



SierraCol  
energy

A photograph of an industrial facility, likely a refinery or chemical plant, featuring several large white cylindrical storage tanks. The tanks are surrounded by palm trees and other vegetation. The entire scene is reflected in a calm body of water in the foreground. The sky is clear and blue.

**Task Force on Climate-related Financial Disclosures (TCFD)**  
**2022 Report**

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This report follows the Task Force on Climate-Related Financial Disclosures (TCFD) recommendations for 2022 performance results in areas where SierraCol Energy has operational control (Caño Limón Area, Central Llanos, and Bolivar contract). For more information about assets, operations and company strategy, see [SierraCol's Sustainability Report](#).

## Letter from the CEO

Climate change represents a significant challenge for the world and it has profound implications for the oil and gas sector. The business community holds a crucial role in driving the transition to a low-carbon and climate-resilient economy. At **SierraCol**, we are committed to addressing climate-related risks and opportunities and developing a sustainable and responsible business strategy. We aim to implement innovative strategies to reduce our carbon footprint, embrace renewable energy sources, and promote resource efficiency to encourage innovation, strengthen our resilience, and create long-term value for our stakeholders.

In line with the principles of the **Task Force on Climate-related Financial Disclosures (TCFD)**, this report highlights **SierraCol's** efforts to address climate-related risks and opportunities in our business strategy and how we continually improve our transparency and accountability. We showcase our attempts to achieve our ambitious emission reduction targets, taking into consideration the integration of climate scenario analysis and climate risk management to support the decision-making processes to address market challenges.

We are taking actions to make measurable progress toward emissions reductions to accelerate the transition to a low-carbon economy and adopt clean and efficient technologies, which would have positive financial implications for the company. We will continuously evaluate new opportunities to minimise our impacts and identify risks and opportunities to enable sustainable growth.

We believe this report will be a valuable resource for our investors, shareholders, and other stakeholders, demonstrating our ongoing commitment to sustainability and corporate responsibility regarding climate change.



**Bernardo Ortiz**  
CEO  
SierraCol Energy

# Our emissions reduction plan

As part of our commitment to address climate-related risks and opportunities, we provide updates on our progress in evaluating their effects on our operating areas. Following the findings and analysis presented in our first TCFD report, we are continuously striving to enable new business opportunities in order to minimise our impacts and increase the use of renewable energy sources.

We seek to continue advancing in our ambitious emissions reduction goals, providing relevant and timely information that supports the decision-making towards and an efficient response to climate change.

## Reduce carbon footprint by 50% by 2023

We achieved 40% reduction in 2022



## Align our operations with TCFD recommendations

We integrated climate-related risks and opportunities in our business strategy



## Aspire to carbon neutrality by 2030\*

We will continue making significant efforts to further reduce carbon footprint with the aim of carbon neutrality by 2030



## Implement energy efficiency and energy transition projects

We developed various projects including:

- Permanent magnet motors implementation
- Reservoir production optimization
- Energy purchase from National Interconnected System (SIN)



\*Scope 1 & 2



## Governance

The achievements obtained by **SierraCol** are a direct result of initiatives established by our corporate governance, which prioritize the integration of climate change in our overall strategy and governance framework.



**SierraCol** has made significant progress on ESG issues (Environmental, Social, and Governance), evidenced in the 2022 Sustainability Report, supported by transparent and independent external auditing.



The company prioritised its climate strategy in response to market challenges, taking actions such as placing sustainability as a fundamental pillar and taking into consideration new regulations that could affect its operation.



