TCFD Report 2023

Introduction

In recognition of the imperative to address the challenges posed by climate change, Canacol Energy Ltd. – hereinafter referred to as "Canacol" or "the Company" – has aligned with the global initiative of the Paris agreement, which aims to limit the increase in temperature to 1.5° above pre-industrial levels. The Company is committed to reducing greenhouse gas emissions, enhancing resilience to the risks posed by climate variability, and implementing measures to adapt to and mitigate the impacts of climate change. Consequently, Canacol is pleased to present its second report on the risks and opportunities associated with climate change for the year 2023, in adherence with the framework of the Task Force on Climate-related Financial Disclosures (TCFD).

In accordance with the recommendations set forth by the TCFD, this report is structured around four main pillars: (i) Governance; (ii) Strategy; (iii) Risks and Opportunities; and iv) Metrics and Objectives. In 2023, Canacol expanded its analysis to further the identification and assessment of physical and transition risks derived from climate-related factors. This involved evaluating the exposure of the Company's key assets to six climate-related threats: extreme heat, extreme cold, water stress and drought, precipitation-induced landslides, forest fires, and river floods. The analysis was conducted using modeling techniques across three-time horizons: 2030, 2040 and 2050, considering various climate scenarios.

Furthermore, this report provides insights into the Company's performance concerning the reduction of greenhouse gas (GHG) emissions, as well as the progress of the strategy and goals established to achieve carbon neutrality. It is anticipated that this analysis will not only encourage the implementation of more tangible actions to address climate-related risks and opportunities but also facilitate the review and refinement of the climate change mitigation and adaptation strategy. Finally, Canacol reiterates its commitment to play an active role in Colombia's energy transition, prioritizing sustainability every step of the way.

Governance

Governance

Board oversight of climate-related risks and opportunities

Canacol is an independent natural gas exploration and production company in Colombia, crafting its sustainability strategy around advancing a cleaner energy future based on natural gas as a transitional energy resource.

Since 2021, Canacol has aligned its sustainability strategy and climate management directives with the guidelines outlined by the TCFD. Consequently, the Company has publicly disclosed its inaugural report, delineating the components of governance, strategy, management of climate-related risks, and metrics. Furthermore, the report included the Company's progress in attaining its GHG emission reduction targets.

The Board of Directors (the "Board") plays a key role in overseeing the actions directed at the management of climate-related risks and opportunities. Its responsibilities encompass reviewing business strategies, policies, and practices designed to address climate challenges, along with continuously evaluating the effectiveness of these measures. In addition, the highest governance body ensures the provision of the necessary resources for executing proposed actions, thereby affirming the Company's commitment to proactive and sustainable decision-making. This commitment aligns with the responsibility to mitigate risks and harness opportunities in the context of climate change.

The Board is responsible for providing the balance between the risks incurred by the Company and the potential returns to its shareholders, implementing actions that monitor and manage risks to ensure the long-term viability of Canacol's operations and assets.

Composition of the Board

The Board is responsible, under the law, for overseeing the administration of the business and affairs of the Company. The Board has the authority and legal obligation to protect and enhance Canacol's assets, as well as a duty of care to its shareholders.

Mindful of the growing challenges related to environmental, social, and governance issues, Canacol has taken measures to ensure that the Board is sufficiently equipped and trained to address these issues. The inclusion of Board members with experience in these fields is a priority in the Company's strategy. [1]

Table 1: Summary of Board members' experience and expertise in different areas including ESG

Board Member	Gender	Age	Director Since	Capital Markets	CEO	Compensation	Corporate Governance	ESG	Financial	Government Relations	Human Resources	Industry Knowledge	Information Technology	Insurance	International Operations	Investor Relations	Leadership	Marketing	Mergers and Acquisitions	Oil and Gas Development	Oil and Gas Exploration	Operational	Risk Management	Strategic Analysis	Strategic Planning
Charle Gamba President, CEO and Director	Male	59	2008	x	x	x	x	x	x	x		x			x	x	x	x	x	x	x	x	x	x	x
Michael Hibberd Chairman	Male	68	2008	x	x	x	x	x	x			x			x	x	x	x	x				x	x	x
Ariel Merenstein Director	Male	40	2020	x			x		x			x			x								x	x	
Francisco Diaz Director	Male	62	2015	x			x	x	x	x		x			x								x	x	
Gustavo Gattas Director	Male	48	2021	x		x	x		x	x	x	x			x	x							x		x
Gonzalo Fernández Tinoco Director	Male	61	2018				x	x	x			x	x		x		x	x				x	x		
Valentina Garbarini Director	Female	36	2023						x								x			x	x				
David Winter Director	Male	66	2009		x	x	x	x		x	x	x			x		x		x	x	x			x	x

1 Table 1: Summary of Board members' experience and expertise in different areas including ESG.

In the year 2023, Canacol designed a series of specific initiatives aimed at strengthening and enhancing the Board's proficiency in sustainability-related matters, encompassing energy transition, climate change, emissions reduction, internal carbon pricing, and nature-based targets, among others. We intend to publicly disclose an assessment and results of these initiatives by 2024.

Committees of the Board of Directors

To strengthen efficiency and decision-making, our Board relies on the experience and knowledge of five cross-business committees: 1. Audit, 2. Governance and Nominating, 3. Compensation, 4. ESG, and 5. Reserves. Among these, the ESG and Audit committees play a pivotal role in addressing climate risks and opportunities. The following is the Company's corporate governance structure .[2]

Table 2: Committees of the Board of Directors

Board Committees

Audit Committee Mandate	Governance and Nominating Committee Mandate	Compensation Committee Mandate	ESG Committee Mandate	Reserves Committee Mandate
Financial Reporting	Governance	Compensation	ESG Strategy	Regulatory Compliance
Audit Process	Director Nomination	Executive Performance	ESG Disclosure	Reserves Disclosure
Risk Management	Board Diversity	Succession Planning	Health and Safety	Operational Performance
Cybersecurity	Board Performance	Diversity, Equity and Inclusion	Sustainability	Independent Evaluator Review
Internal Control Compliance			Governance and Oversight	
			Independent Assurance Review	
			Risk Management	

2 Table 2: Committees of the Board of Directors

ESG Committee

The ESG Committee, serving as the governing body for climate affairs, is responsible for oversight of the Company's strategies concerning social, environmental, and climate responsibilities. Accordingly, the Committee ensures the integration of climate-related risks and opportunities into the corporate strategy. Additionally, it oversees the development of appropriate policies and procedures to identify and manage key climate-related risks, encompassing both physical and transitional risks.

Board meetings are the reporting mechanism for climate issues, and are held at least every six months, or as deemed appropriate by the chair of the Committee. In 2023, two meetings were held.

The roles and responsibilities of the ESG Committee[3] are outlined below:

- Ensure that the ESG Strategy is integrated with Canacol's corporate values, business plan, and annual objectives to foster accountability, compliance, and a culture of transparency at all levels of the Company.
- Establish and monitor ESG policies, plans, and practices.
- Ensure the implementation of appropriate procedures to identify and manage ESG risks.
- Monitor ESG results, and the evolution of sustainability standards and best practices, to ensure the Company's compliance with commitments in this matter.
- Review and approve the sustainability ratings, statement of independence, commitments, and compensation and performance of the third parties selected for the verification of the ESG Integrated Report.
- Review and approve Canacol's annual ESG Integrated Report and other climate reports.

3 For more information on the ESG Committee of the Board of Directors of Canacol, please consult the following link.

Audit Committee

The Audit Committee is responsible for supporting the Board in fulfilling its financial oversight duties. Its responsibilities include reviewing reports submitted by the Company to regulatory authorities and shareholders. Additionally, the Committee oversees the Company's internal control systems related to finance and accounting, as well as its audit, accounting, and financial reporting processes.

The Committee meets at least four times a year and/or as deemed appropriate by its chairperson. The following officers may call a meeting by notifying the Company's corporate secretary, who will notify the members of the Committee:

- Chair of the Committee
- The Company's external auditors
- Chairman of the Board
- Chief Executive Officer ("CEO")
- Chief Financial Officer ("CFO")
- Any member of the Committee

The members of the Committee have adequate and pertinent training that allows them to improve their understanding of audit practices, accounting principles, prevailing legal regulations, as well as risks and industry matters that are applicable to the Company.

The following are the roles and responsibilities of the Audit Committee[4] with respect to risk management:

- Review the Company's established risk management policies and processes to effectively identify, assess, and address core business risks.
- Review the financial exposures assumed by the Company together with the mitigation strategy, including physical and financial positions in commodity markets, strategies with derivatives, capital commitments, exposures to sovereign and foreign exchange risk, and interest rate fluctuations.
- Review, on an annual basis, the adequacy and effectiveness of the Company's insurance policies, including coverage for property damage, loss of profits, civil liability, and directors and officers.
- Review the Company's main financings and its future financing plans and strategies, considering the current and future needs of the business and the condition of the capital markets.
- Review and approve the discussion and disclosure of risks in public documents.

4 For more information on the Audit Committee of the Board of Directors of Canacol, please consult the following link.

The Executive Team's role in assessing and managing climate-related risks and opportunities

The energy transition emerges as a material issue for Canacol, assuming significant relevance. Against the backdrop of a global transition towards cleaner and more sustainable energy sources, addressing this shift becomes paramount for shaping our business strategy, ensuring our long term viability, and bolstering our competitiveness. In alignment with this evolving landscape, the Company has identified as one of its strategic pillars the environmental approach called "A cleaner energy future". This dimension is actively dedicated to fostering sustainable solutions pertaining to renewable energies, reducing GHG emissions, and mitigating risks associated with climate change.

Our strategy not only seeks to enhance our reputation and relationships with stakeholders, but also to unlock new revenue streams and opportunities, and ensures the Company's alignment with evolving energy trends, standards, and regulations. Consequently, the Executive Team has a fundamental role in the execution, management, and assessment of climate-related risks and opportunities.

The Executive Team evaluates and updates the identified risks and opportunities and incorporates them into the Company's strategic and operational objectives. Below are key roles and responsibilities of the Executive Team[5] in managing climate-related risks and opportunities:

- Develop the Company's climate action strategy.
- Build and develop the Company's decarbonization plan.
- Identify climate-related risks and opportunities throughout the Company's value chain.
- Generate actions to address climate-related risks and opportunities.
- Generate strategic alliances to strengthen best practices around climate action.
- Foster an ESG culture built on transparency.
- Monitor and improve the Company's ESG performance.
- Report and communicate climate action initiatives internally and with external stakeholders.

5 See: Table 3. Relationship between the board of directors, the executive team and the committees.

Table 3. Relationship between the Board of Directors, the Executive Team, and the Committees.

CEO: As a member of the Board, Canacol's CEO is a key liaison between management and the Board. The CEO keeps the ESG Committee fully informed about the progress, achievements, and upcoming plans related to the climate strategy. The CEO also provides feedback to the Executive Team and ensures that annual operational objectives and strategies align with climate considerations.

The Climate Management Committee: Established in 2021, the Committee comprises four executives (Vice President of Operations, Vice President of Finance, Vice President of Legal Affairs, and Vice President of Sustainability) and managers who proactively integrate climate issues across all operational activities, corporate processes, and objectives. The Committee meets periodically to monitor progress, which is then reported to the Board's ESG Committee.

Remuneration of Executives for ESG (Climate Action) objectives

Short term Incentive Remuneration

Canacol's remuneration guidelines aim to align executive compensation with the interests of its shareholders and as such the Company has designed metrics where executive compensation is linked to corporate performance.

The Company's bonus plan provides executives with the chance to earn cash bonuses upon achieving key performance goals. The Compensation Committee incorporated corporate performance targets[6] to establish annual bonus objectives for all managers and executives of the Company. These targets are used to assess performance and allocate cash bonuses accordingly.

Key performance measures include 100% compliance with annual sustainability goals (such as the "definition of a corporate plan for carbon reduction and compensation with associated goals, activities, and costs in 2023"). Improving the Company's ESG performance index is another key indicator for the Executive Team's variable compensation.

Table 4. Corporate objetives and performance goals

	Targets					Payout Level				
	Weighting	Threshold	Target	High	Results	<Threshold	Threshold	Target	High	Level Achieved
Operational										
Gross 2P Reserve Additions (BCF)	15-40%	120	145	170	<120	0	50	100	150	0%
Financial										
EBITDA ($M)	20-30%	190	226	264	237	0	50	100	150	114.5%
ESG										
Sustainability Score	10%	67	69	71	69	0	50	100	150	100%
Strategic										
Productive Capacity (mmscf/d)	0-20%	240	250	260	<240	50	50	100	150	0%
General and Administrative ($M)	0-10%	33	30	28	30[(1)]	50	50	100	150	50%
Financing	0-25%	discretionary				50	50	100	150	100%
M&A/Growth	10-15%	discretionary				50	50	100	150	0%

Note: *Adjusted for actual annual bonus and other non-recurring items.*

6 See: Table 4. Corporate Objectives.

Strategy

Strategy

Describe the climate-related risks and opportunities that the organization has identified in the short, medium, and long term.

Methodology

Canacol has developed an analysis of physical and transition risks associated with climate change in accordance with the TCFD recommendations. This analysis prioritizes assets and facilities relevant to the business and its operations.

The prioritized facilities correspond to the stations of i) Jobo, where a unique small-scale liquefied natural gas ("LNG") plant operates, a first of its kind in Colombia, ii) Betania, iii) Clarinete, iv) Pandereta and v) Níspero. In this order of priority, the corresponding analysis was conducted for each asset. These analyses utilized the year 2022 as a baseline and projected outcomes for the short term (2030), medium term (2040) and long term (2050) time horizons. This was done within the framework of climate scenarios SSP1-2.6[7] ; SSP3-7.0[8] and SSP5-8.5[9] for physical risks, and International Energy Agency (IEA) scenarios: STEPS, APS, and NZE for transition risks.

The general objective of Canacol's analysis of physical and climatic risks was to identify the extent of exposure to various climate hazards for each of the prioritized assets and to collect data on the magnitude of such exposure. It is important to note that exposure to climate risks is contingent not only on climate data and projections but also on the unique characteristics of each assessed asset.

Considering the above, the methodology executed by Canacol is composed of four main phases:

- Basis for the analysis of climate risk scenarios
- Physical risk analysis
- Transition risk analysis
- Economic valuation of climate risks

In the following chapters there will be an expansion of each of the stages of the methodology.

7 SSP1-2.6 ("Sustainability"): Low population growth, high economic growth, high levels of education, governability, a globalized society, international cooperation, technological development, and environmental awareness. Under these assumptions, this scenario represents low levels of mitigation and adaptation challenges.

8 SSP3-7.0 ("Fragmentation"): High population growth and low economic development, lower levels of education, and a regionalized society with little environmental awareness, thus representing a high level of challenges for adaptation and mitigation.

