



Climate Risk Analysis



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Introduction and Scope of Service

The ARPEL project aims to **develop guidelines and a tool to prioritize and assess physical and transition risks, as well as identify opportunities**, with the objective of **strengthening climate resilience and contributing to the operational continuity of ARPEL member companies**.

The project includes the review of technical information, the analysis of international frameworks and standards for climate disclosure, and the creation of a practical tool accompanied by guidelines that facilitate risk management and the financial estimation of climate impact.

	Step 1	Step 2	Step 3
Scope	Bibliographic Review	Disclosure Analysis	Development of Tools and Guidelines
Objective	Conduct a literature review of reference frameworks applicable to physical and transition risks for ARPEL member companies, consolidating key technical information for the subsequent phases.	Analyze methodologies and requirements of the main sustainability and climate reference frameworks applicable to ARPEL member companies.	Development of a tool to prioritize and assess the main physical and transition risks affecting ARPEL member companies.
Deliverable	<ol style="list-style-type: none">List of documents requested to ARPEL.	<ol style="list-style-type: none">Presentation on methodologies, frameworks, and disclosure requirements for climate and sustainability priorities for ARPEL.Excel file with a detailed analysis of reporting standards and international regulations.	<ol style="list-style-type: none">Excel tool for the assessment of physical and transition risks.Presentation with guidelines for using the tool, including supplementary information on financial estimation of climate risks and analysis of standards and reference frameworks.

Document content

This document has 2 main sections:



Guidelines for the use of the climate risk analysis tool

Presents the methodology, sections, and step-by-step instructions for using the climate risk analysis Excel tool.

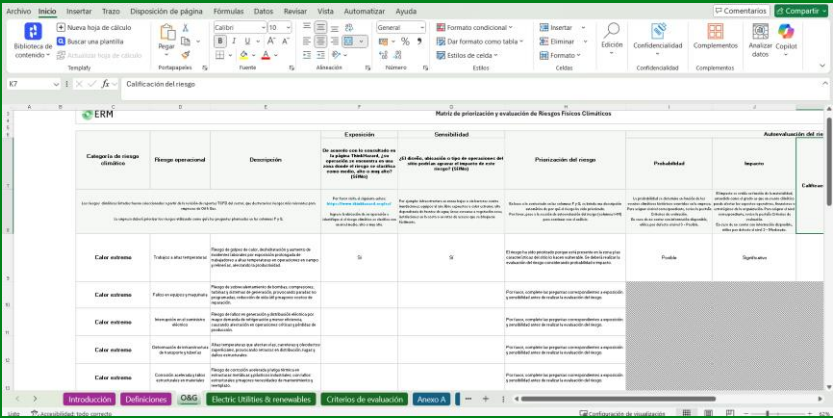
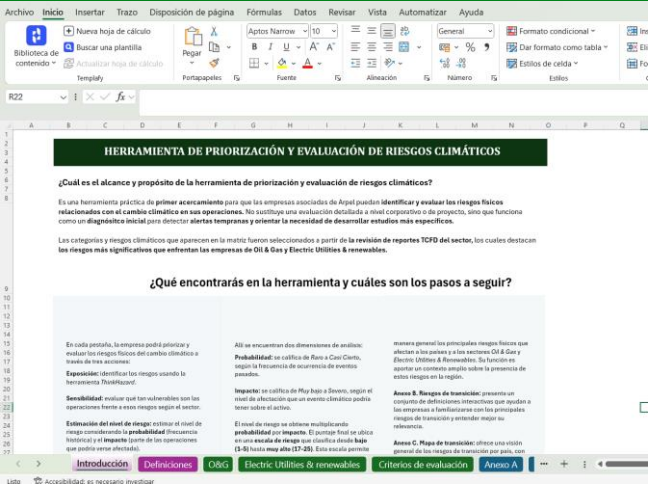


Complementary information on climate change risks and opportunities

Includes information on:

- Financial quantification of climate risks
- Transition Climate Risk Opportunities
- Analysis of regulations

Guidelines for the use of the climate risk analysis tool



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Methodology

Objective

- Provide ARPEL and its affiliated companies with an overview of the main climate risks to which their operations in Latin America and the Caribbean may be exposed, as well as the potential impacts on the relevant sectors.

Approach

- **Physical Risks.** A practical first-approach tool that enables ARPEL's member companies to identify, prioritize, and assess the physical risks of climate change in their operations.
Transition Risks. It includes an introduction with recommendations for their assessment, country-specific examples focused on regulatory changes related to reporting standards and carbon taxes, as well as a tool to identify and prioritize these risks.

Considerations

- It does not replace a detailed evaluation at the corporate or project level; rather, it serves as an initial diagnostic to detect early warning signals and guide the need to develop more specific studies.
- The climate categories and risks included in the matrix were selected based on a review of sector-specific TCFD reports, which highlight the most significant risks faced by companies in Oil & Gas and Electric Utilities & Renewables.

Theoretical basis for prioritizing climate risks

Climate risk assessment and prioritization is based on the analysis of three key components:



Threat

It refers to the potential danger arising from climatic phenomena (such as droughts, floods, heat waves, etc.) that can negatively affect assets, operations or communities.



Exposure

Describes the extent to which a system (company, sector, territory) is physically located in areas where climate-related hazards occur. For example, facilities located in coastal zones exposed to sea-level rise



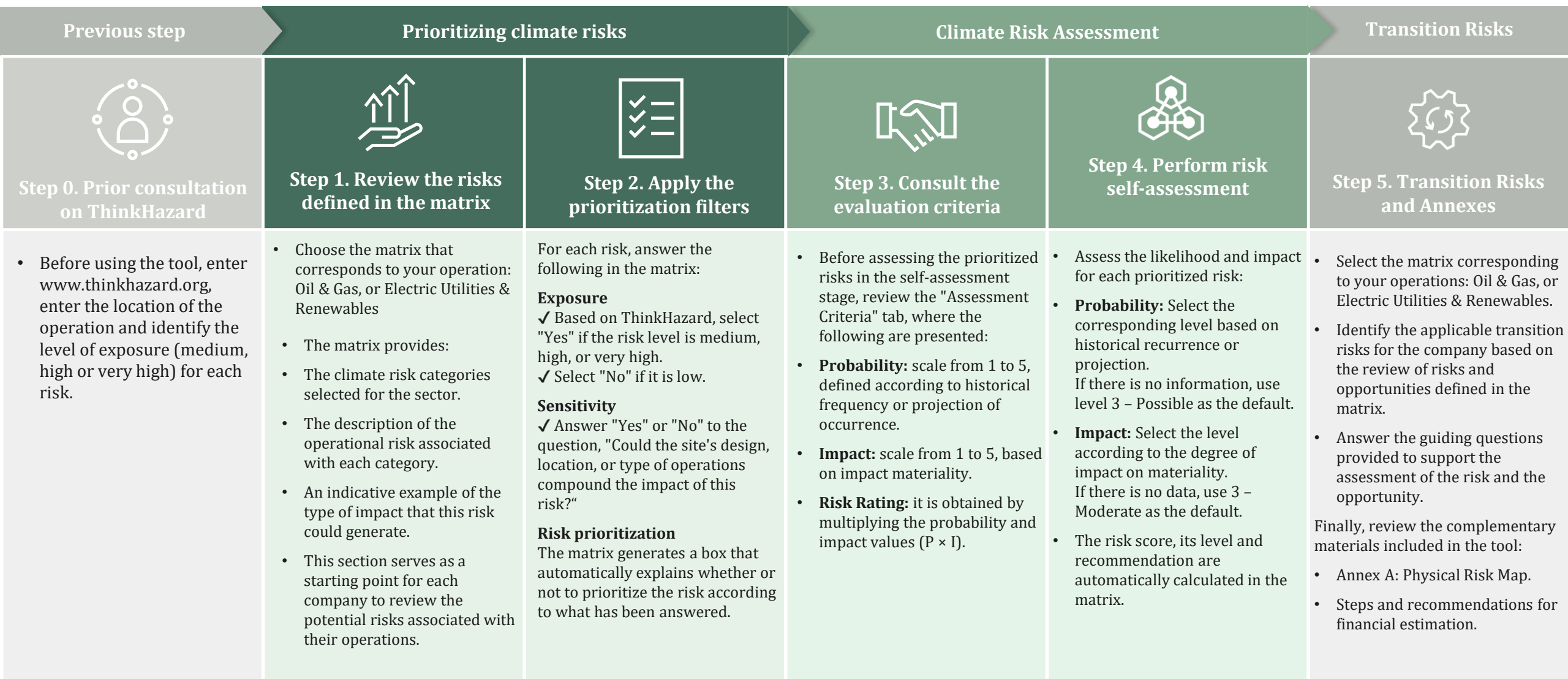
Sensitivity

Indicates how affected a system may be when facing a hazard, considering factors such as dependence on natural resources, vulnerable infrastructure, or critical processes.

Therefore, vulnerability is the combination of exposure and sensitivity. A highly exposed and sensitive system will be more vulnerable, and therefore more likely to suffer significant impacts.

This approach makes it possible to identify risks with higher potential impact and establish management priorities. Assessing threat, exposure, and sensitivity helps determine which risks should be addressed more urgently, whether due to their potential to affect operational continuity, regulatory compliance, financial stability, or organizational reputation

Flowchart for the Climate Risk Assessment and Prioritization Matrix



Using the ThinkHazard Platform

Key Concepts

What is ThinkHazard!?

It is an interactive platform that provides information on natural hazards in different regions of the world, such as floods, earthquakes, droughts, tropical cyclones, among others. The platform uses geospatial and scientific data to provide risk assessments and recommendations for adaptation or mitigation.

Useful tips:

Visit Regularly: The platform is regularly updated with new data, so it's helpful to visit it for the latest information.

1. Access the platform

Step 1: Open your web browser and go to ThinkHazard:
<https://www.thinkhazard.org/es/>

Step 2: You don't need to register to start using the platform. Just by entering the website you can access the information.



2. Select the country or region

Step 1: On the main page, you will see an interactive map.

Step 2: Click on the country or region you're interested in, or use the search bar at the top to find it quickly.

For example:

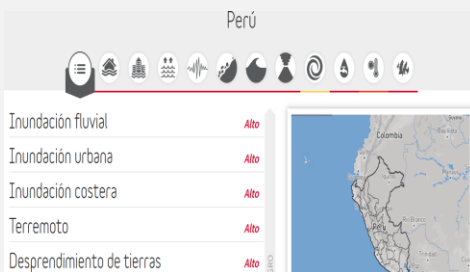


3. Explore climate risks

Step 1: Once you select a region or country, ThinkHazard will show you a list of the climate risks relevant to that area.

Step 2: Common risks include floods, earthquakes, droughts, landslides, tropical cyclones, water deficit.

For example:



4. Analyze the level of risk

Step 1: Each risk is displayed with a color that indicates its severity level: Low, Moderate, High, Very High.

Step 2: Click on the risk you're interested in to get more details about its impact.

For example:



Tool Sections



1. Introduction

Introduces the purpose of the tool, its scope, and the general steps for using it.



2. Definitions

It includes basic concepts on physical and transition risks, and the associated frameworks.



3. Climate Risk Assessment Matrix by Sector

Contain the matrices used to prioritize and assess physical and transition climate risks for companies in the Oil & Gas and Electric Utilities & Renewables sectors.



4. Evaluation criteria

Defines how to allocate the probability, impact and level of risk to assess risks in the Oil & Gas and Electric Utilities & Renewables matrices.



5. Annexes

Include maps and support material on physical and transition hazards to complement the analysis.



1. Introduction

CLIMATE RISK PRIORITIZATION AND ASSESSMENT TOOL

What is the scope and purpose of the Climate Risk Prioritization and Assessment Tool?

It is a practical, first-approach tool designed for Arpel's member companies to identify and assess physical and transition risks related to climate change in their operations. It does not replace a detailed corporate- or project-level assessment but serves as an initial diagnostic to detect early warnings and guide the need for more specific studies.

The climate categories and risks included in the matrix were selected based on a review of TCFD reports from the sector, highlighting the most significant risks faced by companies in Oil & Gas and Electric Utilities & Renewables.

What you will find in the tool and the steps to follow

Physical Risk		Transition Risk	Supplementary Information
<p><u>Tab 4 and 5 – Physical Risk for O&G and EU</u></p> <p>The first step is to select the tab corresponding to your company (Tab 4: O&G or Tab 5: Electric Utilities & Renewables).</p> <p>Within each tab, the company can prioritize and assess climate-related physical risks through three actions:</p> <p>Exposure: Identify risks using the ThinkHazard tool. Sensitivity: Evaluate how vulnerable operations are to these risks based on the sector. Risk Level Estimation: Estimate the level of risk by considering both the probability (historical frequency) and the impact (portion of operations that could be affected).</p>		<p><u>Tab 6 – Evaluation Criteria</u></p> <p>To estimate the risk level, the company should use Tab 6: Evaluation Criteria as a reference.</p> <p>This tab presents two dimensions of analysis:</p> <p>Probability: Rated from Rare to Almost Certain, based on the historical frequency of events.</p> <p>Impact: Rated from Very Low to Severe, according to the potential effect a climate event could have on the asset.</p> <p>The risk level is calculated by multiplying probability by impact. The final score is placed on a risk scale ranging from Low (1–5) to Very High (17–25). This scale allows risks to be categorized according to their potential impact and guides decision-making regarding control, monitoring, or mitigation measures.</p>	<p><u>Tab 7 – Definitions</u></p> <p>As a first step, the company should review Tab 7: Definitions, which provides a set of interactive definitions to familiarize users with the main transition risks and better understand their relevance.</p> <p><u>Tab 8 – Transition Map</u></p> <p>Next, the company should review Tab 8: Transition Map, which offers an overview of the transition risks affecting countries and the O&G and Electric Utilities & Renewables sectors, with a focus on regulatory frameworks and carbon price increases.</p> <p><u>Tab 9 and 10 – Transition Risk Assessment</u></p> <p>Then, the company should select the tab corresponding to its sector (Tab 9: O&G or Tab 10: Electric Utilities & Renewables). Within each tab, the company can assess transition risks. If a risk is marked as relevant, three key questions will automatically be enabled to analyze its strategic impact, internal capabilities, and the decisions or investments needed to manage it effectively.</p>
1. Identification of the Relevant Sector for Physical Risk		3. Identification of the Relevant Sector for Transition Risk Assessment	4. Guidelines for Financial Estimation and Informative Annexes

It is a first approach to identifying and assessing physical risks of climate change in operations in the Oil & Gas and Electric Utilities & Renewables sector.

