="list-style-type: none"> • Production: corresponds to the total barrels of wastewater delivered to third parties for treatment and final disposal in the blocks: <ul style="list-style-type: none"> a. Bloque Aguas Blancas b. Bloque Boranda c. Bloque Cabrestero d. Bloque Capachos e. Bloque Fortuna f. Bloque Llanos 26 g. Bloque Llanos 30 h. Bloque Llanos 32 i. Bloque Llanos 40 j. Bloque Los Ocarros k. Bloque VIM1 • Drilling: corresponds to the total barrels of wastewater delivered to third parties for treatment and final disposal in the blocks: <ul style="list-style-type: none"> a. Bloque Boranda b. Bloque Cabrestero c. Bloque Capachos d. Bloque Fortuna e. Bloque Llanos 134 f. Bloque Llanos 40 g. Bloque Llanos 94 h. Bloque VIM1

Subject matter indicators (selected information)	Criteria
	<ul style="list-style-type: none"> • WO/CO: corresponds to the total barrels of wastewater delivered to third parties for treatment and final disposal in the blocks: <ul style="list-style-type: none"> a. Bloque Aguas Blancas b. Bloque Boranda c. Bloque Cabrestero d. Bloque Capachos e. Bloque Fortuna f. Bloque Llanos 26 g. Bloque Llanos 32 h. Bloque Llanos 40 i. Bloque Llanos 94 j. Bloque Los Ocarros k. Bloque VIM1 • Civil works: calculated from the total man hours in the blocks: <ul style="list-style-type: none"> a. Bloque Aguas Blancas b. Bloque Arauca c. Bloque Boranda d. Bloque Cabrestero e. Bloque Capachos f. Bloque Fortuna g. Bloque Llanos 122 h. Bloque Llanos 134 i. Bloque Llanos 26 j. Bloque Llanos 32 k. Bloque Llanos 40 l. Bloque Llanos 94 m. Bloque Sogamoso n. Bloque VIM 43 o. Bloque VIM1

Subject matter indicators (selected information)	Criteria
	<ul style="list-style-type: none"> • Facilities: corresponds to the total barrels of wastewater delivered to third parties for treatment and final disposal in the blocks: <ul style="list-style-type: none"> a. Bloque Cabretero b. Bloque Capachos c. Bloque Llanos 40 d. Bloque VIM1 • Administrative Offices: Bogotá <p>For the calculation of GHG associated with the discharge of water in sewage and wastewater treatment in WWTPs, we initially estimate the amount of methane (CH4) and nitrous oxide (N2O) produced as a result of the degradation of organic matter present in the wastewater.</p> <p>In the case of water discharged to sewage, data on the amount of nitrogen in protein (0.16 kg nitrogen/kg protein) and the approximate amount of protein consumed by a Colombian (23.36 kg/person/year; IDEAM, 2015) are used to estimate nitrous oxide emissions. This information was multiplied by the emission factor 0.005 kg N2O-N/kg N. For methane, averages of degradable organic matter - Biochemical Oxygen Demand (BOD) (38.4 g/person/day) were used (IDEAM, 2015). Considering the receiving body of these waters, a methane correction factor of 0.3 (MFC) was used (IPCC, 2006). The maximum methane production factor 0.6 kg CH4/ kg BOD (IPCC, 2006) was considered and an additional factor was included for the discharge of waste with protein from the casino of the different locations (1,25).</p> <p>The following variables and emission factors were used to estimate the emissions associated with the wastewater treatment plants: 3 kg COD/m3 (chemical oxygen demand/m3), 0.25 kg CH4/kg COD (maximum methane production capacity) and a correction factor of 0.05 (MFC) associated with the treatment system (WWTP).</p> <p>The calculation of the value of indirect GHG emissions from wastewater treatment corresponds to the multiplication of the emission factor determined for each gas by the total volume of wastewater generated. For the consolidation in tons of CO2 equivalent, the emissions generated for each gas are added once each of these is multiplied by the Global Warming Potential (GWP) of the gas. The potentials for Methane (CH4) and Nitrous Oxide (N2O) are previously mentioned in Table 4 presented in the Scope 1 indicator criteria.</p>

Subject matter indicators (selected information)	Criteria