9 SSP5-8.5 ("Fossil fuel-based development"): This scenario assumes a very high dependence on fossil fuels, and there would be low population growth, high economic growth, and high human development; therefore, it represents a high level of challenge for mitigation.

Basis for the analysis of climate risk scenarios

In the initial phase, the Company defines the scope of its assets to undergo a detailed analysis concerning the identification and assessment of physical risks. Within this framework, time parameters for the analysis are established, along with specific climate scenarios that will be the subject of the assessment.

This approach ensures an understanding of the potential risks linked to the Company's assets, thereby enabling strategic planning and the implementation of effective mitigation and adaptation measures in response to the identified climate challenges.

Selection of assets and geographic locations:

The identification, analysis, and assessment of physical and transition risks were conducted on the Company's five primary strategic assets. These assets are designated to processing and treating natural gas. This process encompasses various stages: i) primary separation, ii) dehydration, iii) dewpoint conditioning of hydrocarbons, iv) compression, v) filtration, and vi) measurement. The location and geographic coordinates of the prioritized assets are presented below:

Table 5: Geographic locations of the assets selected by Canacol for analysis

Asset	Latitude	Longitude	Altitude (masl)	Municipality	Department
Jobo & LNG	8,641	-75,387	83	Sahagún	Córdoba
Betania	8,559	-75,371	89	Pueblo Nuevo	Córdoba
Clarinete	8,729	-75,323	63	San Marcos	Sucre
Pandereta	8,758	-75,238	53	Caimito	Sucre
Níspero	8,614	-75,240	35	San Marcos	Sucre

Based on the geographic location of the assets, an analysis of their proximity, measured in kilometers, was conducted to understand the similarities and differences crucial for interpreting the data and projections provided by the climate scenarios. It was identified that the assets with the greatest distance between them are the routes from Betania to Pandereta, spanning a distance of 26.43 Km, while the closest are Jobo and Betania, with a distance of 9.24 Km. Additionally, it was determined that all the assets are located at altitudes below 90 meters above sea level.

Selection of time horizons

Canacol selected the years 2030, 2040 and 2050 as key time horizons for its analysis. These years are strategically aligned with significant milestones in the field of sustainable development. The year 2030 represents a turning point, marking the end of the period defined by the Global Agenda for Sustainable Development, aligned with the Sustainable Development Goals (SDGs). This year is also of vital importance for the Company, due to the commitments made by Colombia as a nation, as well as by various companies in relation to compliance with the Paris Agreement and the reduction of carbon emissions.

The selection of the year 2050 as the time horizon is due to the commitment of Colombia, and of several companies, to reach "net zero emissions" by this year. Conversely, the year 2040 serves as a milestone, halfway between these two periods. This decade offers an opportune window for assessing and tracking progress of compliance with the goals established from 2030 to 2050. Consequently, these time horizons serve as benchmarks enabling the Company to communicate its performance and contributions in a comparative manner. This facilitates the implementation of its comprehensive decarbonization and adaptation strategy, advancing the global commitment to sustainability and climate change mitigation.[10]

10 Baseline: Climate scenarios based on CMIP6 data present information between 1985 and 2014 only for the baseline, with the complement of the historical time series data of IDEAM [Spanish acronym for Institute of Hydrology, Meteorology and Environmental Studies] for Colombia. The analysis of the climatological variables consulted with IDEAM was conducted using the Inverse Distance Weighting (IDW) Method utilizing data between 1900 and 2022.

Specifically, projections of precipitation and temperature variables and their trend over time were consulted according to each selected time horizon: 2030, 2040, and 2050, as well as for each selected climate scenario: SSP1-2.6, SSP3-7.0 and SSP5-8.5 of the Sixth Assessment of the Intergovernmental Panel on Climate Change.

- 2030-2040: Assessment of short term climate threats. Based on CMIP6 projection data between 2015 and 2044.
- 2040-2050: Assessment of medium term climate hazards. Based on CMIP6 projection data between 2035 and 2064.

Selection of relevant climatic threats for each operation

Canacol selected a series of climate threats to be evaluated in each of the prioritized assets. These threats are described below, along with the climate indicators selected for the analysis of climate risks (in number of days) and the source of consultation:

Table 6: Climate threats considered by Canacol for the analysis of physical risks associated with climate change.

Climate threat relevant to the operations selected in the climate risk analysis for Canacol	Climate indicators selected for climate risk analysis for Canacol	Source of the selected indicator
Extreme heat	Warm period duration index (days)	They are defined, according to the Spanish State Meteorological Agency (AEMET [for its Spanish acronym), as those maximum temperature values that exceed the 95th percentile of historical records for more than 3 consecutive days.
Extreme cold	Cold wave duration index (days)	It is associated with frosts, which according to the WMO [World Meteorological Organization] are defined as temperature values with records below 0°C.
Water stress and drought	Number of days (days)	The Standardized Precipitation Index (SPI) was used, recommended by the WMO. The index is calculated with a 60-day moving average and is considered a dry period when there is a recurrence of the index in 30 consecutive days.
Landslides due to precipitation	Rain-induced landslide rate (Number of days with a potential chance of a landslide event)	According to the methodological guide of the Colombian Geological Service for the assessment of threats by mass movements, they are defined for those areas that have slopes greater than 7% and recurrent daily rainfall for 7 continuous days above the 95th percentile of the historical series.
Forest fires	Forest fire danger index (Number of days with weather conditions that allow fire)	According to the methodological guide of the Colombian Geological Service for the assessment of threats by mass movements, they are defined for those areas that have slopes greater than 7% and recurrent daily rainfall for 7 continuous days above the 95th percentile of the historical series of land cover with pyrotechnic potential. For this threat to be activated, there must be forest covers, vegetation in transition, forest plantations or pastures without irrigation.
River flooding	Number of days (days)	They are defined in those areas where there are flat geo forms with nearby bodies of water and recurrent daily rainfall for 7 continuous days above the 95th percentile of the historical series

Along with the threats described above, the characteristics of the environment were taken into consideration, such as land cover and geomorphology and slopes in the areas where each asset is located:

Land cover: Initially, the predominant land cover is identified in a 200-meter buffer and then the land cover is presented at the exact site of the establishment. This information is relevant for determining susceptibility to forest fires.

Geomorphology and slopes: The landforms and their slope in percentage are presented. This information is relevant for the identification of susceptibility to flooding and to mass movements.

Climate Scenarios

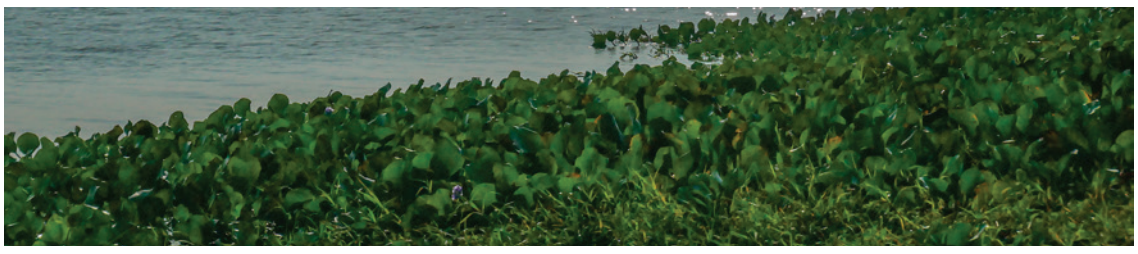
Climate scenarios - Physical risks

For the analysis of physical risks, SSP scenarios were selected, whose projections are achieved by applying the climate model called "Integrated Assessment Model" (IAMs4) to describe plausible but uncertain future changes in human development, the economy, and the environment. These projections were set out by the Intergovernmental Panel on Climate Change (IPCC) in the sixth Assessment Report (AR6).

The main general characteristics of these climate scenarios are:

- Their descriptive approach to socioeconomic and environmental trends at the global level.
- Their quantitative and qualitative content on the assumed challenges for mitigation and adaptation.
- The incorporation of information based on the global atmosphere-ocean general circulation model (GCM7) on energy, economy, and land use on a global scale.
- The absence of climate policies and variables related to the effects of climate change.
- Their extensive information on global assumptions for regional-scale scenarios (O'Neill et al., 2014).

Canacol selected three scenarios out of the five available for the modeling of climate risks and opportunities. The characteristics of each scenario are described in detail below.



SSP1-2.6 - Sustainability: Challenges low for mitigation and low for adaptation:

The scenario is characterized by low GHG emissions declining to net-zero emissions around 2050 or later, followed by varying levels of net negative CO2 emissions. The temperature increase is unlikely to exceed 2°C.

- The world is gradually, but broadly, evolving towards more inclusive and sustainable development that respects the perceived environmental limits. The management of the commons is slowly improving, investments in education and health accelerate the demographic transition, and emphasis on economic growth shifts to a broader emphasis on human well-being. Driven by a growing commitment to achieving development goals, inequality is reduced both between and within countries. Consumption is geared towards low material growth and lower intensity of resources and energy.
- In a scenario characterized by low population growth, high economic growth, high levels of education, strong governability, a globalized society, robust international cooperation, technological development, and heightened environmental awareness, the challenges related to mitigation and adaptation are minimal. This scenario suggests a future where societies are well-equipped to address and manage environmental issues effectively, leveraging technological advancements and international partnerships to create sustainable solutions and minimize the impacts of climate change.

Canacol chose this scenario due to the trend of adoption of Net Zero strategies by major governments and the private sector, and it could be a possible path in the future. This scenario is also considered as optimistic and/or conservative, as it is referred to throughout the analysis.

SSP3-7.0 - Fragmentation: High challenges for mitigation, high challenges for adaptation:

- The resurgence of nationalism, concerns about competitiveness, security and regional conflicts push countries to focus more and more on internal or, at most, regional issues. Policies change over time to become increasingly oriented towards national and regional security issues. Countries are focused on achieving energy and food security goals within their own regions at the expense of broader-based development.
- Investments in education and technological development decrease. Economic development is slow, consumption is material-intensive, and inequalities persist or worsen over time.

Population growth is low in industrialized countries and high in developing countries. The low international priority in addressing environmental problems leads to severe environmental degradation in some regions, a regionalized society with little environmental awareness, high GHG emissions, almost doubling with respect to current levels by 2100, so all this represents a high level of challenges for adaptation and mitigation.

The formidable challenges for mitigation in this scenario are of interest to Canacol, given that natural gas plays a fundamental role in GHG mitigation processes.

SSP5-8.5: Fossil fuel-based development: high challenges for mitigation, low challenges for adaptation:

This scenario assumes a widespread distrust in markets and free competition, innovation, and participatory societies as catalysts for producing rapid technological progress and fostering the development of human capital as a means towards sustainable development.

- Global markets are increasingly integrated. There is also a great deal of investment in health, education, and institutions to improve human and social capital. At the same time, the drive for economic and social development goes hand in hand with the exploitation of abundant fossil fuel resources and the adoption of resource- and energy-intensive lifestyles around the world.
- All these factors lead to fast growth of the world economy, while the world population reaches its peak and declines in the 21st century. Local environmental problems, such as air pollution, are successfully managed. The ability to effectively manage social and ecological systems, including through geoengineering, if necessary, is relied upon. This represents high challenges in mitigation and low challenges in adaptation.

Canacol chose a catastrophic scenario, in the case that technology continues to advance towards fossil fuels without considering other less polluting energy sources. It is used as a scenario to be considered as a stress test on assets that would have to face the consequences of physical risks at their maximum expression.

Considering that, prior to the construction of SSP scenarios, the scientific community had been using RCP scenarios, which inherently possess uncertainties and limitations, RCPs have an equivalence with SSP scenarios, as presented in the following table:

Table 7: RCP scenarios in relation to SSP scenarios

RCP	SSP	SSP x-y
RCP 1.9 – Very strong decline in emissions	SSP1 ("Sustainability")	SSP1-1.9
RCP 2.6 – Strong decline in emissions	SSP1 ("Sustainability")	SSP1-2.6
RCP 4.5 – Slow decline in emissions	SSP2 (Intermediate level of challenges)	SSP2-4.5
RCP 6.0 – Stable emissions	SSP1 ("Sustainability")	SSP4-6.0
RCP 7.0 – Reference result	SSP1 ("Sustainability")	SSP3-7.0
RCP 8.5 – Emissions rising	SSP1 ("Sustainability")	SSP5-8.5

The projections of CO2 and methane (CH4) emissions classified as two greenhouse gases relevant to Canacol's operations considered in this scenario, show the following trends:

Figure 1: Evolution of carbon dioxide (CO2) emissions with each SSP scenario (GtCO2/year) [11]