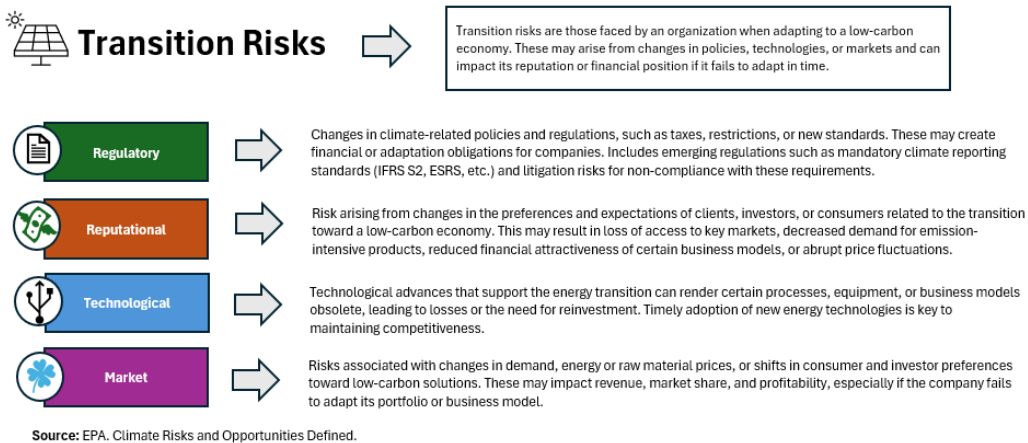
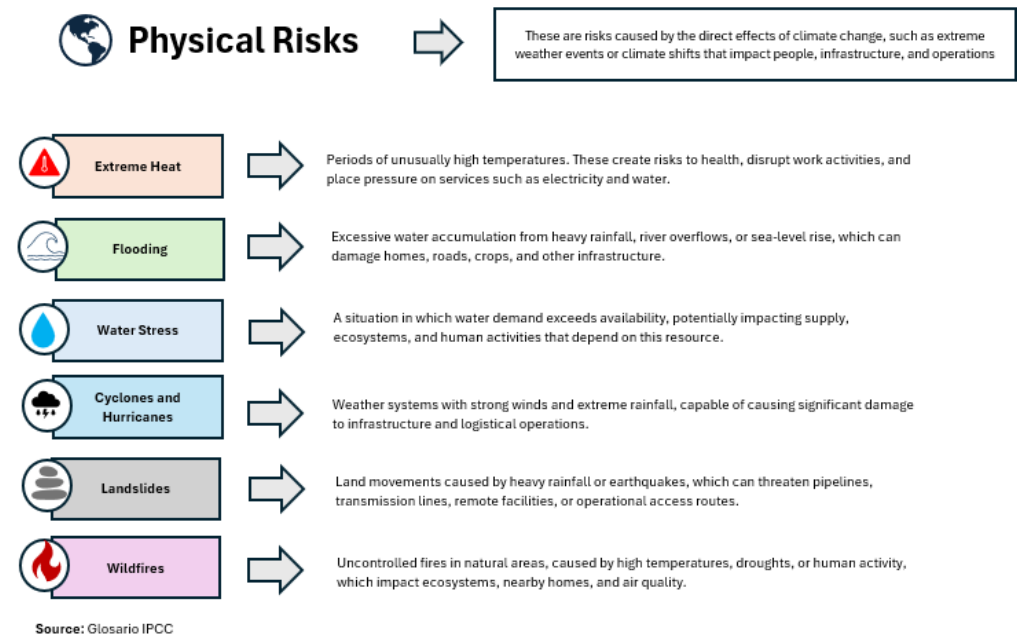
It does not replace detailed studies: it works as an initial diagnosis to detect alerts and guide future analyses.

The risks included are based on TCFD reports of the sector, prioritizing the most relevant for Arpel companies.

The assessment is carried out according to the sector, in the Oil & Gas or Electric Utilities & Renewables tabs, considering exposure, sensitivity and risk level.

The Assessment Criteria tab guides the estimation of likelihood, impact and risk level, and the annexes provide supporting maps and definitions.

2. Definitions



Explains the concepts of physical risks linked to climate change.

It details the definitions of transition risks and their relevance to businesses.

It presents the main standards and reporting frameworks used in the sector.

Introduce the ThinkHazard platform as a reference to identify exposure levels.

Reporting Standards

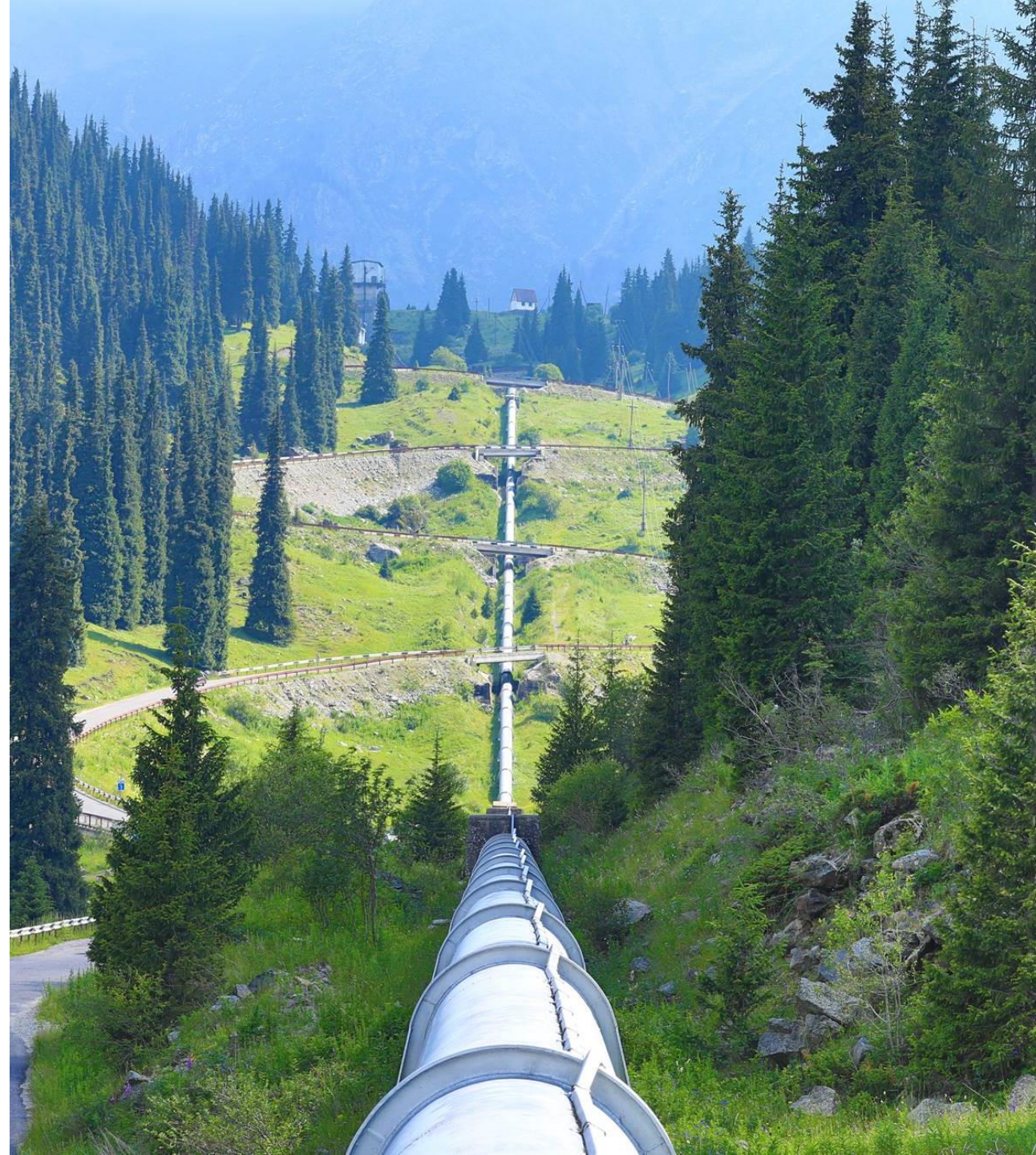




Physical Risk Assessment Matrix

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3. Steps to use the Climate Risk Assessment Matrix

Climate and Operational Risk

This section serves as a starting point for each company to review the potential risks associated with their operations. Each company must identify which tab to use (Oil & Gas or Electric Utilities & Renewables) according to the sector to which it belongs.

Climate Risk Category	Operational risk	Description
The listed climate risks were selected based on a review of TCFD sector reports, which highlight the most relevant risks for Oil & Gas companies. The company should prioritize the risks using the questions provided in columns F and G as a guide.		
Extreme heat	Work in High-Temperature Conditions	Risk of heatstroke, dehydration, and increased workplace incidents due to prolonged exposure of workers to high temperatures in field operations and refineries, impacting productivity.

The climate risks included in the matrix were selected from a review of TCFD reports from the Oil & Gas and Electric Utilities & Renewables sectors, in order to focus on the most relevant events for operations.

Each row of the matrix contains three key elements:

Climate risk category: corresponds to the main climatic event (e.g. extreme heat, water deficit, floods) identified as frequent or relevant to the sector.

Operational risk: describes how that climate-related event may affect processes, infrastructure, personnel, logistics, or operational continuity

Description: offers a specific example of the type of affectation that could be generated, as a guide for the analysis.

Based on this baseline, in the next stage, explained in the following slide, exposure and sensitivity filters are applied to prioritize only those risks that represent a real threat to the operation

3. Steps to use the Climate Risk Assessment Matrix

Exposure and Sensitivity

In this section, each operational risk is analyzed through two elements: Exposure and Sensitivity. The answers entered make it possible to determine whether the risk should advance to the self-assessment stage (probability and impact).

Exposure + Sensitivity = Risk Prioritization

Exposure	Sensitivity	
According to the information consulted on the ThinkHazard website, is your operation located in an area where the risk is classified as medium, high, or very high? (Yes/No)	Could the site's design, location, or type of operations exacerbate the impact of this risk? (Yes/No)	Risk prioritization
Please visit the following link: https://www.thinkhazard.org/en/ Enter the location of your operation and identify whether the climate risk is classified as medium, high, or very high.	For example: infrastructure in low-lying areas or without flood barriers; outdoor equipment exposed to extreme heat; high dependence on water sources; areas near dry vegetation; facilities on the coast or along access routes that are easily blocked.	Based on the responses provided in columns F and G, an automatic description is generated explaining why the risk has been prioritized. Please proceed to the risk self-assessment section (columns I-M) to continue with the analysis.
Yes	Yes	The risk has been prioritized because it is present in the area and the site characteristics make it vulnerable. A risk assessment considering probability and impact should be carried out.

Exposure: Answer the following question: According to what you consulted on the ThinkHazard page, is your operation located in an area where the risk is classified as medium, high or very high?

Enter <https://www.thinkhazard.org/es/>, enter the location of the trade and identify the level of risk. If the risk is classified as medium, high, or very high, select "Yes." If the risk is low or does not apply, select "No."

Sensitivity: Answer the following question: Could the design, location, or type of operations of the site compound the impact of this risk? (Yes/No)
Based on the reference examples included in the matrix for each risk, select: "Yes" if there is any level of vulnerability or possible impact. "No" if no relevant impact is identified.

Risk prioritization: This field automatically generates a justification indicating whether the risk has been prioritized or not, based on the responses entered in the Exposure and Sensitivity columns. Its purpose is to document the reason why the risk remains in the assessment or is discarded before moving on to the self-assessment stage. It does not require manual input from the user.

3. Steps to use the Climate Risk Assessment Matrix

Risk Self-Assessment

In this stage, the company assigns a probability and impact level to each prioritized risk, using the criteria defined in the Evaluation Criteria tab as a reference. This information enables a quantitative estimation of the risk level.

Probability: Probability refers to the frequency with which a climate-related event has occurred or could occur, considering historical evidence or future projections. To select the corresponding level, refer to the evaluation criteria. If no specific information is available, Level 3 – Possible may be used as an initial reference.

Risk self-assessment				
Probability	Impact	Risk rating	Risk Level	Recommendation
Probability is determined based on historical climate events affecting the company. To assign the corresponding level, refer to the Evaluation Criteria tab. If no information is available, use Level 3 – Possible by default.	Impact is evaluated based on materiality, understood as the extent to which a climate event could affect the organization's operational, financial, or strategic aspects. To assign the corresponding level, refer to the Evaluation Criteria tab. If no information is available, use Level 3 – Moderate by default.			
Almost Certain	Severe	25	Very high	Requires immediate mitigation actions and priority management

Impact: Impact represents the extent to which a climate-related event may affect the organization's operational, financial, or strategic aspects, considering the percentage of materiality involved. To select the corresponding level, refer to the evaluation criteria. If sufficient data is not available, Level 3 – Moderate may be used as a reference.

Automatic fields: The Risk Rating, Risk Level, and Recommendation columns are generated automatically based on the probability and impact levels selected, following the ranges established in the evaluation criteria.

4. Evaluation criteria: Probability

This section presents the methodological approach used to assess physical risks related to climate change

Probability		
Probability refers to the expected frequency of occurrence of a climate-related event, considering historical evidence and projected scenarios. It is classified into five levels, from “Rare” (1 point) to “Almost Certain” (5 points), based on the time elapsed since the last similar event and the likelihood of it occurring in the near future.		
Probability Level	Score	Criteria
Almost certain	5	At least one similar event has occurred in the past year or is almost certain to occur in the next year.
Probable	4	At least one event has occurred in the last 3 years, or is very likely to occur in the next 1-3 years.
Possible	3	Has an event occurred in the last 5 years, or may occur in the next 3-5 years.
Improbable	2	Has any event occurred in the last 10 years, or is unlikely to occur in the next 5 years.
Strange	1	There are no records of similar events in the last 10 years, or it is highly unlikely to occur.

4. Evaluation criteria: Impact

This section presents the methodological approach used to assess the physical risks related to climate change.

Impact		
Impact is assessed based on materiality, understood as the degree to which a weather event can affect the operational, financial, or strategic aspects of the organization. For this evaluation, the percentage of impact on the defined materiality is considered, classifying the impact from "Very low" (1 point) to "Severe" (5 points).		
Impact Level	Scoring	Criteria
Severe	5	Impact >50% of materiality
Significant	4	It impacts 30–50% of the materiality.
Moderate	3	It impacts 15–30% of the materiality.
Low	2	It impacts 5–15% of materiality.
Very Low	1	It impacts <5% of the materiality.

4. Evaluation criteria: Risk Rating

This section presents the methodological approach used to assess the physical risks related to climate change.

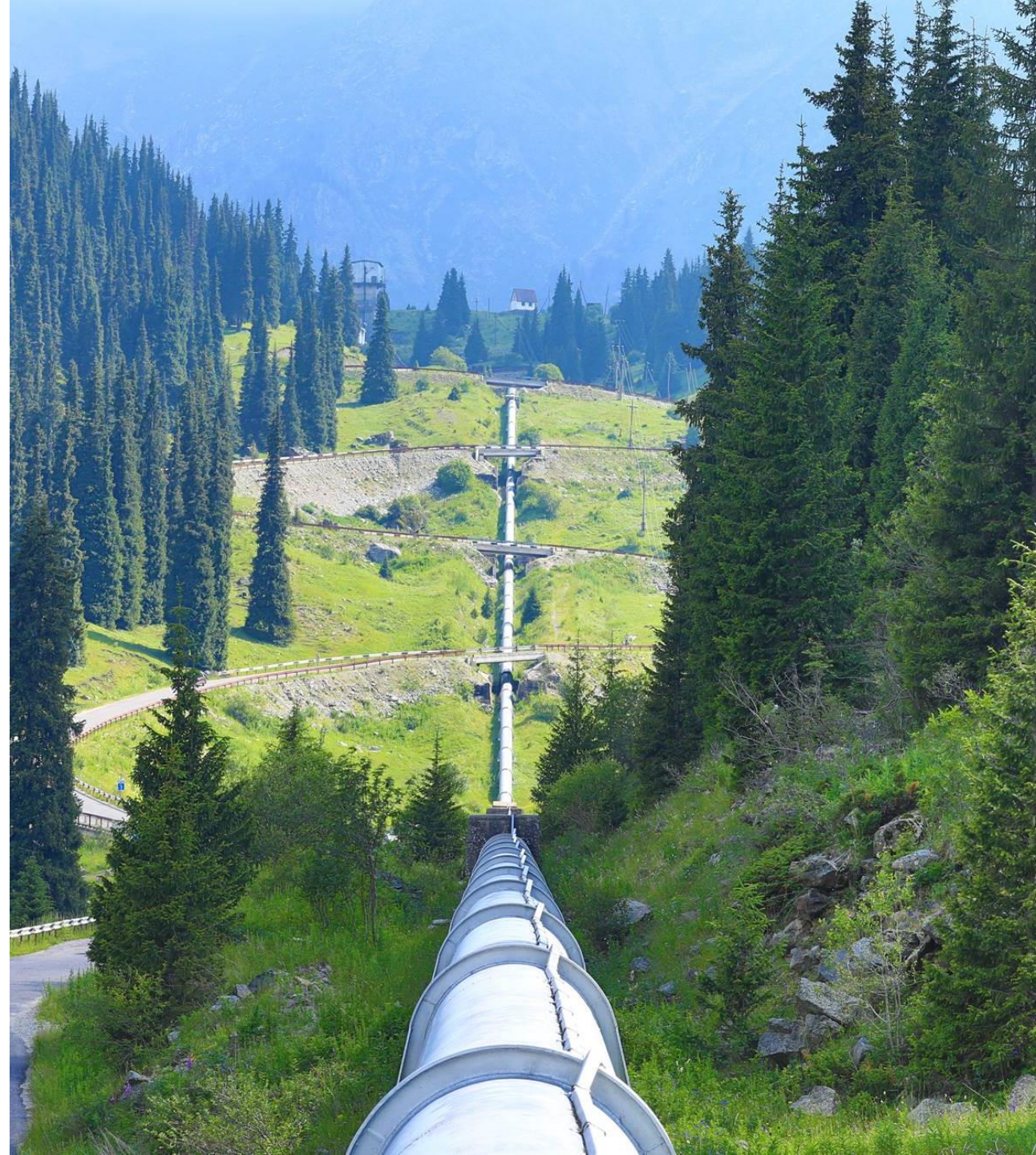
Risk Rating		
The result of multiplying probability by impact is translated into a risk scale ranging from low (1–5) to very high (17–25). This scale categorizes risks based on their potential impact on operations, facilitating decision-making regarding control, monitoring, or mitigation measures.		
Risk Rating	Scoring	Criteria
Very High	17-25	Critical risk that can seriously compromise operational continuity. It requires immediate mitigation and priority management actions.
High	11-16	Significant risk with potential to affect operational performance. It requires specific control plans and frequent monitoring.
Medium	6-10	Moderate risk that could generate specific effects on the operation. It requires regular monitoring and preventive measures.
Low	1-5	Lower risk that does not compromise the operation. It can be managed with basic controls and requires no additional actions.