	<p>VIII. Management and treatment of solid waste: refers to the total volume of solid waste generated in the production, drilling, WO/CO, seismic, facilities and civil works areas, as well as in the administrative headquarters, of the reporting companies during the period under review. The detail of these areas and facilities is presented below:</p> <ul style="list-style-type: none"> • Production: corresponds to waste generated in the blocks: <ul style="list-style-type: none"> a. Bloque Aguas Blancas b. Bloque Boranda c. Bloque Cabrestero d. Bloque Capachos e. Bloque Fortuna f. Bloque Llanos 26 g. Bloque Llanos 30 h. Bloque Llanos 32 i. Bloque Llanos 40 j. Bloque VIM1 • Civil works: corresponds to waste generated in the blocks: <ul style="list-style-type: none"> a. Bloque Aguas Blancas b. Bloque Arauca c. Bloque Boranda d. Bloque Cabrestero e. Bloque Capachos f. Bloque Fortuna g. Bloque Llanos 134 h. Bloque Llanos 16 i. Bloque Llanos 24 j. Bloque Llanos 26 k. Bloque Llanos 32 l. Bloque Llanos 40 m. Bloque VIM 43 n. Bloque VIM1

Subject matter indicators (selected information)	Criteria
	<ul style="list-style-type: none"> • WO/CO: corresponds to waste generated in the blocks: <ul style="list-style-type: none"> a. Bloque Aguas Blancas b. Bloque Boranda c. Bloque Cabrestero d. Bloque Capachos e. Bloque Fortuna f. Bloque Llanos 26 g. Bloque Llanos 32 h. Bloque Llanos 94 i. Bloque Los Ocarros • Drilling: corresponds to waste generated in the blocks: <ul style="list-style-type: none"> a. Bloque Boranda b. Bloque Cabrestero c. Bloque Capachos d. Bloque Fortuna e. Bloque Llanos 134 f. Bloque Llanos 40 g. Bloque Llanos 94 h. Bloque VIM1 • Facilities: corresponds to waste generated in the blocks: <ul style="list-style-type: none"> a. Bloque Cabrestero b. Bloque Capachos c. Bloque Llanos 40 d. Bloque VIM 1

Subject matter indicators (selected information)	Criteria																								
	<ul style="list-style-type: none"> Administrative area: includes the administrative headquarters and offices in Bogotá and Yopal. <p>To estimate the total volume of waste generated in the Bogotá offices, facilities and civil works, we used the number of workers and days worked in each location, and we used the national statistics of waste generation and its composition given by Superintendencia de Servicios Públicos Domiciliarios de Colombia (2015).</p> <p>As for solid waste from the production areas and work camps, the records of kilograms of waste delivered to third parties for treatment and final disposal are used. Glass, metal, and plastic waste is separated and reenters the value chain of different products. Emissions associated with the decomposition of paper, cardboard, textiles and organic waste are estimated from records of the weight of each of these wastes that were collected in the work camps.</p> <p>For GHG estimation, two disposal methods are considered:</p> <ul style="list-style-type: none"> Disposal of solid waste in landfills: <p>A first order decomposition model is used (IPCC, 2006) and a decomposition time of 100 years in accordance with what is established by ISO 14064-1. The physical composition of solid waste with degradation potential was taken from the report of the Superintendencia de Servicios Públicos Domiciliarios de Colombia reported by IDEAM (2015) and corresponds to the following: Cardboard 3.92%, Paper 3.7%, Textiles 3.17%, Organic 56.44%, Leather 0.53% and Rubber 0,32%</p> Solid waste disposal by incineration: <p>Data on percentages of dry matter content of wet weight, total carbon content of dry weight, and fossil carbon fraction of total carbon are used for each waste material, as presented in the table below (IPCC, 2006):</p> <table border="1" data-bbox="835 873 2179 1222"> <thead> <tr> <th style="background-color: #f4a460;">Contaminated material</th> <th style="background-color: #f4a460;">Dry matter content as % of wet