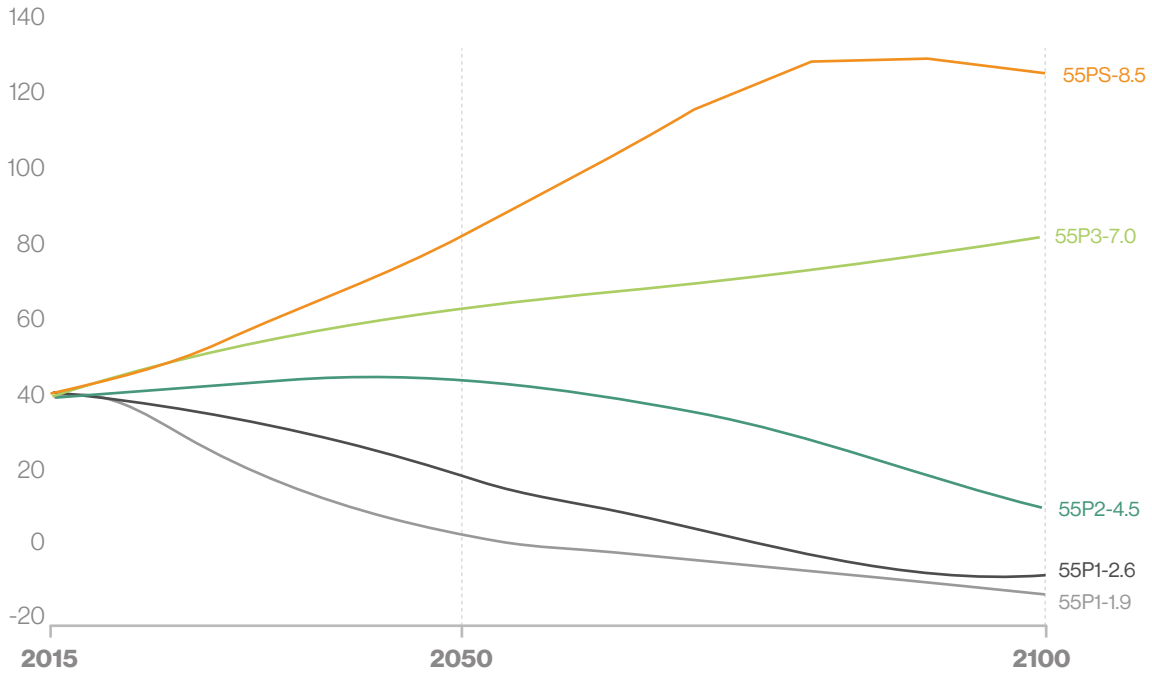
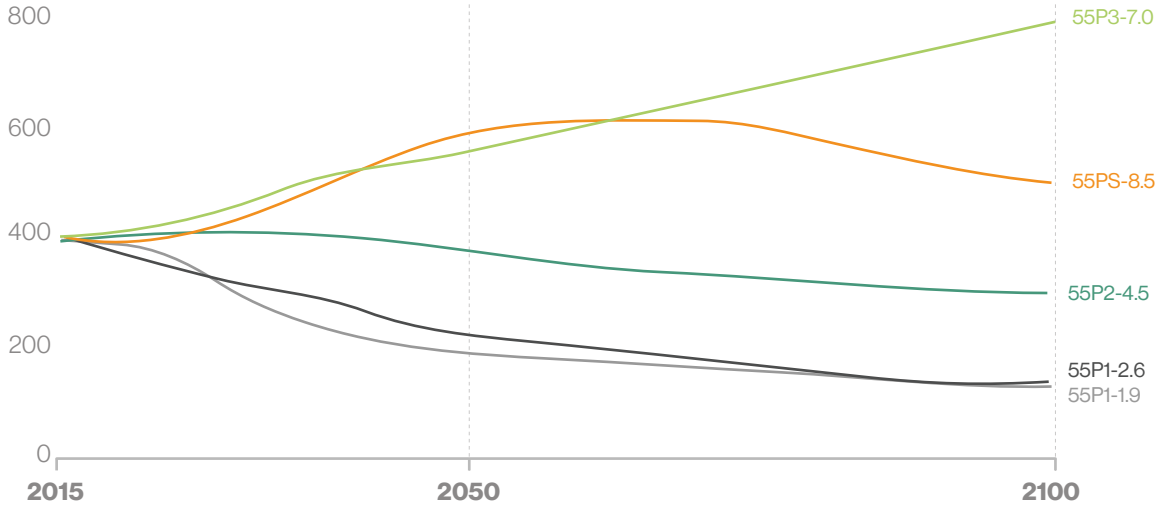
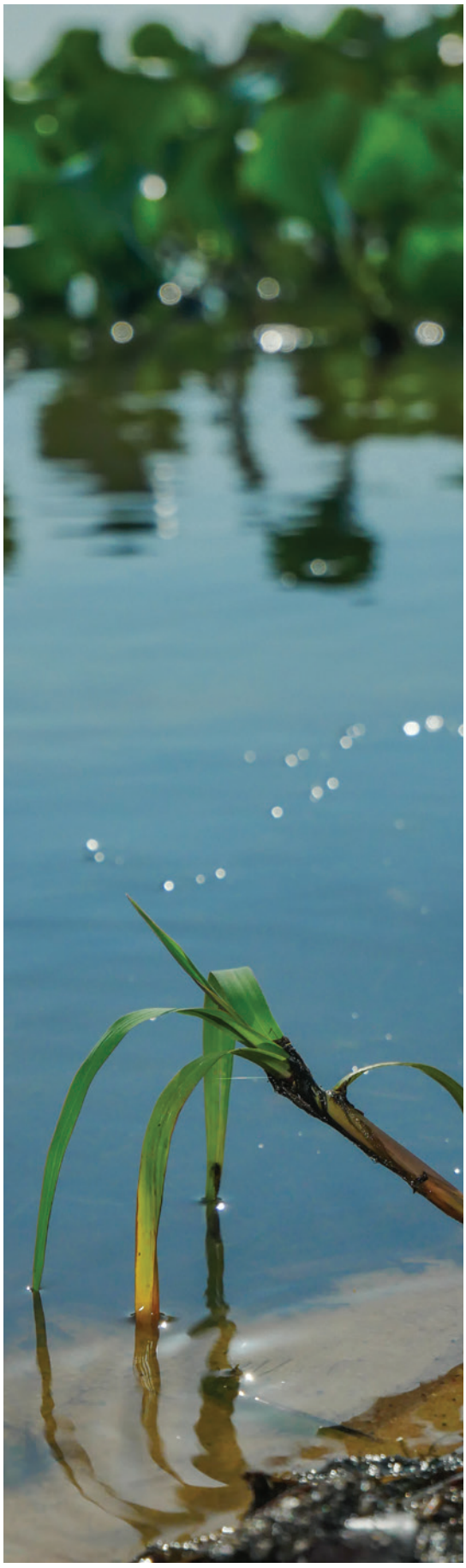


Figure 2: Annual CH4 emissions in Shared Socioeconomic Pathways (SSP).



11 Source: Annual CH4 emissions in Shared Socioeconomic Pathways (SSP). Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (p. 16), by the IPCC (2021).



Climate Scenarios - transition risks

Canacol selected the energy trend scenarios to model transition risks, which were formulated by the International Energy Agency (IEA), an organization created by the OECD in 1974. The IEA produces globally relevant information such as the World Energy Outlook (WEO) and the Energy Technology Perspectives (ETP). These scenarios are developed within the framework of the Global Energy and Climate (GEC) model.

The GEC model explores several scenarios for the energy transition, based on underlying assumptions about how the energy system might respond to and evolve from the global situation.

These scenarios do not constitute predictions and do not offer a singular perspective on the long term future. Instead, they are designed to establish alternative scenarios for comparing different potential futures. They aim to provide a rationale for understanding potential global energy trajectories within the context of climate change and offer insights into the actions that governments can consider fostering knowledge in this area.

The WEO-2022 and the ETP-2023 rely on an integrated modeling cycle of the GEC to explore three scenarios that incorporate energy cost and energy market data. The three scenarios selected by Canacol are:

Net Zero Emissions by 2050 (NZE).

This scenario outlines a pathway to achieve the stabilization of global temperature rise at 1.5°C and universal access to electricity and modern energy systems by 2030. It forecasts an increase of 1.5°C, with annual

emissions decreasing to 23 Gt by 2030 and achieving net zero emissions by 2050.

By 2030, for every dollar spent on fossil fuels, 5 dollars will be spent on clean energy supply, and another 4 dollars will be spent on efficiency and end-uses. Increasing the supply of clean energy is complemented by energy-saving measures, bringing benefits in terms of emission reduction, affordability, and energy security. Improvements in energy intensity through 2030 are almost three times faster than in the last decade.

Hydrogen and hydrogen-based fuels are used in heavy industry and long-distance transport, and their share in total final consumption reaches around 10% by 2050. The use of bioenergy remains at around 100 EJ in the interest of promoting sustainability and reaches around 15% of total final consumption by 2050. CO2 capture amounts to 1.2 Gt in 2030 and 6.2 Gt in 2050, with more than 60% occurring in industry and other fuel transformation sectors.

Announced Pledges (APS)

The APS scenario assumes that all targets announced by governments are met in full and on schedule, including their long term energy access and zero-emission targets.

In the APS scenario, a short term peak in annual emissions is followed by a faster decline to 12 Gt by 2050. This is a larger reduction than in the WEO-2021 APS scenario, reflecting the additional commitments that were reached in 2021. If these commitments are fully implemented and on schedule, along with sectoral commitments for specific industries and targets set by companies (considered for the first time in the APS scenario of 2022), the temperature increase in 2100 under the APS scenario remain at 1.7°C. In this scenario, global production of low-emission hydrogen increases from current very low levels to exceed 30 million tons (Mt) annually by 2030, equivalent to more than 100 bcm of natural gas (although not all low-emission hydrogen would replace natural

Stated Policies (STEPS).

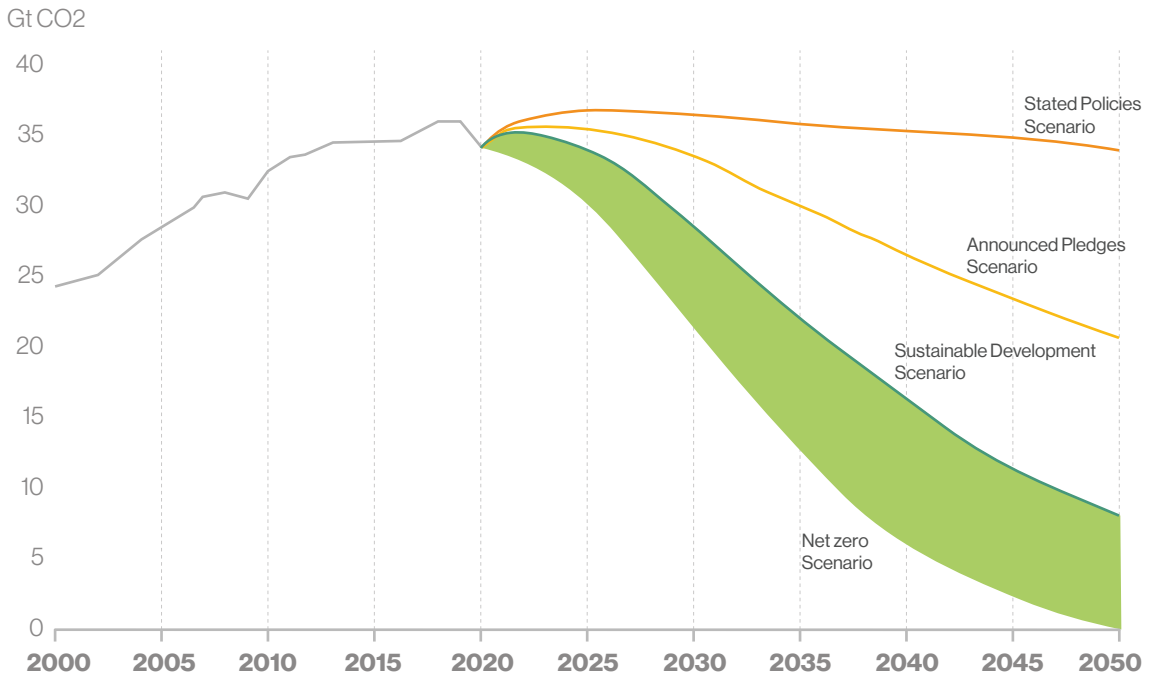
The implementation of new policies in the primary energy markets contributes to a significant increase in annual investments in clean energy, exceeding 2 trillion dollars by 2030 in this scenario. This marks an increase of over 50% compared to current levels (2022).

This scenario is the one with the highest gas consumption, with global demand increasing by less than 5% between 2021 and 2030, and then stabilizing at around 4,400 bcm[12] until 2050. Factors contributing to the decline in gas prospects include the rise in short term prices, rapid expansion of heat pumps and other efficiency measures, extensive deployment of renewable energies, and quicker adoption of other flexibility options in the electric sector. Additionally, in some cases, continued reliance on coal for a slightly longer period. Most of this trend in gas demand until 2030 is attributed to a faster transition to clean energies, although approximately a quarter can be attributed to gas losing market share to coal and oil.

APS and STEPS scenarios are exploratory in nature, as they establish a framework of initial conditions, such as policies and targets, and then assess their outcomes based on representations of energy system models. These models incorporate market dynamics and technological progress to further the understanding of the potential trajectories of these scenarios.

12 Trillion cubic feet.

Figure 3: Behavior of CO2 emissions in the WEO 2021, 2000-2100 scenarios[13]



Physical risk analysis

This content outlines the analysis of the physical risks identified by Canacol for the five prioritized assets. The results are presented individually for each asset, detailing the risks associated with each climate threat, the selected climate scenarios, the time horizons, and the assessment outcomes. Consideration is given to the potential consequences of each risk on various stakeholders, including people, the asset and/or operation, the environment, financial aspects, operational privileges and/or reputation, as well as compliance with legal requirements.

The probability of occurrence, as assessed in the risk assessment, is determined by analyzing the return times of extreme weather events that have the potential to manifest the identified risk.

Only the levels of risks that were assessed as high or medium will be presented in this document, as risks classified as low are not relevant for the purpose of the analysis.

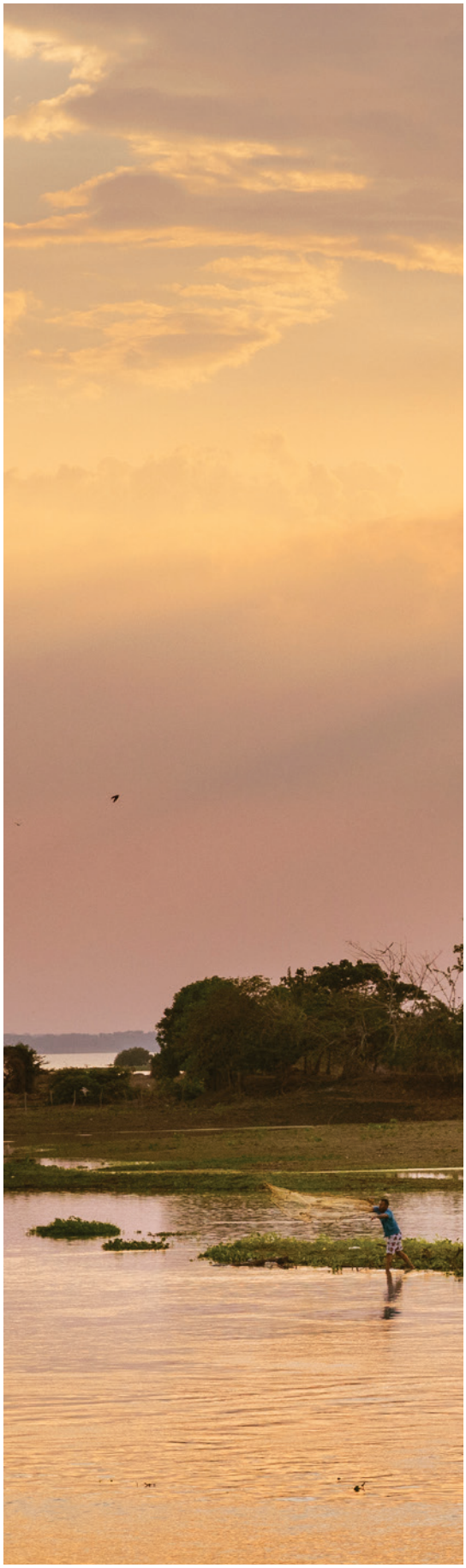
13 Source: https://www.iea.org/reports/world-energy-outlook-2021/scenario-trajectories-and-temperature-outcomes

Jobo Station

Below are the results on the risks and scenarios of the Jobo Station:

