

SierraCol Energy LLC

Limited assurance report of the Independent External Auditor regarding the compliance of the social, economic and environmental information included in the SierraCol Energy LLC Sustainability Report which comprises the companies SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC and Colombia Energy Development Co – Cedco in its English version for the period covered from January 1, 2021 to December 31, 2021

October 2022



Limited assurance report of the Independent External Auditor regarding the compliance of the social, economic and environmental information included in the SierraCol Energy LLC Sustainability Report which comprises the companies SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC and Colombia Energy Development Co – Cedco-.

To the Board of Directors of SierraCol Energy LLC
October 5, 2022

We have undertaken to perform an independent limited assurance report regarding the compliance by SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC and Colombia Energy Development Co – Cedco- (hereinafter the "Company" or "SierraCol") of the obligations detailed in the social, economic and environmental information detailed in Annex I, included in its Sustainability Report, for the period from January 1, 2021 to December 31, 2021.

Evaluation criteria

The defined evaluation criteria are presented in Annex I (Limited assurance criteria regarding the compliance of SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC and Colombia Energy Development Co – Cedco- of the obligations established in the selected information included in its Sustainability Report and the results obtained), attached to this report.

SierraCol Management's responsibility regarding the subject matter information

SierraCol Management is responsible for carrying out the activities necessary to comply with the obligations stipulated in the selected information included in the 2021 Sustainability Report, in accordance with the criteria defined in our service proposal dated April 01, 2022, which are presented in Annex I attached to this report. This responsibility includes the design, implementation and maintenance of the relevant internal control for the preparation, presentation and disposal of the information related to compliance with the obligations detailed in Annex I (Limited assurance criteria regarding the compliance by SierraCol of the obligations established in the selected information included in the 2021 Sustainability Report and the results obtained), attached to this report, and the application of a basis for preparing the required information in a manner that is free from material misstatement due to fraud or error.¹

Our independence and quality control

We have complied with the ethical and independence requirements of the International Ethics Standards Board for Accountants (IESBA) Code of Ethics for Professional Accountants, which is based on the principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

¹ The maintenance and integrity of the SierraCol website (<https://sierracolenergy.com/esg/>) repository of the 2021 SierraCol Sustainability Report, 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 2021 Sustainability Report issued by the Company on which said assurance was made and the conclusion was issued.



To the Board of Directors of SierraCol Energy LLC

The Firm applies International Standard for Quality Control No. 1 (ISQC 1), and, accordingly, maintains a comprehensive system of quality control that includes documented policies and procedures on compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

PwC's Responsibility

Our responsibility is to express a limited assurance conclusion on the Company's compliance with the obligations established in the selected information included in the 2021 Sustainability Report, in accordance with the evaluation criteria, based on the work we have performed.

We conducted our limited assurance engagement in accordance with International Standard on Assurance Engagements, other than Audits or Reviews of Historical Financial Information No. 3000 Revised (ISAE) issued by the International Auditing and Assurance Standards Board (IAASB). This standard requires that we comply with ethical requirements and plan and perform our procedures to obtain limited assurance about whether the Company complies with the subject matter of the assurance in all material respects and in accordance with the evaluation criteria.

A limited assurance engagement involves performing assessment procedures to obtain sufficient and appropriate evidence to determine whether, in the period under review, the Company complied with the obligations set forth in the selected information included in the 2021 Sustainability Report, in accordance with the assessment criteria set forth in Annex I (Limited assurance criteria regarding the compliance of SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC and Colombia Energy Development Co – Cedco- of the obligations established in the selected information included in its Sustainability Report and the results obtained), attached to this report, assess the risks of material misstatement of the subject matter of assurance due to fraud or error and respond to the assessed risks depending on whether it is necessary in the circumstances. The procedures selected depend on the professional judgment of the independent auditors, within the framework established in the International Standard on Assurance Engagements, other than audits or reviews of historical financial information No. 3000 Revised (ISAE), issued by the International Auditing and Assurance Standards Board (IAASB), including the assessment of risks of material misstatement of engagements, according to the evaluation criteria. The scope of limited assurance work is substantially less than that of reasonable assurance work in relation to both the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks.

The developed procedures were performed based on our professional judgement and included inquiries, observation of the developed processes, inspection of documents, and reconciliation of the respective supporting documentation. Additionally, the disclosure and presentation of the selected sustainability information were considered. Given the circumstances of the engagement, we performed, among others, the following procedures:

- a. Understanding of the tools used to generate, add, and report the selected sustainability information through inquiries with those responsible for the processes listed, carried out virtually.
- b. Limited substantive testing, on a random selective basis of the selected sustainability information by the Company, to determine the indicators subject to limited assurance and verify that data have been appropriately measured, recorded, collated and reported through:
 - i. Inspection of policies and procedures established by the Company.
 - ii. Inspection of internal and external supporting documentation.



To the Board of Directors of SierraCol Energy LLC

- iii. Arithmetical calculations in accordance with formulas previously defined in the reporting criteria included in Annex I attached.
- iv. Comparison of the contents presented by the Management in its 2021 Sustainability Report with what is established in this regard in the “Core” option of the GRI Standards of the Global Reporting Initiative (2016).

Procedures performed within a limited assurance engagement vary in nature and timing, and are less in extent, than those performed for a reasonable assurance engagement. Consequently, the level of assurance obtained in the limited assurance engagement is substantially less than the assurance that would have been obtained if we had performed a reasonable assurance engagement. Accordingly, we do not express a reasonable assurance opinion as to whether the selected information included in the 2021 Sustainability Report has been prepared, in all material respects, in accordance with the criteria detailed in Annex I.

We consider that the evidence we have obtained as a result of the procedures developed is sufficient and appropriate to provide a basis for our conclusion expressed below.

Inherent limitations

Non-financial data may be subject to more inherent limitations than financial information due to both its nature and the methods used to determine, calculate and estimate such information. Qualitative interpretations of relevance, materiality and accuracy of data are subject to individual assumptions and judgments.

Limited Assurance conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that would cause us to believe that the selected information included in the 2021 SierraCol Sustainability Report for the period covered from January 1, 2021 to December 31, 2021, in terms of the information that addresses the assurance criteria described in Annex I attached to this report, is not prepared, in all material respects, in accordance with those criteria.

Restrictions on use and distribution

This assurance report regarding the selected information included in the Sustainability Report was prepared for the sole purpose of the Company reporting compliance with the obligations set forth in the selected information included in the 2021 Sustainability Report for the period covered from January 1, 2021 through December 31, 2021 and is not to be used for any other purpose.

Our report has been prepared solely for presentation by the Management of the Company to the Board of Directors of SierraCol Energy LLC for the purposes described above and should not be distributed or used by other parties. Notwithstanding the foregoing, when the Company requires the presentation of the same to a third party other than the aforementioned, or its publication in any media, the Company must inform PwC Asesores Gerenciales S.A.S., prior to the presentation or publication in order to obtain the pertinent authorizations.



To the Board of Directors of SierraCol Energy LLC

Other issues

The scope of our engagement did not include the review of comparative information or prior periods; therefore, we do not express or make reference to the fulfillment of commitments by the Company in prior periods or for criteria that no longer present contractual obligation on the part of the Company for the period covered from January 1, 2021 to December 31, 2021.

(Original signed in Spanish by)

Diego Henao González
Accountant
Professional License No. 20732-T
October 5, 2022



To the Board of Directors of SierraCol Energy LLC

Annex I - Limited assurance criteria regarding the compliance of SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC and Colombia Energy Development Co – Cedco- of the obligations established in the selected information included in its Sustainability Report and the results obtained.

Subject matter indicators (selected information)		Criteria					
Own Representative information	indicator: economic	<p>The Company's Management included in its Sustainability Report 2021 (hereinafter for all criteria IS21) the result of the own indicator "Representative economic information" for the period from January 1 to December 31, 2021 (hereinafter, the year under review) for the company SierraCol Energy Limited ("SCE"), an entity that consolidates the results of SierraCol Energy Andina, LLC, SierraCol Energy Arauca, LLC, SierraCol Energy Condor, LLC, Colombia Energy Development Co, Cinco Ranch Petroleum Colombia Inc., Lagosur Petroleum Colombia Inc. and Global Energy Management Resources Colombia Inc. and their respective branches established in Colombia, based on the procedures established by the Company's Management and their interest in presenting relevant data to their Stakeholders. The values are presented in thousands of U.S. dollars as follows:</p>					
		Financial result	Definition	File source	Section / Note	Item	Page
	Net Production (kpoepd)	Production of company-owned product which the company is entitled to transport and commercialize.	MD&A	Financial and Operation Results / Production and Sales	Net Production (kpoepd)	2	
Oil and gas net sales (kboepd)	Net sales of crude oil and gas	MD&A	Financial and Operation Results / Production and Sales	Net sales (kboepd)	2		



	Income tax paid	Total income tax payments	Consolidated Financial Statements SCE for the year ended December 31, 2021 ("FS")	Consolidated Statement of Cash Flows	Income tax payments	12
GRI 303-3 Water withdrawal (2018)	<p>The scope of the assurance work is limited to cross-checking the information reported in the IS21 against the sources mentioned in the criteria, provided by management; validation and verification of the data based on the information included in those sources, and does not include the assessment of the reasonableness of the sources mentioned in the criteria, nor the assessment of the completeness of the supporting documentation in the year under review, nor the assessment of the occurrence of the events that gave rise to the report.</p> <p>The company's management includes, in its IS21, the result of the GRI 303-3 indicator corresponding to "Water withdrawal" for the year under review, for the companies SierraCol Energy Arauca LLC and Colombia Energy Development Co - Cedco, taking as a basis what is established on page 9 of the GRI Thematic Content GRI Standard GRI 303: Water and Effluents (2018), and in line with the procedures established by the company's management, as presented below:</p> <p>a. Total water withdrawal from all areas (in megaliters) and a breakdown of this total according to the following sources, where applicable:</p> <p>i. surface water, ii. ground water, iii. produced water</p> <p>The calculation of the total water withdrawal value is determined as the sum of the volumes withdrawn at the locations in Llanos Norte (Caño Limón, Caricare, Cosecha and Primavera), consolidated in the file 'CColombia Water Balance Workbook 2021.xlsm', and the sum of the volumes withdrawn at the locations in Llanos Central (Llanos 23, Río Verde, Canacabare, Palo blanco) consolidated in the file 'Consolidado LLC.xlsx', as shown below for each type of water:</p> <ul style="list-style-type: none"> ● Surface water: corresponds to the sum of the catchment data of surface water bodies, in megaliters (ML) during 2021, consolidated in the file 'CColombia Water Balance Workbook 2021.xlsm' for Llanos Norte and in the file 'Consolidado LLC.xlsx' for Llanos Central, in the operation of the following locations: <ul style="list-style-type: none"> ○ Llanos Norte <ul style="list-style-type: none"> ■ Caricare - From the Ele River ■ Spring 					