weight</th> <th style="background-color: #f4a460;">Total carbon content as % of dry weight</th> <th style="background-color: #f4a460;">Fossil carbon fraction as a % of total carbon</th> </tr> </thead> <tbody> <tr> <td>Paper/Cardboard</td> <td>0.9</td> <td>0.46</td> <td>0.01</td> </tr> <tr> <td>Wood</td> <td>0.85</td> <td>0.5</td> <td>0</td> </tr> <tr> <td>Plastic</td> <td>1</td> <td>0.75</td> <td>1</td> </tr> <tr> <td>Textiles</td> <td>0.8</td> <td>0.5</td> <td>0.2</td> </tr> <tr> <td>Rubber/Leather</td> <td>0.84</td> <td>0.67</td> <td>0.2</td> </tr> </tbody> </table> <p>Table 10. Dry mass in humid weight content, total carbon in dry weight content and total fossil carbon fractions.</p> <p>The oxidation factor used for contaminated industrial waste is 1. The methane and nitrous oxide emission factors for incinerated waste were 0.2 kg CH₄/ton waste and 100 g N₂O/ton waste (IPCC, 2006).</p>	Contaminated material	Dry matter content as % of wet weight	Total carbon content as % of dry weight	Fossil carbon fraction as a % of total carbon	Paper/Cardboard	0.9	0.46	0.01	Wood	0.85	0.5	0	Plastic	1	0.75	1	Textiles	0.8	0.5	0.2	Rubber/Leather	0.84	0.67	0.2
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Subject matter indicators (selected information)	Criteria															
	<p>The calculation of the value of indirect GHG emissions from the management and treatment of solid waste corresponds to the multiplication of the emission factor determined for each gas by the total volume of waste generated. For the consolidation in tons of CO2 equivalent, the emissions generated for each gas are added once each of these is multiplied by the Global Warming Potential (GWP) of the gas. The potentials for Methane (CH4) and Nitrous Oxide (N2O) are previously mentioned in Table 4 presented in the Scope 1 indicator criteria.</p> <p>IX. Fugitive emissions associated with the transportation of fuel (crude oil and gas): refers to the values of leaks that occur in vehicles during the transportation of gas and crude oil from the production activities of the reporting companies. The IPCC (2006) emission factors for gases associated with fugitive emissions were used to estimate fugitive emissions, as shown in the table below:</p> <p>The IPCC (2006) emission factors for gases associated with fugitive emissions were used to estimate fugitive emissions, as shown in the table below:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #f4a460;">Category</th> <th style="background-color: #f4a460;">FE CH₄</th> <th style="background-color: #f4a460;">FE CO₂</th> <th style="background-color: #f4a460;">FE N₂O</th> <th style="background-color: #f4a460;">Unit</th> </tr> </thead> <tbody> <tr> <td>Transport of crude oil in trailers</td> <td>0,000025</td> <td>0,000023</td> <td>N/A</td> <td>Gg per 1.000 m³ of oil production transported in tractor-trailers</td> </tr> <tr> <td>Gas transportation in trailers</td> <td>0,0011</td> <td>0,000051</td> <td>N/A</td> <td>Gg per 1000000 m³ distributed (sales)</td> </tr> </tbody> </table> <p>Table 11. Emission factors for fugitive emissions related to crude and gas transportation in vehicles.</p> <p>The calculation of fugitive emissions generated in the transportation of crude oil and gas corresponds to the multiplication of the emissions factor determined by the amount of gas (m3) or crude oil (barrels) transported. For the consolidation in tons of CO2 equivalent, the emissions generated for each gas are added once each of these is multiplied by the Global Warming Potential (GWP) of the gas. The potentials for Carbon Dioxide (CO2), Methane (CH4) and Nitrous Oxide (N2O) are previously mentioned in Table 4 presented in the Scope 1 indicator criteria. The blocks included in the calculation are the following:</p> <ul style="list-style-type: none"> • Bloque Aguas Blancas • Bloque Cabrestero • Bloque Capachos • Bloque Llanos 32 • Bloque Los Ocarros • Bloque VIM1 	Category	FE CH ₄	FE CO ₂	FE N ₂ O	Unit	Transport of crude oil in trailers	0,000025	0,000023	N/A	Gg per 1.000 m ³ of oil production transported in tractor-trailers	Gas transportation in trailers	0,0011	0,000051	N/A	Gg per 1000000 m ³ distributed (sales)