Table 8: Jobo Station risks and scenarios

Threat/ Climate Event	Risk	Receiver - Risk Area	Specific Climate Scenario	Time Horizon	Risk Level
Extreme Heat/ Heat Wave	Effect on health of the workforce, especially those who work outdoors and in confined spaces due to exposure to high temperatures.	Individuals	SSP1-2.6	2030-2040-2050	Medium
			SSP3-7.0	2030	High
				2040-2050	Medium
				2030-2040	Medium
			SSP5-8.5	2050	High
	Effect on equipment and their integrity, as well as on gas treatment processes due to exposure to extreme heat.	Asset/ Operations	SSP3-7.0	2030	Medium
			SSP5-8.5	2050	
Extreme Heat/ Hailstorm	Events of hail precipitation of a large size that upon collision would affect roofs, resulting in possible damage to buildings and/or infrastructure.	Asset/ Operations	SSP5-8.5	2050	Medium
Water stress/ Drought	Decrease in availability of water to sustain the operation.	Individuals/ Environment/ Reputation/Legal	SSP3-7.0	2040	Medium
Water stress/ Drought	Forest fire, exposure to heat, flames, smoke with effect on people, assets, operations, and surrounding flora and fauna.	Individuals/ Environment/ Reputation/Legal	SSP1-2.6	2030-2040-2050	High
			SSP3-7.0	2030-2040-2050	
			SSP5-8.5	2030-2040-2050	
River Flooding	Increase of precipitation (rainfall events in the 95th percentile of historical data series) and overflow of surface water bodies closest to the Betania plant.	Individuals Asset/ Operations Environment	SSP1-2.6	2030-2040	High
				2050	Medium
			SSP3-7.0	2030	High
				2040-2050	Medium
			SSP5-8.5	2030-2050	
				2040	High



Considering the information provided in Table 8, the following general conclusions are presented:

- **Forest fire risk conditions:** The conditions that can lead to a forest fire near the Jobo asset can occur during a period of 145 to 171 continuous days, regardless of the weather scenario. In addition, historical records indicate occurrences of similar events in the vicinity of the Jobo asset.
- **Fire triggers:** Dry conditions that persist for at least 60 days can cause plant material to lose its moisture and become fuel, this can lead to short-lived but rapidly spreading forest fires, directly affecting an area of up to 4.48 km2.
- **Potential for human impact:** Although there is the potential for a fire of this magnitude to be fatal for at least one person involved in the emergency response, on-the-ground technical controls, rapid response capability, training and available resources can significantly reduce the risk to people. However, there is still the potential for accidents that could cause operational disruptions and downtime exceeding 24 hours.

In summary, although significant forest fire risks have been identified near the Jobo asset, measures and controls have been implemented to mitigate the potential impact on people and operations.

However, it is crucial to continue to closely monitor conditions and maintain preparedness to respond effectively to any emergencies that may arise.

Betania Substation

Below are the results on the risks and scenarios of the Betania substation:

Table 9: Betania Substation risks and scenarios

Threat/ Climate Event	Risk	Receiver - Risk Area	Specific Climate Scenario	Time Horizon	Risk Level
Extreme Heat/ Heat Wave	Effect on health of the workforce, especially those who work outdoors and in confined spaces due to exposure to high temperatures.	Individuals	SSP1-2.6	2030-2040-2050	Medium
			SSP3-7.0	2030	High
				2040-2050	Medium
			SSP5-8.5	2030-2040-2050	
	Effect on equipment and their integrity, as well as on gas treatment processes due to exposure to extreme heat.	Asset/ Operations	SSP1-2.6	2030-2040-2050	Medium
			SSP3-7.0		
			SSP5-8.5		
Extreme Heat/ Hailstorm	Events of hail precipitation of a large size that after collision would affect roofs with possible damage to the buildings and infrastructure.	Asset/ Operations	SSP5-8.5	2050	Medium
Forest Fires	Forest fire, exposure to heat, flames, smoke with effect on people, assets, operations, and surrounding flora and fauna.	Individuals/Asset/ Operations	SSP1-2.6	2030-2040	Medium
			SSP3-7.0		
			SSP5-8.5	2030-2050	
River Flooding	Increased precipitation (rainfall events in the 95th percentile of historical data series) and overflow of surface water bodies closest to the Betania plant.	Asset/ Operations Environment	SSP1-2.6	2050	Medium
			SSP3-7.0		
			SSP5-8.5		

According to the analysis, the best climate scenario (SSP1-2.6) for 2030 projects is that exposure to heat waves could last between 14 to 24 consecutive days with elevated temperatures. This scenario represents a future with relatively low GHG emissions, which could help mitigate some of the more severe impacts of climate change. However, even under this optimistic scenario, prolonged heat waves are anticipated, indicating the importance of preparing for such extreme weather events. Additionally, it anticipates the possibility of at least one individual experiencing temporary disability for less than 15 days due to ailments linked with extreme heat, such as heat stroke, severe dehydration, hyponatremia, or loss of consciousness induced by high body temperature.

In the worst climate scenario (SSP5-8.5) for 2050, there is a forecast of prolonged exposure to heat waves lasting up to 55 consecutive days, characterized by high temperatures and lacking mitigation measures.

Furthermore, there is a possibility of one individual experiencing disability for a maximum of 180 days, or a group of individuals with disabilities lasting less than 15 days, due to complications or severe symptoms arising from ailments associated with extreme heat.

These results underscore the heightened risk associated with heat waves in the most severe climate scenario projected for 2050. It is important to implement adaptation and mitigation measures to alleviate the impact of heat waves on public health and society. Such measures may encompass public health policies, early warning systems, urban infrastructure adaptation, and awareness campaigns regarding the health implications of extreme heat.

Clarinete

Below are the results on the risks and scenarios of the Clarinete asset:

Table 10: Clarinete risks and scenarios

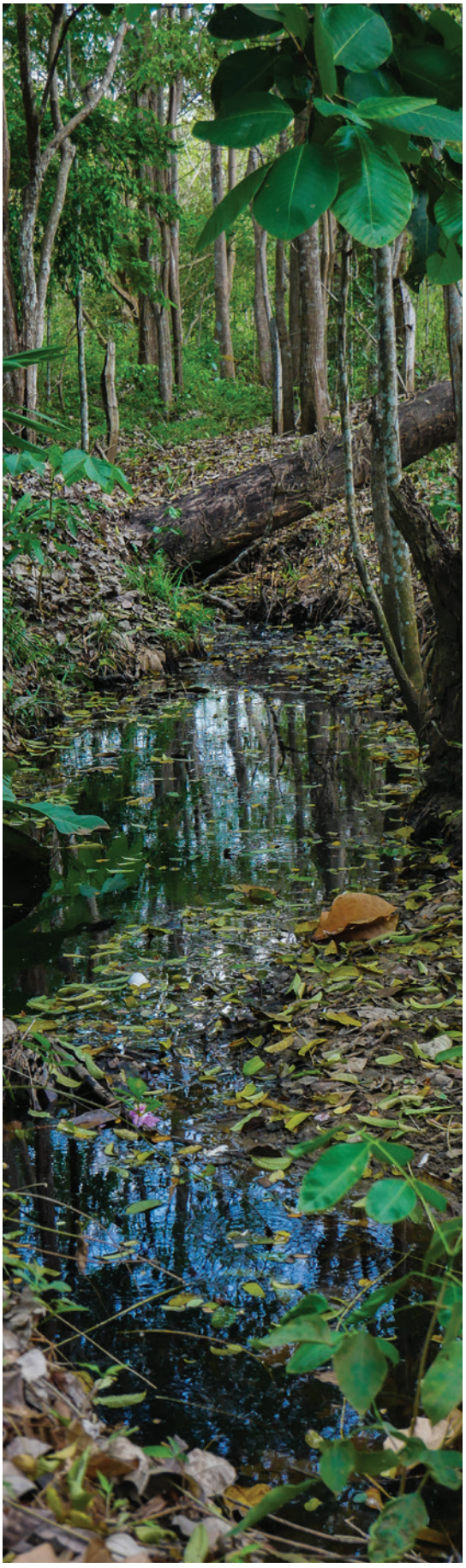
Threat/ Climate Event	Risk	Receiver - Risk Area	Specific Climate Scenario	Time Horizon	Risk Level
Extreme Heat/ Heat Wave	Effect on health of the workforce, especially those who work outdoors and in confined spaces due to exposure to high temperatures.	Individuals	SSP1-2.6	2030-2040-2050	Medium
			SSP3-7.0	2030-2040-2050	
			SSP5-8.5	2030-2040	
				2050	High
	Effect on equipment and their integrity, as well as on gas treatment processes due to exposure to extreme heat.	Asset/ Operations	SSP3-7.0	2040-2050	Medium
			SSP5-8.5	2030-2040-2050	
Extreme Heat/ Hailstorm	Events of hail precipitation of a large size that after collision would affect roofs with possible damage to buildings and infrastructure.	Asset/ Operations	SSP5-8.5	2050	Medium
Water stress /Drought	Decrease in availability of water to sustain the operation.	Individuals/ Environment/ Reputation/Legal	SSP5-8.5	2050	Medium
Forest Fires	Forest fire, exposure to heat, flames, smoke with effect on people, assets, operations, and surrounding flora and fauna.	Individuals/ Environment/ Reputation/Legal	SSP3-7.0	2040	Medium
			SSP5-8.5	2040-2050	
River Flooding	Increase of precipitation (rainfall events in the 95th percentile of historical data series) and overflow of surface water bodies closest to the Betania plant.	Individuals/ Asset/ Operations/ Environment	SSP1-2.6	2030-2040	Medium
			SSP3-7.0	2050	
			SSP5-8.5		

The analysis reveals that in the best climate scenario (SSP1-2.6) spanning from 2030 to 2040, the recurrence interval of an acute heat wave event is less than 3 years. Furthermore, there is a potential increase of up to 71% in the number of consecutive days with elevated temperatures (24 continuous days with high temperatures) compared to the baseline period.

In the SSP5-8.5 climate scenario from 2040 to 2050, there is a potential increase of up to 29% in the duration of heat waves compared to the baseline period. Heat waves may persist for up to 55 consecutive days, representing an acute high-temperature weather event.

These results indicate a significant increase in the frequency and severity of heat waves across the projected climate scenarios. The worst-climate scenario exhibits a sharper and prolonged rise in the occurrence and duration of heat waves, presenting a greater risk to human health, infrastructure, and ecosystems.

Addressing these climate challenges is paramount, necessitating the implementation of adaptation and mitigation measures. These may encompass climate change mitigation policies, enhancing community resilience to extreme weather events, and advocating for sustainable practices aimed at curbing greenhouse gas emissions.



Níspero

Below are the results on the risks and scenarios of the Níspero asset:

Table 11: Níspero risks and scenarios

Threat/ Climate Event	Risk	Receiver - Risk Area	Specific Climate Scenario	Time Horizon	Risk Level
Extre Heat/ Heat Wave	Effect on health of the workforce, especially those who work outdoors and in confined spaces due to exposure to high temperatures.	Individuals	SSP1-2.6	2030-2040-2050	Medium
			SSP3-7.0	2030	High
				2040-2050	Medium
			SSP5-8.5	2030-2040	
				2050	High
	Effect on equipment and their integrity, as well as on gas treatment processes due to exposure to extreme heat.	Asset/ Operations	SSP1-2.6	2030	Medium
			SSP3-7.0	2030-2040	
			SSP5-8.5	2050	
Extreme Heat/ Hailstorm	Events of hail precipitation of a large size that after collision would affect roofs with possible damage to buildings and infrastructure.	Asset/ Operations	SSP5-8.5	2050	Medium
Forest Fires	Forest fire, exposure to heat, flames, smoke with effect on people, assets, operations, and surrounding flora and fauna.	Individuals/ Environment/ Reputation/Legal	SSP1-2.6	2030-2040-2050	Medium
			SSP3-7.0	2030-2040	
			SSP5-8.5	2030-2050	
River Flooding	Increased precipitation (rainfall events in the 95th percentile of historical data series) and overflow of surface water bodies closest to the Betania plant.	Individuals/ Asset/ Operations/ Environment	SSP1-2.6	2030-2040	Medium
			SSP3-7.0	030-2040-2050	
			SSP5-8.5	2030-2040	

For the Níspero asset, the risk of river flooding is mainly identified, considering the following factors:

- Consecutive rainy days with rainfall above the 95th percentile of the data record can trigger river flooding.
- The plant is located on a low-slope location and near a body of water, increasing vulnerability to flooding.
- Heavy rains can cause damage to infrastructure, equipment, machines, wiring and vehicles.
- Potential disruptions to processes may require evacuations of personnel for safety and health reasons.
- Access roads may be closed, and critical supplies may be interrupted due to flooding.

In addition, river flood projections from the projected scenarios propose the following:

- In a conservative climate scenario, rainfall events with precipitation above the 95th percentile can be expected for at least 14 consecutive days.
- There is a trend of increase in the time of consecutive days of precipitation, with projections more than 16 days between 2040 and 2050. Despite this increase, event recurrence times also increase, suggesting that large-scale events become less likely over time.

- It is estimated that an event of more than 16 consecutive days of elevated rainfall could occur every 2.92 years from 2030 onward.
- In a catastrophic climate scenario, although up to 15 continuous days of high rainfall are projected, recurrence times suggest that such events become less likely over time.

In summary, the plant is highly susceptible to river flooding, particularly during periods of intense and prolonged rainfall. It is essential to implement mitigation and preparedness measures to protect infrastructure and ensure the safety of personnel during flood events. In addition, close monitoring of climate projections and adapting to shifts in precipitation patterns are crucial for effective risk management.

Pandereta

Below are the results on the risks and scenarios of the Pandereta asset:

Table 12: Pandereta risks and scenarios

Threat/ Climate Event	Risk	Receiver - Risk Area	Specific Climate Scenario	Time Horizon	Risk Level
Extre Heat/ Heat Wave	Effect on health of the workforce, especially those who work outdoors and in confined spaces due to exposure to high temperatures.	Individuals	SSP1-2.6	2030-2040-2050	Medium
			SSP3-7.0	2030-2040-2050	
				2040-2050	
			SSP5-8.5	2040-2050	
	Effect on equipment and their integrity, as well as on gas treatment processes due to exposure to extreme heat.	Asset/ Operations	SSP1-2.6	2030-2040	Medium
			SSP3-7.0	2030-2040	High
			SSP5-8.5	2030-2050	Medium
				2040	High
Extreme Heat/ Hailstorm	Events of hail precipitation of a large size that after collision would affect roofs with possible damage to the buildings and infrastructure.	Asset/ Operations	SSP3-7.0	2040	Medium
			SSP5-8.5		
Water stress /Drought	Decrease in availability of water to sustain the operation.	Individuals/ Asset/ Operations/ Environment/ Reputation Legal	SSP5-8.5	2050	Medium
Landslide due to precipitation	Death or injury of people from impact or burial due to landslide, particularly for personnel working outdoors.	Individuals/ Environment/ Reputation	SSP1-2.6	2030-2040-2050	High
			SSP3-7.0		
			SSP5-8.5		
	Multiple localized damage to the infrastructure of the operation and/or attached to the operation such as roads which would potentially be covered with debris. Communication routes and power lines would also be affected.	Asset/ Operations/ Environment/ Legal	SSP1-2.6	2030	
				2040-2050	Medium
			SSP3-7.0	2030-2040-2050	
			SSP5-8.5	2030-2040	High
				2050	Medium
Forest Fires	Forest fire, exposure to heat, flames, smoke affecting people, assets, operations, and nature	Individuals/ Asset/ Operations	SSP1-2.6	2040	Medium
			SSP3-7.0	2030	

Source: Self-prepared.