### Board of directors

Responsible for oversight and monitoring climate change strategy



### ESG Committee

Board's subcommittee that provides strategic guidance related to the identification and assessment of climate risks management, and carbon footprint reduction targets



### President and CEO / Management team

Assessment and engagement in climate change programs



### Carbon footprint reduction manager

Define planning, development, and implementation of the company's decarbonisation strategy



### Senior sustainability consultant

Responsible for emissions inventory construction and climate change adaptation programmes



### Risk management and analysis team

Implements the Process Risk Management programme and ensures compliance with corporate standards

SierraCol Energy is committed to adopting a climate-resilient business model as part of its medium and long-term strategy. We understand the significance of addressing climate-related risks and opportunities, and we recognize our responsibility in mitigating greenhouse gas (GHG) emissions, enhancing infrastructure resilience through adaptation activities such as flood-resistance infrastructures, and delivering value to our stakeholders.

With the implementation of a diverse range of emission reduction initiatives, the company aims to make significant progress in its sustainability journey. Through a combination of green investments, efficiency improvements, and the adoption of renewable energy sources, the company is actively working towards achieving its emission reduction targets.

As a company, we have outlined a climate action plan that encompasses contribute to prevent, mitigate and adapt to climate change and its negative impacts on the well-being of people and the environment.

## 1 Energy Transition programme

SierraCol has transitioned to purchasing clean electricity (hydro based) from the National Interconnected System to eliminate crude oil self-generation. Through this arrangement, we acquire Guarantees of Origin certificates for energy purchased for the Caño Limón area. Moreover, we also utilise Associated Petroleum Gas (APG) for electricity generation, further contributing to our sustainable energy practices.

## 2 Energy Efficiency projects

We have implemented permanent magnet motors in crude oil production systems and implemented water production control strategies in non-producing areas. These measures aim to reduce energy consumption in our operations.

## 3 Methane emissions Measurement and mitigation



SierraCol conducted in-situ measurements to establish the baseline of methane emissions associated with fugitive sources. The company will establish a programme to address the fugitive emissions.


## 4 Gas flaring Elimination

In 2022, as part of our efforts to eliminate routine gas flaring, the company installed new equipment to replace the previous crude oil self-generation with a more efficient gas power generation system, amounting to 0.3 MW.

# Physical risks and opportunities


The company has conducted physical risk evaluation based on geographical conditions, past events impacts, and the likelihood of extreme weather events in the surrounding area. SierraCol has a range of opportunities to innovate, adapt, and enhance our resilience against future physical risks. By leveraging these opportunities, SierraCol can develop strategies to mitigate the impacts of physical risks, thereby safeguarding its local communities, the environment, and the operation.

 <b>TYPE OF RISK</b>	 <b>BUSINESS IMPACT</b>
Floods	<ul style="list-style-type: none"> <li>• Reduced production capacity and therefore reduced revenues (transportation difficulties, supply chain disruptions)</li> <li>• Damage to property and assets in high-risk locations</li> <li>• Suspension of operations due to blockages resulting from events such as floods or forest fires</li> <li>• Conflicts related to water resources access</li> </ul>
Droughts -Forest fires	
Temperature Increase	
Water Availability	



### Efficient water management technologies and practices

SierraCol invests in technologies and practices that allow us to optimise the use of water resources and promote responsible consumption, ensuring efficient water management.



### Development of adaptation and resilience solutions

SierraCol's expertise in **flood management** provides an opportunity to develop adaptive and resilient solutions transferable to other industries and communities vulnerable to extreme weather events.



### Alternative and low carbon energy sources

Prioritising cleaner and renewable energy source adoption allows us to diversify our energy matrix and significantly reduce our carbon footprint. This strategic focus aligns with our commitment to climate change mitigation and supports the transition to a more sustainable economy.



## Transition risks

SierraCol recognises transition risks require careful consideration for business strategy implementation. During the evaluated period we assessed and addressed external variables and scenarios that may directly affect the company activities in the short and medium term. These variables include environmental regulations, market trends, capital investment allocation, Oil & Gas demand, business opportunities, and others.