- **Groundwater:** corresponds to the sum of groundwater withdrawal data in megaliters (ML) during 2021 for Llanos Norte, consolidated in the file 'CColombia Water Balance Workbook 2021.xlsm', and for Llanos Central, consolidated in the file "Consolidado LLC.xlsx' for the following wells of the respective fields:
 - Llanos Norte
 - Caño Limón
 - Supply Water Wells - domestic/industrial consumption (fixed facility wells and WSW reference wells)
 - Other Wells - domestic/industrial consumption (Cravo Norte Association - Caricare Drilling)
 - Caricare
 - Supply Water Wells - domestic/industrial consumption (fixed facility wells and WSW reference wells)
 - Other Wells - domestic/industrial consumption (Cravo Norte Association - Caricare Drilling)
 - Cosecha development
 - Supply Water Wells - domestic/industrial consumption (fixed facility wells and WSW reference wells)
 - Primavera exploratory
 - Supply Water Wells - domestic/industrial consumption (fixed facility wells and WSW reference wells)
 - Llanos Central
 - Block Río Verde
 - Block Canacabare
 - Block Llanos 23
 - Block Palo blanco
- **Produced Water** corresponds to the sum of the data of water extracted in megaliters (ML) as a result of crude oil extraction activities during 2021 from Llanos Norte, consolidated in the file 'CColombia Water Balance Workbook 2021.xlsm' by the Environmental Coordination, and from Llanos Central, consolidated in the file "Consolidado LLC.xlsx' for the following blocks of the respective locations:
 - Llanos Norte
 - Caño Limón
 - Fresh Produced Water
 - Caricare
 - Non-fresh -Produced Water
 - Llanos Central

- Block Río Verde
- Block Canacabare
- Block Llanos 23
- Block Palo blanco

The total value of water withdrawn corresponds to the following formula:

$$\text{Total withdrawn water (WL)} = \text{surface water (WL)} + \text{groundwater (WL)} + \text{produced water (WL)}$$

b. Total withdrawal water from all water-stressed areas (in megaliters) and breakdown of this total according to the following sources, if applicable:

- **Surface water from water-stressed areas:** corresponds to the total water withdrawal captured (in ML) from surface sources in water-stressed areas, as established in the environmental studies of the areas where the reporting company operates, prepared by the Environmental Coordination of SierraCol Energy Arauca LLC. based on the information published in the file "Estudio Nacional de Agua 2018" of the IDEAM where the water supply of the country is established.
- **Groundwater from water-stressed areas** corresponds to the total extraction of water captured (in ML) from groundwater sources in water-stressed areas, as established in the environmental studies of the areas where the reporting company operates, prepared by the Environmental Coordination of SierraCol Energy Arauca LLC. based on the information published in the file "Estudio Nacional de Agua 2018" of the IDEAM where the water supply of the country is established.
- **Water produced from water stressed areas** corresponds to the total water extraction generated as a result of crude oil extraction activities in water stressed areas, as established in the environmental studies of the areas where the reporting companies operate, prepared by the Environmental Coordination of SierraCol Energy Arauca LLC. based on the information published in the file "Estudio Nacional de Agua 2018" of the IDEAM where the water supply of the country is established.

The total value of water withdrawn in water-stressed areas corresponds to the following formula:

$$\text{Total water withdrawn from water stressed areas (ML)} = \text{surface water in water stressed areas (ML)} + \text{groundwater from water stressed areas (ML)} + \text{produced water from water stressed areas (ML)} + \text{water produced from water stressed areas (ML)}$$

c. The breakdown of total freshwater (total dissolved solids ≤ 1000 mg/L) and other water (total dissolved solids > 1000 mg/L) withdrawals, considering each of the sources (surface, ground, and produced water) listed in subparagraphs a and b of this criterion (in megaliters), as described below:

i. fresh water: included in this category are the values of water extracted from surface water, groundwater and produced water sources reported in a) and b) of this criterion, whose laboratory samples show a concentration of total dissolved solids less than or equal to 1000 mg/L (as established in GRI Standard 303-3), for groundwater, surface water and produced water, and have been classified as 'freshwater' in the file 'CColombia Water Balance Workbook 2021 . xlsx' and in the file 'Consolidado LLC.xlsx' for the following locations and their respective blocks:

- Llanos Norte
 - Caño Limón
 - Caricare
 - Cosecha development
 - Primavera exploratory
- Llanos Central
 - Block Río Verde
 - Block Canacabare
 - Block Llanos 23
 - Block Palo blanco

ii. other waters: this category includes the abstracted water values reported in a) and b) of this criterion from surface water sources (rivers), groundwater and produced water, whose laboratory samples show a concentration of total dissolved solids higher than 1000 mg/L (as established by GRI Standard 303-3) and have been classified as 'other waters' in the file "CColombia Water Balance Workbook 2020-2.xlsx" and in the file 'Consolidado LLC.xlsx' for the following locations and their respective blocks:

- Llanos Norte
 - Caricare
- Llanos Central
 - Block Río Verde
 - Block Llanos 23
 - Block Palo blanco

d. Any contextual information necessary to understand how the data has been collected, as well as any standards, methodologies or assumptions used.

The scope of the assurance work is limited to the cross-checking of the information reported in the IS21 in relation to the sources mentioned in the criterion, provided by the Environmental Coordination of SierraCol Energy Arauca LLC. and by the Sustainability Advisor of Colombia Energy Development Co - Cedco, to the crossing of information



	<p>and recalculation of the formulas established in the criterion based on the information included in said sources and does not evaluate the occurrence of surface and subway extractions of the operations in Llanos Norte and Llanos Central, which are registered manually and consolidated for the report of this indicator.</p>
<p>GRI 305-1 Direct GHG emissions (Scope 1) (2021)</p>	<p>The IS21 includes the result of the GRI 305-1 indicator corresponding to "Direct GHG emissions (scope 1)" for the year under review for the companies SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC, and Colombia Energy Development Co - Cedco - (hereinafter companies), as follows.</p> <p>According to the sectorial standards established by the American Petroleum Institute - API, for the inventory of atmospheric emissions of Greenhouse Gases from companies, direct emissions from: fuel combustion in fixed and mobile sources, process emissions or venting, gas flaring and fugitive emissions of hydrocarbons in accessories linked to pipelines in the facilities under their operational control are included.</p> <ul style="list-style-type: none"> ● The Standards, methodologies, assumptions and/or calculation tools used: <p>Corresponds to the emission factors, densities, calorific values used by the companies taken from the 2016 FECOC (Colombian Fuels Emission Factors) and the American Petroleum Institute (API) (Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry 2009 version). The IPCC methodology is used to calculate GHG emissions through the use of the SANGEA™ software solution (https://apisangea.org/WhatIsSangea) designed by the API to assist oil and gas companies in the estimation, management and reporting of GHG emissions; the GHG inventory report is prepared following the specifications of the Colombian Technical Standard (NTC) ISO 14064-1:2006. All the aforementioned methodological details are consolidated in the document "Design of SierraCol Energy's atmospheric emissions inventory" of 2021.</p> <p>In turn, the methodology proposes the following exclusions in quantification:</p> <ul style="list-style-type: none"> ○ Emissions generated in the administrative areas of the companies located in the city of Bogota (electricity purchased from the National Interconnected System - SIN). ○ Other GHGs such as Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs). ○ Fugitive emissions associated with the transportation of crude oil between facilities. <p>Based on page 7 of the GRI Thematic Content GRI Standard GRI 305: Emissions (2016), and according with the procedures established by the companies' management, the calculation of the indicator is carried out as follows:</p>

- **Gross value of direct GHG emissions (Scope 1) in metric tons of CO2 equivalent:**

The indicator reports information from the Llanos Norte and Llanos Central locations, in which activities associated with the emission of Greenhouse Gases (GHG) scope 1 of the companies SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC, and Colombia Energy Development Co - Cedco - are carried out, during the year under review, for the blocks associated with their respective operating licenses, as follows:

Llanos Norte (SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC):

1. Caño Limón
2. Caricare
3. Cosecha

Llanos Central (Colombia Energy Development Co - Cedco -):

1. Canacabare
2. Alcaraván
3. Llanos 23
4. Río Verde

For the locations located in the Putumayo and Middle Magdalena basins, no Greenhouse Gas (GHG) scope 1 emissions data are presented because none of the companies manages them; the Putumayo fields are operated by Geopark and the Middle Magdalena fields are operated by Ecopetrol.

The gross value of emissions is obtained by calculating the total direct GHG emissions, generated by the companies in the above-mentioned blocks, of the gases Carbon Dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O), as established in the document "Documentos_Diseño_Inventario_Emisiones.pdf", provided by the Senior Environmental Coordinator. To obtain the emissions associated with each gas, the calculation methodology incorporated in the SANGEA™ software is used, which considers two types of methodologies for its estimation, being these by mass balance or by emission factors (according to the emission source and the type of gas to be evaluated).

- **Mass balance methodology (B.M.):**

The mass balance methodology is based on the application of the law of conservation of mass. In essence, if there is no accumulation within the system, all materials entering the system must leave. This methodology is mainly used in the estimation of CO₂ emissions from stationary combustion sources, as well as in the estimation of CO₂ and CH₄ emissions from the combustion of hydrocarbons in the combustion plants.

For liquid combustion, the following equation is used:

$$\text{Emissions of } CO_2 = Volc * \rho * \%C * 44/12$$

Were,

CO2 Emissions: CO2 emissions (lb.)

VolC: Liquid fuel consumption (gal.)

ρ : fuel density (lb./gal)

%C: percentage carbon content of the fuel

44/12: ratio of CO2 and Carbon molecular weights

For gas combustion (e.g., burning in fireplaces), the following is used:

$$ECO_2 \text{ emissions} = Volquem * Volmolgas * PMCO_2 * [\sum(\text{moleHidrocarburo/mole gas} * AmolC/molHC * 0,98\text{moleCO}_2/\text{moleCquemado}) + B\text{moleCO}_2/\text{mol gas}]$$

$$CH_4 \text{ emissions} = Volquem * \text{Frac. molar}CH_4 * \%res. CH_4 * (1/Volmolgas) * PMCH_4$$

Were,

Volquem: Volume of gas sent to flare

Frac. molarCH4: Molar content of CH4 in the gas stream sent to flare

%res. CH4: Percentage of unburned gas stream (default 2%)

Volmolgas: Molar conversion of gas from volume to mass (379,3 scf/lbmol ó 23,685 m³/kg-mol)

AmolC: The number of moles of carbon in the hydrocarbon particle

BmoleCO2: The moles of CO2 present in the gas stream to flare

PMCO2: Molecular weight of CO2

PMCH4: Molecular weight of CH4

- **Emission factor methodology (F.E.):**

The emission factor (EF) methodology consists of combining information on the level of each activity (A.N.), for example, fuel consumption, with coefficients that quantify emissions or removals per unit activity, called emission factors (EF). In addition, it takes into consideration the percentage efficiency in total emissions reduction, if a capture technology exists (if it does not exist, the ER value will be equal to 0). Therefore, the basic equation is:

$$\text{Emissions} = \text{NA} * \text{FE} * (1 - \text{ER}/100)$$

Where:

Emissions: Estimated emission value for the source (at process level)

NA: Activity level (e.g., material produced, gas flared, electrical energy)

EF: Emission factor

ER: Overall efficiency in total emission reduction, expressed as a percentage, which is equal to the efficiency of the capture equipment multiplied by the efficiency of the control equipment. If there is no control equipment, ER =0.