Category	FE CH ₄	FE CO ₂	FE N ₂ O	Unit												
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Gas transportation in trailers	0,0011	0,000051	N/A	Gg per 1000000 m ³ distributed (sales)												

Subject matter indicators (selected information)	Criteria				
	<p>X. Oil refining: refers to the number of emissions estimated for activities related to the processing of crude oil production from the block's concessioner to the reporting companies during the period under review. These facilities are mentioned below:</p> <ul style="list-style-type: none"> • Production from the blocks: <ul style="list-style-type: none"> a. Bloque Aguas Blancas b. Bloque Boranda c. Bloque Cabrestero d. Capachos e. Bloque Fortuna f. Bloque Llanos 26 g. Bloque Llanos 30 h. Bloque Llanos 32 i. Bloque Llanos 40 j. Bloque Los Ocarros k. Bloque VIM 1 <p>The emission factors (in units of Kg/barrel loaded in refinery) indicated in Ecopetrol's sustainability report for the year 2020 (Ecopetrol, 2020) were used as the basis for the calculation, as shown in the following table:</p> <table border="1" data-bbox="1204 841 1817 946"> <thead> <tr> <th data-bbox="1204 841 1507 894">Fuel type</th> <th data-bbox="1513 841 1817 894">FE CO₂e</th> </tr> </thead> <tbody> <tr> <td data-bbox="1204 894 1507 946">Crude</td> <td data-bbox="1513 894 1817 946">39,9</td> </tr> </tbody> </table> <p>Table 12. Emission factors associated to crude oil refining processes.</p> <p>To estimate the GHG emissions associated with crude oil refining, the number of barrels of crude oil marketed for domestic and international refining was taken into account. The calculation corresponds to the multiplication of the emissions factor determined by the amount of gas produced. For the consolidation in tons of CO₂ equivalent, the emissions generated for each gas are added once each of these is multiplied by the Global Warming Potential (GWP) of the gas. The potentials for Carbon Dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O) are previously mentioned in Table 4 presented in the Scope 1 indicator criteria.</p>	Fuel type	FE CO ₂ e	Crude	39,9
Fuel type	FE CO ₂ e				
Crude	39,9				

Subject matter indicators (selected information)	Criteria																														
	<p>XI. Use of products sold (crude oil, LPG, Compressed Natural Gas, Vehicular Natural Gas): refers to the number of estimated emissions associated with the consumption/use of the products sold by the reporting companies during the period under review. The areas where the product is generated are mentioned below:</p> <ul style="list-style-type: none"> • Sale of production from sales blocks based on specific use: <ul style="list-style-type: none"> a. Bloque Aguas Blancas b. Bloque Boranda c. Bloque Cabrestero d. Bloque Capachos e. Bloque Fortuna f. Bloque Llanos 26 g. Bloque Llanos 30 h. Bloque Llanos 32 i. Bloque Llanos 40 j. Bloque Los Ocarros k. Bloque VIM1 <p>Emission factors were used as the basis for the calculation of CO₂, CH₄ and N₂O emission factors indicated in Ecopetrol's sustainability report for 2021 (Ecopetrol, 2021), as well as density and caloric values for each type of fuel sold, as shown in the following table:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #f4a460;">Fuel type</th> <th style="background-color: #f4a460;">Density</th> <th style="background-color: #f4a460;">Net calorific value</th> <th style="background-color: #f4a460;">FE CO₂</th> <th style="background-color: #f4a460;">FE CH₄</th> <th style="background-color: #f4a460;">FE N₂O</th> </tr> </thead> <tbody> <tr> <td>Crude Oil</td> <td>0,94 kg/l</td> <td>40.670,46 kJ/kg</td> <td>11,282 kg/gal</td> <td>0,03 g/gal</td> <td>0,006 