For the Pandereta asset, the risk of landslides due to precipitation represents a high risk from the year 2023 onwards across all climate scenarios assessed in the analysis. The potential magnitude of a landslide event could have fatal consequences for the workforce engaged in outdoor operations near the site.

Additionally, there are percentage variations of up to 44% in the number of consecutive days with elevated precipitation, especially during the time horizon from 2040 to 2050.

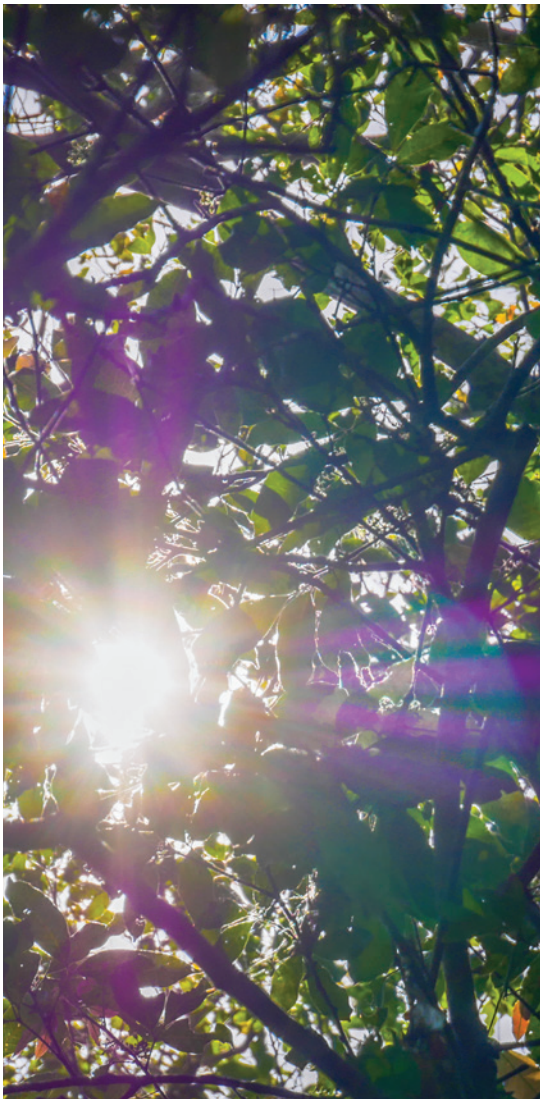
Slopes and precipitation factors are considered as potential triggers for landslides, although other variables, such as soil composition and physics are not considered.

In a catastrophic climate scenario, conditions leading to a potential landslide could last up to 9 days from 2030 onwards.

On the other hand, in a conservative and likely climate scenario, the recurrence interval for triggering events leading to possible landslides due to precipitation could be approximately every 1.37 years starting from 2023. However, in a catastrophic climate scenario, such events may occur with a recurrence interval as short as 1.91 days from the same year.

Regarding inverse phenomena and extended periods of rainfall, it is concluded that they do not represent risks to this asset. This determination is based on low recurrence periods, rendering the risk imperceptible.w

In summary, landslides resulting from precipitation pose a significant risk to both workforce safety and plant operation, particularly during periods of extreme and prolonged weather events. Implementing mitigation and preparedness measures is crucial to reduce this risk, which includes monitoring soil and infrastructure conditions, establishing early warning systems, and developing evacuation plans for emergencies.



Transition risk analysis

The transition risks associated with climate change were assessed considering two parameters: i) Canacol's business in the natural gas value chain and its operations, and ii) the operation and market for Liquefied Natural Gas (LNG).

In accordance with the TCFD's recommendations on transition risks, this analysis maintains the risk categories (market, technological, reputational, political/legal) that were independently analyzed for the assessment of these risks. Moreover, in anticipation of the risk assessment process, potential financial impacts were identified for each of these categories.

The consequences of each transition risk, along with the assessed probability, are based on arguments, projections, data, facts, assumptions, and assertions outlined in the scenarios selected by the IEA for this analysis. These scenarios were supplemented with publicly available information from various sources.

The summary of the results of the analysis of transition risks associated with climate change is as follows:

Table 13: Results of the analysis of transition risks associated with climate change

Risk	Risk focus	Category	Risk Level		
			2030	2040	2050
Progressive increase in the value of carbon credits and in the imposition of carbon taxes to finance the energy transition and the achievement of the determined national contributions assumed by the Colombian government.	Businesses of Canacol Energy Ltd	Market	Low	Medium	Medium
		Technology	Medium	Medium	Medium
		Reputation	Low	Medium	Medium
		Political and Legal	Low	Low	Low
		Financial	Medium	High	High
Reduction in the demand for natural gas on a global scale because of the energy transition.	Businesses of Canacol Energy Ltd	Market	Low	Low	High
		Technology	Low	Medium	Medium
		Reputation	Low	Medium	Medium
		Political and Legal	Low	Low	Low
		Financial	Low	Medium	High
No alignment in decarbonization and information disclosure strategies associated with climate change that induce negative perceptions by interpretation in the absence or insufficiency of climate action.	Businesses of Canacol Energy Ltd	Market	Low	Medium	Medium
		Technology	Low	Low	Medium
		Reputation	Low	Medium	Medium
Increase of costs due to mandatory requirements for generation, capture, recovery and use of fugitive emissions and vents, as well as for the granting of quotas in the framework of the national program of tradable quotas (ONCT) - Res. 40317 of 2023 and title III of Law 2169 of 2021 and Law 1931 of 2018.	Businesses of Canacol Energy Ltd	Market	Low	Low	Low
		Technology	High	High	High
		Reputation	Medium	Low	Low
		Political and Legal	High	Medium	Medium
		Financial	High	High	High

Risk	Risk focus	Category	Risk Level		
			2030	2040	2050
Accelerated technological change leading to the implementation of new high-cost technologies that demand technical capabilities not available in the Colombian market.	Businesses of Canacol Energy Ltd	Market	Medium	Medium	Medium
		Technology	High	High	Medium
		Reputation	Low	Medium	Medium
		Political and Legal	High	High	Medium
		Financial	High	High	Medium
Gradual massification of hydrogen-based technologies with direct effect on gas production and increase of NG (natural gas) imports from 2040 onwards. Rejection of grey hydrogen in the face of lower impact production technologies.	LNG	Market	Medium	High	High
		Technology	Low	Medium	High
		Reputation	Medium	Medium	High
		Political and Legal	Low	Low	Medium
		Financial	Low	Medium	High
Negative perception and loss of competitive advantages due to a slow technological transition to the use of transition fuels and increased pressure from external stakeholders on the natural gas business in the national and international market.	LNG	Market	Low	Medium	High
		Technology	Medium	Medium	Medium
		Reputation	Low	Medium	High
		Political and Legal	Low	Medium	Medium
		Financial	Low	Medium	Medium
It is foreseen that the natural gas supply contracts will be negotiated for shorter terms, in some cases even on a quarterly basis.	LNG	Market	Low	Medium	High
		Reputation	Low	Low	Low
		Political and Legal	Low	Low	Low
		Financial	Low	Medium	Medium
Accelerated energy transition of high cost for the use of natural gas due to compliance with public policies and nationally determined contributions of the Government of Colombia that lead to favoring massive gas imports and to a possible disinvestment in assets for gas liquefaction.	LNG	Market	Low	Medium	High
		Technology	Low	Medium	Medium
		Reputation	Low	Low	Low
		Political and Legal	Medium	High	High
		Financial	Medium	Medium	High

Source: Self-prepared.

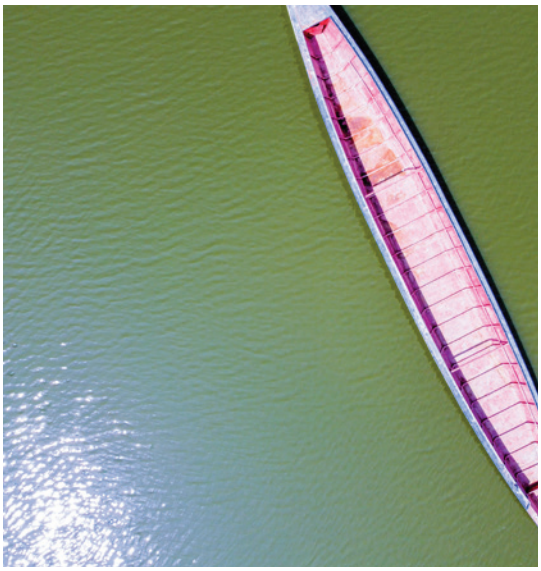
Describe the impact of climate-related risks and opportunities on the organization's business, strategy, and financial planning.

Economic valuation of risks

The methodology used for the economic validation of climate-related risks is described in general terms below:

Selection of significant risks: With reference to the results derived from the assessment of climate-related risks, encompassing both physical and transition risks, as well as opportunities linked to climate change, attention was focused exclusively on those risks and opportunities deemed significant to undertake the economic valuation.

- **Estimation of consequences with possible financial impact:** For each significant risk across each climate threat and time horizon, possible consequences with financial impact for Canacol's operations and business were estimated.
- **Probability of occurrence of climatic events leading to possible financial impacts:** Following the risk analysis, climatic events with the highest probability of occurrence across defined time horizons were identified. This process factored in the specific vulnerability of each asset, evaluating its level of exposure to risks and considering the return times of extreme weather events. In addition, transition risks and opportunities were based on concrete facts.
- **Identification of financial thresholds:** Financial thresholds, delineating monetary limits where the risk magnitude shifts, were defined based on valuation scales for operational and financial risk levels. In Canacol's specific analysis, the financial threshold was set using scales designed to assess financial risk levels.
- **Calculation of the economic valuation of the risk or identification of arguments of possible financial impact:** The economic valuation was calculated as a measure of financial impact in a specific formulation. In instances where there was insufficient information to identify variables for a formulation according to the outlined steps, arguments and data were presented to determine the potential financial consequences linked to the outcomes of the risk or the benefit of each opportunity.



The following table sets out the ceilings of the financial consequences analyzed:

Table 14: Ceilings of the financial consequences analyzed.

Valuation	Financial consequence	Suspension of operations
Very high (Frequent) 5	Value of damage repair plus damaged infrastructure repair. Great economic loss for the Company. The cost of loss is greater than US$500,000.	Loss of time greater than 15 days.
High (Moderate) 4	Value of damage repair plus damaged infrastructure repair, US$50,000 up to US$500,000. Prolonged shutdown in the process.	Loss of time between 5 and 15 days.
Medium (Occasional) 3	Partial interruption in the process. Value of damage repair plus damaged infrastructure repair between US$15,000 and US$50,000.	Loss of time of 1 to 5 days.
Very low (Unlikely) 2	There may be a brief interruption in the process. Value of damage repair plus damaged infrastructure repair less than US$15,000.	Loss of time less than 24 hours.
None (Impossible) 1	There is no material loss or interruption in the process.	There is no loss of time of production due to an occurrence of an event.

For the calculations, the variables and equations that quantified the financial impact of the risks were defined.

The sources of information for each variable in each of the physical risks and climatic threats are presented below:

Table 14: Ceilings of the financial consequences analyzed.

Threat/ Climate Event	Risk	Source of each one of the variables for the calculation of the financial impact
Extreme heat	Effect on health of the workforce, especially those who work outdoors and in confined spaces due to exposure to high temperatures.	The financial impact calculated for this risk is estimated for the period of the specific time horizon. For stress testing purposes, the less conservative values from the SSP7-8.5 climate scenario will be taken for the conclusions of the valuation exercise calculated. The number of heat wave events projected during the period is calculated dividing the time of each time horizon by the return time of each acute heat wave event. The daily cost of the interruption was taken from the physical risk evaluation scale adopted in the content of the disaster risk management plan (chapter 4), estimated at USD$15,000 and a loss of time less than or equal to 24 hours.[9] The maximum duration of the event in days during the period corresponds to the values of the warm period duration index specific to each assessed asset.
	Effect on equipment and equipment integrity, as well as on gas treatment processes from exposure to extreme heat	The number of extreme heat events during each time horizon was calculated dividing the duration of each time horizon by the return time of the threat, for each of the scenarios (the data are on page 3.1 Climate Data of each of the Excel files). The cost of partial interruption of the process and of repairs for a period less than or equal to 72 hours is sourced from the physical risk assessment scale adopted in the content of the disaster risk management plan (chapter 4), estimated at USD$50,000. Due to information limitations, the economic valuation does not include the cost of business continuity measures, or the costs associated with fines for possible contractual breaches with clients with the potential of increasing the financial impact of this risk.
	Events of hail precipitation of a large size that after collision would affect roofs with possible damage to the buildings and infrastructure.	The number of events is taken from the non-conservative projection of up to 4 hailstorm events projected for a recurrence interval of 34 years. This results in a rate of up to 0.11 events per year, that could potentially occur between the months of June and August of each year. The risk factor corresponds to the risk score calculated and described in the climate data tab for extreme heat. The daily cost of interruption was taken from the physical risk assessment scale adopted in the content of the disaster risk management plan (chapter 4), estimated at USD$15,000 and a loss of time less than or equal to 24 hours.