Transition Risk Assessment Matrix

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5. Definitions, key concepts and recommendations to address Transition Risks

Before the Transition Risk Assessment Matrix, an interactive tab with key definitions and concepts is presented to help companies become familiar with the main transition risks and understand their relevance within corporate strategy and management.



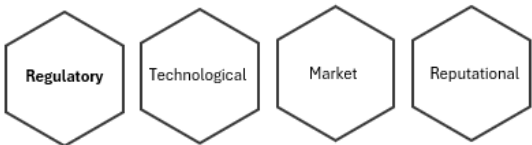
Within the tool, click on each hexagon to interactively explore the implications of key transition risks



Recommendations for the Assessment of Climate Transition Risks

This section aims to provide an initial step in analyzing transition risks, focusing on four key categories: regulatory, technological, market, and carbon pricing. It contextualizes the risks and offers general guidance on how to begin assessing them.

Click on the boxes to navigate through each risk



1

What are they?



Changes or the emergence of new laws, regulations, or public policies related to the transition toward a low-carbon economy, including market instruments that place an explicit price on emissions.

2

Why are they relevant?



These may generate operational restrictions, new compliance requirements, increased costs, reputational impacts among investors and stakeholders, and affect access to financing.

3

What to consider?



- Current and future regulatory frameworks in the countries where the company operates.
- Regulations in regions with high influence on international markets, such as Europe and the U.S.
- Carbon neutrality laws, emissions standards, sectoral regulations, and energy efficiency mandates.
- Carbon pricing: taxes, emissions trading systems (ETS), and price trends.
- Requirements from banks and investors: IFRS S1 and S2, IFC Performance Standards, ESG criteria, and sustainability standards for access to financing.

4


Where to start?



- Conduct a regulatory mapping by country and state/province.
- Identify trends in international legislation relevant to the sector.
- Analyze national emission reduction targets or climate commitments.
- Review banks' and investors' requirements on climate and ESG matters.
- Assess reputational impacts related to climate management.

5. Transition Risk Map

Subsequently, an interactive map is presented, offering an overview of transition risks by country, with a focus on the regulatory framework and carbon price increases, allowing the identification of potential regulatory or market trends.

 **Map of countries with associated companies**
(2025)



Within the tool, click on each country to interactively explore the main associated transition risks.





General description of transition risks for: Colombia

The identified transition risks in this tool represent an overview by country, focused on the regulatory framework and the increase in carbon prices. These risks may vary or intensify depending on regional locations and specific operating conditions, so they should be complemented with more specific and contextualized analyses.

Transition Risks	Description
Regulatory (Mandatory implementation of reporting standards)	TCFD: The adoption of TCFD is mandatory for certain issuers under External Circular 031 of 2021 issued by the Colombian Financial Superintendence (SFC). This regulation establishes a transition regime that requires the disclosure of climate-related financial information in line with TCFD recommendations.
Increase in carbon prices	It applies a tax on direct CO ₂ emissions generated by stationary sources, such as boilers or turbines, when these exceed 25,000 tons annually.



Prioritized Risk Ranking and Sector Impacts

Prioritized Risks	Impact in Oil and Gas Sector	Impact in Electric Utilities Sector
1. Regulatory 	It requires the sector to disclose its exposure to climate change and its transition plans. This may reveal stranded assets, create investor pressure, and hinder access to financing if there is no clear decarbonization strategy. It can also affect reputation and demand adjustments to the business model.	Companies will need to justify investments in clean energy and demonstrate how they are reducing their carbon footprint. Regulatory risk increases if the energy mix is not aligned with decarbonization targets, which could lead to forced adjustments, additional compliance costs, and lower competitiveness compared to renewable generators.
2. Increase in carbon prices 	It adds an additional cost per ton of CO ₂ emitted, impacting the profitability of carbon-intensive operations. This can alter the economic viability of certain assets, especially those with high emission levels, and accelerate strategic decisions toward cleaner technologies or low-carbon business models.	The increase in carbon prices introduces an additional cost for emissions associated with power generation, which may affect the sector's competitiveness depending on its energy mix. This change encourages a transition toward cleaner sources, influences investment decisions, and may impact cost structures and tariffs.

5. Steps to use the Transition Assessment Matrix

Transition risk

This section serves as a starting point for each company to review the potential transition risks associated with its operations. Each company should identify which tab to use (Oil & Gas or Electric Utilities & Renewables) according to its sector.

Risk Type	Identified Risk	Associated Opportunity	Risk-Opportunity Relationship	Does it apply to the company? Yes/No
The listed transition risks were defined based on a review of TCFD reports and international sectoral guidelines for O&G, prioritizing those considered most relevant due to their potential impact on strategy, operations, and sector competitiveness.				The company must select in column G the risks it considers applicable, using the detailed descriptions in columns D to F as a reference.
Regulatory	Implementation of carbon pricing (ETS or taxes)	Early preparation for carbon pricing schemes	Anticipating carbon pricing reduces financial exposure, prevents penalties, and enhances competitiveness in the face of emerging regulations.	Yes

The transition risks included in the matrix were selected based on a review of TCFD reports from the Oil & Gas and Electric Utilities & Renewables sectors, focusing on the most relevant events for business operations.

Each row of the matrix contains the following key elements:

Type of Risk: Classifies the origin of the risk (regulatory, technological, market, or reputational) according to its nature and potential impact on strategy and operations.

Identified Risk: Describes the specific event or change related to the climate transition that may affect the company.

Associated Opportunity: Presents the action or advantage that may arise from proactively managing the risk.

Risk-Opportunity Relationship: Explains how an appropriate response can transform the risk into value or a competitive advantage.

Applicability: Based on this information, the company must determine whether the risk is applicable to its operations.

5. Steps to use the Transition Risk Assessment Matrix

If the transition risk is considered applicable to the company, columns H to J will be automatically enabled, where guiding questions will be presented to deepen the strategic analysis.

How does this risk affect the business strategy, operating model, and investment priorities in the medium and long term?	What technical capabilities and competencies need to be developed to effectively manage the risk and capture the opportunity?	What investment decisions and technological, operational, or infrastructure transformations are required to accelerate the response and strengthen business resilience against this risk?
If the transition risk has been selected as applicable for the company, columns H to J will be automatically enabled. Please answer the following questions to guide strategic decisions, prioritize organizational capabilities, and define investments that reduce exposure and create value in response to this risk.		

Guiding questions:

Strategy and business model: How does this risk affect strategy, operating model, and investment priorities in the medium and long term?

Technical capabilities: What competencies and capabilities need to be developed to manage risk and seize the opportunity effectively?

Investments and transformation: What investment decisions or technological, operational, or infrastructure transformations are needed to accelerate response and strengthen business resilience?

These questions allow us to approach how to address risk, identify the necessary capabilities and define investment and transformation actions that strengthen the resilience of the business.

5. Annex A. Climate Risk Map

It provides an overview of the main physical risks affecting countries and the Oil & Gas and Electric Utilities & Renewables sectors. Its function is to provide a broad context on the presence of these risks in the region.



Within the tool, click on each country to interactively explore the main associated risks.



General description of physical risks for: **Perú**

The physical risks identified in this tool represent a general approximation of potential climate-related events by country. However, these may vary or intensify depending on regional locations and specific operating conditions. This information serves as an initial step for identifying and contextualizing physical risks and should be complemented with more detailed analyses tailored to the local reality of each operation or project.

Significant Physical Risks	Risk Description
Fluvial, urban, and coastal flooding	In Peru, flooding is a growing risk, especially due to climate variability, such as El Niño, which increases the frequency and intensity of extreme rainfall. River flooding mainly affects coastal regions and mountain valleys, where overflowing rivers damage infrastructure, homes and crops. In urban areas, heavy rainfall causes flooding due to insufficient storm drainage capacity. Coastal areas also face sea-level rise-related flooding, exacerbated by climate change, leading to significant economic costs and risks for vulnerable communities.
Landslides	Landslides are common in the mountainous areas of Peru, especially in the central and southern highlands, where heavy rains and temperature fluctuations can trigger landslides. These events can destroy roads, disrupt access to remote areas, and damage key infrastructure such as pipelines, affecting both communities and extractive and energy operations. In addition, landslides increase the risk of loss of life and damage to homes in peripheral urban or rural areas.
Water stress	Water stress in Peru is a growing challenge, especially in the Andean and desert coastal regions, where water availability is limited due to climate variability and changing precipitation patterns. The overexploitation of water sources for agriculture and mining, combined with the retreat of glaciers, reduces the amount of water available during dry seasons, which puts pressure on the population and industry, particularly in sectors such as agriculture and hydropower production. As climate change intensifies droughts, the most affected areas face increased water scarcity and access issues.



Prioritized Risk Ranking and Sector Impacts

Prioritized Risks	Impact in Oil & Gas sector	Impact in Electric Sector
1. Water Stress	Reduces the availability of water required for operations such as cooling, drilling, refining, and emissions control. Climate change alters precipitation patterns, impacting the continuity of extractive operations that depend on large volumes of	Electric power generation, especially hydroelectric, requires large amounts of water. Water scarcity and increased droughts reduce generation capacity, compromising energy security.
2. River, Urban, and Coastal Flooding	Can damage extraction, production, and refining infrastructure, as well as disrupt the operation of oil and gas pipelines. This leads to increased operating costs and risks of shutdown.	Compromise substations, transmission lines, and generation plants located in vulnerable areas. Coastal flooding also threatens thermal and transmission infrastructure near the shoreline.
3. Landslides	Increase the risk of damage to oil and gas pipelines in mountainous areas, with potential for leaks or environmental accidents. They also hinder access to remote facilities and maintenance tasks.	Affect transmission towers and electrical networks in regions with complex topography, hindering the continuous and safe operation of the system.
4. Extreme Heat	It can affect the performance of equipment, transportation systems, and sensitive industrial processes, causing failures or interruptions. Additionally, maintenance costs increase in areas with prolonged heat exposure, and it poses a significant risk to the health and safety of field personnel.	In thermal plants, extreme heat reduces generation efficiency, while in solar plants it decreases panel effectiveness. In hydroelectric plants, evaporation lowers the available water flow. Additionally, it drives higher energy demand for cooling, increasing pressure on the power grid.

6. Steps and recommendations for the financial estimation of climate risk

Presents what climate-related financial risks are, why it is relevant to quantify them, and the general guidelines for their estimation.

What is the financial quantification of climate risks?

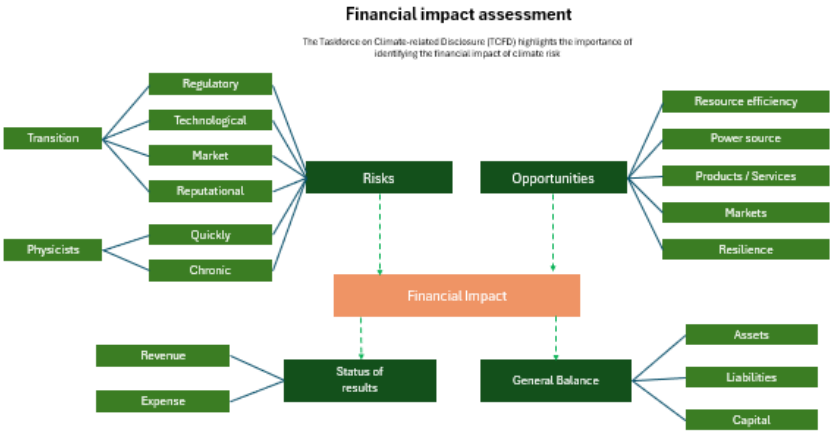
The financial quantification of climate risks is the process of translating physical and transition risks associated with climate change into concrete financial impacts on revenues, costs, assets, investments (CAPEX), and access to financing.

It enables the connection between climate management and companies' strategic and financial planning.

It relies on future scenarios and analytical techniques such as stress testing to estimate potential losses or changes in value.

Why quantify financial risks?

	Decision-making	It facilitates strategic decision-making and the definition of resilient investments
	Financial resilience	It improves financial resilience against climate events and regulatory changes
	Regulatory compliance and stakeholder expectations	It enables compliance with international reporting frameworks (TCFD, ISSB). In addition, it addresses investor and regulator demand for greater transparency



General guidelines for financial impact assessment

1 Selection of future climate and regulatory scenarios

- It is important to define under which emission trajectories and regulatory conditions the risks will be assessed. The recommended climate scenarios come from the IPCC (RCP2.6, RCP4.5, RCP6.6, RCP8.6) and can be combined with regulatory scenarios from international organizations (e.g., IEA, NGFS).
- In the Oil & Gas sector, this helps explore how changes in energy demand or restrictions on fossil fuels may affect revenues.
- For the Electric Utilities & Renewables sector, it shows how variations in water availability or decarbonization policies impact generation costs.

2 Identification and linkage of risks to financial variables

Each physical or transition risk should be mapped to key financial indicators:

Revenues: production disruptions due to extreme weather events or lower demand from regulatory changes.

Operating costs: increases in insurance, inputs, carbon tariffs, or maintenance expenses.

Assets: depreciation or loss of value of vulnerable infrastructure (pipelines, power plants, transmission networks).

CAPEX: need to invest in modernization or resilient infrastructure.

Financing: changes in access to credit or investment conditions from banks and funds.

3 Quantification through scenario analysis / stress testing

Here the information is translated into numbers. There are approaches such as:

Climate Value at Risk (CvAR): estimates the variation in the company's value under different climate scenarios.

Balance sheet stress testing: analyzes how assets and liabilities are affected under extreme physical or regulatory risk scenarios.