The two methodologies described above are applied to the sources and emissions of gases calculated according to the following table:

Emission source	CO₂	CH₄	N₂O
Stationary combustion	B.M.	F.E.	F.E.
Routine gas flaring: Flare	B.M.	B.M.	F.E.
Equipment leaks	F.E.	F.E.	-

Oil and gas venting	F.E.	F.E.	-
Combustion in mobile sources	B.M.	F.E.	F.E.
Biogenic	-	F.E.	-

In accordance with the above, Scope 1 emissions are calculated according to the following formula:

- a. **Direct GHG emissions (Scope 1) in tons of CO₂e**= tons of CO₂ equivalent emissions from stationary combustion activities + tons of CO₂ equivalent emissions from routine flaring + tons of CO₂ equivalent emissions from venting + tons of CO₂ equivalent emissions from equipment leaks + tons of CO₂ equivalent emissions from fuel combustion in mobile sources.

The elements included in the above formula are as follows:

Ton of CO₂ equivalent emissions from stationary combustion activities: corresponds to fuel consumption (diesel, crude oil and fuel oil) used at the locations mentioned above, during the period under review. For the emissions estimates, the mass balance and emission factors methodologies are used. For the latter, consumption data multiplied by the conversion factors, calorific value and emission factors included in the table in item e for each type of fuel are used.

Corresponds to the values of stationary combustion generated in the production activities of the locations, associated with their respective blocks, which are detailed as follows:

Llanos Norte (SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC):

1. Caño Limón
2. Caricare
3. Cosecha

Llanos Central (Colombia Energy Development Co - Cedco):

1. Canacabare
2. Alcaraván
3. Llanos 23
4. Río Verde

The following formula is applied to consolidate emissions from stationary combustion activities in tons of CO₂:

$$\text{Tons of CO}_2 \text{ equivalent emissions} = \text{Ton CO}_2 + (\text{Ton CH}_4 * \text{PCG}) + (\text{Ton N}_2\text{O} * \text{PCG})$$

** GWP refers to Global Warming Potential. The values used are presented in the table in item e.

Tons of CO₂ equivalent emissions from routine flaring: corresponds to the values of gas flaring generated in the production activities in the production blocks:

Llanos Norte (SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC):

4. Caño Limón
5. Caricare
6. Cosecha

Llanos Central (Colombia Energy Development Co - Cedco):

5. Canacabare
6. Alcaraván
7. Llanos 23
8. Río Verde

For emissions estimates, the mass balance and emission factor methodologies are used. For the latter, consumption data multiplied by the conversion factors, calorific value and emission factors included in the table in item e for each type of fuel are used.

For the consolidation of emissions in tons of CO₂ equivalent, the following formula is applied:

$$\text{Tons of CO}_2 \text{ equivalent emissions} = \text{Ton CO}_2 + (\text{Ton CH}_4 * \text{PCG}) + (\text{Ton N}_2\text{O} * \text{PCG})$$

Tons of CO₂ equivalent emissions from fuel combustion in mobile sources: corresponds to the consumption of fuels (diesel and gasoline) used in the vehicles associated with the locations mentioned above, during the period under review. For emissions estimates, the mass balance and emission factor methodologies are used. For the latter, consumption data multiplied by the conversion factors, calorific value and emission factors included in the table in item e for each type of fuel are used.

Corresponds to the values of mobile source combustion generated in production activities in the blocks of:

Llanos Norte (SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC):

1. Caño Limón
2. Caricare
3. Cosecha

Llanos Central (Colombia Energy Development Co - Cedco):

1. Canacabare
2. Alcaraván
3. Llanos 23
4. Río Verde

The following formula is applied to consolidate emissions from stationary combustion activities in tons of CO₂:

$$\text{Tons of CO}_2 \text{ equivalent emissions} = \text{Ton CO}_2 + (\text{Ton CH}_4 * \text{PCG}) + (\text{Ton N}_2\text{O} * \text{PCG})$$

Tons of CO₂ equivalent emissions due to equipment leaks from the operation: corresponds to the values of emissions from different accessories such as valves, flanges, connectors and seals, among others, associated with the different gas and crude oil production processes in the blocks of the operation:

Llanos Norte (SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC):

1. Caño Limón
2. Caricare
3. Cosecha

Llanos Central (Colombia Energy Development Co - Cedco):

1. Canacabare
2. Alcaraván

3. Llanos 23
4. Río Verde

The emission factor methodology is used to estimate emissions, using consumption data multiplied by the conversion factors, calorific value and emission factors included in the table in item e for each type of fuel.

The following formula is applied to consolidate emissions from stationary combustion activities in tons of CO₂:

$$\text{Tons of CO}_2 \text{ equivalent emissions} = \text{Ton CO}_2 + (\text{Ton CH}_4 * \text{PCG}) + (\text{Ton N}_2\text{O} * \text{PCG})$$

Tons of CO₂ equivalent emissions from venting: corresponds to the values of emissions associated with the venting of hydrocarbons associated with production generated at specific points in the production blocks:

Llanos Norte (SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC):

1. Caño Limón
2. Caricare
3. Cosecha

Llanos Central (Colombia Energy Development Co - Cedco):

1. Canacabare
2. Alcaraván
3. Llanos 23
4. Río Verde

The emission factor methodology is used to estimate emissions, using consumption data multiplied by the conversion factors, calorific value and emission factors included in the table in item e for each type of fuel.

For the consolidation of emissions from stationary combustion activities in tons of CO₂, the following formula is applied:

$$\text{Tons of CO}_2 \text{ equivalent emissions} = \text{Ton CO}_2 + (\text{Ton CH}_4 * \text{PCG}) + (\text{Ton N}_2\text{O} * \text{PCG})$$

b. Gases included in the calculation CO₂, CH₄ y N₂O:

The gases included in the calculation are determined for each emission source as established in the methodology, as follows:

Emission source	CO ₂	CH ₄	N ₂ O
Stationary combustion	X	X	X
Routine gas flaring: Flare	X	X	X
Equipment leaks	X	X	
Venting	X	X	
Combustion in mobile sources	X	X	X

c. Biogenic CO₂ emissions in metric tons of CO₂ equivalent:

Correspond to the tons of CO₂ equivalent from the combustion of biofuels in the operations of the Caño Limón, Caricare, Cosecha, Alcaraván, Canacabare, Llanos 23 and Río Verde blocks. The companies use information from the National Biofuels Federation which establishes that for diesel distributed in the Llanos Norte operations



the biofuel content is equivalent to 2% biodiesel, while in the Llanos Central operations it is equivalent to 10% biodiesel from palm oil. For this calculation, only tons of CO₂ are taken into account and other types of GHG emissions (such as CH₄ and N₂O) are excluded from biogenic emissions. The calculation then corresponds to the total CO₂ emissions generated by the combustion of diesel used in its fixed and mobile sources (using an emissions factor of 6,882 kg CO₂ / gal), multiplied by 2% and 10% respectively, as established in the document "Documentos_Diseño_Inventario_Emisiones.pdf", provided by the Senior Environmental Coordinator. It should be noted that the estimate of emissions from biomass burning is estimated and reported but is not added to the total direct emissions of the companies.

d. Base year for calculation:

Justification for selecting the base year: After the transition to SierraCol Energy, it was decided to change the base year of the GHG emissions inventory from 2010 to 2020 as a reference year to compare emissions over time; the main reason for the change is that during 2020, Cedco's operations (Central Plains) began the development of the emissions inventory using the methodologies used in the emissions inventory of the Northern Plains area. The year 2020 serves then as a reference due to the similarity in current operating conditions, with those evidenced when comparing with that year.

Emissions in the base year correspond to the total emissions in tons of CO_{2e} of the base year.

e. Source of emission factors and Global Warming Potential (GWP) rates used or a reference to the GWP source.

Emission factors and global warming potential rates are used according to the following sources for the companies' operations at the Llanos Norte and Llanos Central locations (Caño Limón, Caricare, Cosecha, Alcaraván, Canacabare, Llanos 23 and Río Verde blocks):

Emission factors							
Emission source	Fuel	Additional information	CO ₂	CH ₄	N ₂ O	Units	Reference
	Diesel	Motor	-	1.44 e ⁻⁵	6.01 e ⁻⁷	Tons / MBTU	



	Stationary combustion	Diesel	General	-	1.80 e ⁻⁷	6.01 e ⁻⁷	Tons / MBTU	SANGEA database. Sourced from API 2009 Table 4-5 and 4-9.
		Crudo	General	-	3.01 e ⁻⁶	6.01 e ⁻⁷	Tons / MBTU	
		Diesel	High power >600HP	-	3.70 e ⁻⁶	6.01 e ⁻⁷	Tons / MBTU	
	Routine gas flaring: Flare	Gas flaring	-	-	-	3.02e ⁻⁵	Ton / 1000 bbls	Table 4.2.4A and Table 4A.2.2.2 IPCC 2006, refined to 2019
	Equipment leaks	Hydrocarbon	Valves in gas production.	-	2.63 e ⁻⁶	-	Ton TOC / component hour	SANGEA database. From API 2009 Table 6-14.
		Hydrocarbon	Valves in heavy oil production.	-	1.30 e ⁻⁸	-		
		Hydrocarbon	Valves in light crude oil production.	-	1.32 e ⁻⁶	-		



		Hydrocarbon	Connectors in gas production.	-	3.21 e ⁻⁷	-		
		Hydrocarbon	Heavy oil production connectors.	-	7.98 e ⁻⁹	-		
		Hydrocarbon	Connectors in light crude oil production.	-	1.64 e ⁻⁷	-		
		Hydrocarbon	Flanges in gas production.	-	1.18 e ⁻⁷	-		
		Hydrocarbon	Bridas in heavy oil production.	-	2.19 e ⁻⁸	-		
		Hydrocarbon	Bridas in light crude oil production.	-	7.69 e ⁻⁸	-		



		Hydrocarbon	Pump seals in gas production.	-	1.95 e ⁻⁷	-		
		Hydrocarbon	Pump seals in light crude oil production.	-	3.18 e ⁻⁷	-		
		Hydrocarbon	Other pumps in gas production.	-	9.19 e ⁻⁶	-		
		Hydrocarbon	Other pumps in heavy oil production.	-	6.99 e ⁻⁸	-		
		Hydrocarbon	Other pumps in light crude oil production.	-	7.50 e ⁻⁶	-		
Venting	Gas venting	Compressor start-up		1.62e ⁻¹ (Is adjusted with the	1.62e ⁻¹ (Is adjusted with the	-	tons/compressor-yr.	



				fraction of CO2)	fraction of CO2)			SANGEA database. Sourced from API 2009 Table 5-23 using default values.
		Gas venting	Oil Well Workovers (pipeline maintenance)	1.80 e ⁻³ (Is adjusted with the fraction of CH4)	1.80 e ⁻³ (Is adjusted with the fraction of CH4)	-	tons/workover	
	Combustion in mobile sources	Diesel	Light-duty Diesel Vehicles (uncontrolled)	-	3.80 e ⁻⁴	6.10 e ⁻⁴	Tons/100 Gallons	SANGEA database. Sourced from API 2009 Table 4-17 using default values.
		Fuel	Light-duty Diesel Vehicles	-	1.70 e ⁻³	1.10 e ⁻⁴	Tons/100 Gallons	
Fuel		Other Gasoline Vehicles	-	0.01	1.9 e ⁻⁴	Tons/100 Gallons	Table 4-17 API 2009.Mobile Source Combustion Emission Factors	
<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> Global Warming Potential (GWP) Values </div>								

(Potential Global Warming Values)		
Component	Emission factor/ GWP	Source
CO ₂	1	IPCC, 2014. Fifth Assessment Report.
CH ₄	28	
N ₂ O	265	

f. The consolidation approach for issues: equity ownership, financial control or operational control.