Threat/ Climate Event	Risk	Source of each one of the variables for the calculation of the financial impact
Forest fire	Forest fire, exposure to heat, flames, smoke with effect on people, assets, operations, and surrounding flora and fauna.	The cost assumed for economic loss due to a large-scale event is taken from the disaster risk management plan (chapter 4), estimated at USD$500,000 in events that could have an interruption of the operations potentially greater than 15 days. The probability of occurrence is calculated determining the number of events per year based on the relationship between the duration in years of each time horizon and the recurrence interval of the acute climatic event in which the ideal conditions configured for forest fires of greater magnitude and affectation of up to 1.82 Km^2 in Betania, 1.09 Km^2 in Pandereta, 4.48 Km^2 in Jobo, 1.04 Km^2 in Níspero, and 4.47 Km^2 in Clarinete.
River flooding	Increase of precipitation (rainfall events in the 95th percentile of historical data series) and overflow of surface water bodies closest to the assessed asset.	The cost assumed for economic loss due to a large-scale event is taken from the disaster risk management plan (chapter 4), estimated at USD$500,000 in events that could have an interruption of the operations potentially greater than 15 days. The probability of occurrence is calculated determining the number of events per year from the relationship between the duration in years of each time horizon and the recurrence interval of the acute climatic event in which the ideal conditions configure for a possible river flooding.
Landslide due to precipitation	Death or injury of people from impact or burial due to landslide, particularly for personnel working outdoors.	The number of events of potential landslide due to precipitation projected during the period is calculated dividing the time of each time horizon by the recurrence interval of each acute event of consecutive days of intense precipitation during the period. The daily cost of interruption was taken from the physical risk evaluation scale adopted in the content of the disaster risk management plan (chapter 4), estimated at USD$15,000 and a loss of time less than or equal to 24 hours. The maximum duration of the event in days during the period corresponds to the values of the rate of rain-induced landslides (number of days with a possibility of a landslide event) specific for the Pandereta asset.
	Multiple localized damage to the infrastructure for the operation and attached to the operation such as roads which would potentially be covered	The cost assumed for economic loss per large-scale event is taken from the disaster risk management plan (chapter 4), estimated at USD$500,000 in events that could have an interruption of the operations potentially greater than 15 days.

Table 16: Valuation of the potential financial impact or possible economic implications of transition risks associated with climate change for Canacol's businesses.

Risk	Risk focus	Time horizon with the highest risk level	Basis of the economic valuation	
			Climatic scenario or source	Financial impact without risk control
Progressive increase in the value of carbon credits and in the imposition of carbon taxes to finance the energy transition and the achievement of the determined national contributions assumed by the Colombian government.	Canacol's Businesses	2050	APS (up to US$160/ TonCO2e issued in 2050)	$29,791,200
			APS (up to US$160/ TonCO2e issued in 2050)	$29,791,200
			APS (up to US$160/ TonCO2e issued in 2050)	$29,791,200
Reduction in the demand for natural gas on a global scale as a result of the energy transition.	Canacol's Businesses	2030-2040	In the APS scenario, the global production of low-emission hydrogen increases from the very low current levels exceeding30 million tons (Mt) per year in 2030. This is equivalent to more than 100 bcm of natural gas (although not all low-emission hydrogen would replace natural gas)	Cost of generating electricity - LCOE from gas up to US$110/MWh in 2050. Price of natural gas in the US as a reference location, up to $4 (USD/MBtu) in 2030 and $4.7 (USD/MBtu) in 2050.
	Canacol's Businesses	2030-2040	Most of the downward revision of gas demand to 2030 in this year's STEPS scenario is due to a faster transition to clean energy, although about a quarter is due to gas losing market share to coal and oil.	Cost of generating electricity - LCOE from gas up to US$130/MWh up to 2040. From this year onwards, generation of electricity from gas is no longer considered. Price of natural gas in the US as a reference location, up to $3.7 (USD/MBtu) in 2030 and $2.6 (USD/MBtu) in 2050.
	Canacol's Businesses	2030-2040	Global investments of up to 4 trillion USD, boosting clean energies, are assumed. This highlights the need to attract new investors to the energy sector and to diversify businesses and value proposals around natural gas. By 2030, in the NZE scenario, for every dollar spent on fossil fuels, 5 dollars are spent on clean energy supply, and another 4 dollars are spent on efficiency and end-uses.	Cost of generating electricity - LCOE from gas up to US$130/MWh up to 2040. From this year onwards, generation of electricity from gas is no longer considered. Price of natural gas in the US as a reference location, up to $3.7 (USD/MBtu) in 2030 and $2.6 (USD/MBtu) in 2050.

Risk	Risk focus	Time horizon with the highest risk level	Basis of the economic valuation	
			Climatic scenario or source	Financial impact without risk control
No alignment with decarbonization and information disclosure strategies associated with climate change that induce negative perceptions by interpretation in the absence or insufficiency of climate action.	Canacol's Businesses	2030-2050	All transition climate scenarios of the IEA.	The financial impact is related to the loss of opportunity to access capital for company financing, especially concessional resources associated with ESG performance of better interest rates or credit conditions to manage liabilities.
Increase of costs due to mandatory requirements for generation, capture, recovery, and use of fugitive emissions and vents, as well as for the granting of quotas in the framework of the national program of tradable quotas (ONCT) - Res. 40317 of 2023 and title III of Law 2169 of 2021 and Law 1931 of 2018.	Canacol's Businesses	2025-2050	2025-2030 Accumulated CAPEX value in USD for the implementation of Canacol's decarbonization plan.	$2,790,000
	Canacol's Businesses	2025-2050	2030-2050 Accumulated CAPEX value in USD for the implementation of Canacol's decarbonization plan.	$45,440,000
Gradual massification of hydrogen-based technologies with direct effect on gas production and increase of NG imports from 2040 onwards. Rejection of grey hydrogen technologies in the face of lower impact production technologies.	LNG	2030-2050	N.A.	It is evidenced in the IEA's information analyzed that the gross domestic product in Latin America would reach a growth rate of 2.4% from 2023, followed by a projected stagnation until 2050. This financial indicator shows an economic constraint that could have an impact on the technological transition of all sectors for the conversion and use of natural gas as a transition fuel. On the other hand, it is identified that technologies that do not use gas would have a decrease in their cost; for example, the cost of a hydrogen electrolyzer in the STEPS scenario would go from USD/kW $1,505 today to USD/kW $445 in 2050; in the APS scenario it would cost USD/kW $265 and in the NZE scenario it would cost USD/kW $230 by the year 2050.

Risk	Risk focus	Time horizon with the highest risk level	Basis of the economic valuation	
			Climatic scenario or source	Financial impact without risk control
Negative perception and loss of competitive advantages due to a slow technological transition to the use of transition fuels and increased pressure from external stakeholders on the natural gas business in the national and international markets.	LNG	2030-2050	N.A.	It is evidenced in the IEA's information analyzed that the gross domestic product in Latin America would reach a growth rate of 2.4% from 2023, followed by a projected stagnation until 2050. This financial indicator would show an economic constraint that could have an impact on the technological transition of all sectors for the conversion and use of natural gas as a transition fuel. On the other hand, it is identified that technologies that do not use gas would have a decrease in their cost; for example, the cost of a hydrogen electrolyzer in the STEPS scenario would go from USD/kW $1,505 today to USD/kW $445 in 2050; in the APS scenario it would cost USD/kW $265 and in the NZE scenario it would cost USD/kW $230 by the year 2050.
It is foreseen that the natural gas supply contracts will be negotiated for shorter terms; in some cases even on a quarterly basis.	LNG	N.A.	N.A.	This report had limitations to identify details of current commercial agreements and the contracting terms in order to estimate an economic valuation.
Accelerated energy transition of high cost for the use of natural gas due to compliance with public policies and nationally determined contributions of the Government of Colombia that lead to favoring massive gas imports and to a possible disinvestment in assets for gas liquefaction.	LNG	N.A.	Divestment is an alternative of financial impact that could increase liquidity and raise capital that could be reinvested. However, divestment in an asset such as Canacol´s LNG plant would mean that that asset is not aligned with the priorities or needs of the business. This impact is directly related to the change of the business model and to the loss of opportunities in the market that would not materialize in the case of a disruptive and accelerated energy transition in Colombia.	It is recommended to evaluate alternatives for Canacol's business model, and to strengthen the long term strategic planning processes. Taking into account the inputs of this report, they constitute an input in a probable scenario in which Canacol decides to diversify its performance in other segments of the energy market so that changes in the environment may increase the resilience of the Company.

The analysis of estimated financial impacts reveals that the NZE 2050 scenario presents a higher likelihood for transition risks to reach high levels and record significant costs for the Company. The cost of carbon credits for offsetting emissions is expected to rise over time, and access to the carbon market may become restricted due to mandatory compliance with maximum permissible GHG emission quotas. Assuming Canacol does not effectively implement its decarbonization plan, mitigation management through offsetting could result in expenses of up to USD $33,515,000 by 2050, provided that the emission trend included in the GHG inventory remains stable over time.

The IEA transition scenarios suggest that the cost of generating electric energy will remain stable, which would have favorable financial implications for the solar photovoltaic projects established in the Company's decarbonization plan.

Furthermore, considering the self-generation capacity for the assets, this practice reduces dependencies on comparative energy sources and mitigates the potential financial impact of price fluctuations. Additionally, the stability of natural gas prices over time as projected in the IEA climate scenarios, is pertinent for the business projections and other financial decisions. The APS scenario forecasts the highest gas prices, while the NZE scenario predicts the lowest values.

Describe the resilience of the organization, considering different climate-related scenarios, such as a scenario with 2°C or less.

Results of level of exposure and vulnerability of each asset to climate threats.

The initial findings of the analysis reveal the level of exposure exhibited by each asset to the identified climate threats defined in this study, along with their evolution over time based on the projections of the selected climate scenarios.

The analysis of the level of exposure over time has, in turn, facilitated the identification of asset-specific vulnerabilities, thereby pinpointing the instances and scenarios where the consequences of climate risks could be most significant.

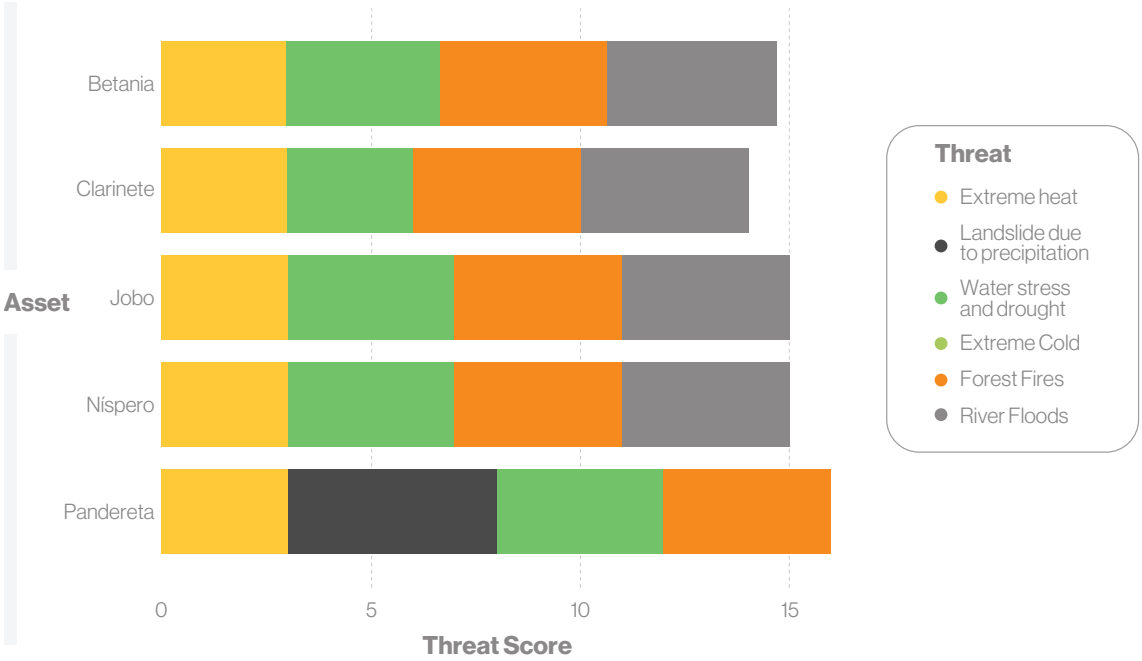
These results were comparatively analyzed using graphical tools to assess the level of exposure to natural climatic threats and to recognize specific vulnerabilities of the assets. The results of this first analysis are presented below:

Levels of exposure to climatic threats by time horizon and climate scenario

The interpretation of the climatic data obtained from primary sources for constructing the baseline, along with projections of each scenario across time horizons in selected locations, facilitated the identification of extreme weather events associated with specific conditions.

Extreme weather events were determined by calculating indices that relate to climatic variables indicative of such events. Additionally, each event was rated based on its probability of occurrence and frequency in years for each asset.

Considering that each asset varies in its exposure to climatic threats and extreme weather events due to factors such as vegetation cover or geomorphology, a multi-temporal graphical analysis was conducted. This analysis allows for the cumulative visualization of each asset's exposure to various natural climatic threats considered in the study.



The graph indicates that Pandereta has the highest accumulated exposure to climatic threats, followed by Jobo and Níspero, then Betania and the one with the lowest level of exposure is Clarinete.

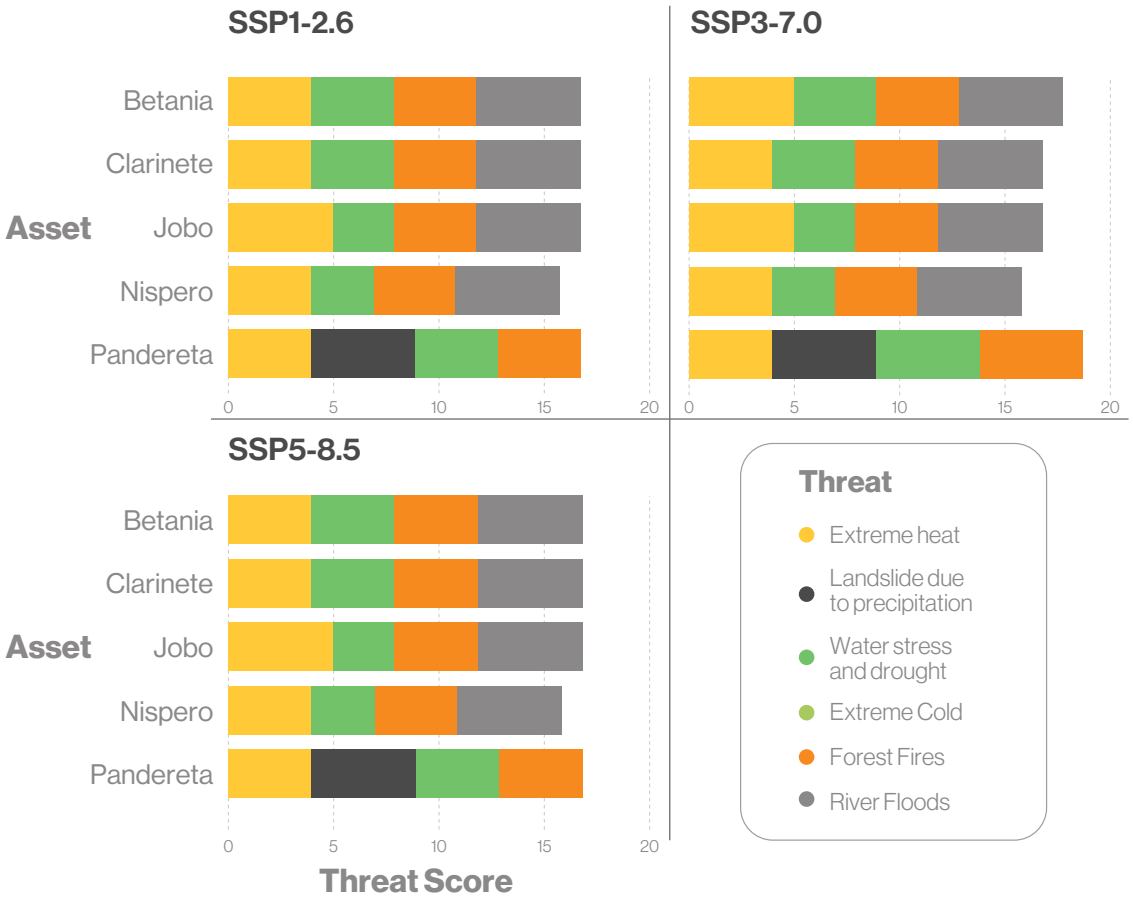
On the Pandereta asset, there are mitigating factors due to geo form variables (slopes greater than 7%) that heightens vulnerability to landslides triggered by precipitation. However, these same factors mitigate exposure to river flooding, reducing this particular risk to zero. Consequently, Pandereta stands as the sole asset in the analysis susceptible to landslides from precipitation while remaining unaffected by river flooding.