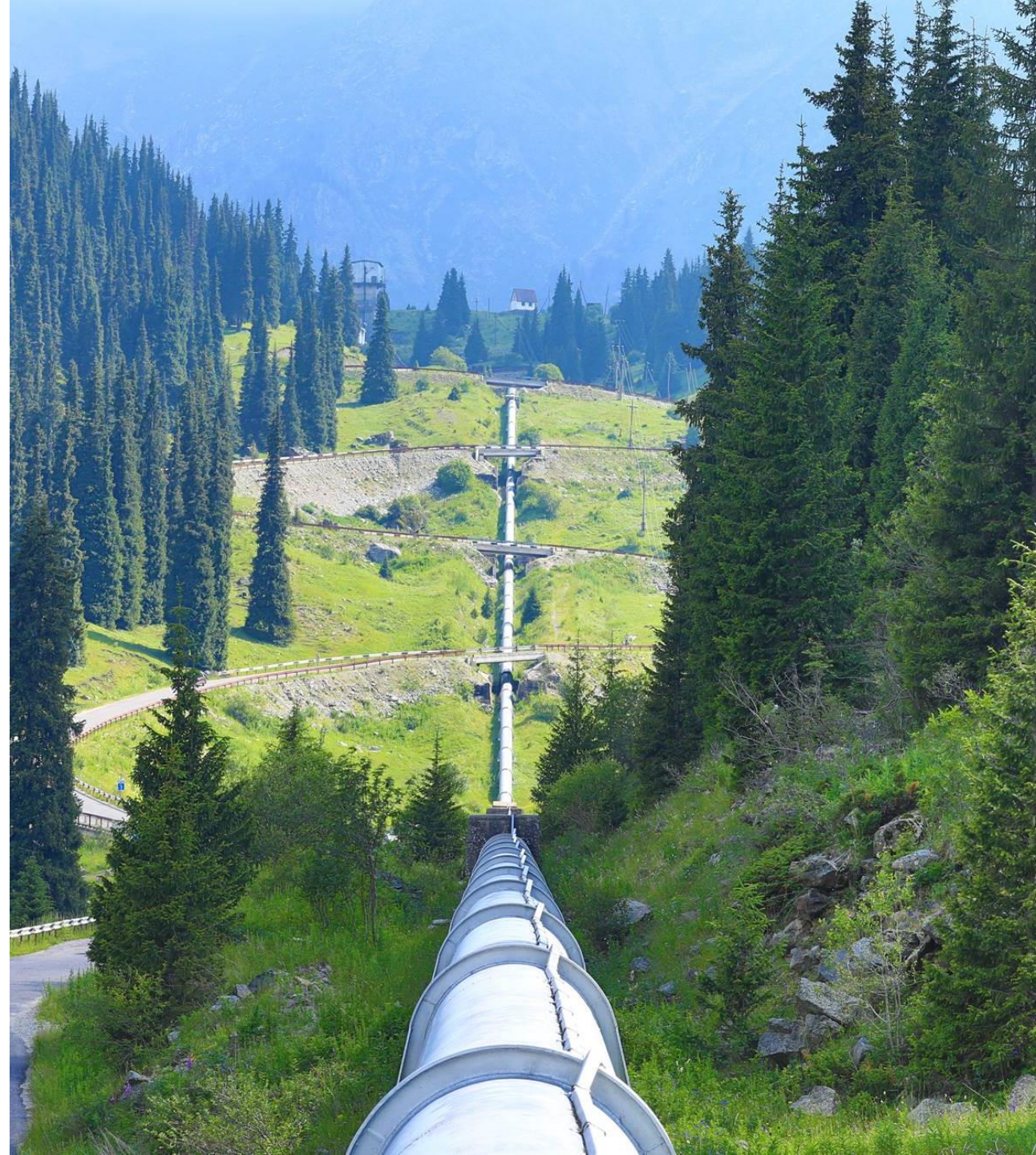
Sensitivity models: apply variations in carbon prices, energy demand, or operating costs to observe financial impacts. The goal is not absolute precision, but plausible impact ranges that serve as an initial reference.



Recommendations and next steps

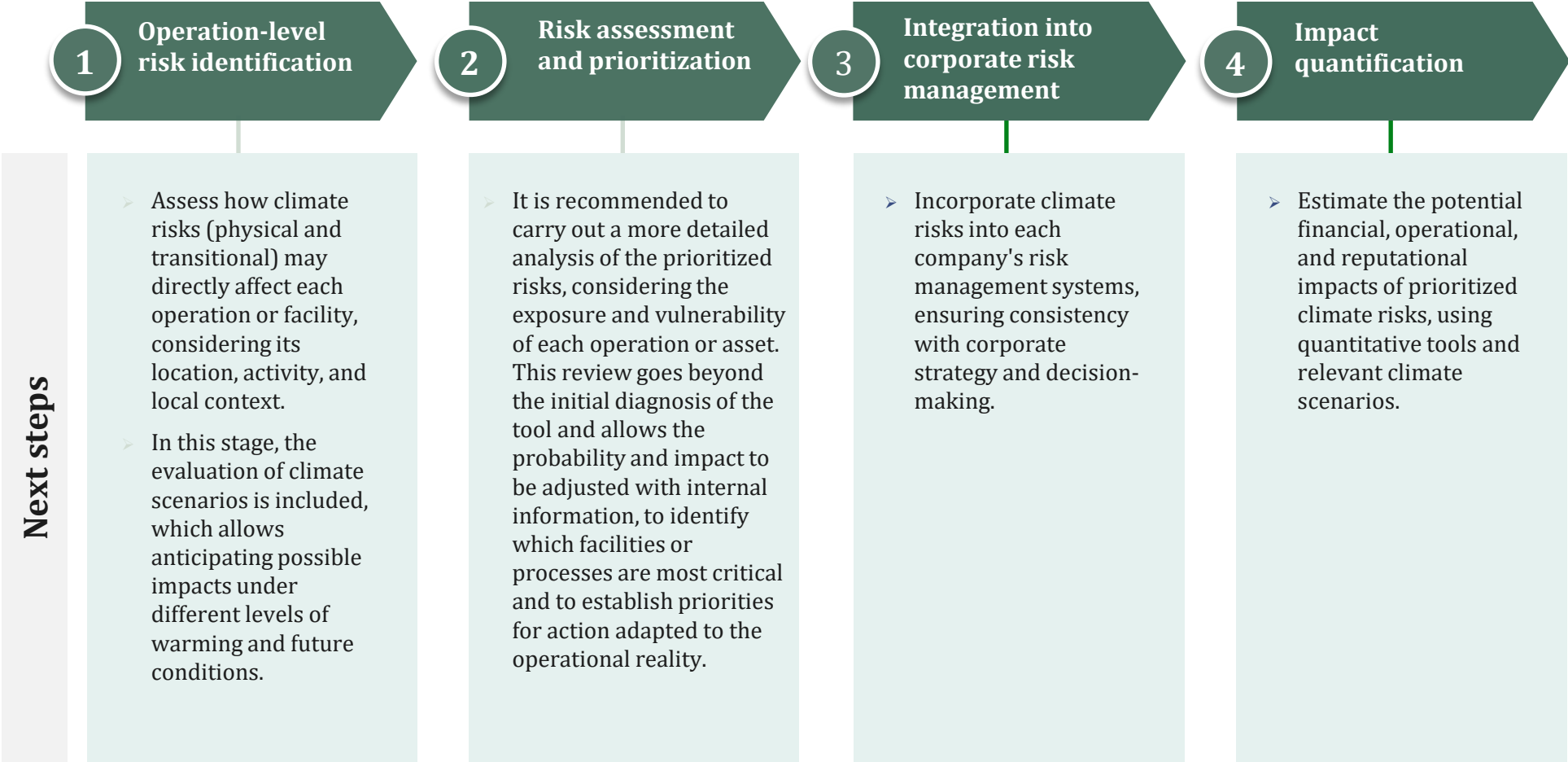
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Recommendations and next steps

This tool serves as an initial approach to identify and prioritize climate risks relevant to each company, based on its sector and operational context. Building on this initial diagnostic, it is essential to move toward a more detailed assessment that enables a deeper understanding, management, and quantification of the actual impact of these risks on each operation. The following next steps are recommended:

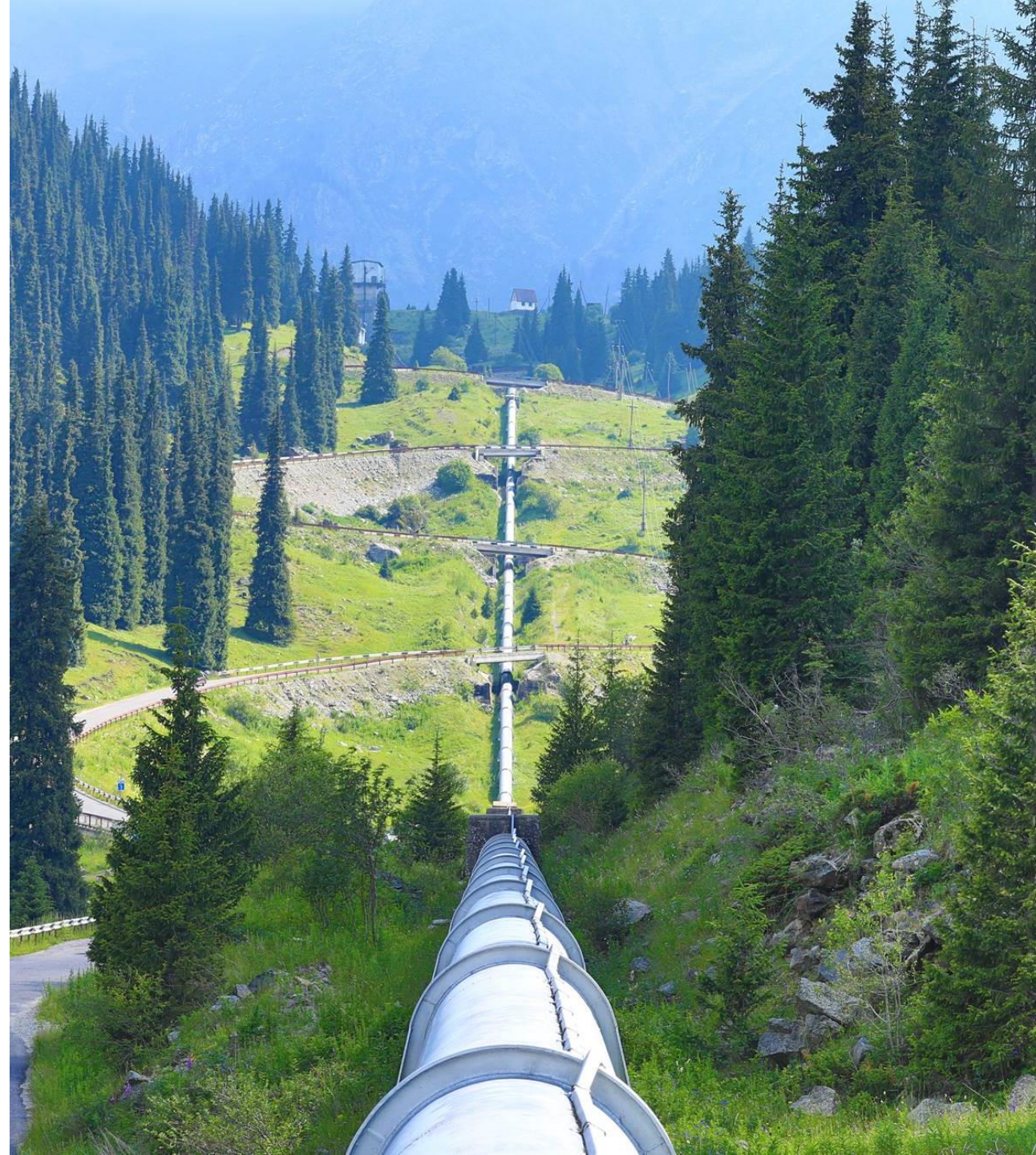




Example cases

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Case 1: Southern Energy S.A. and the impact of climate on its operation

 **Location:** Rincón Norte Operating Complex

 **Sector:** Oil & Gas – Onshore production and transportation of gas and oil

 **Region:** Aguara Güe Complex – Salta Province

Company context

Southern Energy S.A. is an Argentine company engaged in the onshore production and transportation of natural gas and oil. Its main operations are located in the Aguara Güe Complex, in the province of Salta, within the Northwestern region of Argentina. There, production continuity depends on critical assets such as wells, drilling equipment, pipelines, pumping stations, compressors, cooling systems, and steam generation boilers.

Why are they considered critical? Because any interruption affecting these assets directly impacts production volumes, operational safety, and revenue

What is happening in the region?

In recent years, the province of Salta has experienced record heat waves (exceeding 40°C) and sustained water scarcity. The Risk Manager considers that, given the climate events observed in the region, the following operational risks could arise for the company's assets:

Extreme Heat

- Failures in pumps, compressors, and valves may occur due to overheating, leading to unplanned shutdowns.
- Accelerated corrosion and microcracks in pipelines may develop as a result of thermal expansion.
- Extreme heat increases the risk of fires due to dry vegetation and the high volatility of hydrocarbons at the facilities.
- Temperatures above 35°C could affect fieldwork, creating health risks for personnel and causing operational pauses

Water Scarcity

- Reduced water availability could limit key processes such as drilling, cooling, and steam generation, decreasing efficiency and production.
- The use of low-quality water (higher salinity or hardness) could cause internal corrosion and scaling in pipelines and boilers.

Case 1: Southern Energy S.A. and the impact of climate on its operation

What is the company looking for?

Southern Energy wants to take the first step towards managing physical climate risk. To do this, it will use the Physical Risk Assessment and Prioritization Matrix to:

- ✓ Identify the most critical risks.
- ✓ Assess your exposure (how present the risk is in the region).
- ✓ Assess their sensitivity (how vulnerable assets and processes are).
- ✓ Prioritize risks to define actions.

How will we do it in the session?

We will use the risk assessment and prioritization matrix.
We will complete three stages:

Exposure	Sensitivity	Risk self-assessment
<ul style="list-style-type: none">• Is the risk in Salta medium, high or very high?• Source: ThinkHazard (to be reviewed live).	<ul style="list-style-type: none">• Does the design, location, or operation exacerbate the risk?	<ul style="list-style-type: none">• Estimation of probability and impact according to historical events

Operational risks we'll analyze

#	Operational Risk	Climate phenomenon	Probability	Impact
1	Equipment and machinery failures	Extreme heat	Likely	Moderate
2	Accelerated corrosion and structural failures	Extreme heat	Possible	Significant
3	Fires and explosions	Extreme heat	Possible	Low
4	High Temperature Work	Extreme heat	Almost certain	Moderate
5	Operational disruption and loss of efficiency	Water deficit	Possible	Severe
6	Degradation of equipment by lower quality water	Water deficit	Rare	Significant

Case 2: NovaEnergy S.A. – Transition Risks



Sector: Electric Utilities & Renewables – Power generation (gas + solar)



Region: Arequipa Department

Company context

NovaEnergy S.A. is a Peruvian power generation company with a portfolio primarily composed of natural gas thermal plants and solar projects. Currently, 80% of its installed capacity comes from fossil-based generation, while the remaining 20% corresponds to solar energy. The company supplies industrial and commercial clients in the southern region of the country.

What is happening in the sector?

NovaEnergy S.A.'s Board of Directors analyzed the accelerated transformation currently taking place in the global power sector, driven by climate regulations, market pressure, and social expectations. This shift presents strategic risks, but also opportunities to innovate and lead the energy transition in the country.

During the discussion, the key factors reshaping the business were identified as follows:

- **Emerging regulations:** Increase in carbon prices and environmental taxes applied to fossil generation.
- **Environmental regulations:** Regulations that shorten the useful life of thermal plants and increasing requirements for permits and grid connection.
- **Technological advances:** Digitalization, grid automation, integration of intermittent renewables and storage.
- **Changes in demand:** Self-consumption and prosumers are growing, reducing traditional sales.
- **Reputational and financial pressure:** Investors demand clear decarbonization and transparency goals to avoid greenwashing.