Risk	Risk type	Strategy response
<b>Political</b>	<ul style="list-style-type: none"> <li>Energy government policy changes.</li> <li>Oil &amp; Gas government policy changes.</li> <li>National political instability.</li> </ul>	<ul style="list-style-type: none"> <li>Verification and validation of our carbon footprint and our participation to Colombian NDC (Nationally Determined Contribution) and E2050 (Climate long-term strategy).</li> <li>Carbon Neutrality Strategy by 2030.</li> <li>Engage with regulatory authorities for fair energy policies.</li> <li>Collaboration with government on new climate-related policies and programmes.</li> </ul>
<b>Legal</b>	<ul style="list-style-type: none"> <li>Environmental regulation changes.</li> <li>Legal claims related to climate change.</li> <li>Fines for non-compliance with environmental regulations.</li> <li>Fiscal regulation changes.</li> </ul>	<ul style="list-style-type: none"> <li>Implement risk management and insurance strategies for asset protection.</li> <li>Implement a compliance management system.</li> <li>Certificate our health, safety, and environmental management system.</li> </ul>
<b>Market</b>	<ul style="list-style-type: none"> <li>Changes in energy demand.</li> <li>Oil and gas prices decrease.</li> <li>Reserves and resources reduction.</li> </ul>	<ul style="list-style-type: none"> <li>Diversify the energy portfolio with renewable energy investments and partnerships.</li> <li>Identify new business opportunities related to energy supply through market research and partnerships.</li> <li>Monitor energy market, economic trends and Indicators Monitor.</li> </ul>
<b>Reputational</b>	<ul style="list-style-type: none"> <li>Damage to the company's image due to poor environmental performance.</li> </ul>	<ul style="list-style-type: none"> <li>Invest in employee training and safety programmes.</li> <li>Proactive communication with stakeholders and ensure compliance with regulations and standards.</li> <li>Enhance transparency and sustainable finance practices.</li> </ul>
<b>Technological</b>	<ul style="list-style-type: none"> <li>Changes in extraction and transportation technologies.</li> <li>Increase in clean energy demand, high new technologies implementation cost.</li> </ul>	<ul style="list-style-type: none"> <li>Develop a robust business plan and preventive maintenance programmes.</li> <li>Implement cost-saving measures.</li> <li>Invest in renewable energy R&amp;D.</li> <li>Analyse cost-effective technologies and explore partnerships.</li> <li>Reduce carbon footprint and optimize energy efficiency.</li> <li>Develop a strategic plan for renewable energy innovation</li> </ul>





## Transition opportunities

Transition opportunities provide possibilities to have a strong positive impact on business and financial strategies. Capitalizing on these opportunities can help drive sustainable growth, strengthen our reputation, reduce our operational costs, improve efficiency, and enable compliance with regulatory requirements. We are committed to building a resilient business model, which is prepared to face future challenges, and has the capacity to contribute to climate change mitigation. With these strategies we stand out as an industry leader, ensuring a solid and profitable future in a business environment focused on sustainability.



### Improvement in reputation and stakeholder trust

A proactive and responsible approach to climate change strengthens trust among our stakeholders, including customers, investors, employees, and local communities. These efforts attract environmentally conscious customers, responsible investors, and new talent, providing us with a competitive advantage.



### Compliance with regulatory requirements and mitigation of legal risk

Leveraging climate-related opportunities enables compliance with regulatory requirements and mitigates legal risks associated with climate change. Adapting to evolving environmental regulations and standards would minimise legal risks and potential sanctions, avoiding disruptions in our operations and protecting our reputation.



### Operating costs reduction and efficiency improvement

Climate-related opportunities can lead to cost reduction and efficiency improvement. The implementation of energy-efficient projects, the optimization of resources, and the adoption of clean technologies can reduce energy, water, and other resource consumption, resulting in significant long-term financial savings. The integration of renewable energy into our energy matrix would mitigate risks associated with oil and gas price volatility.