The companies consider as an emissions consolidation approach the operational control in the Llanos Norte and Llanos Central locations (Caño Limón, Caricare, Cosecha, Alcaraván, Canacabare, Llanos 23 and Río Verde blocks). Such operational limits are defined in the table below, as established in the document "Documentos_Diseño_Inventario_Emisiones_Emisiones.pdf" provided by the Senior Environmental Coordinator.

Operational boundaries (activities) of the GHG inventory (Scope 1)

		Emission sources associated with activities	Blocks	
		Stationary combustion	Caño Limón	
			Caricare	
			Cosecha	
			Alcaraván	
			Canacabare	
			Llanos 23	
			Río Verde	

		Routine gas flaring: Flare	Caño Limón
			Caricare
			Cosecha
			Alcaraván
			Canacabare
			Llanos 23
			Río Verde
		Equipment leaks	Caño Limón

			Caricare	
			Cosecha	
			Alcaraván	
			Canacabare	
			Llanos 23	
			Río Verde	
		Venting	Caño Limón	
			Caricare	

			Cosecha	
			Alcaraván	
			Canacabare	
			Llanos 23	
			Río Verde	
		Combustion in mobile sources	Caño Limón	
			Caricare	
			Cosecha	

Alcaraván
Canacabare
Llanos 23
Río Verde

g. The Standards, methodologies, assumptions, and/or calculation tools used.

Finally, in relation to the calculation of the uncertainty associated with the source, both the uncertainty associated with the activity level and the uncertainty associated with the emission factor (whose uncertainty values are obtained directly from the API or the IPCC) are considered; however, they also include standard parameters in the definition of the specific uncertainties of the activity levels that can be grounded to the operational reality of the companies; in the case of the use of emission factors estimated on their own, it is advisable to establish uncertainty levels for the GHGs considered.

In order to evaluate the uncertainty of the GHG emissions inventory, the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories is used as a reference.

The different procedures for calculating uncertainty for the GHG emissions inventory are presented as follows:

- a. Directly determined emission factors:** When periodic emission estimation information is available that can be directly linked to activity data, proprietary emission factors are developed, as in the case of the emission factor for electric power generation that is generated by a third party for the companies, from fuel supplied by the companies. In this type of case, monthly information is used to calculate the uncertainty.

- b. Emission factors from published references:** When emission factors from other published sources are used, the uncertainty published by the same authors of the reference is used. To reduce uncertainty, the conditions under which the emission factors were calculated should be similar to the conditions of the reference.
- c. Activity data:** These data are collected for purposes other than calculating the emissions inventory and are generally focused on economic purposes, so their uncertainty is low. The uncertainty of these data is found using internal studies or the judgment of experts in the companies.
- d. Expert judgment:** When there is not enough information to calculate the uncertainty with field data, the judgment of experts who have experience and knowledge of a particular field of the companies is used. This procedure aims to develop a probability density function taking into account relevant issues such as similarity with other evaluated cases, as well as knowledge in the processes and procedures of the area.

Once the uncertainties of the different categories have been calculated and determined, they should be combined to provide the uncertainty estimate for the entire inventory in each year. Two rules are used to calculate the uncertainty; the first (Rule A) is used when the uncertainties are combined as a consequence of an addition of quantities, the standard deviation of the sum will be the square root of the sum of the squares of the standard deviations of the quantities being added, with all standard deviations expressed in absolute terms. The second rule (Rule B) is used when uncertainties are combined as a consequence of multiplication; the same rule applies, but the standard deviations should be expressed as fractions of the average values.

The equation of the above-mentioned rules is as follows:

Rule A:

$$UTotal = \frac{\sqrt{(U1 \times X1)^2 + (U2 \times X2)^2 + \dots + (Un \times Xn)^2}}{X1 + X2 + \dots + Xn}$$

Were,

UTotal: The percentage uncertainty of the sum of the quantities (half of the 95% confidence interval divided by the total (average) and expressed as a percentage).

Ui y Xi: These are the uncertainties and the percentage of uncertainty associated with each of the quantities.

Rule B:

$$UTotal = \sqrt{U1^2 + U2^2 + \dots + Un^2}$$



	<p>Were,</p> <p><i>UTotal</i>: It is the percentage uncertainty of the product of the quantities (half of the 95% confidence interval divided by the total (average) and expressed as a percentage). <i>Ui</i>: These are the percentages of the uncertainty associated with each of the quantities.</p> <p>The scope of the assurance work is limited to cross-checking the information reported in the IS21 and in the GHG Inventory, in relation to the sources mentioned in the criteria, provided by the Senior Environmental Coordinator (who consolidates this information from the records and reports of the other areas of the companies); validation on a sample basis, of the existence and accuracy of source data for the calculation; and recalculation of the final values according to the formulas established in the criteria and based on the information included in these sources. It 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 criteria, the evaluation of the completeness of the sources of information basis for the calculation in the year under review, nor the evaluation of the occurrence of the events that gave rise to the report.</p>
<p>GRI 305-2 Indirect GHG emissions from energy generation (scope 2) (2021)</p>	<p>The IS21 includes the result of the GRI 305-2 indicator corresponding to "Indirect GHG emissions (scope 2)" for the year under review for the companies SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC, and Colombia Energy Development Co - Cedco - (hereinafter companies).</p> <ul style="list-style-type: none"> <p>The Standards, methodologies, assumptions and/or calculation tools used:</p> <p>Corresponds to the emission factors used by the companies taken from the UPME (Resolution 0385 of 2020) and the American Petroleum Institute (API) (Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry 2009 version). The IPCC methodology is used to calculate GHG emissions through the use of the SANGEA™ software solution (https://apisangea.org/WhatIsSangea) designed by the API to assist oil and gas companies in the estimation, management and reporting of GHG emissions; the GHG inventory report is prepared following the specifications of the Colombian Technical Standard (NTC, by its acronym in Spanish) ISO 14064-1:2006. All the aforementioned methodological details are consolidated in the document "Design of SierraCol Energy's atmospheric emissions inventory" of 2021.</p> <p>I. Emissions from imported electricity:</p> <p>These emissions are estimated to be associated with the consumption of electrical energy purchased (imported) from third parties (from the National Interconnected System or local suppliers) that is used within the locations of the reporting companies; this type of energy is the only one purchased by the companies. In the case of</p>

thermal energy and steam, this is self-generated within the operating areas of the companies; on the other hand, no consumption of energy flows for cooling has been identified.

Emission values are presented for the locations of:

Llanos Norte (SierraCol Energy Arauca LLC, SierraCol Energy Andina LLC):

1. Caricare, including Harvest emissions.
2. Caño Limón

Llanos Central (Colombia Energy Development Co - Cedco):

1. Alcaraván
2. Río Verde

To estimate the emissions associated with imported Scope 2 electricity, two estimation methods are used in accordance with the Greenhouse Gas Protocol Scope 2 methodological guidance: the location-based method and the market-based method.

a. Indirect GHG emissions from power generation (Scope 2) - location-based method

The location-based method quantifies Scope 2 GHG emissions based on average power generation emission factors for defined locations, including local, subnational or national boundaries. For the case of Colombia, it consists of applying the emission factor reported by the Unidad de Planeación Minero Energética (UPME) for the National Interconnected System (SIN) and assuming that all electric power used by companies is supplied by the SIN.

The following formula is applied for the consolidation of indirect emissions by the location-based method:

$$CO_2e \text{ emissions} = FE * (\sum \text{Consumption})$$

CO₂e emissions: CO₂ emissions (lb. or kg)

FE: Emission factor (t CO₂e/MWh)

Consumption: Power consumption (MWh)

b. Indirect GHG emissions from power generation (Scope 2) - market-based method:

The market-based method quantifies scope 2 GHG emissions based on the GHG emissions emitted by the generators from which the companies purchase contractually packaged electricity with unbundled instruments or instruments. In addition to what was previously taken into account (UPME emission factor for the SIN), emissions from local suppliers must be considered when the operating areas subcontract the direct supply of electricity through a third party using on-site energy sources. For these local suppliers, it is necessary to estimate the own emission factor from the amount of energy delivered, as well as the amount and characterization of the fuel used for generation.

The following formula is applied for the consolidation of indirect emissions using the market-based method:

$$CO_2e \text{ emissions} = (FE \text{ SIN} * \text{Consumption SIN}) + (FE \text{ Genser Power - Gas} * \text{Consumption Genser Power - Gas})$$

CO₂e emissions: CO₂e emissions

FE SIN: SIN supplier emission factor (weight/MWh)

FE Genser Power - Gas: Supplier emission factor Genser Power - Gas (wt./MWh)

SIN Consumption: Energy consumption of SIN supplier (MWh)

Genser Power Consumption - Gas: Supplier's energy consumption Genser Power - Gas (MWh)

According to the GHG Protocol scope 2 methodological guide, indirect emissions from electricity should be estimated by both methods and reported separately. In addition, in Colombia the electricity generation basket has a mostly hydroelectric contribution, therefore, the emission factor for electricity purchased through the SIN is lower than the factors estimated for local suppliers (market-based method).

c. The gases included in the calculation are CO₂, CH₄ and N₂O:

<u>Emission source</u>	CO₂	CH₄	N₂O
<u>Indirect emissions</u>	X	X	X

d. Source of emission factors used

Emission factors are used according to the following sources for the operation of the companies at the Llanos Norte and Llanos Central locations (Caño Limón, Caricare, Alcaraván and Río Verde blocks):