Case 2: NovaEnergy S.A. – Transition Risks

Given this context, NovaEnergy S.A. identified the need to map the main transition risks that could impact its business. Therefore, it applied the transition risk prioritization matrix to identify them:

Risk Type	Identified Risk	Associated Opportunity	Risk-Opportunity Relationship	Does it apply to the company? Yes/No
The transition risks listed were defined based on a review of TCFD reports and international sectoral guidelines for Electric Utilities & Renewables, prioritizing those considered most relevant due to their potential impact on strategy, operations, and sector competitiveness.				The company must select in column G the risks it considers applicable, using the detailed descriptions in columns D to F as a reference.
Regulatory	Increase in carbon prices and environmental taxes applied to fossil-based	Investment in renewable generation and energy efficiency	Renewable expansion reduces exposure to carbon costs, lowers OPEX, and improves competitiveness. At the same time, it enables access to tax incentives and preferential market prices, generating stable revenues and strengthening competitive	Yes
Regulatory	Regulations shortening the lifespan of fossil plants (phase-out)	Repowering existing assets with clean technologies	Repurposing assets prevents accounting losses from stranded assets, maintains revenue at the same site, reduces dismantling costs, and improves regulatory compliance. It mitigates regulatory risk by turning an obligation into an opportunity for technological renewal.	No
Regulatory	Increasing requirements for obtaining permits, licenses, and grid connection	Early engagement practices and project design with advanced ESG criteria	Adopting best practices reduces permitting times and prevents financial delays, improves social acceptance, and can accelerate operational start-up. It creates value by lowering delay costs, enhancing predictability, and increasing project development success rates.	No
Technological	Accelerated equipment obsolescence due to continuous improvements (batteries, panels, inverters)	Technology upgrade programs	Investing in technology upgrades reduces efficiency losses, extends asset lifespan, and maintains competitiveness against new entrants. Additionally, it increases capacity factors and improves revenues through enhanced availability and performance.	No

Case 2: NovaEnergy S.A. – Transition Risks

Need for transition risk mapping

The company identified risks and opportunities in four categories: Regulatory, Technological, Market and Reputational. The risks selected were:

Type	Risk	Opportunity
Regulatory	Increase in carbon prices and environmental taxes applied to fossil generation	Investment in renewable generation and energy efficiency
Technological	Need to update infrastructures to integrate intermittent renewables	Investment in storage, flexibility systems and network modernization
Market	Gradual reduction in sales due to increased self-consumption and prosumers	Development of complementary energy services (demand management, microgrids, V2G)
Reputational	Loss of confidence due to perceived slow progress in the energy transition	Transparent communication of decarbonization goals and external certifications

Case Application

In the session, we will use the prioritization matrix to assess how these risks affect strategy and what opportunities they generate. For each risk, the following will be answered:

Strategic impact: How does risk affect the operating model and investment priorities?

Skills needed: What technical skills must be developed to manage it?

Key decisions: What technological, operational, or infrastructure transformations are required to accelerate response and strengthen resilience?

Complementary information on climate change risks and opportunities

A. Financial quantification of climate risks

B. Transition Climate Risk Opportunities

C. Analysis of regulations

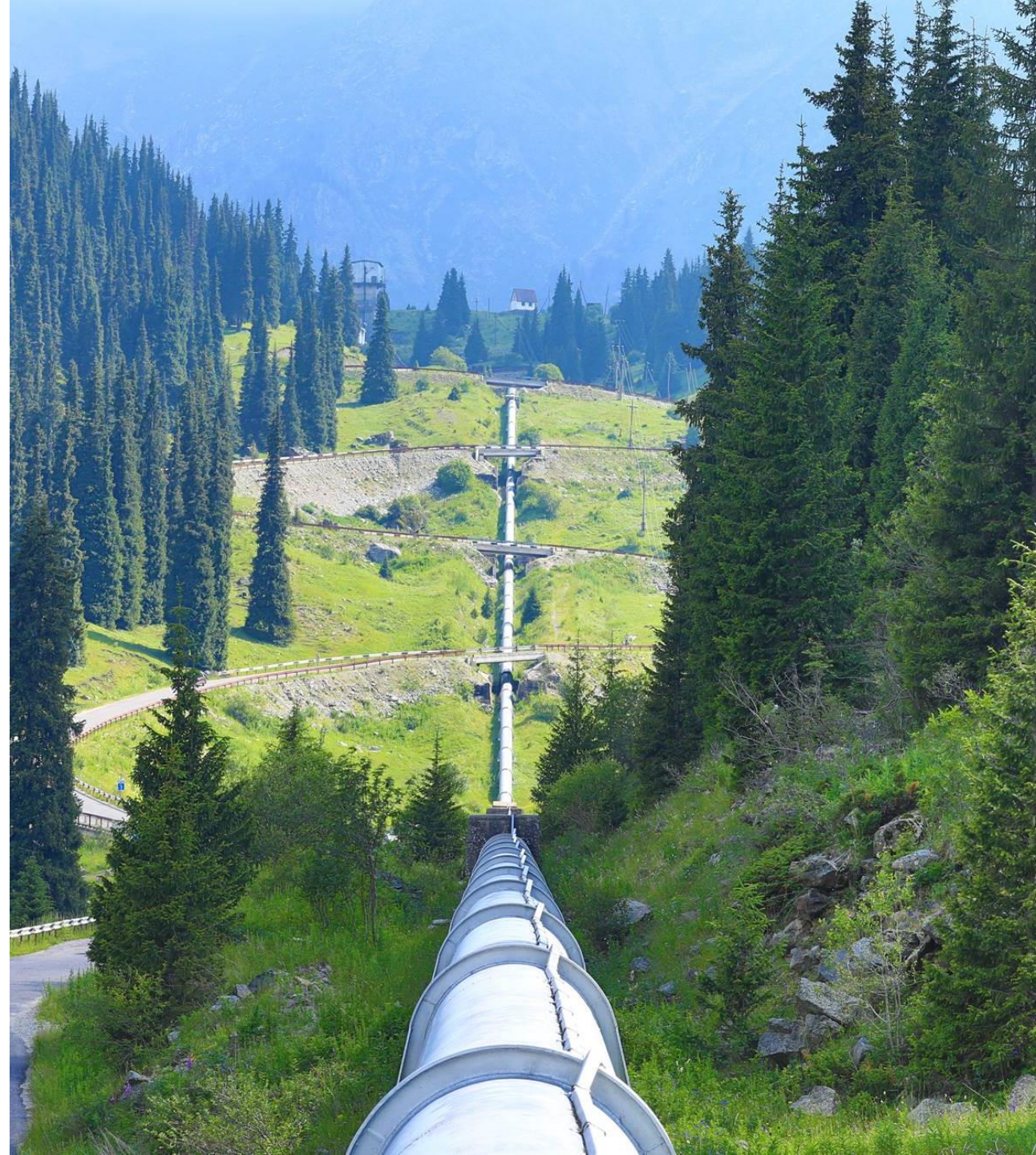
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A. Financial quantification of climate risks

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What is financial quantification of climate risks?

The financial quantification of climate risks is the process of translating physical and transition risks associated with climate change into concrete financial impacts on revenues, costs, assets, investments (CAPEX), and access to financing.

- It enables companies to connect climate risk management with strategic and financial planning.
- It is supported by future scenarios and analytical techniques such as stress testing to estimate potential losses or value variations.

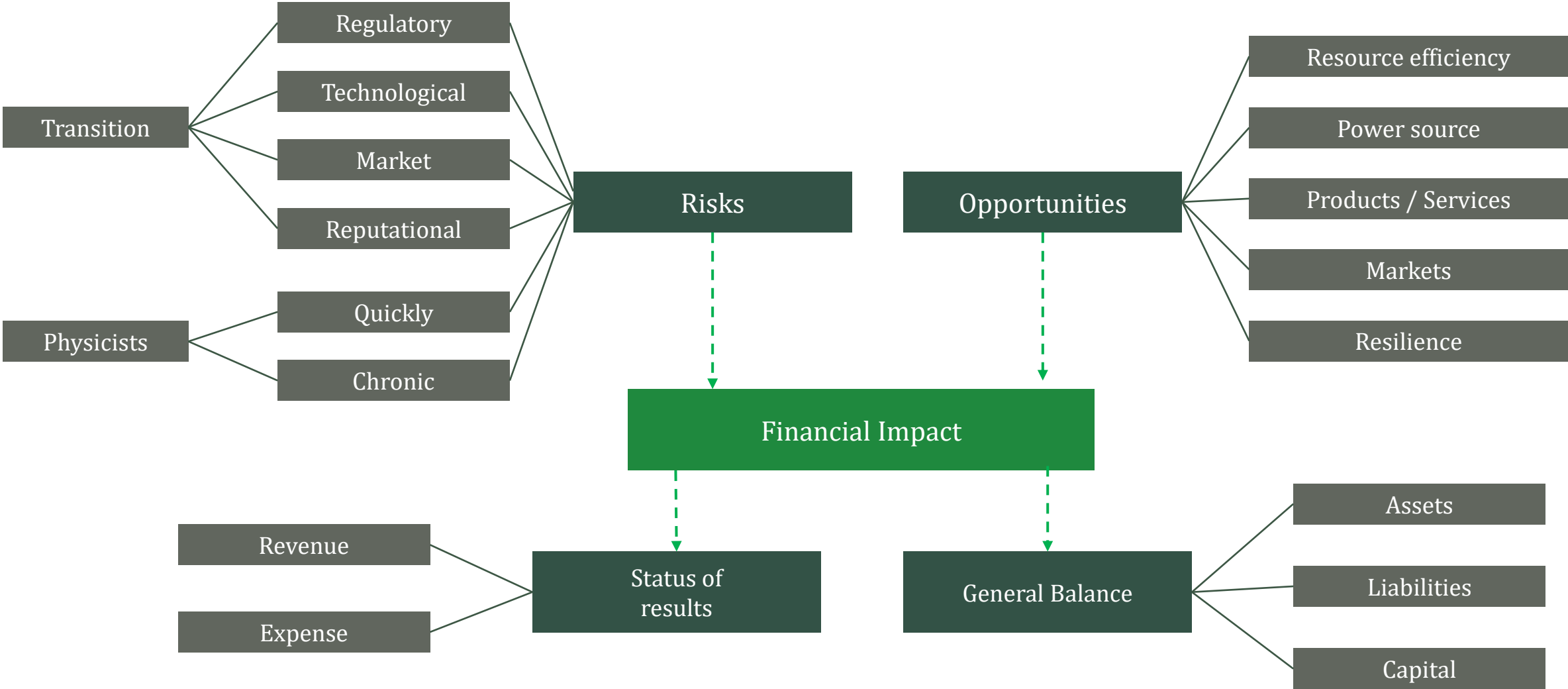
Why quantify financial risks?

- Facilitates strategic decision-making and the definition of resilient investments.
- Improves financial resilience in the face of climate-related events and regulatory changes.
- Enables compliance with international reporting frameworks (TCFD, ISSB).
- Responds to investor and regulatory demands for greater transparency.



Financial Impact Assessment

The Taskforce on Climate-related Disclosure (TCFD) highlights the importance of identifying the financial impact of climate risk



General Guidelines for Financial Impact Assessment

Step 1. Selection of future climate and regulatory scenarios

- It is important to define under which emissions trajectories and regulatory conditions the risks will be evaluated. The recommended climate scenarios come from the IPCC (RCP2.6, RCP4.5, RCP6.0, RCP8.5) and may be combined with regulatory scenarios from international organizations (e.g., IEA, NGFS).
- In the Oil & Gas sector, this helps explore how changes in energy demand or restrictions on fossil fuels may affect revenues.
- For the Electric Utilities & Renewables sector, it illustrates how variations in water availability or decarbonization policies impact generation costs

Step 2. Identification and linking of risks to financial variables

Each physical or transition risk should be mapped to key financial indicators:

- **Revenues:** production disruptions due to extreme climate events or reduced demand driven by regulatory changes.
- **Operating costs:** increases in insurance, inputs, carbon fees, or maintenance expenses.
- **Assets:** depreciation or loss of value in vulnerable infrastructure (refineries, power plants, transmission networks).
- **CAPEX:** need to invest in modernization or resilient infrastructure.
- **Financing:** changes in access to credit or investment conditions from banks and funds

General Guidelines for Financial Impact Assessment

Step 3. Quantification through scenario analysis / stress testing

Here, the information is translated into numerical values. There are several approaches, such as:

- **Climate Value at Risk (CVaR):** estimates variations in a company's value under different climate scenarios.
- **Balance sheet stress testing:** analyzes how assets and liabilities are affected under extreme physical or regulatory risk scenarios.
- **Sensitivity models:** apply variations in carbon prices, energy demand, or operating costs to observe financial impacts.

The goal is not absolute precision, but rather plausible impact ranges that serve as an initial reference.

Step 4. Prioritization of critical risks and definition of adaptation/mitigation strategies

With the preliminary quantification, risks can be classified based on probability and financial impact.

The most relevant should be addressed through concrete strategies, for example:

Oil & Gas: diversification toward natural gas or biofuels, improvements in energy efficiency, investments in carbon capture.

Electric Utilities & Renewables: integration of renewable energy, water resource management, grid digitalization.

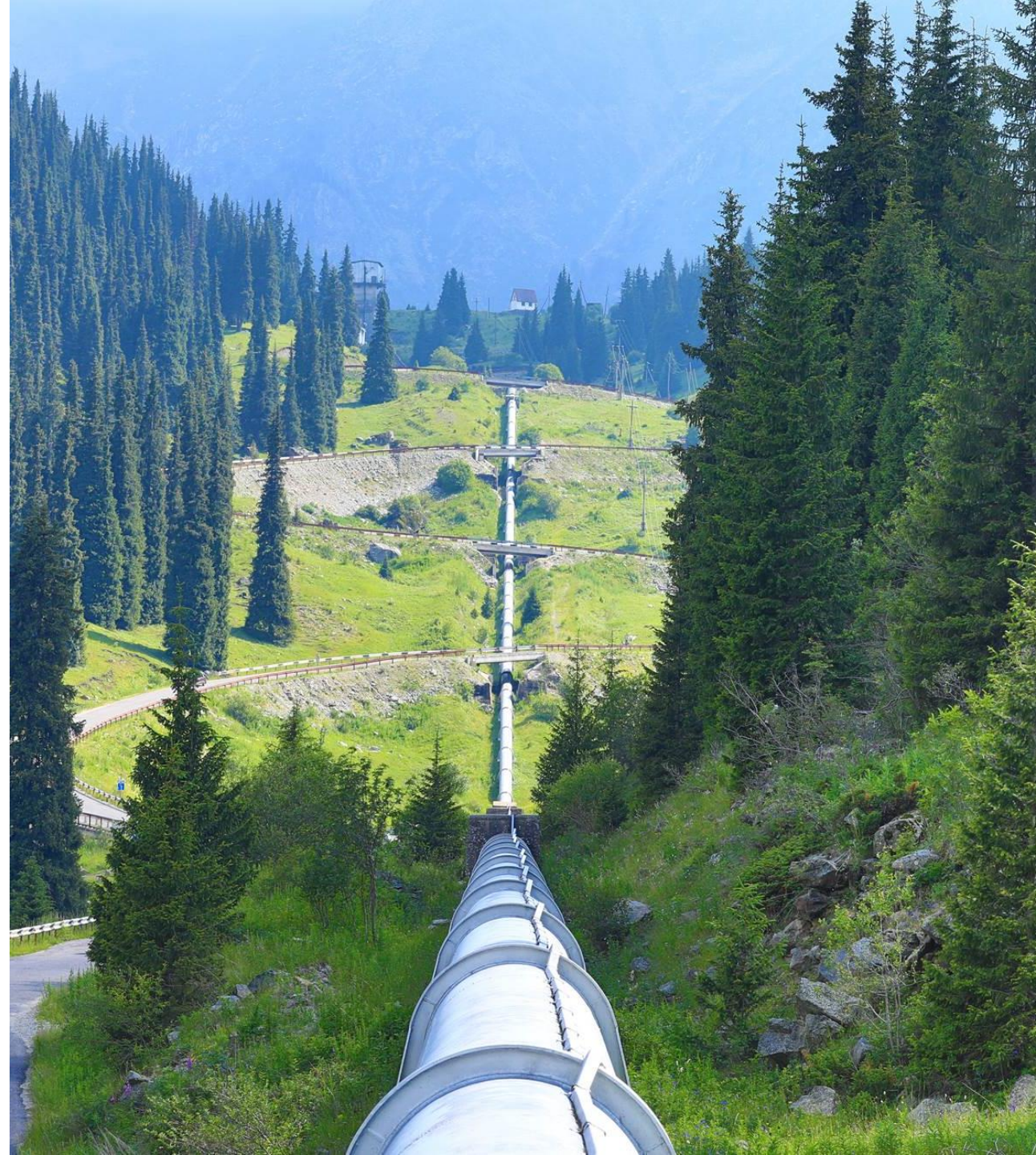
Prioritization supports strategic decision-making and communication with investors under frameworks such as TCFD or ISSB.