Furthermore, it is apparent that the threat of water stress exerts a lesser impact on the Clarinete asset compared to others. Additionally, a general trend reveals similarities across all assets regarding exposure to climatic threats such as forest fires and extreme heat. These commonalities stem from the geographical proximity of the assets, subjecting them to similar climatic patterns.

None of the assets face exposure to extreme cold, defined here as frosts. Expanding on the interpretation of the threat of extreme cold for this analysis, temperature records within the 10th percentile of historical data and projections were considered. However, only the SSP1-2.6 scenario recorded 0.60 days of low temperature for 2030 and 0.8 days for 2050 across all assets, while other scenarios showed no days with low temperature. This overall condition across all assets leads to the conclusion that there is no threat of extreme cold across any of the locations.

First time horizon (2023 – 2030)

After 2023, and utilizing the data from the projections of each selected climate scenario for the analysis until 2030, the cumulative exposure to natural climate threats exhibits the following patterns



This enables us to recognize that, based on the climate scenarios, even with temperatures in the range of 1.2°C to 1.8°C as projected in the SSP1-2.6 scenario, certain alterations in the exposure to threats for each location of the assets may occur. For the 2030 time horizon, the identified changes correspond to heightened exposure of assets to climate threats.

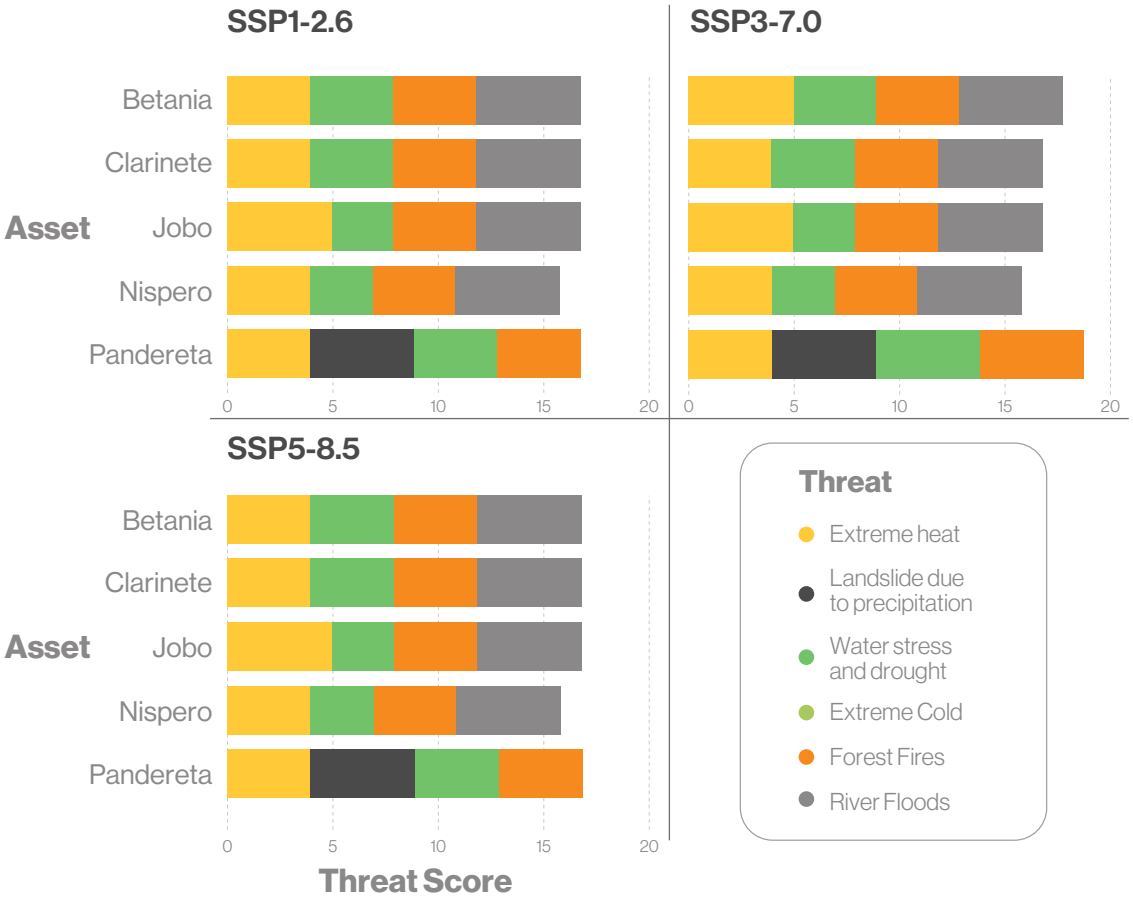
Despite the relatively optimistic scenario of SSP1-2.6, which aims for lower greenhouse gas emissions, the increased frequency and duration of extreme weather events like heat waves highlight the necessity for robust adaptation and mitigation strategies to protect vulnerable assets.

The SSP1-2.6 and SSP5-8.5 scenarios exhibit a similar trend for the 2030 horizon. Among them, Pandereta displays the highest level of exposure to climatic threats, followed by Betania, Clarinete and Jobo, which have relatively similar conditions. Jobo stands out with a higher exposure to extreme heat but a lower level of exposure to water stress and drought compared to Betania and Clarinete. In the SSP3-7.0 scenario, exposure to extreme heat increases for Betania compared to the other two scenarios, while Pandereta emerges as the asset with the highest level of exposure in the SSP2-7.0 scenario. There is a noticeable upward trend in the level of exposure to climatic threats by 2030 across all climate scenarios, with Jobo experiencing a particularly significant increase in exposure to extreme heat, potentially up to 50% more than other assets by 2030. Interestingly, both the Jobo and Nispero assets consistently show lower exposure levels to the threat of water stress across all climate scenarios in 2030.

Compared to the baseline, the exposure level to the threat of water stress appears to be consistent and similar across all assets. However, there is a notable increase in the cumulative exposure to climatic threats in the Betania and Pandereta assets, particularly in the SSP3-7.0 climate scenario. This increase is attributed to a rise in the threat of extreme heat for Betania and water stress for Pandereta by 2030.

First time horizon (2023 – 2030)

Beyond 2030 and based on the projections of each climatic scenario selected for analysis until 2040, the cumulative exposure level to natural climatic threats exhibits the following patterns across each asset:



The graph clearly illustrates an overall increase in exposure across all assets and climate scenarios. This increase is mainly attributed to changes in the threat of extreme heat, with the most significant changes observed in the SSP3-7.0 and SSP5-8.5 scenarios.

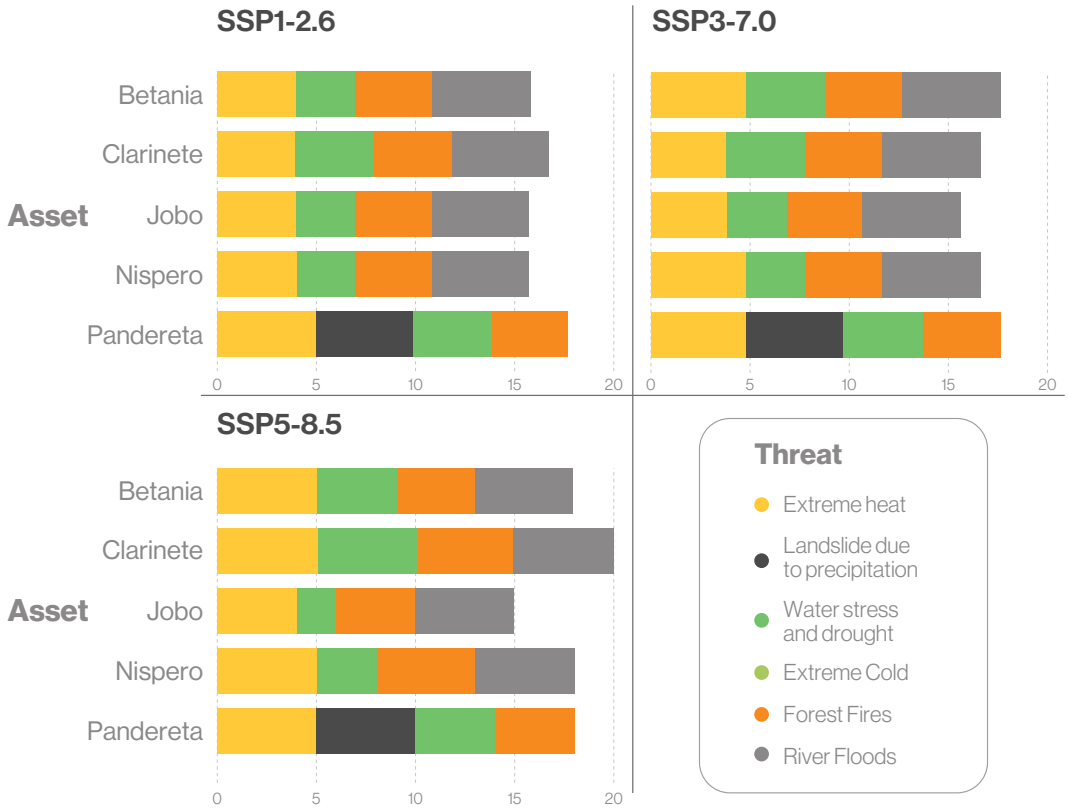
In this time horizon, all climate scenarios indicate a consistent level of exposure to the threat of river flooding for all assets (except Pandereta, which has no exposure to this threat), as well as to the threat of forest fires.

In the SSP1-2.6 scenario for 2040, it is evident that the Níspero asset would experience an increase in the level of exposure to the threat of extreme heat compared to the baseline. Similarly, the Clarinete asset shows an increase in exposure to the threat of water stress or drought compared to the baseline.

In the SSP3-7.0 scenario for 2040, it is evident that the Betania, Jobo, and Pandereta assets have the highest level of cumulative exposure to climatic threats. In the SSP5-8.5 scenario, it is evident that the Jobo and Pandereta assets have the highest level of cumulative exposure to climatic threats.

Third time horizon (2040–2050)

After 2040 and using the data from the projections of each climate scenario selected for the analysis until 2050, the level of cumulative exposure to natural climate threats shows the following behavior for each asset:



It is evident that in all climate scenarios from 2040 onwards, the Pandereta asset experiences an increase in the level of accumulated exposure compared to the baseline, primarily due to heightened exposure to extreme heat.

During the period from 2040 to 2050, it is identified that in all climate scenarios, the threats experiencing the most significant variations are extreme heat and water stress, particularly in the projections of the SSP5-8.5 scenario. These variations have implications for the level of exposure of all assets considered in the analysis.

By 2050, the assets projected to have the highest level of exposure to threats include the Clarinete plant, maintaining its high level in the SSP1-2.6 and SSP3-7.0 scenarios and escalating further in the SSP5-8.5 scenario. Following is Betania, which consistently shows a high level of exposure across all climate scenarios, particularly under the projections of the SSP3-7.0 scenario.

Therefore, in the SSP1-2.6 scenario, Pandereta exhibits the highest cumulative exposure to climatic threats. In the SSP3-7.0 scenario both Pandereta and Betania show the highest cumulative exposure levels, while in the SSP5-8.5 scenario, Clarinete emerges as the asset with the highest cumulative exposure to climatic threats.

Risk Management

Risk Management

Describe the organization's processes for identifying and assessing climate-related risks.

Processing and analysis of climate data for each climate scenario and threat.

The extraction of climate change projections relies on the COPERNICUS platform of the European Union, drawing on data from the CMIP6 (Coupled Model Intercomparison Project Phase 6). Approximately 31 distinct models are processed, with selection based on the model's closest alignment with historical data specific to each asset's location.

The extracted data comprises daily series of precipitation and temperature, facilitating the analysis of various events, including their duration. Here is an illustration of the absolute and return climate data for one of the evaluated assets.

Climate Threat	Climate Indicator	Climatic Data											
		SSP1-2.6				SSP3-7.0				SSP5-8.5			
		Base Line	2030	2040	2050	Base Line	2030	2040	2050	Base Line	2030	2040	2050
Extreme Heat	Warm period duration index (days)	14	19	24	20	14	16	22	26	14	17	26	55
Extreme Cold	Cold wave duration index (days)	0	0	0	0	0	0	0	0	0	0	0	0
Water stress and drought	Rain-induced landslide rate (Number of days with a potential chance of a landslide event)	168	109	114	114	168	106	112	99	168	107	116	119
Landslides Due to Precipitation	Rain-induced landslide rate (Number of days with a potential chance of a landslide event)	0	0	0	0	0	0	0	0	0	0	0	0
Forest Fires	Forest fire danger index (Number of days with weather conditions that allow fire)	168	164	145	147	171	170	171	150	171	170	157	162
River Flooding	Increases in the frequency of heavy rainfall events (days)	14	7	9	11	14	13	8	7	14	9	11	15

Return Periods (Years)											
SSP1-2.6				SSP3-7.0				SSP5-8.5			
Base Line	2030	2040	2050	Base Line	2030	2040	2050	Base Line	2030	2040	2050
20.77	3.40	3.01	3.14	20.77	2.75	3.86	3.39	20.77	3.68	3.62	3.16
0	0	0	0	0	0	0	0	0	0	0	0
7.13	6.90	7.63	5.97	7.13	9.83	4.89	4.89	7.13	9.83	9.38	11.02
0	0	0	0	0	0	0	0	0	0	0	0
25.60	6.51	6.54	5.76	25.60	8.19	7.65	8.96	25.60	9.56	8.74	8.67
18.08	0.94	3.30	6.31	18.08	2.71	6.97	4.10	18.08	4.48	2.80	5.33

After extracting climatic data for each asset, in each scenario, and for each time horizon, the risk score for each threat is calculated. This score is defined based on the duration in days of the climatic index and the return period. Subsequently, the score for each threat is presented.