Emission source	Associated material	Estimation methodology	CO2	CH4	N2O	Units	Reference
Imported electricity	Electricity SIN -2021 onwards	Emission factor	126			kg/MWh	UPME Resolution 320 Aug 5 of 2022
Imported electricity	Electricity SIN -2020 onwards	Emission factor	203			kg/MWh	UPME Resolution 382 Nov 2 of 2021
Imported electricity	Electricity SIN -2019	Emission factor	166			kg/MWh	UPME Resolution 385 Dec 24 of 2020
Imported electricity	Electricity SIN -2018	Emission factor	130			kg/MWh	UPME Resolution 642 Dec 27 of 2019
Imported electricity	Electricity SIN -2017	Emission factor	110			kg/MWh	UPME Resolution 774 Dec 28 of 2018
Imported electricity	Electricity SIN -2016	Emission factor	210			kg/MWh	UPME Resolution 804 Dec 26 of 2017
Imported electricity	Electricity SIN -2015	Emission factor	199			kg/MWh	UPME Doc. Attached Resolution 843 Dec 23 of 2016



Imported electricity	Electricity SIN -2014 and previous	Emission factor	157	0,0028	0,00185	kg/MWh	UPME. Resolution 857 Dec 24 of 2015
Imported electricity	Electricity-Indirect GP Caricare-2021	Emission factor	0,8858	8,49 e ⁻⁶	8,42 e ⁻⁷	tons/MWh	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
Imported electricity	Electricity-Indirect GP Caricare-2020	Emission factor	0,7041	8,33 e ⁻⁶	8,26 e ⁻⁷	tons/MWh	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
Imported electricity	Electricity-Indirect CP Cosecha -2020	Emission factor	1,156	5,42 e ⁻⁵	8,87 e ⁻⁷	ton/MWh	Own estimate Sierracol Energy
Imported electricity	Electricity-Indirect CP Cosecha -2019	Emission factor	1,089	5,10 e ⁻⁵	8,35 e ⁻⁶	ton/MWh	Own estimate Sierracol Energy
Imported electricity	Electricity-Indirect GP Caricare -2019	Emission factor	0,8991	7,60 e ⁻⁶	7,54 e ⁻⁷	tons/MWh	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
Imported electricity	Electricity-Indirect GP Caricare -2018	Emission factor	0,9603	8,12 e ⁻⁶	8,05 e ⁻⁷	tons/MWh	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
Imported electricity	Electricity-Indirect GP Caricare -2017	Emission factor	0,7075	9,18 e ⁻⁶	9,11 e ⁻⁷	tons/MWh	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
Imported electricity	Electricity-Indirect GP Caricare -2016	Emission factor	0,82	9,25 e ⁻⁶	9,17 e ⁻⁷	tons/MWh	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP

Imported electricity	Electricity-Indirect GP Caricare -2015	Emission factor	0,8151	9,20 e ⁻⁶	9,12 e ⁻⁷	tons/MWh	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
Imported electricity	Electricity-Indirect GP Caricare -2014	Emission factor	0,8092	9,13 e ⁻⁶	9,05 e ⁻⁷	tons/MWh	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
Imported electricity	Electricity-Indirect GP Caricare -2013	Emission factor	0,8577	9,68 e ⁻⁶	9,60 e ⁻⁷	tons/MWh	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
Imported electricity	Electricity-Indirect GP Caricare -2012	Emission factor	0,7211	9,65 e ⁻⁶	9,57 e ⁻⁷	tons/MWh	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
Imported electricity	Electricity-Indirect GP Caricare -2011	Emission factor	0,8466	1,07 e ⁻⁵	7,07 e ⁻⁶	tons/MWh (CH4) Own estimate - Caia Ing.	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
Imported electricity	Electricity-Indirect GP Caricare -2010	Emission factor	0,7938	1,01 e ⁻⁵	9,97 e ⁻⁷	tons/MWh (CH4) Own estimate - Caia Ing.	SierraCol GHG Emissions Inventory Design Document Annex B. Estimated F.E GP
e. The base year for the calculation:							

	<p>I. the justification for the selection: After the transition to SierraCol Energy, it was decided to modify the base year of the GHG emissions inventory, changing from 2010 to 2020 as a reference year to compare its emissions over time; the main reason for the change is that during the year 2020 in Cedco's operations (Central Plains), the preparation of the emissions inventory was started using the methodologies used in the emissions inventory of the Northern Plains area. The year 2020 serves then as a reference due to the similarity in current operating conditions, with those evidenced when comparing with that year.</p> <p>II. emissions in the base year; corresponds to the total emissions in tons of CO2e of the base year.</p> <p>In turn, the methodology proposes the following exclusions in quantification:</p> <ul style="list-style-type: none"> o Emissions generated in the administrative areas of the companies located in the city of Bogota (electrical energy purchased from the National Interconnected System - SIN). <ul style="list-style-type: none"> f. The consolidation approach for issuances: equity ownership, financial control or operational control. <p>The companies consider as an emissions consolidation approach the operational control at the Llanos Norte and Llanos Central locations (Caño Limón, Caricare, Alcaraván and Río Verde blocks). Such operational limits are defined in the table below, as established in the document "Documentos_Diseño_Inventario_Emisiones_Emisiones.pdf" provided by the Senior Environmental Coordinator.</p> <p>The scope of the assurance work is limited to cross-checking the information reported in the IS21 and in the GHG Inventory, in relation to the sources mentioned in the criterion, provided by the Senior Environmental Coordinator (who consolidates this information from the records and reports of the other areas of the companies); validation on a sample basis, of the existence and accuracy of source data for the calculation; and recalculation of the final values according to the formulas established in the criterion and based on the information included in these sources. It 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 completeness of the sources of information basis for the calculation in the year under review, nor the evaluation of the occurrence of the events that gave rise to the report.</p>
<p>GRI 307-1 Non-compliance with environmental laws and regulations (2016)</p>	<p>The management of the companies SierraCol Energy Arauca LLC. and Colombia Energy Development Co - Cedco included in its IS21 the result of the GRI 307-1 indicator corresponding to 'Non-Compliance with Environmental Legislation and Regulations' for the period of the year under review taking as a basis what is established on page 6 of the GRI 307 Content: Environmental Compliance (2016), and in line with the procedures established by the company's management, as presented below:</p> <p>a. Significant fines and non-monetary penalties for non-compliance with environmental laws or regulations and to indicate:</p>



	<p>i. Total monetary value of significant fines: Corresponds to fines over USD \$500,000 as indicated in the 'Incident Investigation and Reporting Standard' of SierraCol Energy Arauca LLC, imposed in the year under review. In the file 'Cases 2021 Bizagi.xlsx', issued by the Bizagi application, administrative acts are followed up and verified by those responsible for the legal and environmental area and corroborated in the platform Ventanilla de Trámites Ambientales in the Registro Único de Infractores Ambientales (VITAL) of the Ministry of Environment and Sustainable Development.</p> <p>ii. Total number of non-monetary sanctions: Corresponds to the number of non-material sanctions or less than USD \$500,000, threshold determined in the 'Incident Investigation and Reporting Standard' of SierraCol Energy Arauca LLC, in terms of environmental compliance imposed in the year under review. In the file 'Cases 2021 Bizagi.xlsx', issued by the Bizagi application, administrative acts are followed up and verified by those responsible for the legal and environmental area and corroborated in the platform Ventanilla de Trámites Ambientales in the Registro Único de Infractores Ambientales (VITAL) of the Ministerio de Ambiente y Desarrollo Sostenible (Ministry of Environment and Sustainable Development).</p> <p>iii. Cases submitted to litigation resolution mechanisms: Corresponds to the number of circumstances in which there has been a direct ruling against the reporting organization regarding non-compliance with environmental legislation and regulations and an appeal process has been implemented in the year under review through legal mechanisms, and corroborated in the Environmental Procedures Window platform in the Single Registry of Environmental Violators (VITAL) of the Ministry of Environment and Sustainable Development.</p> <p>b. If the organization has not identified any non-compliance with environmental laws or regulations, it is sufficient to state this fact in a brief statement.</p> <p>The scope of the assurance work was limited to the cross-checking of the information reported in the IS21 in relation to the sources mentioned in the criteria and those provided by the legal and environmental area of the reporting companies, at the cut-off corresponding to the year under review based on the information provided, the evaluation of the integrity of the documentation supports in the year under review, and corroborated with searches related to environmental non-compliance of the companies in the platform Ventanilla de Trámites Ambientales in the Registro Único de Infractores Ambientales (VITAL) of the Ministry of Environment and Sustainable Development, and did not include the evaluation of the reasonableness of the sources mentioned in the criterion, nor the evaluation of the occurrence of the events that gave rise to the report.</p>
<p>GRI 403-9 Work-related injuries 2018</p>	<p>The Company's Management includes in its IS21 the result of the GRI 403-9 indicator "Work-related injuries" during the year under review of the companies SierraCol Energy Arauca, LLC, SierraCol Energy Andina, LLC and Colombia Energy Development Co, Cedco, taking as a basis what is established on pages 19 and 20 of the section "GRI 403: Occupational Health and Safety" of the Global Reporting Initiative (GRI) Standard (2018), and in line with the procedures established by the Companies' Management, as presented below:</p> <p>Reporting will be done in accordance with the following companies:</p>

1. SierraCol Energy Arauca, LLC: Headquarters in Bogota and Llanos Norte. The latter includes the following association contracts with Ecopetrol:

- Cravo Norte
- Rondón
- Cosecha
- Chipiron

2. Colombia Energy Development Co (Cedco): Llanos Central, which includes the following blocks:

- Alcaraván A
- Alcaraván B
- Río Verde
- Llanos - 23
- Catalina
- Torcaz

3. SierraCol Energy Andina, LLC: Magdalena Medio, in which the following blocks are included:

- La Cira Infantas
- Teca

These categories will be evaluated according to the following information:

- a. For all employees:** The following are the guidelines for calculating the indicators, which include in all cases the number of deaths and the number of man-hours worked, as explained below:

i. The number and rate of fatalities resulting from an occupational accident injury.

- **Number of deaths resulting from an occupational injury:**

- SierraCol Energy Arauca, LLC: Bogota and Llanos Norte central offices.

Corresponds to the sum of deaths of employees resulting from an occupational accident injury in the year under review, as indicated in the file "SEG Y SALUD EN EL TRABAJO - JFCristancho - DGiraldo - JLMartin Rev May 31-2022.xlsx" prepared by the Industrial Safety Advisor of the HS Department of the reporting company, with the total information for the year to be evaluated.

- Colombia Energy Development Co (Cedco): Llanos Central:

Corresponds to the sum of deaths of employees resulting from an occupational accident injury in the year under review, as indicated in the file "SEG Y SALUD EN EL TRABAJO - JFCristancho - DGiraldo - JLMartin Rev May 31-2022.xlsx" prepared by the Industrial Safety Advisor of the HS Department of the reporting company, with the total information for the year to be evaluated.

- SierraCol Energy Andina, LLC: Magdalena Medio:

SierraCol energy Andina LLC has no direct employees.

- **Number of man-hours worked of employees:**

See description below in section a.v.

- **Rate of death resulting from an occupational injury:** Corresponds to the application of the following formula:

$$= \frac{(Number\ of\ deaths\ resulting\ from\ occupational\ injury\ of\ employees) * 1.000.000}{(Total\ number\ of\ man - hours\ worked\ by\ employees\ during\ the\ period\ under\ evaluation)}$$

ii. The number and rate of occupational injuries with major consequences (not including fatalities). For this calculation, the following definitions will be taken into account:

- **Number of occupational injuries with major consequences (not including fatalities):**

- SierraCol Energy Arauca, LLC: Bogota and Llanos Norte central offices.