B. Transition Climate Risk Opportunities

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Types of climate opportunities

The climate transition not only involves managing risks but also seizing strategic opportunities. These arise across multiple areas: from anticipating new regulations and accessing green financing, to incorporating technologies that improve efficiency, opening new sustainable markets, and strengthening corporate reputation.

Together, these opportunities enable the company to innovate, diversify its portfolio, and build a competitive advantage in the context of global decarbonization.

Below are specific opportunities identified for each ARPEL sector

Regulatory

- Opportunities that arise from aligning early with new regulations and legal frameworks, generating advantages in compliance and access to benefits linked to regulation.

Technological

- Opportunities associated with the adoption and innovation of technologies that reduce emissions, increase efficiency and allow a transition to more sustainable production models.

Market

- Opportunities arising from changes in demand and market structure, which drive the creation of new products, services or sustainable business models.

Reputational

- Opportunities linked to the strengthening of image and credibility in front of investors, customers and other stakeholders, consolidating trust and competitive positioning.

Oil & Gas Sector – Identifying Opportunities

Type of Risk	Identified Risks	Opportunities
Regulatory	<ul style="list-style-type: none"> • Implementation of carbon pricing (ETS or taxes). • Restrictions on fossil fuel production. • Stricter regulations on greenhouse gas emissions. 	<ul style="list-style-type: none"> • Advance preparation for carbon pricing schemes. • Improvement of the ESG profile for access to sustainable financing. • Adjusting operations to comply with new regulations.
Technological	<ul style="list-style-type: none"> • Need to invest in carbon capture and storage (CCS) technologies. • Digitalisation and automation to improve efficiency and safety. • Pressure to adopt low-carbon technologies. 	<ul style="list-style-type: none"> • Investment in renewable energies (solar, wind, hydrogen). • Partial electrification of processes. • Digitization and automation to reduce risks and costs.
Market	<ul style="list-style-type: none"> • Decreased demand for petroleum products. • Volatility of fossil fuel prices. • Revaluation of fossil assets as "stranded assets". 	<ul style="list-style-type: none"> • Diversification towards natural gas, biofuels and clean energy. • New business models based on energy services. • Access to voluntary or regulated carbon markets.
Reputational	<ul style="list-style-type: none"> • Growing pressure from stakeholders and investors. • Reduction of available capital due to negative perception. 	<ul style="list-style-type: none"> • Strengthening climate commitments. • Active participation in ESG rankings. • Strategic communication on energy transition.

Case 1: Ecopetrol (Transition risks)



Riesgo de mercado	
Senda	<ul style="list-style-type: none"> Cambiar las preferencias en el uso de productos bajos en carbono a largo plazo, lo que implica un riesgo de que la Compañía no pueda satisfacer la demanda del mercado y no avance de manera efectiva en el desarrollo de estos productos.
Impacto potencial	<ul style="list-style-type: none"> La volatilidad en los precios de los combustibles fósiles (petróleo y gas natural) podría afectar los ingresos de la compañía por activos varados, primas de seguros más altas, costos de capital más altos y cambios en las coberturas de las pólizas de seguro.
Riesgo regulatorio	
Senda	<ul style="list-style-type: none"> Fijación del precio del carbono: la fijación del precio del carbono se considera una política clave para la transición energética, aunque varía considerablemente entre los escenarios climáticos y los mecanismos de implementación. Compensaciones de emisiones: Ecopetrol estableció un límite de compensación para el cumplimiento de las metas de reducción de emisiones en torno al 30%. Otras vías: (i) requisitos en solicitudes de licencias ambientales o modificaciones asociadas a la gestión de mitigación y adaptación al cambio climático, (ii) mayores requisitos asociados a las regulaciones para la detección y reparación de fugas de gas, quema y ventilación, (iii) nuevos requisitos para la validación y verificación de proyectos de reducción y su inscripción en el Registro Nacional de Reducción de Emisiones de GEI (RENARE), (iv) implementación del Programa Nacional de Cuotas de Emisiones Transables (PNCTE), similar a un Sistema de Comercio de Emisiones, en el que se asignarían derechos de emisión.
Impacto potencial	<ul style="list-style-type: none"> El aumento de la fijación del precio del carbono también aumenta los costes operativos de la empresa, con una variación negativa en los escenarios APS y NZE, mientras que sigue siendo positivo en el escenario STEPS. Las respuestas gubernamentales al cambio climático podrían implicar un aumento en los precios del carbono en las emisiones de alcance 1 y 2. La regulación y los lineamientos públicos internacionales específicos del sector pueden limitar el uso de compensaciones, lo que aumentaría los costos para Ecopetrol debido a la necesidad de acelerar la inversión en tecnologías de reducción adicionales para cumplir con la meta de descarbonización. Los nuevos requisitos y las mayores demandas aumentarían los costos para Ecopetrol debido a la necesidad de acelerar la inversión en tecnologías de reducción adicionales.

Case 1: Ecopetrol (Opportunities)



Fuente de energía	
Oportunidades continuas	<ul style="list-style-type: none"> • Uso de energías renovables, como la solar, la eólica y la geotérmica • Incorporación gradual de tecnologías emergentes (hidrógeno, CCUS)
Beneficios	<ul style="list-style-type: none"> • Reducción de los costes operativos • Reducción de la exposición a los precios futuros de la energía • Reducción de las emisiones de GEI y disminución de la exposición y sensibilidad a la fijación del precio del carbono

Eficiencia de los recursos	
Oportunidades continuas	<ul style="list-style-type: none"> • Rendimiento energético • Gestión eficiente del agua • Modelo de economía circular • Reducción de la quema, las emisiones fugitivas y los respiraderos • Soluciones climáticas naturales (NCS)
Beneficios	<ul style="list-style-type: none"> • Reducción de los costes operativos • Flujos de efectivo de ingresos adicionales • Reducción de la exposición a las emisiones de GEI • Exposición reducida a riesgos regulatorios • Reducción de los riesgos de pérdida de biodiversidad • Optimización del uso de los recursos naturales

Productos, servicios y mercados	
Oportunidades continuas	<ul style="list-style-type: none"> • Diversificación en la cadena de valor del petróleo y el gas <ul style="list-style-type: none"> ◦ Oportunidades en la cadena de valor del gas ◦ Desarrollar nuevos productos petroquímicos ◦ Mejorar la calidad del combustible ◦ Logística de transporte ◦ Desarrollar nuevos modelos de negocio circulares • Diversificación de la electricidad • Diversificación de negocios de bajas emisiones <ul style="list-style-type: none"> ◦ NCS: Soluciones climáticas naturales ◦ Hidrógeno • CCUS: Captura, uso y almacenamiento de carbono
Beneficios	<ul style="list-style-type: none"> • Reducción de los costes operativos y de capital Reducir las emisiones de GEI • Mejorar el perfil de riesgo • Aumento de los ingresos mediante el acceso a nuevas líneas de negocio y mercados • Acceso a nuevas fuentes de financiamiento (por ejemplo, bonos verdes) • Impactos positivos en el medio ambiente y la salud Mejorar las calificaciones ESG

Examples of opportunities in the region

Climate opportunities for the Oil & Gas sector

Opportunity	How it represents an opportunity for the company	Detail
Biomethane and biogas in Brazil (RenovaBio) – development of projects with agribusiness for heavy transport and grid injection	It diversifies the portfolio with low-carbon gas, generates additional income via CBIOs and improves the ESG profile vis-à-vis investors.	RenovaBio program includes biomethane in its decarbonization credit framework. ABiogás estimates >120 million m ³ /day of potential.
Green hydrogen in Chile – use in refineries, NG blending and export Brazil and Colombia are emerging markets with nascent but growing regulatory frameworks and Argentina and Peru show potential	It turns refineries and gas networks into transition hubs, attracts international financing and positions regional leadership in emerging chains.	National Green H ₂ Strategy (2020) sets targets (5 GW in 2025, 25 GW in 2030). Private projects underway (e.g. TotalEnergies, 2025).
Leakage and venting reduction (LDAR, VRU) in operations (Peru, Argentina, region)	Reduces operating costs by recovering gas, avoids penalties and improves access to green financing.	Measures included in NDCs (e.g. Peru) and regulatory frameworks (e.g. Argentina for flaring). Global initiatives such as OGMP 2.0 support.
Carbon credits in Colombia (methane + afforestation) – internal projects to offset carbon tax	It converts a regulatory liability (carbon tax) into a financial asset, monetizing credits and reinforcing ESG reputation.	Law 1819/2016 allows the carbon tax to be offset with REDD+ and AFOLU credits. Ecopetrol already applies verified compensations.
Natural gas as a transition fuel (Colombia and region) – substitution of diesel and coal	Secures supply contracts, income stability and maintains relevance in the energy transition.	Colombia's 2020–2050 National Energy Plan recognizes gas as a bridge energy. This trend has been replicated in other countries in the region.

Electric Utilities & Renewables Sector – Identifying Opportunities

Type of transition risk	Identified Risks	Opportunities
Regulatory	<ul style="list-style-type: none"> Regulations that favour the transition to clean energy. Restrictions on fossil fuel generation. Changes in incentive schemes that affect the profitability of renewable projects. 	<ul style="list-style-type: none"> Access to incentives and climate finance for clean energy projects. Regulatory compliance that improves corporate reputation. Public-private partnerships in energy transition.
Technological	<ul style="list-style-type: none"> Need to update infrastructures to integrate intermittent renewables. Dependence on emerging technologies with uncertainty in costs/performance. Digitalization and automation of electricity grids. 	<ul style="list-style-type: none"> Innovation in energy storage and batteries. Improved network efficiency and reduced losses. Digitalisation, automation and predictive maintenance in renewable plants.
Market	<ul style="list-style-type: none"> Fluctuations in electricity prices. Competition with new players in renewable energy. Changes in demand for energy efficiency and electrification. 	<ul style="list-style-type: none"> Expansion in clean energy markets. Development of new products and services. Participation in regional renewable energy markets.
Reputational	<ul style="list-style-type: none"> Risk of negative perception due to non-compliance with climate targets. Pressure from consumers and investors to accelerate the transition. 	<ul style="list-style-type: none"> Strengthen corporate image as a leader in sustainability. Attracting capital from ESG-oriented investors. Increased customer and regulatory confidence.

Case 2: Engie (Transition Risks and Opportunities)



Thematic	Identified Risks	Opportunities
Gas networks: transformation towards total decarbonisation	<ul style="list-style-type: none"> Reduction of the volume of gas in transport, storage or distribution networks. Imposing stricter carbon criteria for methane. 	<ul style="list-style-type: none"> Transformation of current networks to distribute biomethane, synthetic gas and hydrogen. Networks as essential support for the electricity system in peak demand (e.g. use of hybrid heat pumps). Assurance of supply in complex geopolitical environments. Possibility of converting part of the current networks to hydrogen.
Low-carbon gases: promising technologies to industrialize	<ul style="list-style-type: none"> Exposure to regulatory constraints and conflicts of use (e.g., biomass vs. agriculture). Risk of insufficient production sufficient to support gas-fired plants and the safety of the electricity system. Need to transform or build hydrogen-friendly networks, which can delay its deployment. 	<ul style="list-style-type: none"> Development and massification of biomethane, hydrogen and synthetic methane. Active role in technological innovation (ENGIE Lab). Implementation of carbon capture and storage (CCS) projects.
Renewable electricity: mature supply chain, but under pressure	<ul style="list-style-type: none"> Dependence on the manufacturing capacity of solar, wind and battery components. Risk of not meeting expansion goals due to limitations in the value chain. 	<ul style="list-style-type: none"> Strategic action in the diversification of the supply chain. Promotion of reuse and eco-design of turbines and solar panels (e.g. Zebra project). Reduced risk exposure through more resilient investment decisions.
Ambition in the face of major social and societal challenges	<ul style="list-style-type: none"> Exclusion from certain markets for not meeting sustainability criteria in tenders. Risk of losing competitiveness to attract specialized talent. Social challenges linked to the closure of fossil activities (e.g. phasing out coal). 	<ul style="list-style-type: none"> Implementation of a Just Transition strategy with vulnerable customers, regions and employees. Training and retraining through the Renewables Academy. Strengthening corporate reputation by integrating sustainability and social justice into the energy transition.

Examples of opportunities in the region

Climate Opportunities for Electric Utilities and Renewables

Opportunity	How it represents an opportunity for the company	Detail
Long-duration storage in Chile (4–8h) – support for renewables after coal retirement	Secures capacity contracts and a central role in the energy transition, with stable long-term revenues.	Chile plans to phase out coal by 2040; recent CNE tenders already include storage blocks.
Wind-solar hybridization with storage in Brazil	Improve efficiency of renewable assets, reduce landfills and increase revenues with firm energy.	ANEEL Regulation (2022) authorizes hybrid projects. Brazil exceeds 60 GW of solar and wind capacity.
Electric vehicle charging in Colombia – urban and industrial infrastructure *Chile also already operates a fleet of electric vehicles. Other opportunities: Brazil and Mexico.	It expands business beyond the sale of electricity, with recurring revenues from charging services.	National Electric Mobility Plan (2030) sets a goal of 600,000 EVs. Bogota already operates the largest fleet of electric buses in LATAM.
Renewable PPAs + BESS for mining in Peru	Allows premium contracts with mining companies seeking clean energy 24/7, improving profitability and international reputation.	Large mining companies (e.g. Antamina, Anglo American) have assumed carbon neutrality commitments; Global buyers demand renewable energy.
Green bonds and SLBs (region) – sustainable financing for transition	Access to international capital in better financial conditions, with a competitive advantage in financing.	Example: CFE (Mexico) issued a sustainable bond of USD 1,750 million in 2023. IDB and CAF support green issuances in the region.

Recommendations for managing risks and taking advantage of climate opportunities

Some of the main recommendations are the following:

1. Strategic integration

- Include risks and opportunities in corporate management and risk map.
- Define those responsible and follow-up mechanisms.

2. Prioritization and regulation

- Evaluate impact/probability to prioritize.
- Anticipate regulatory changes and design compliance roadmap.

3. Technological innovation and diversification

- Invest in low-carbon and low-efficiency technologies.
- Diversify portfolio towards clean energy and new business models.

4. Reputation and trust

- Communicate progress with transparency.
- Position the company in ESG rankings and alliances.

5. Continuous monitoring

- Define climate transition KPIs.
- Review and update risks and opportunities annually.

Climate risk management should not be limited to mitigation but rather become a strategic lever for value creation.