Extreme Heat

		Duration (consecutive days)				
		>30 days	21 to 29 days	15 to 20 days	7 to 14 days	3 to 6 days
Return Period (years)	0-2 years	Very high	Very high	Very high	High	High
	3-5 years	Very high	Very high	High	High	Moderate
	6-10 years	Very high	High	High	Moderate	Low
	11-50 years	High	High	Moderate	Low	Very low
	51-100 years	High	Moderate	Low	Very low	Very low

Extreme Cold

		Duration (consecutive days)				
		>30 days	21 to 29 days	15 to 20 days	7 to 14 days	3 to 6 days
Return Period (years)	0-2 years	Very high	Very high	Very high	High	High
	3-5 years	Very high	Very high	High	High	Moderate
	6-10 years	Very high	High	High	Moderate	Low
	11-50 years	High	High	Moderate	Low	Very low
	51-100 years	High	Moderate	Low	Very low	Very low

Water stress

		Duration (consecutive days)				
		>30 days	21 to 29 days	15 to 20 days	7 to 14 days	3 to 6 days
Return Period (years)	0-2 years	Very high	Very high	Very high	High	High
	3-5 years	Very high	Very high	High	High	Moderate
	6-10 years	Very high	High	High	Moderate	Low
	11-50 years	High	High	Moderate	Low	Very low
	51-100 years	High	Moderate	Low	Very low	Very low

Landslides due to precipitation

		Duration (consecutive days)				
		>30 days	21 to 29 days	15 to 20 days	7 to 14 days	3 to 6 days
Return Period (years)	0-2 years	Very high	Very high	Very high	High	High
	3-5 years	Very high	Very high	High	High	Moderate
	6-10 years	Very high	High	High	Moderate	Low
	11-50 years	High	High	Moderate	Low	Very low
	51-100 years	High	Moderate	Low	Very low	Very low

Forest fires

		Duration (consecutive days)				
		>30 days	21 to 29 days	15 to 20 days	7 to 14 days	3 to 6 days
Return Period (years)	0-2 years	Very high	Very high	Very high	High	High
	3-5 years	Very high	Very high	High	High	Moderate
	6-10 years	Very high	High	High	Moderate	Low
	11-50 years	High	High	Moderate	Low	Very low
	51-100 years	High	Moderate	Low	Very low	Very low

River flooding

		Duration (consecutive days)				
		>30 days	21 to 29 days	15 to 20 days	7 to 14 days	3 to 6 days
Return Period (years)	0-2 years	Very high	Very high	Very high	High	High
	3-5 years	Very high	Very high	High	High	Moderate
	6-10 years	Very high	High	High	Moderate	Low
	11-50 years	High	High	Moderate	Low	Very low
	51-100 years	High	Moderate	Low	Very low	Very low

Finally, the consolidation of the risk score matrix is generated. For illustration, we continue with the example asset:

- The very high score is represented by the number 5.
- The high score is represented by the number 4.
- The moderate score is represented by the number 3.
- The low score is represented by the number 2.
- Very low score is represented by the number 1.

Risk scores per climatic threat – considering return time of the event in years

Climate Threat	Climate Indicator	Climatic Data											
		SSP1-2.6				SSP3-7.0				SSP5-8.5			
		Base Line	2030	2040	2050	Base Line	2030	2040	2050	Base Line	2030	2040	2050
Extreme Heat	Warm period duration index (days)	3	5	4	4	3	5	5	4	3	5	5	4
Extreme Cold	Cold wave duration index (days)	0	0	0	0	0	0	0	0	0	0	0	0
Water stress and drought	Disruption to water services (days)	4	3	3	3	4	3	4	3	4	3	4	2
Landslides Due to Precipitation	Rain-induced landslide rate (Number of days with a potential chance of a landslide event)	0	0	0	0	0	0	0	0	0	0	0	0
Forest Fires	Forest fire danger index (Number of days with weather conditions that allow fire)	4	4	4	4	4	4	4	4	4	4	4	4
River Flooding	Increases in the frequency of heavy rainfall events (days)	4	5	5	5	4	5	5	5	4	5	5	5

Risk level

Canacol defines severity levels from 1 to 5 to assess the degree of severity and impact of each risk. These levels are evaluated across six impact categories: Personnel, Asset/Operation, Environmental, Financial, Privilege/Reputation, and Legal and Compliance. Additionally, the probability of occurrence of a risk is assessed on a scale from 1 to 5, with 1 indicating an unlikely event and 5 indicating an inevitable, high probability occurrence.

The risk level is calculated by combining the severity ratings of the identified consequences with the probability of occurrence of each risk. Below is the risk level assessment matrix along with its corresponding scales.

Qualitative Possibility			The occurrence is not known in the industry	It has happened in the O&G industry	Occurs in the industry sporadically	Likely to occur in the operation	Commonly occurring in the O&G industry
Return period of the event			It can happen in 10 years or more	It can occur between 5 and 10 years	It can occur between 3 and 5 years	It can occur between 1 and 3 years	It may happen next year
			Probability of occurrence				
			A - Unlikely	B - Low probability of occurrence	C - Likely	D - Very likely	E - Inevitable, high probability of occurrence
			1	2	3	4	5
Severity of the conse-quences	Very High	5	5	10	15	20	25
	High	4	4	8	12	16	20
	Medium	3	3	6	9	12	15
	Vey low	2	2	4	6	8	10
	None	1	1	2	3	4	5

Risk level (RL)	Duration (consecutive days)
Very high (20-25)	Follow the hierarchy of control measure defined by Canacol Energy Ltd. All control measures must be considered thoroughly.
High (10-19)	Follow the hierarchy of control measure defined by Canacol Energy Ltd. All control measures must be considered thoroughly.
Medium (5-9)	Follow the hierarchy of control measure defined by Canacol Energy Ltd. All control measures must be considered thoroughly.
Low (1-4)	Follow the hierarchy of control measure defined by Canacol Energy Ltd. All control measures must be considered thoroughly.

Describe the organization's processes for identifying and evaluating climate-related opportunities.

Opportunities represent positive aspects derived from favorable circumstances or conditions that benefit the Company's business and operations.

Canacol identifies and evaluates climate-related opportunities by examining favorable conditions that the Company can leverage through its management and response to climate change. These opportunities are categorized based on components outlined in the TCFD recommendations, which include:

- Resilience, understood as the Company's ability to respond in a timely manner to emerging or current challenges and circumstances with potential profit creation.
- The receiving component of the market, understood as the segment served or with the possibility of expansion for the Company's business.
- The receiving component of products and services in which Canacol explores the opportunity to venture or strengthen its capabilities, recognizing that climate change may have favorable conditions, current and future, to strengthen the value offerings of the Company in the energy context and specifically in its natural gas offering.
- The receiving component of energy sources, understanding that the operation has a dependence on energy for conducting business operations. In this context, the Company evaluates opportunities related to self-generation capacities utilizing natural gas, energy efficiency, and demand management. Canacol also ensures to uphold guarantees to sustain these capacities.
- The receiving component of eco-efficiency, which refers to the rational and efficient use of the natural resources necessary to operate and which are accounted for in the operating expenses (OPEX). Recognizing that all companies have dependencies on natural resources due to the natural foundation supporting any productive system, TCFD suggests that certain sectors exhibit greater dependency based on the nature their businesses and value chain.

In this context, Canacol assessed the potential benefits or favorable conditions using a method defined and adapted by the Company. This method employs a 3 x 3 matrix that combines values from 1 to 3 for the positive impact or favorable consequence, and from 1 to 3 for the probability of occurrence. This assessment considers uncertainties arising from projections and estimates supported by studies and analysis conducted by energy authorities at the global and national level.

The 3 x 3 opportunity assessment matrix offers a less detailed and more subjective approach compared to the 5 x 5 matrix used for risk assessment. This method allows for a presumptive determination of actions to materialize potential opportunities, which is typical for this type of analysis. Unlike risks, the assessment of probability and possibilities of opportunities is measured by a 3 x 3 matrix. Impact values are measured on a scale of 1 to 3 across categories such as market, eco-efficiency, natural resource efficiency, financial, products or services, resilience, and energy source.

A (1) Low probability	B (2) Likely	C (3) Very likely
3	6	9
2	4	6
1	2	3

Describe the organization's processes for managing climate-related risks.

At Canacol, we recognize the paramount importance of risk management in safeguarding the environment, stakeholder interests, long term value creation, and operational sustainability. Annually, we conduct a comprehensive review of our risk management protocols, business continuity strategies, and disaster recovery plans. This process includes conducting training sessions and incident drills aimed at enhancing our level of preparedness.

The risk management process aligns with the ISO 31000 standard, structured around a five-step cyclical process. We closely monitor this process and systematically communicate its progress to our stakeholders. Regular risk reviews are conducted, complemented by both internal and external audits to ensure the robustness of our risk management process. Additionally, Canacol conducts an annual assessment to proactively identify and disclose potential risks that could impact our business, thus ensuring a comprehensive understanding of our risk exposure.

Canacol has created a well-structured risk analysis framework that facilitates decision-making, improves operational performance, and in compliance with legal and regulatory requirements.

- **Scope:** Definition of the scope of the activity.
- Context: Impact on the Company of the internal or external process or activity.
- **Communication and consultation:** Clear exchange of information to ensure that the stakeholders and employees of the Company understand the risk and/or opportunity.
- **Criteria:** Definition of the amount and type of risk that the Company can assume.
- **Evaluation:** Definition of the magnitude of the risk or opportunity, through an identification, analysis, and evaluation approach.
- **Treatment:** Definition of the most appropriate measures to prevent the occurrence of the identified risks.
- **Registration and reporting:** Reporting of decision-making and results allows for review and monitoring of management's response to identified risks.
- **Monitoring and review:** Involves planning, gathering, analyzing information, and recording the results of the risk management process, as well as providing feedback on the outcome.

Following this methodology, we implement a five-stage cyclical process in our identification of emerging risks: identification, analysis, assessment, processing, and recording and reporting.

Canacol's risk management methodology includes the review of published reports, benchmarking against peers in Colombia's sector, collaboration with strategic partners and consulting firms, analysis of industry trends, and consideration of geopolitical factors in the Company's operational area. Additionally, we review publications from global institutions like the WEF's Global Risk Report. Through these diverse information sources, Canacol implements its systematic approach to identify potential emerging risks that could affect the Company and its operations.

Canacol executes two key actions within the framework of its risk management process:

- Sensitivity analysis: A procedure that tests the particular outcome of any given set of inputs under a given set of assumptions. It helps assess the potential outcomes of different scenarios and events. Analysts conducting sensitivity analysis focus on understanding how alterations in one or more inputs could influence the desired outcome.
- Stress testing: A simulation technique applied to assets, portfolios, or positions of interest to determine their reactions to various events not typically considered in traditional value or risk analysis. It aims to measure how specific stressors (events, risks, or megatrends) or extreme circumstances could affect a company or industry.

Metrics

Metrics

Canacol's metric and target disclosures

We have defined metrics and targets that ensure business objectives relating to climate change and the energy transition are realized. Carbon accounting and management are defined as key performance indicators for all our business units. We followed the GHG Protocol's Corporate Standard to calculate and disclose carbon emissions and, through a third-party expert, we quantified 100% of the most recent direct and indirect GHG inventory (FY 2023).

We use Wood Mackenzie's Emissions Benchmarking Tool to enhance transparency and provide a more comprehensive assessment of emissions-related risks and opportunities at the corporate level and across our value chain.

Metrics used by Canacol to assess climate-related risks and opportunities as part of its strategy and risk management process

Robust and high-quality data is critical for accurate tracking of operational metrics relating to resource consumption. Canacol continues to identify metrics to establish targets and track progress. We have defined multiple environmental and operational risk metrics involving energy and water consumption, as well as GHG emissions and land use.

- Since 2020 we have been implementing an energy transformation process in our operations to minimize the use of other fossil fuels and to optimize the efficiency of our own-produced natural gas.
- We quantified the Company's indirect 2023 GHG emissions, including emissions associated with the use of energy products sold by Canacol. We are in the process of assessing significant data- driven opportunities that will influence our GHG reductions and enhance our climate strategy across our value chain for the upcoming years.

We recognize that there is a long road ahead and we are committed to continue improving the implementation of physical and transition risk specific metrics.

Canacol's 2023 Scope I, II and III GHG emissions

- **Scope 1:** 111,180,23 tCO2e
- **Scope 2:** 28,57 tCO2e
- **Scope 3:** 3,872,237,97 tCO2e

Scope 1 + 2 emissions

Risk	Gas	Crude Oil	Total	%
Stationary comb. (Compression & Generation)	89,588.04	15,161.24	104,749.28	79.75%
Mobile combustion	144.52	0	144.52	0.11%
Fire extinguishers	0.13	0.01	0.14	0.00%
HFC from air conditioning and refrigeration use	175.93	65.59	241.52	0.18%
Fugitive emissions	21,243.04	4,944.24	26,187,28	19.94%
Purchased electricity (Scope 2)	28.57	0	28.57	0.02%
Total tCO2	**111,180.23**	**20,171.08**	**131,351.31**	**100%**

Scope 3 (indirect emissions)

Risk	Gas	%
Use of sold products	3,695,622.26	95.44%
Purchased goods and services	97,317.61	2.51%
Downstream transportation and distribution	11,811.02	0.31%
Employee commuting	65,855.38	1.70%
Other fuel-and energy-related activities	5.4	0.00%
Business travel	190.69	0.00%
Upstream transportation and distribution	195.4	0.01%
Waste generated in operations	1,240.21	0.03%
Total tCO2	**3,872,237.97**	**100%**

As part of Canacol's decarbonization strategy to progressively reduce greenhouse gas emissions and eliminate fugitive emissions and other air pollutants we have set metrics to ensure targets are achieved.

Our decarbonization roadmap encompasses short, medium, and long term actions including leak detection and repair to eliminate fugitive emissions, flare efficiency and reduction, and the expansion of renewable energy projects, among others.

At Canacol, we are dedicated to fostering a cleaner energy future and accelerating the global energy transition. As part of this commitment, we have taken significant steps to meet the growing demand for natural gas in Colombia. By doing so, we are empowering millions of people to make the switch to cleaner fuels, contributing to a more sustainable and environmentally friendly energy landscape.

TCFD Report 2023