Corresponds to the total number of cases, in the year under review, in which employee injuries result in harm such that the worker cannot or does not fully recover to pre-accident state of health, or the worker is not expected to fully recover to pre-accident state of health within 6 months. Accidents that do not meet these characteristics of the GRI standard will be considered in the recordable accidents (see point iii).

The procedure for the calculation of accidents with major consequences is structured in the document "60.450.026 Standard for reporting and investigation of incidents and occupational diseases" of SierraCol. The consolidated of these calculations can be found in the file "SEG Y SALUD EN EL TRABAJO - JFCristancho - DGiraldo - JLMartin Rev May 31-2022.xlsx", prepared by the Industrial Safety Advisor of the HS Department of the reporting company, with the total information of the year to be evaluated.

- Colombia Energy Development Co (Cedco): Llanos Central:

Corresponds to the total number of cases, in the year under review, in which employee injuries result in harm such that the worker cannot or does not fully recover to pre-accident state of health, or the worker is not expected to fully recover to pre-accident state of health within 6 months. Accidents that do not meet these characteristics of the GRI standard will be considered in the recordable accidents (see point iii).

The procedure for calculating accidents with major consequences is structured in Cedco's document "PR-HSE-009 CEDCO Proc de Notificación e Investigación de Incidente y EL.pdf". The consolidated of these calculations can be found in the file "SEG Y SALUD EN EL TRABAJO - JFCristancho - DGiraldo - JLMartin Rev May 31-2022.xlsx", prepared by the Industrial Safety Advisor of the Company's HS Department, with the total information for the year to be evaluated.

- SierraCol Energy Andina, LLC: Magdalena Medio:

SierraCol Energy Andina LLC has no direct employees.

- **Number of man-hours worked of employees:**

See description below in section a.v.

- **Injury rate per occupational accident with major consequences (excluding fatalities):**

Corresponds to the application of the following formula:

$$= \frac{\text{Number of occupational injuries with major consequences (excluding fatalities) to employees} * 1.000.000}{\text{Total number of employee man - hours worked}}$$

iii. The number and rate of occupational injuries that are recordable.

- **Number of recordable work-related injuries:**

- SierraCol Energy Arauca, LLC: Bogota and Llanos Norte central offices:

Corresponds to the sum of employee occupational accidents, considered recordable with any of the following outcomes: "death, days off work, work restriction or transfer to other positions, fainting or medical treatment beyond first aid; or serious injury or illness diagnosed by a physician or other health professional, even if it does not result in death, days off work, work restriction or transfer to other positions, fainting or medical treatment beyond first aid" as defined by the GRI Standards.

The procedure for the calculation of recordable occupational accidents is structured in the document "60.450.026 Standard for reporting and investigation of occupational incidents and diseases" of SierraCol. The consolidated of these calculations can be found in the file "SEG Y SALUD EN EL TRABAJO - JFCristancho

- DGiraldo - JLMartin Rev May 31-2022.xlsx", prepared by the Industrial Safety Advisor of the HS Department of the reporting company, with the total information of the year to be evaluated.

- Colombia Energy Development Co (Cedco): Llanos Central:

Corresponds to the sum of work-related accidents of employees, considered recordable with some of the following outcomes: "death, days off work, work restriction or transfer to other positions, fainting or medical treatment beyond first aid; or serious injury or illness diagnosed by a physician or other health professional, even if it does not result in death, days off work, work restriction or transfer to other positions, fainting or medical treatment beyond first aid" according to the definition of the GRI Standards.

The procedure for calculating accidents with major consequences is structured in Cedcol's document "PR-HSE-009 CEDCO Proc de Notificación e Investigación de Incidente y EL.pdf". The consolidated of these calculations can be found in the file "SEG Y SALUD EN EL TRABAJO - JFCristancho - DGiraldo - JLMartin Rev May 31-2022.xlsx", prepared by the Industrial Safety Advisor of the HS Department of the reporting company, with the total information of the year to be evaluated.

- SierraCol Energy Andina, LLC: Magdalena Medio:

SierraCol Energy Andina LLC has no direct employees.

- **Number of man-hours worked of employees:**

See description below in section a.v.

- **Recordable occupational injury rate:**

Corresponds to the application of the following formula:

$$= \frac{(Number\ of\ recordable\ occupational\ accidents\ of\ employees) * 1.000.000}{((Total\ number\ of\ employee\ man - hours\ worked))}$$

iv. The main types of work-related injuries.

- SierraCol Energy Arauca, LLC: Bogota and Llanos Norte central offices:

Corresponds to the types of incidents suffered by employees of work-related injuries and classified in the file “Gráficas TRIR SierraCol - 2021.xlsx”.

- Colombia Energy Development Co (Cedco): Llanos Central:

Corresponds to the types of incidents suffered by employees of work-related injuries and classified in the file “Gráficas TRIR SierraCol - 2021.xlsx”.

- SierraCol Energy Andina, LLC: Magdalena Medio:

SierraCol Energy Andina has no direct employees.

v. The number of hours worked.

- SierraCol Energy Arauca, LLC: Bogota and Llanos Norte central offices:

Corresponds to the record of the total man hours worked by employees during the year under review, reported monthly by the payroll area, which are verified and consolidated in the Excel file "HHT by Workplace Project December-21.xlsx" by the HS Department's Industrial Safety Advisor.

- Colombia Energy Development Co (Cedco): Llanos Central:

Corresponds to the record of the total man hours worked by employees during the year under review, reported monthly by the payroll area, which are verified and consolidated in the Excel file "HHT CEDCO 2021 - FR-HSE-044 Reporte de Indicadores_2021.xlsx" by the HES Specialist of the HS Department.

- SierraCol Energy Andina, LLC: Magdalena Medio:

SierraCol energy Andina LLC has no direct employees.

b. For contractors of reporting companies: Understood as all workers who are not employees, but whose jobs or workplaces are controlled by the company.

i. The number and rate of fatalities resulting from an occupational accident injury:

- **Number of deaths resulting from an occupational injury:**

- SierraCol Energy Arauca, LLC (Bogota and Llanos Norte central offices); and SierraCol Energy Andina, LLC (Magdalena Medio):

Corresponds to the sum of deaths of contractors resulting from a work-related accident injury in the year under review, as indicated in the Excel file "SEG Y SALUD EN EL TRABAJO - JFCristancho - DGiraldo - JLMartin Rev May 31-2022.xlsx" which is manually constructed with the information exported from the sharepoint of the contractors' web page. This platform is operated by the Field Coordinator and the Industrial Safety Advisor.

- Colombia Energy Development Co (Cedco): Llanos Central:

Corresponds to the sum of contractor fatalities resulting from a work-related injury in the year under review, as indicated in the file "SEG Y SALUD EN EL TRABAJO - JFCristancho - DGiraldo - JLMartin Rev May 31-2022.xlsx" which is manually constructed with the information exported from the sharepoint of the contractors' web page. This platform is operated by Cedco's Field Coordinator and the Industrial Safety Specialist.

- **Number of man-hours worked of employees:**

See description below under b.v.

- **Rate of fatalities resulting from an occupational accident injury:**

Corresponds to the application of the following formula:

$$= \frac{(\text{Number of fatalities resulting from an occupational accident injury of contractors}) * 1.000.000}{(\text{Total number of contractor man-hours worked})}$$

ii. The number and rate of occupational injuries with major consequences (not including fatalities).

- **Number of occupational injuries with major consequences (not including fatalities):**

- For the three companies evaluated:

Corresponds to the total number of cases, in the year under review, in which injuries to contractors result in damage such that the worker cannot or does not fully recover the pre-accident state of health, or the worker is not expected to fully recover the pre-accident state of health within 6 months. Accidents that do not meet these characteristics of the GRI standard will be considered in the recordable accidents (see point iii).

The consolidated of these calculations can be found in the file "SEG Y SALUD EN EL TRABAJO - JFCristancho - DGiraldo - JLMartin Rev May 31-2022.xlsx", which is manually built with the information exported from the sharepoint of the contractor's website. This platform is operated by the Field Coordinator and the HS Advisor.

- **Number of man-hours worked of employees:**

See description below under b.v.

- **Injury rate per occupational accident with major consequences (excluding fatalities):**

Corresponds to the application of the following formula:

$$= \frac{[\text{Number of major workplace injuries (not including fatalities) of contractors} * 1.000.000]}{(\text{Total number of contractor man - hours worked})}$$

iii. The number and rate of recordable occupational injuries.

- **Number of recordable occupational injuries:**

- For the three companies evaluated:

Corresponds to the sum of contractor workplace accidents, considered recordable with any of the following results: "death, days off work, work restriction or transfer to other positions, fainting or medical treatment beyond first aid; or serious injury or illness diagnosed by a physician or other health professional, even if it does not result in death, days off work, work restrictions or transfers to other positions, fainting or medical treatment beyond first aid" according to the definition of the GRI Standards.

The consolidated of these calculations can be found in the file "SEG Y SALUD EN EL TRABAJO - JFCristancho - DGiraldo - JLMartin Rev May 31-2022.xlsx", which is manually built with the information exported from the sharepoint of the contractor's website. This platform is operated by the Field Coordinator and the HS Advisor.

All occupational accidents are reported to the Labor Risks Administration (ARL). However, only accidents occurring during the performance of work-related activities are considered recordable.

- **Number of man-hours worked of employees:**

See description below under b.v.

- **Recordable occupational injury rate:**

Corresponds to the application of the following formula:

$$= \frac{(Number\ of\ recordable\ occupational\ accidents\ of\ contractors) * 1.000.000}{(Total\ number\ of\ contractor\ man - hours\ worked)}$$

iv. The most common types of work-related injuries:

- For all three companies:

Corresponds to the types of incidents suffered by contractors of work-related injuries and classified in the file "TRIR SierraCol - 2021.xlsx", which is built manually with the information exported from the sharepoint of the contractors' web page. This platform is operated by the Field Coordinator and the HS Advisor.

v. The number of hours worked.

- SierraCol Energy Arauca, LLC (Bogota and Llanos Norte central offices) and Colombia Energy Development Co (Cedco) (Llanos Central)

Corresponds to the record of total man-hours worked by contractors during the year under review. Contractor's report during the first 10 days of each month in the sharepoint of the contractors' web page. At the end of the month, the man-hours worked during the provision of services are reviewed by the Industrial Safety advisor of the reporting company who validates the information, approves it and consolidates it in the file "Gráficas TRIR SierraCol - 2021.xlsx".