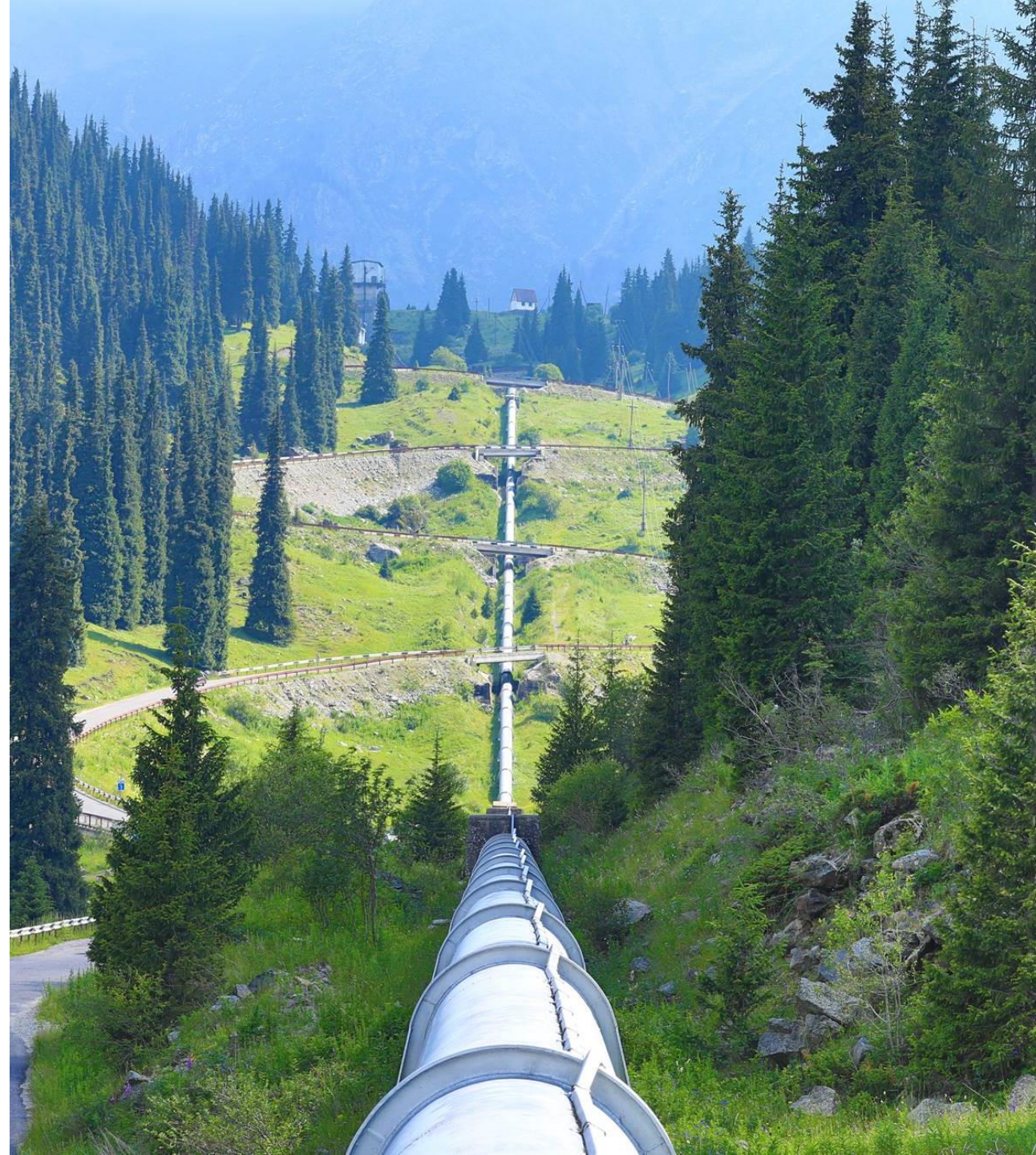
Integrating these considerations into corporate planning allows not only for the reduction of vulnerabilities, but also for the capitalization of regulatory, technological, market, and reputational opportunities. The proposed recommendations guide the company toward an orderly, innovative, and competitive transition within the context of global decarbonization.



C. Analysis of regulations

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Current State of Climate Regulation in Latin America

Country	Emissions regulation	Carbon pricing instruments	Climate Report	Advance in IFRS S1 & H2
Brasil	Adherent to the Regional Methane Declaration. It has Decree No. 11,075/2022, which establishes the National Emissions Reduction System (SINARE).	Law No. 15,042/2024 establishes the Brazilian Emissions Trading System (SBCE), with emission quotas (CBE) and CRVE certificates	CVM Resolution No. 193/2023 requires mandatory climate reporting from 2026 for regulated issuers	Mandatory adoption from 2026, according to the CVM and the Ministry of Finance
Chile	Adherent to the Regional Declaration on Methane. The Framework Law on Climate Change No. 21,455 establishes carbon neutrality goals by 2050.	Since 2017, it has applied a carbon tax (Law No. 20,780). In 2025, the Regulation of the GHG Emission Standards Compensation System was approved, which allows emissions to be offset through certificates.	The LMCC requires mandatory climate reporting for regulated sectors, aligned with the Long-Term Climate Strategy.	Mandatory adoption from 2026 for issuers of securities according to NCG No. 519.
Bolivia	Adherent to the Regional Declaration on Methane. It has no specific regulation on methane or CO ₂ emissions.	It does not have an ETS or carbon tax.	Supreme Decree No. 5264/2024 establishes guidelines for climate financing, but does not require business reporting.	No IFRS S1 and S2 adoption has been announced.
Mexico	Adherent to the Regional Declaration on Methane. The General Law on Climate Change (2012) establishes emission reduction goals and creates the National Emissions Registry (RENE), which requires certain sectors to report their emissions.	Carbon tax has been applied since 2014 (IEPS Law). It has been operating a pilot ETS since 2020, regulated by SEMARNAT.	The LGCC establishes reporting obligations for companies subject to the RENE.	In the process of adoption. Mexico is among the jurisdictions that have declared an intention to align with IFRS S1 and S2.
Costa Rica	Adherent to the Regional Declaration on Methane. It does not have specific emissions regulations.	It has no ETS or formal carbon tax.	It has a National Decarbonization Plan 2018–2050, but does not require mandatory business reporting.	Mandatory adoption is expected from 2028 for regulated entities.

Current State of Climate Regulation in Latin America

Country	Emissions regulation	Carbon pricing instruments	Climate Report	Advance in IFRS S1 & H2
Argentina	It is not listed as an adherent. Law No. 27,520/2019 establishes minimum budgets for adaptation and mitigation, and creates the National Climate Change Cabinet.	Applies taxes on fossil fuels as an indirect mechanism.	The law promotes climate planning at both the national and provincial levels but does not mandate corporate reporting. Provinces such as Neuquén, Mendoza, and Río Negro have begun implementing their own climate and environmental frameworks, focusing on mitigation and emissions control.	The Accounting and Auditing Standards Development Council (CENCyA) has initiated technical analysis for future adoption of IFRS S1 and S2.
Colombia	Adherent to the Regional Declaration on Methane. Law No. 2169/2021 establishes climate goals and creates the Mandatory Emissions Reporting (ROE) for public, private and mixed entities.	Carbon tax since 2017 (Law No. 1819/2016).	Law 2169 promotes climate reporting, but does not require it for private companies.	The Superfinanciera recommends TCFD and SASB through Circular 031/2021; the CTCP has issued guidelines for IFRS, but there is no obligation.
Ecuador	It is not listed as an adherent to the Regional Declaration on Methane. Ministerial Agreement MAATE-2025-0051-A creates the National Climate Change Registry (RNCC)	It does not have an ETS or carbon tax.	The RNCC allows voluntary reporting by public, private and academic entities, under technical criteria defined by MAATE.	Mandatory adoption of IFRS S1 and S2 has not been announced.
Perú	Adherent to the Regional Declaration on Methane. The Framework Law on Climate Change No. 30754 and its regulations (DS No. 013-2019-MINAM) establish principles for reporting, monitoring and evaluation of climate policies.	It has no ETS or formal carbon tax.	Business reporting is not mandatory, but is promoted as part of the Monitoring System for Adaptation and Mitigation Measures.	Mandatory adoption of IFRS S1 and S2 has not been announced.
Uruguay	Adherent to the Regional Declaration on Methane. Decree No. 310/2017 approves the National Climate Change Policy and the First NDC.	Carbon tax from 2023.	The PNCC promotes the generation of and access to climate information, but does not require mandatory business reporting.	Mandatory adoption of IFRS S1 and S2 has not been announced.

Comparison of Approaches in Climate Risk Assessment: IFRS, ESRS and CSA

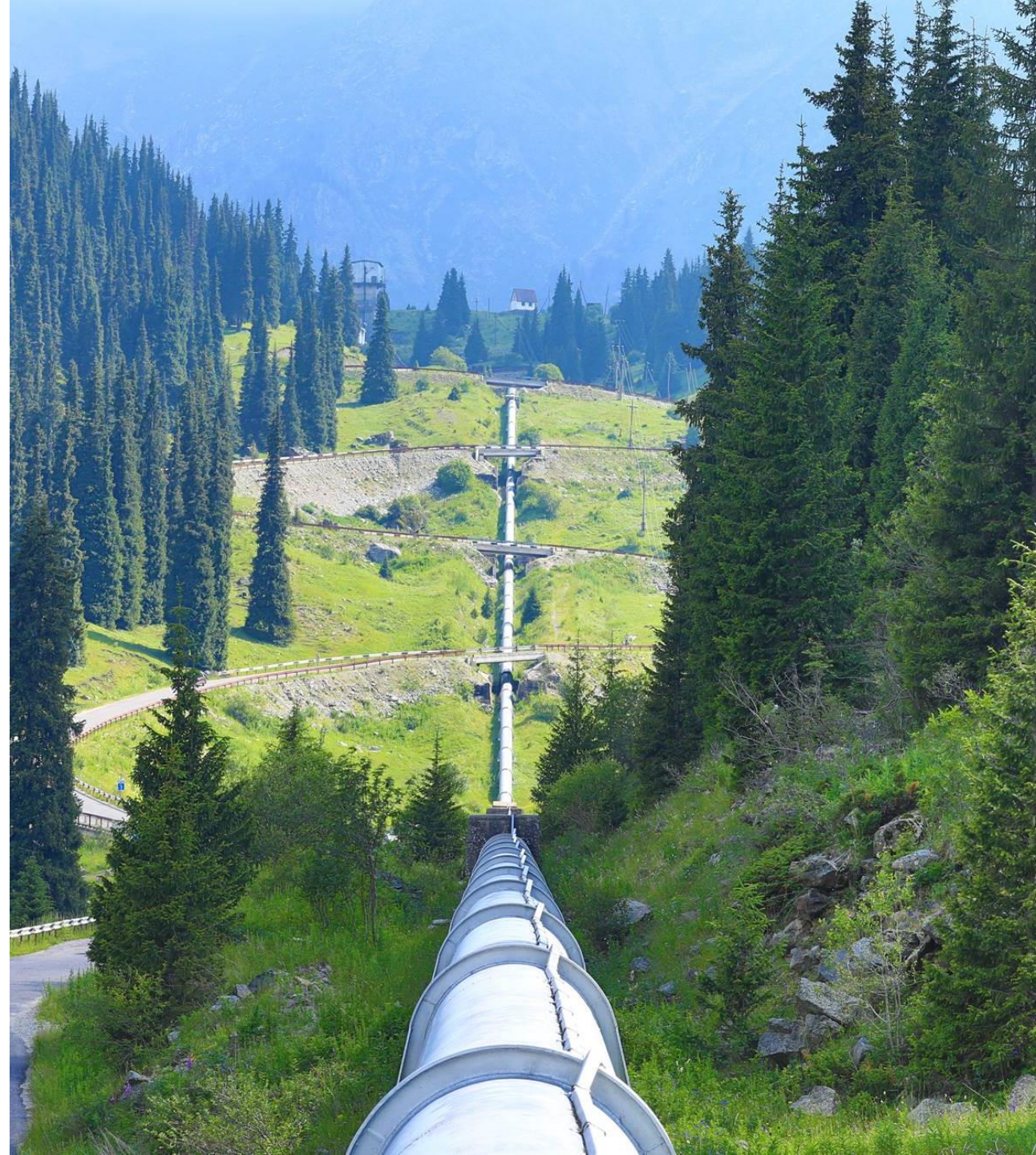
Criteria	IFRS S1 & S2	ESRS	CSA
Scope	IFRS S1 applies to general sustainability disclosure; IFRS S2 focuses on climate change. Aimed at companies that report under IFRS accounting standards.	Applicable to large companies within the EU under the CSRD. It considers the double materiality (financial and social impact).	Voluntary ESG performance assessment used globally for indices such as the DJSI. It is based on financial materiality.
Climate risk	IFRS S2 mandates disclosure of climate risks and opportunities, mitigation and adaptation strategies, climate scenarios, and key metrics.	ESRS E1 Climate Change requires reporting on GHG emissions, climate risks, associated CapEx and alignment with the EU Taxonomy and the 32 climate hazards.	It assesses climate risk as part of its climate strategy module, measuring emissions, energy efficiency, exposure to regulations, and reduction strategies.
Obligation	Mandatory for companies that follow IFRS from 2024.	Mandatory in the EU for large companies from 2024; foreign companies with revenues >€150M in the EU from 2028.	Voluntary, but key for companies looking to improve their ESG score and enter sustainability indexes.
Key metrics	GHG emissions (Scope 1, 2 and 3), climate scenarios, climate finance and exposure to physical and transition risks.	Indicators aligned with the EU Taxonomy, carbon reduction targets, decarbonisation plans and financial costs associated with climate change.	Carbon footprint assessment, energy efficiency, emission reduction and climate transition strategies. It compares with peers in the sector.
Purpose	Provide financial and sustainability information aligned with traditional financial reporting.	Integrate sustainability at the level of financial and impact information for greater comparability.	Measure ESG performance for investors and allow comparison between companies within the same sector.



Annex A: Analysis of International Standards

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IFRS (IFRS for Sustainability)

INTERNATIONAL FINANCIAL REPORTING STANDARDS



Description of Frameworks: IFRS S1 & S2

IFRS S1

General Requirements for the Disclosure of Sustainability-Related Financial Information.



Sets out how an entity reports its sustainability-related financial disclosures



Requires companies to disclose relevant information on sustainability-related risks and opportunities that could affect their cash flow, access to financing, or cost of capital in the short, medium, and long term



Introduces requirements for disclosure of governance, strategy, risk management, and metrics and objectives.

IFRS S2

Climate-related disclosures.



- Used in accordance with S1.
- It requires a company to disclose its climate-related information.



Establishes how an entity reports its climate-related risks and opportunities. It requires the disclosure of material information on physical risks, transition risks, and climate-related opportunities



It expands the recommendations of CDP, CDSB, and TCFD on climate-related financial disclosures to more effectively address the needs of investors and capital markets.



CONTEXT

The International Financial Reporting Standards (IFRS) has developed specific frameworks to address the impact of climate change on financial reporting. Through the IFRS Foundation, the International Sustainability Standards Board (ISSB) was established, which issued the IFRS S1 and IFRS S2 standards in 2023

SECTORAL GUIDES

Sector guidance - Oil and gas

Sector guidance - Electric utilities and power generators



RELEVANCE TO CLIMATE RISK ASSESSMENT

- **IFRS S1** guides companies to disclose how sustainability-related risks and opportunities — including those related to climate change — affect their financial position and strategy.
- **IFRS S2** sets out specific disclosure requirements on how climate change impacts financial performance, corporate strategies, and business resilience. It requires entities to assess and report climate-related risks from a financial perspective, distinguishing between physical risks (extreme events) and transition risks (regulatory, technological, and market changes).



COMPULSORY LEVEL

- **Brazil:** Mandatory application from January 1, 2026. Reporting period: Fiscal year 2026, publication in 2027.
- **Chile and Bolivia:** Mandatory application from January 1, 2026. Reporting period: Fiscal year 2026, publication in 2027.
- **Mexico and Costa Rica:** Mandatory application from January 1, 2025. Reporting Period: FY 2025, Publication in 2026
- **Argentina, Colombia, Ecuador and Peru:** There is no obligation and they are implemented voluntarily.