# Climate scenario analysis

CLIMATE SCENARIOS	Mitigation	Sustainability	Halfway	High Emissions
RCP*	2.6	2.6	4.5	4.5 – 8.5
Temperature	Variation between -1,2 to -0,93°C	Variation between -1,05 to -1,05°C	Variation between -1,48 to 0,03°C	Variation between 1,34 to 2,57°C
Precipitation	↓ -33% to -34%	↑ 16% to 15%	↑ 16% to 15%	↑ 14% to 11%
Risks	Insufficient water supply and poor water quality associated to drought events	Floods, limiting transport and value chain operations	Floods and extreme precipitations, limiting transport operations and affecting value chain	Floods and extreme precipitations, limiting transport operations and affecting value chain
AFOLU Measures	<ul style="list-style-type: none"> <li>Restoration of deforested areas (up to 504.8 ha) covering the mitigation potential.</li> </ul>	<ul style="list-style-type: none"> <li>Ambitious restoration of deforested areas (504.8 ha) to sufficiently cover the mitigation potential</li> </ul>	<ul style="list-style-type: none"> <li>Restoration of deforested areas 151.44 ha covering by 30% the mitigation potential.</li> </ul>	<ul style="list-style-type: none"> <li>No restoration of deforested areas, but no increase in deforestation.</li> </ul>
Policies	Implementation of ambitious mitigation policies, setting stringent targets, and energy transition incentives.	Adoption of a holistic sustainability policy framework, promoting a diversified energy matrix, and foster inclusive economic work.	Introduction of moderate policies that aim to reduce emissions gradually while ensuring the industry's competitiveness and energy security.	The government does not apply new climate-related policies and regulations.
NDC	75% GHG reduction by 2030	50% GHG reduction by 2030	50% GHG reduction by 2050	Non-existent
Non-AFOLU Measures	Measures within the following action lines: energy efficiency, energy transition, and gas flaring elimination.	Measures within the following action lines: energy efficiency, energy transition, gas flaring elimination, circular economy, and risk mitigation.	Measures within the following action lines: energy efficiency, energy transition, and gas flaring elimination.	Measures within the following action lines: energy efficiency and energy transition.

**PHYSICAL ASSUMPTIONS**

**TRANSITION ASSUMPTIONS**

**CUMULATIVE MITIGATION POTENTIAL BY 2030**

SierraCol has conducted a thorough analysis of both physical and transition risks, which has greatly enhanced our climate risk management efforts. This analysis has allowed us to identify and address the exposure and vulnerability of our assets, operations, and value chain. We are actively working towards reducing risks and ensuring the long-term resilience of our business.

As part of our commitment, SierraCol is focused on improving business ability to adapt to climate change. We developed a comprehensive and targeted strategies that specifically addresses climate-related risks and opportunities.

In line with this objective, SierraCol selected scenarios aligned with Socioeconomic Pathways (SSP) to evaluate possible impacts on our business.



# Risk Management

We recognise the importance of climate-related risk understanding. Therefore, we have implemented activities to integrate climate-related risk management into our process risks programme. These efforts allow us to improve adaptive capacity to address impacts derived from identified risks, considering relevant factors such as strategic planning, availability of financial resources, and adoption of information related to climate issues by employees.

We acknowledge the **importance of understanding and addressing** the physical and transition risks associated with climate change.

We **develop and update an adaptation plan aligned with the strategic guidelines** of the Mines and Energy Ministry for climate change management.

We aim to **safeguard the resilience of our business and make informed and strategic decisions** in an ever-evolving climate environment.

The adaptation plan **considers nature-based solutions, community engagement, technology, and infrastructure** while identifying the associated benefits.

Our risk management process includes **analysing climate trends, identifying physical and transition risks, assessing probability and consequences, and evaluating the company's adaptive capacity.**

We **strengthened our strategy** by incorporating climate-related risk analysis, going beyond just physical risks.

We **adopt a comprehensive approach to managing climate risks**, preparing the company to **face challenges and benefit from opportunities.**



## Metrics





In this section, we present the emissions inventory accountability that supports our climate change strategy in compliance with the principles of the TCFD. Key metrics such as greenhouse gas emissions and energy consumption is highlighted to guarantees the traceability of the information and facilitates the decision-making process.