g/gal</td> </tr> <tr> <td>Compressed Natural Gas</td> <td>0,78 kg/m³</td> <td>39,4987 MJ/m³</td> <td>1,98 kg/m³</td> <td>0,036 g/m³</td> <td>0,004 g/m³</td> </tr> <tr> <td>Natural Gas Vehicles</td> <td>0,78 kg/m³</td> <td>39,4987 MJ/m³</td> <td>1,98 kg/m³</td> <td>3,28 g/m³</td> <td>0,107 g/m³</td> </tr> <tr> <td>LPG Generic</td> <td>0,54 kg/l</td> <td>45,4145 MJ/kg</td> <td>3,051 kg/kg</td> <td>0,000005 g/kg</td> <td>0,000001 g/kg</td> </tr> </tbody> </table> <p style="text-align: center;">Table 13. Emission factors associated to sold product usage (combustion model)</p> <p>To estimate emissions, we used the quantities of products sold, such as barrels of crude oil for power generation; the amount of MBTU of compressed natural gas for generation (CNG); and the kg of residential LPG and the MBTU of Natural Gas Vehicles and CNG for industrial consumption.</p> <p>In addition, taking into account that the barrels of crude oil sold for refining will result in the production of a wide variety of products and be used in multiple ways, the mass balance principle was used to calculate the potential emissions associated with their use. In this way it is understood that all the carbon that enters the refinery will eventually be released into the atmosphere, and as such, it can be estimated that the resulting emissions correspond to the stationary burning of all the crude oil produced and sent to refining.</p>	Fuel type	Density	Net calorific value	FE CO ₂	FE CH ₄	FE N ₂ O	Crude Oil	0,94 kg/l	40.670,46 kJ/kg	11,282 kg/gal	0,03 g/gal	0,006 g/gal	Compressed Natural Gas	0,78 kg/m ³	39,4987 MJ/m ³	1,98 kg/m ³	0,036 g/m ³	0,004 g/m ³	Natural Gas Vehicles	0,78 kg/m ³	39,4987 MJ/m ³	1,98 kg/m ³	3,28 g/m ³	0,107 g/m ³	LPG Generic	0,54 kg/l	45,4145 MJ/kg	3,051 kg/kg	0,000005 g/kg	0,000001 g/kg
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Subject matter indicators (selected information)	Criteria
	<p>The calculation of indirect emissions from the use of the products sold corresponds to the multiplication of the emissions factor determined by the amount of gas (m3) or crude oil (barrels) transported. For the consolidation in tons of CO2 equivalent, the emissions generated for each gas are added once each of these is multiplied by the Global Warming Potential (GWP) of the gas. The potentials for Carbon Dioxide (CO2), Methane (CH4) and Nitrous Oxide (N2O) are previously mentioned in Table 4 presented in the Scope 1 indicator criteria.</p> <p>The above is presented in accordance with the Greenhouse Gas Inventory 2022 of the reporting companies, which can be found in the document "Informe Parex 2022.pdf", as well as the detail of the calculations presented in the file "20230329 Calculos Inventario GEI 2022.xlsx", where the Emission Factors (EF), Global Warming Potentials and consumption data, leaks, kilometers traveled and other data used for the estimation of emissions can be found. Both documents are managed by the Sustainability Area.</p> <p>The scope of the assurance work is limited to the cross-checking of the information reported in the GHG Inventory, in relation to the sources mentioned in the criterion, provided by the Sustainability Area (which consolidates this information from the records and reports of the other areas of the companies); to the validation, on a sample basis, of the existence of source data for the calculation; and the recalculation of the final values according to the formulas established in the criterion and based on the information included in said sources, for the selected samples; and does not include the evaluation of the reasonableness or suitability of the sources, emission factors, calorific values, densities and global warming potentials mentioned in the criterion, the evaluation of the integrity of the information sources used for the calculation in the year under review, nor the evaluation of the occurrence of the events that gave rise to the report.</p>