- SierraCol Energy Andina, LLC: Magdalena Medio:

Corresponds to the record of the total man hours worked by contractors for CAPEX activities during the year under review in the La Cira Infantas field only, as there were no activities related to this concept in the Teca field during 2021. The contractors report the man-hours worked during the first 10 days of each month in the sharepoint of the contractors' web page. At the end of the month, this consolidated information is reviewed by the Industrial Safety advisor of the reporting company, who validates the information, approves it and consolidates it in the file "Gráficas TRIR SierraCol - 2021.xlsx".

c. Occupational hazards that present a risk of occupational injury in the Northern Plains, Central Plains and Middle Magdalena with major consequences, including:

- i. How these hazards are determined.

ii. Which of such hazards have caused or contributed to causing occupational injuries with major consequences during the year 2021.

iii. The measures taken or planned to eliminate such hazards and minimize risks through the hierarchy of control. These correspond to the measures or programs developed to eliminate the hazards identified in the risk matrix "1. Matrix SierraCol Energy October-2021", which was developed according to GTC - 45 guide.

d. Measures taken or planned to eliminate other occupational hazards and minimize risks through the hierarchy of control.

Corresponds to the risks and hazards that must be managed to minimize risks and eliminate occupational hazards in the following work areas, as established in the file "1. Matriz SierraCol Energy Octubre-2021.xlsm":

- Teca
- Caño Limón
- Caricare
- Chipirón
- La Cira Infantas
- Llanos Norte
- Cosecha
- Offices in Bogotá

e. Whether the rates are calculated per 200,000 or per 1,000,000 hours worked.

In the file "SEG Y SALUD EN EL TRABAJO - JFCristancho - DGiraldo - JLMartin Rev May 31-2022.xlsx" the reporting companies define the parameter they use to calculate the rates.

f. Whether any workers have been excluded from this Content, including the type of worker and the reason for exclusion.

This refers to the total number of employees and contractors involved in the operation of the Llanos Norte, Bogotá headquarters, Llanos Central and Magdalena Medio blocks.

g. Any contextual information necessary to understand how data from the sources mentioned in this criterion have been collected for SierraCol Energy Arauca LLC, Colombia Energy Development Co (Cedco) and SierraCol Energy Andina LLC, as well as any standards, methodologies or assumptions used.



	<p>The scope of the assurance work was limited to cross-checking the information reported in the IS21 against the sources mentioned in the criterion and those provided by the HS Department of the reporting company, validation on a sample basis of the existence of the cases recorded in the source documents, the cut-off for the year under review based on the information provided, evaluation of the completeness of the supporting documentation in the year under review, and did not include evaluation of the reasonableness of the sources mentioned in the criterion.</p>
<p>GRI 412-1 Operations subject to human rights impact assessments or reviews (2016)</p>	<p>The reporting Company included in its IS21 the result of the GRI 412-1 indicator "Operations subject to human rights impact reviews or assessments" during the year under review for the company SierraCol Energy Arauca, LLC, taking as a basis what is established on page 7 of the GRI 412 Content: Human Rights Assessment, of the Global Reporting Initiative (GRI) Standard (2016).</p> <p>The scope of the criterion covers the assessment of risks and impacts on human rights, documented in the file "Analysis of risks and impacts on Human Rights and action plan for the company SierraCol Energy Arauca, LLC", prepared by the consulting firm TRUST: Strategic Risk Management, for SierraCol.</p> <p>The assessment process is defined as "the detail of operations subject to human rights assessments, and the development of a due diligence process aimed at identifying, preventing, mitigating and accounting for human rights risks". This document defines human rights impact as "the effects that may result in the nullification or restriction of the human rights of rights holders".</p> <p>This assessment was developed taking into account the guidelines of the United Nations Guiding Principles on Business and Human Rights, the Due Diligence Guidance for Responsible Business Conduct - OECD and the requirements of international standards such as the Equator Principles (EP) and the environmental and social assessment criteria of the International Finance Corporation (IFC Performance Standard). Likewise, the recommendations of the Voluntary Principles on Security and Human Rights and the good practices in due diligence for the hydrocarbon sector were considered, in line with the procedures established by the Company's Management.</p> <p>The calculation of the indicator will be as follows:</p> <p style="text-align: center;">a. Total number and percentage of operations subject to human rights assessments or human rights impact assessments by country.</p> <p>For this indicator, the Llanos Norte operations LLC that underwent a human rights risk and impact assessment in the year under review will be taken into account. These operations are located in the Caño Limón field, located in the Department of Arauca. This field comprises the 4 contracts that the reporting company has with Ecopetrol: Cravo</p>



	<p>Norte, Cosecha, Rondón and Chipirón, which are located in the municipalities of Arauca and Arauquita (mainly). These operations will be included in the calculation of the following formula:</p> $\text{Percentage of operations subject to human rights assessments} = \frac{\text{Number of operations subjected to human rights evaluations}}{\text{Total number of operations}}$ <p>Considering that the company's operations are carried out only in Colombia, the indicator is presented consolidated for the operations of Llanos Norte.</p> <p>The scope of the assurance work was limited to the cross-checking of the information reported in the IS21 against the sources mentioned in the criterion, provided by the Human Rights and Government Affairs Advisor of the Vice-Presidency of Sustainability and the recalculation of the formulas established in the criterion based on the information included in said sources and did not include the evaluation of the reasonableness of the sources mentioned in the criterion.</p>
<p>Own indicator</p> <p>Local employment</p>	<p>The Company's Management included in its IS21 the result of its own indicator corresponding to "Local employment" for the year under review of the companies SierraCol Energy Andina LLC, (Barrancabermeja) and SierraCol Energy Arauca LLC (Arauca and Arauquita). The calculation of this indicator considers the local jobs generated under the modality of contractors that worked with the mentioned companies between January and December 2021 for trained and untrained labor. It is defined as follows:</p> <p>A. Percentage (%) of local trained labor force =</p> $\frac{\text{Annual average of local trained labour employees}}{\Sigma (\text{Annual average of local trained labour employees} + \text{Annual average non- local trained labour employees})}$ <p>The calculation is made independently for each company as follows:</p> <ul style="list-style-type: none"> • Annual average of local trained labour employees: calculated from the sum of the number of employees of local trained workforce divided into twelve (12) months, as indicated in the document "CONSOLIDATED EMPLOYABILITY 2021.xlsx provided by the Social Responsibility area. • Annual average of non-local trained labour employees: calculated from the sum of the number of employees of trained workforce rest of the country divided in twelve (12) months, as indicated in the document "CONSOLIDATED EMPLOYABILITY 2021.xlsx provided by the Social Responsibility area. <p>Where:</p> <ul style="list-style-type: none"> • Trained labour: refers to all those positions that require technical, technological or professional studies, certifications or experience.

- Local trained labour employees: refers to all trained employees who accredit their residence in the areas of influence of the companies through certificates issued by the competent authorities.
- Non-local trained labour employees: refers to all trained employees whose residence is not located in the area of influence.

B. Percentage (%) of untrained local labour force =
$$\frac{\text{Annual average of local untrained labour employees}}{\Sigma (\text{Annual average of local untrained labour employees} + \text{Annual average non-local untrained labour employees})}$$

The calculation is made independently for each company as follows:

- Annual average of local untrained labour employees: calculated from the sum of the number of local untrained labor employees divided into twelve (12) months, as indicated in the document "CONSOLIDATED EMPLOYABILITY 2021.xlsx provided by the Social Responsibility area.
- Annual average of non-local untrained labour employees: calculated from the sum of the number of non-local untrained labor employees divided by twelve (12) months, as indicated in the document "CONSOLIDATED EMPLOYABILITY 2021.xlsx provided by the Social Responsibility area

Where:

- Untrained labour: refers to all those positions that do not require previous experience or academic training to be exercised.
- Local untrained labour employees: refers to all untrained labor employees who prove their residence in the companies' areas of influence through certificates issued by the competent authorities.
- Non-local untrained labour employees: refers to all untrained labor employees whose residence is not located in the area of influence.
- The untrained labour category considers the following positions: laborers, yard workers, yard workers, waitresses, sample collectors, general service helpers, road assistants and pallet workers

Area of influence: the area of influence shall be understood as the municipality or municipalities where the company's exploration or exploitation activities are carried out in the companies referred to. Sources of information: the indicator is calculated based on the report "CONSOLIDATED EMPLOYABILITY 2021.xlsx" prepared by the Local Content Advisor, whose supports are the "employability reports" sent monthly by contractors to the Labor Audit team to SierraCol Arauca and the "labor" reports sent monthly by contractors to the Labor Audit team to SierraCol Andina. These reports have as annexes the documents that support the hiring processes of the employees.



	<p>The scope of the assurance work is limited to the crossing of the information reported in the IS21 and the information provided by the Local Content Advisor of SierraCol Energy Arauca LLC; to the validation on a sample basis of the existence and accuracy of the data recorded in the source documents for the calculation; to the recalculation of the final values according to the formulas established in the criteria, and to the evaluation of the integrity of the supporting documentation for the year under review. It does not include the evaluation of the reasonableness of the sources mentioned in the criterion, nor the occurrence of the events that gave rise to the report.</p>
<p>GRI 11.8.3 Total number of Tier 1 and Tier 2 process safety events</p>	<p>The company's management includes in its IS21, the result of the GRI 11.8.3 indicator which refers to the total number of Tier 1 and Tier 2 process safety events of its operations in the Llanos Norte and Llanos Central locations in the year under review, based on what is established on page 31 of the GRI 11 - Oil and Gas Sector 2021 content in the REF# 11.8.3 standard. The company's management defines Tier 1 and Tier 2 events based on API RP 754 - Process Safety Performance Indicators for the Refining and Petrochemical Industries (2nd edition), and they are published in the 'PROCESS SAFETY KPI's' procedure in its numeral 3.2 and 3.3 as follows:</p> <ul style="list-style-type: none"> ● Tier 1 - An unplanned and uncontrolled discharge of any material, including non-toxic and non-flammable materials (e.g., steam, hot water, nitrogen, compressed CO2, or compressed air) from a process at the company's Northern Plains and Central Plains operations, recorded in the file 'Risk Management PSI 2021 - LLN. xlsx' file provided by the Risk Management Administration for events occurring in Llanos Norte and in the 'Risk Management PSI 2021 -LLC.xlsx' file provided by the Risk Management Administration for events occurring in Llanos Central, which results in one or more of the following consequences: <ol style="list-style-type: none"> 1. Disability or fatality of an employee, contractor or subcontractor. 2. Fatality or hospital admission of a third party. 3. Officially declared evacuation (even as a precaution) of a community or reservation. 4. A fire or explosion with damage equal to or exceeding USD \$100,000 in direct costs to the company. 5. A specifically designed/engineered pressure relief release (e.g., pressure relief devices, pressure relief control systems, manually initiated emergency depressurization), greater than or equal to the threshold defined in Appendix A of 60.400.309 PR, for Tier 1, in a one (1) hour period, and directed into the atmosphere directly or through a downstream device, which results in one or more of the following consequences: <ol style="list-style-type: none"> i. Condensation / Precipitation ii. Discharge in a potentially unsafe area. iii. Evacuation from a shelter or land. Excluding precautionary evacuations.