Type of emissions	Thousand metric tons CO2e		
	2020	2021	2022
GHG Emissions (Scope 1 and 2)	651	572	391
Direct Source Emissions (Scope 1)	531	454	299
Stationary Combustion	364	301	147
Routine gas flaring	120	120	124
Fugitive emissions	46	30	22
Process and venting emissions	0.6	1.6	5.7
Emissions generated in transportation	0.3	0.4	0.4
Indirect emissions - energy purchase [Market based approach] (Scope 2)	120	118	92
Biogenic emissions (metric tons – Scope 1 and 2)	126	393	1,642
Other indirect emissions (Scope 3)	-	-	9,354.6
Emissions intensity (kgCO2 e/BOE - Scope 1 and 2)	32.8	26.6	20.2

Non – GHG Air Emissions	Metric tons		
	2020	2021	2022
NOx emissions	1,171	1,135	910
SOx emissions	2,201	1,721	724
VOC emissions	999	998	902
PM emissions	304	265	177

Imported Electrical Energy	Terajoules		
	2020	2021	2022
National Grid System Energy purchase	1,269	1,865	2,720
Genser Power Generation (Gas)	245	215	189
Confipetrol Generation (Diesel)	1.9	0	0



	RECOMMENDATION	SIERRACOL ENERGY REPORT
 GOVERNANCE	Disclosure of the organization's governance on the management of risks and opportunities related to climate change.	a) Describe the management team's view (Board of Directors) on climate-related risks and opportunities Letter from the CEO Governance
		b) Describe the management roles for the evaluation and management of climate-related risks as well as opportunities identified Governance
 STRATEGY	Disclosure of current and potential impacts of climate-related risks and opportunities related to the organization's business, strategy and financial planning where such information is working material.	a) Describe the climate-related risks and opportunities that the organization has identified in the short, medium, and long-term. Strategy Climate scenario analysis Physical and transition risks and opportunities
		b) Describe the impact of climate-related risks and opportunities related to the organization's business, strategy, and financial planning Strategy Physical and transition risks and opportunities
		c) Describe the resilience of the organization's strategy, taking into consideration different climate scenarios, including 2C or lower Strategy Climate scenario analysis Physical and transition risks and opportunities
 RISK MANAGEMENT	Disclosure of how the organization identifies, assesses, and manages climate-related risks.	a) Describe the organization's procedure for identifying and assessing climate-related risks Risk Management - Climate Risk Management
		b) Describe the organization's process for managing climate-related risks Risk Management - Climate Risk Management
		c) Describe how the processes for the identification, assessment and management of climate-related risks are integrated into overall risk management Risk Management - Climate Risk Management
 METRICS AND GOALS	Disclosure of the metrics and objectives used to assess and manage relevant risks and opportunities related to climate change where such information is working material.	a) Disclose the metrics or objectives used to measure and manage relevant climate risks and opportunities, where such information is working material Metrics - Strategy Physical and transition risks and opportunities
		b) Disclose Scope 1, Scope 2, and if appropriate Scope 3 GHG emissions and related risks Metrics
		c) Describe the objectives used by the organization to manage climate-related risks and opportunities and the presentation of progress against the proposed objectives Metrics



## LEGAL DISCLOSURE

This document was prepared by [SierraCol Energy](#) to provide relevant information about company's climate risk management for external stakeholders.

The report summarises the Climate Risk and Climate Scenario Analysis conducted through collaborative work across Climate Change Management related areas in the company. This analysis is subject to subsequent review, validation and updating as part of SierraCol's business review and updating process.

Please note that the data used in the climate scenarios and past trends are based on scientific models validated nationally and internationally. Similarly, the analysis carried out regarding the implementation of new GHG mitigation technologies used the company's current projections as a reference, considering compliance with the goals that have been defined in the medium and long-term. Additionally, the information provided and proposed also depends on external factors that are beyond the control of [SierraCol Energy](#) and that the company may propose improvement strategies at any time, to actively respond to changes in the environment and the sector.