KEY CONTENTS FOR DISSEMINATION

- **Governance:** Structure for managing sustainability (S1) and climate risks (S2), including responsibilities and oversight of the governing body.
- **Strategy:** Impact of sustainability risks and opportunities on the business model, performance and resilience (S1); specific focus on climate risks and opportunities and their alignment with transition plans (S2)
- **Risk management:** Methods for assessing and managing sustainability (S1) and physical and transition climate (S2) risks.
- **Metrics:** Key indicators and sustainability targets (S1) and specific climate metrics such as GHG emissions, energy consumption and reduction plans (S2).

IFRS S1 & S2

Coincidences and differences between IFRS S1 and S2

Management Framework	IFRS S1	IFRS S2
Governance	Governance structure, roles and responsibilities.	
	Sustainability Risk and Opportunity Supervision and Management Process	Process for monitoring and managing climate-related risks and opportunities
Strategy	Identification of risks and opportunities in the short, medium and long term.	
	Impact of risks and opportunities on the business.	
	Approach to managing sustainability risks and opportunities	Approach to managing climate-related risks and opportunities
Risk Management	Processes for identifying, assessing and managing sustainability-related risks.	Processes for identifying, assessing and managing climate-related risks.
	Financial and non-financial risk assessment.	Assessment of climate, physical and transition risks.
Metrics and Objectives	Short, medium and long-term objectives	
	Performance against sustainability risks and opportunities	Climate-related metrics and targets

Sector Guides

Sector guide	Oil & Gas	Electric Services & Power Generators
Scope	Aimed at companies in the exploration, production, transportation, refining and marketing of oil and gas. It addresses the reduction of emissions and adaptation to the energy transition.	Applicable to companies in the electricity generation, transmission and distribution sector. Focuses on decarbonization of the electricity sector to achieve the goals of the Paris Agreement.
Objective	Support companies in managing transition and physical risks, reducing emissions in their operations, and diversifying into low-carbon energy.	Guide companies in the development of transition plans aligned with climate disclosure standards and the reduction of GHG emissions in the electricity sector.
Challenges	Reduced demand for fossil fuels, regulatory pressure, risk of stranded assets, adaptation of infrastructure to extreme weather events, and diversification into new energy sources.	Reducing emissions from electricity generation, increasing renewable energy capacity, improving transmission and distribution infrastructure, and addressing the physical risks of climate change.
Opportunities	Development of alternative fuels (hydrogen, biofuels), carbon capture and storage, conversion of infrastructure for new energy uses.	Growth of electrification in sectors such as transport and industry, integration of renewable energies and energy storage technologies
Disclosure Requirements	It requires disclosing strategies for reducing emissions, mitigating physical risks and transitioning to sustainable business models.	It focuses on Scope 1, 2 and 3 emissions reductions, strategic transition planning and physical risk assessment.
Just transition approach	It considers the impact on the oil sector workforce and the need for retraining and job diversification programs.	It considers the impact of the transition on communities dependent on electricity generation and seeks an equitable transition.







ESRS

EUROPEAN SUSTAINABILITY REPORTING STANDARDS



Description of the ESRS standard

It is the mandatory sustainability disclosure framework under the CSRD, which sets out detailed requirements for companies to report on their environmental, social, and governance (ESG) impacts, as well as their management of sustainability-related risks and opportunities.

			
Applicability	Time	Requirements	Objective
<p>All large companies and groups in the EU that meet at least 2 of the following 3 criteria:</p> <ul style="list-style-type: none">• 250 employees and/or• 50 million euros in turnover and/or• €25 million on the balance sheet• Companies listed on regulated markets in the EU <p>Application to non-EU companies generating a net turnover of €150 million in the EU, with at least one subsidiary or branch in the EU.</p>	<p>The final ESRS standards were adopted on July 31, 2023.</p> <p>The first application was from the 2024 reporting year for companies that meet certain requirements.</p>	<p>Makes non-financial disclosure mandatory.</p> <p>A sustainability statement must be included in the management report. Specific key performance indicators (KPIs) need to be reported.</p> <p>An audit/assurance requirement applies related to the content, with at least one limited warranty.</p> <p>Disclosure on the EU Taxonomy is mandatory.</p>	<p>Encourage responsible approaches to business.</p> <p>Achieve greater transparency and comparability.</p> <p>Bring sustainability disclosure to the same level as financial disclosure.</p> <p>Align with broader legislative frameworks in the EU.</p>



CONTEXT

It is the mandatory sustainability disclosure framework under the CSRD, which sets out detailed requirements for companies to report on their environmental, social, and governance (ESG) impacts, as well as their management of sustainability-related risks and opportunities.

SECTORAL GUIDES

Exposure draft - Oil and gas



RELEVANCE TO CLIMATE RISK ASSESSMENT

- It requires companies to disclose the impact of climate change on their business model and their financial risks.
- It requires the disclosure of strategies and action plans to manage climate risks, including how they are integrated into strategic planning, emission reduction targets, and adaptation measures.
- It includes key metrics and indicators, such as GHG emissions (Scope 1, 2 and 3), energy consumption and the financial impact of climate risks, as well as expenditures and CapEx associated with mitigation and adaptation activities according to the EU Taxonomy.



COMPULSORY LEVEL

ESRS is mandatory in the EU under the CSRD, while in Latin America they are not yet mandatory.

- **Europe:** The mandatory level is gradually applied from 2024 for large companies, listed SMEs and foreign companies with significant operations in the EU.
- **Latin America:** From 2028, companies in the region with revenues of more than €150M in the EU and significant subsidiaries or branches must comply with ESRS; In addition, companies in supply chains or with European investors could be influenced by these requirements.

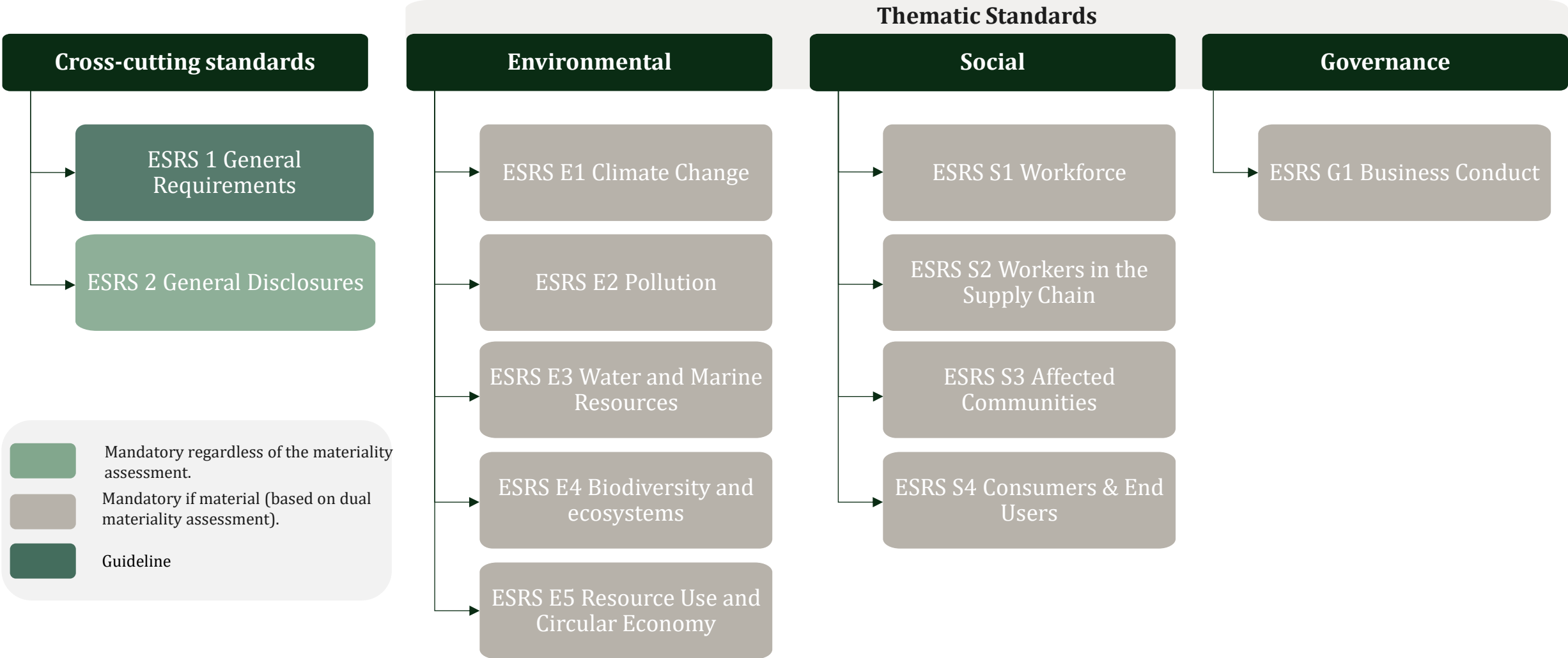
ESRS



KEY CONTENTS FOR DISSEMINATION

- **Strategy and Business Model:** How sustainability aspects affect the business model, strategy, and long-term resilience.
- **Governance:** Governance structure for sustainability, roles and responsibilities of the board and senior management.
- **Management of impacts, risks and opportunities:** Identification and evaluation of material impacts on the environment, people and business, as well as risks and opportunities.
- **Metrics and objectives:** Key performance indicators (KPIs), sustainability goals and progress in meeting them.
- **Policies and actions:** Strategies, policies and initiatives adopted to manage material sustainability issues.

The ESRS are structured into 12 cross-cutting and thematic standards.



Sectoral Guide – ESRS Oil & Gas (draft)

Sectoral guide	Description
Objective	Define disclosure requirements for oil and gas companies to report their environmental, social, and governance (ESG) impacts.
Greenhouse Gas Emissions	Requires reporting of Scope 1, 2 and 3 emissions, including CO ₂ and methane emissions. It should be broken down by source: stationary combustion, venting, flaring, and fugitive emissions.
Emissions intensity	Information is requested on the emission intensity of energy production (CO ₂ e per unit of energy). Refinery companies must report CO ₂ /CWT.
Fossil fuel reserves	A locked-in emissions breakdown of proven oil and gas reserves is required, differentiating between producing reserves, developing reserves and undeveloped reserves.
Decarbonisation and CO₂ abatement	It must report on the CO ₂ reduction technologies implemented, including carbon capture and storage (CCUS) and decarbonization strategies.
Financing the transition	It is required to disclose R+D expenditures on energy transition technologies, including investments in clean energy and adaptation to climate risks.
Social Impact and Just Transition	An analysis of the impact on workers and communities affected by the shift to a low-carbon economy is required, including relocation and job training.
Climate Risk Assessment	Physical and transition risks associated with climate change, including stranded assets, litigation, and access to financial markets, must be reported.
Governance and Strategy	Companies should explain how senior management and the board monitor ESG risks and opportunities within the corporate strategy.



CSA

CORPORATE SUSTAINABILITY ASSESSMENT







ANATOMY OF AN S&P GLOBAL ESG SCORE

- 1,000** DATA POINTS, APPROX.
Assessed Values, Text, Checkboxes, Documents
Sources: Web-based questionnaire and company documents
- 100+** QUESTION-LEVEL SCORES
Weighted Data Point Scores
Up to 50% industry-specific
- 23** CRITERIA SCORES
Weighted Question Scores
62 industry-specific approaches, with tailored questions, criteria, and related weightings
- 3** DIMENSIONS SCORES
Weighted Criteria Scores
Adjusted for corporate ESG controversies where applicable
- 1** S&P GLOBAL ESG SCORE
Sum of weighted dimension scores
The S&P Global ESG Score is calculated by summing weighted dimension scores

Description of the Corporate Sustainability Assessment

The CSA is an assessment used by investors and companies to measure sustainability performance, identifying ESG risks and opportunities. Developed by S&P Global, it is used to determine inclusion in indices such as the Dow Jones Sustainability Index (DJSI)

 Applicability	 Time	 Requirements	 Objective
<p>It applies to companies in various sectors, especially those that want to improve their sustainability performance and attract responsible investors.</p> <p>It focuses on large companies that seek to be included in ESG indices or improve their competitiveness in sustainable markets.</p> <p>Medium-sized companies interested in the evaluation can also participate, even if they are not candidates for indexes.</p>	<p>The evaluation is carried out annually.</p> <p>Companies can be invited to participate or request their evaluation on a voluntary basis.</p>	<p>It requires the disclosure of ESG information through a detailed questionnaire.</p> <p>It includes industry-specific KPIs.</p> <p>Aspects such as climate management, human rights, corporate governance, sustainable innovation, among others, are evaluated.</p> <p>Documented evidence is required.</p>	<p>Provide a detailed analysis of sustainability performance.</p> <p>Facilitate comparison between companies within the same sector.</p> <p>Enable investors to make informed decisions based on ESG criteria.</p> <p>To promote continuous improvement in the management of sustainability and corporate transparency.</p>

The CFS is structured into multiple ESG evaluation criteria.

S&P Global's Corporate Sustainability Assessment (CSA) analyzes companies' sustainability performance across multiple dimensions within the environmental, social and governance (ESG) domains. The assessment is designed to identify key risks and opportunities based on the industry and business context.

Environmental	Social	Governance
Climate strategy and energy transition	Workforce and Human Rights	Code of Business Conduct and Ethics
Carbon footprint (Scope 1, 2 and 3)	Diversity, Equity, and Inclusion	Corporate governance structure
Climate Risk Management and Adaptation	Occupational Health and Safety	Transparency in ESG risk management
Efficient use of water and water security	Community Engagement and Social Development	Regulatory and regulatory compliance
Waste management and circular economy	Labour rights and trade union relations	Anti-corruption and bribery
Biodiversity and ecosystems	Responsible Supply Chain Management	ESG Financial Risk Management
Energy efficiency and decarbonization	Privacy and data protection	Cybersecurity and information management
Environmental impact of products and services	Product Safety and Consumer Responsibility	Executive compensation aligned with ESG performance



CONTEXT

General: Assesses companies' sustainability performance through industry-specific ESG criteria, measuring how environmental, social, and governance factors impact corporate strategy, financial performance, and risk management.

Climate Strategy: Focuses on evaluating climate risk, requiring companies to report their mitigation and adaptation strategies, climate-related risks and opportunities, as well as key metrics such as GHG emissions, energy efficiency, and alignment with global frameworks like TCFD and SBTs.



RELEVANCE FOR CLIMATE RISK ASSESSMENT

Key metrics and indicators: Data such as Greenhouse Gas (GHG) emissions (Scope 1, 2 and 3), carbon intensity, energy efficiency and use of renewable energies are reviewed.

- Assesses the integration of sustainability into corporate strategy and risk and opportunity management.



APPLICABILITY LEVEL

- **Global:** It is a voluntary assessment, but it is widely used by companies looking to improve their sustainability profile
- **Sustainability Indices:** The results of the CSA determine the inclusion of companies in sustainability indices such as the Dow Jones Sustainability Index (DJSI) and other ESG rankings of S&P Global.
- **Investors and Stakeholders:** The scores obtained can influence the decisions of investors, insurers and other stakeholders in the assessment of ESG risks and opportunities.

CSA



KEY CONTENTS FOR DISSEMINATION

- **Governance:** Transparency in the governance structure, roles and responsibilities of the board and senior management in ESG matters.
- **Strategy and Business Model:** Assessment of how sustainability is embedded in corporate strategy and long-term resilience.
- **Risk and Opportunity Management:** Identification and assessment of material ESG risks, including climate change, human rights, and occupational safety.
- **ESG Metrics and Indicators:** Evaluation of sustainability performance through sector-specific KPIs.

Thank you

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