	<ul style="list-style-type: none"> iv. Community protection measures (e.g., road closure). Even when the protective measures are a precaution. <p>6. A process upset emission from a regulated or authorized source, with an amount greater than or equal to the threshold defined in Appendix A of 60.400.309 PR procedure, for an event classified as Tier 1, in a one (1) hour period, that results in one or more of the following consequences:</p> <ul style="list-style-type: none"> i. Condensation / Precipitation. ii. Discharge to a potentially unsafe area. iii. Evacuation from a shelter or land. Excluding precautionary evacuations. iv. Community protection measures (e.g., road closures). Even when the protective measures are a precaution. <p>7. A release of material greater than or equal to the threshold defined in Appendix A of 60.400.309 PR procedure, for Tier 1 category, in a one (1) hour period.</p> <ul style="list-style-type: none"> • Tier 2 - corresponds to an unplanned and/or uncontrolled discharge of any material, including non-toxic and non-flammable materials (e.g., steam, hot water, nitrogen, compressed CO₂, or compressed air), from a process recorded in the file 'Risk Management PSI 2021 - LLN. xlsx' file provided by Risk Management Administration for Northern Plains events and in the 'Risk Management PSI 2021 -LLC.xlsx' file provided by Risk Management Administration for Central Plains events, resulting in one or more of the following consequences: <ul style="list-style-type: none"> 1. A recordable case of illness or injury to an employee, contractor or subcontractor. 2. A fire or explosion with damage equal to or greater than USD \$2,500 in direct costs to the company. <p>Note: A fire or explosion causing a Loss of Primary Containment (LOPC) in a process may cause a review of the consequences of the Tier 2 incident. This does not imply that the LOPC must occur first.</p> 3. A specifically designed/engineered pressure relief release (e.g., pressure relief devices, pressure relief control systems, manually initiated emergency depressurization), with an amount greater than or equal to the threshold defined in Appendix A of 60.400.309 PR, for Tier 2, within a one (1) hour period, and directed into the atmosphere directly or through a downstream device, that results in one or more of the following consequences: <ul style="list-style-type: none"> i. Condensation / Precipitation. ii. Discharge to a potentially unsafe area.
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	<ul style="list-style-type: none"> iii. Evacuation from a shelter or land. Excluding precautionary evacuations. iv. Community protection measures (e.g., road closures). Even when the protective measures are a precaution. <p>4. A process upset emission from a regulated or authorized source, with an amount greater than or equal to the threshold defined in Appendix A of 60.400.309 PR for a Tier 2 classified event, in a one (1) hour period, resulting in one or more of the following consequences:</p> <ul style="list-style-type: none"> i. Condensation / Precipitation. ii. Discharge to a potentially unsafe area. iii. Evacuation from a shelter or land. Excluding precautionary evacuations. iv. Community protection measures (e.g., road closures). Even when the protective measures are a precaution. <p>5. A release of material greater than or equal to the threshold defined in Appendix A of 60.400.309 PR procedure, for Tier 2 category, in a period of one (1) hour</p> <p>The Risk Management Administration (RM Adm) is responsible for properly applying the requirements for reporting Process Safety events and consolidating them in the file "Risk Management PSI 2021 - LLN.xlsx" for events occurring in Llanos Norte and in the file "Risk Management PSI 2021 -LLC.xlsx" for events occurring in Llano Central.</p> <p>The scope of the assurance work is limited to the crossing of the information reported in the IS21 and the information provided by the Risk Management Administration for the reporting of this indicator in the year under review, to the validation on a sample basis of the existence and accuracy of the data recorded in the source documents for the calculation, and to the evaluation of the integrity of the supports of the documentation for the year under review. It does not include the evaluation of the reasonableness of the sources mentioned in the criterion, nor the occurrence of the events that gave rise to the report.</p>
<p>Own indicator Social investment</p>	<p>The Company's Management included in its IS21 the result of its own indicator corresponding to "Social Investment" for the year under review, reported in Colombian pesos (COP) and in US dollars (USD), excluding VAT, for the companies SierraCol Energy Arauca, LLC, SierraCol Energy Andina, LLC and Colombia Energy Development Co - Cedco-, as follows:</p> <ul style="list-style-type: none"> 1. SierraCol Energy Arauca LLC: <p>Corresponds to the voluntary investment executed by SierraCol Energy Arauca, LLC in 2021 and invoiced by third parties including Fundación Alcaraván and other suppliers that cover the services destined to social investment that Fundación Alcaraván cannot offer. This investment is detailed in the file "Social Investment SC 2021 PwC_Adjusted</p>



080922.xlsx", provided by the Social Responsibility area and which has as source of information the file "Execution Total Social Investment 2021.xlsx" and as supports the invoicing minutes of the Alcaraván Foundation and invoices from other suppliers.

For the investment reported in USD, the exchange rate used was determined by calculating the simple daily average of the market representative rate (TRM) issued by Banco de la República of Colombia, as follows:

$$\text{Exchange rate} = \frac{\sum \text{daily representative market rates based on transactions recorded on the immediately preceding business day issued by Banco de la República of Colombia}}{\text{No. Days of the year}}$$

2. SierraCol Energy Andina LLC:

Corresponds to the voluntary investment made by SierraCol Energy Andina, LLC executed directly or by third parties in 2021 and whose invoices were received by the company. Said investment is detailed in the file "Inversión social SC 2021 PwC Ajustado 080922.xlsx", provided by the Social Responsibility area and has as source of information the file "SUSTAINABILITY REPORT.xlsx" and the supports included as follows:

- Investment executed directly by SierraCol Energy Andina LLC: purchase invoices to suppliers of goods and services.
- Investment executed and invoiced by third parties: invoices received by the company with the detail of the investment made.

For the investment reported in USD, the same exchange rate formula mentioned in paragraph 1 of this criterion is applied.

3. Colombia Energy Development Co - Cedco -:

Corresponds to the voluntary investment executed directly by Colombia Energy Development Co - Cedco in 2021. Said investment is detailed in the file "Inversión social SC 2021 PwC Ajustado 080922.xlsx", provided by the Social Responsibility area, has as source of information the file "Inv. Soc. Ejecutada 2021_ .xlsx" and as supports the purchase invoices to suppliers of goods and services.

For the investment reported in USD, the same exchange rate formula mentioned in numeral 1 of this criterion is applied.

The scope of the assurance work is limited to the cross-checking of the information reported in the IS21 for the calculation of the "Social investment" indicator with the figures included in the sources mentioned in this criterion for the year under review, provided by the company's Social Responsibility area; to the validation on a sample basis of the existence and accuracy of the data recorded in the source documents for the calculation; to the recalculation of the final values according to the formulas established in the criterion at the corresponding cut-off of the year under review based on the information provided and to the evaluation of the completeness of the documentation supports in the



year under review. It does not include the evaluation of the reasonableness of the sources mentioned in the criterion, nor the occurrence of the events that gave rise to the report.

Presentation of IS21 in accordance with the "Core" option of the Global Reporting Initiative's GRI Standards (2016)

The company's management reports in its IS21 the following mandatory general basic contents, applicable for the "Essential" compliance level, defined in the GRI Standards (2016) of the Global Reporting Initiative (<https://www.globalreporting.org/standards/gri-standards-translations/gri-standards-spanish-translations-download-center/>) GRI 101, item 3.1 p. 23 Table 1 - Criteria for declaring that a report has been prepared in accordance with the GRI Standards or the corresponding justification for omission defined in item 3.2 reasons for omission - p. 24.

General basic contents applicable to the "Essential" level of conformity	No. of general basic content
Organizational Profile	GRI 102-1 a 102-13
Strategy	GRI 102-14
Ethics and integrity	GRI 102-16
Governance	GRI 102-18
Stakeholder engagement	GRI 102-40 a 102-44
Reporting practices	GRI 102-45 a 102-56

a. The Company's Management reports in its IS21, the information corresponding to the mandatory general management approaches, defined in the GRI Standards (2016) of Global Reporting Initiative (<https://www.globalreporting.org/standards/gri-standards-translations/gri-standards-spanish-translations-download-center/>) GRI 101, item 3.1 page 23 Table 1 - Criteria for declaring that a report has been prepared in accordance with the GRI Standards or the corresponding omission justification defined in item 3.2 reasons for omission - page 24, for the following material aspects:

Material appearance	General management approach information to be reported for each material aspect
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	<table border="1"> <tr> <td data-bbox="964 277 1473 363">Economic performance</td> <td data-bbox="1473 277 2112 363" rowspan="8"> <ul style="list-style-type: none"> a. The explanation of why the subject is material. b. The coverage of the material topic. c. Any particular limitations regarding coverage of the subject matter. d. An explanation of how the organization manages the subject matter. e. A statement of the purpose of the management approach. f. A description of the following, if the management approach includes this component: policies, commitments, objectives and targets, responsibilities, resources, formal grievance and/or complaint mechanisms, specific actions. g. An explanation of how the organization evaluates the management approach, including: the mechanisms for evaluating the effectiveness of the management approach, the results of the evaluation of the management approach, and any modifications related to the management approach. </td> </tr> <tr> <td data-bbox="964 363 1473 449">Compliance, ethics and transparency</td> </tr> <tr> <td data-bbox="964 449 1473 535">Water management</td> </tr> <tr> <td data-bbox="964 535 1473 643">Climate Change & Greenhouse Gas Emissions</td> </tr> <tr> <td data-bbox="964 643 1473 729">Communities and society</td> </tr> <tr> <td data-bbox="964 729 1473 815">Human Rights</td> </tr> <tr> <td data-bbox="964 815 1473 901">Asset integrity and process safety</td> </tr> <tr> <td data-bbox="964 901 1473 1133">Worker health and safety</td> </tr> </table>	Economic performance	<ul style="list-style-type: none"> a. The explanation of why the subject is material. b. The coverage of the material topic. c. Any particular limitations regarding coverage of the subject matter. d. An explanation of how the organization manages the subject matter. e. A statement of the purpose of the management approach. f. A description of the following, if the management approach includes this component: policies, commitments, objectives and targets, responsibilities, resources, formal grievance and/or complaint mechanisms, specific actions. g. An explanation of how the organization evaluates the management approach, including: the mechanisms for evaluating the effectiveness of the management approach, the results of the evaluation of the management approach, and any modifications related to the management approach. 	Compliance, ethics and transparency	Water management	Climate Change & Greenhouse Gas Emissions	Communities and society	Human Rights	Asset integrity and process safety	Worker health and safety	<p>b. The Company's Management reports in its IS21, for each of the material aspects related in section (a) of this criterion, at least one (1) associated performance indicator or the corresponding omission justification whose options are contemplated in GRI 101, item 3.2 reasons for omission - page 24 of the GRI Standards (2016). These indicators can be defined according to the GRI Thematic Standards (200, 300 and 400 series) of the GRI Standards 2016.</p>
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	<p>The scope of assurance work is limited to cross-checking the information defined in the criteria with the information reported in the IS21 and does not include the assessment of the reasonableness and completeness of the information reported or the assessment of the occurrence of the events giving rise to the report.</p>
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