



# Climate Change

ISA Group's Climate Strategy  
Energy Transmission Business

December 2020

# Index

## Context

- Global trends
- Climate Change Strategy
- Priority actions

## Concepts

- Climate change phenomenon
- Extreme weather events
- Global emissions and vulnerability to climate change
- Integrated climate change management plan
- Task Force on Climate-related Financial Disclosures (TCFD) recommendations

## Adopting the TCFD recommendations

- Governance
- Strategy
- Risk management
- Metrics and Targets



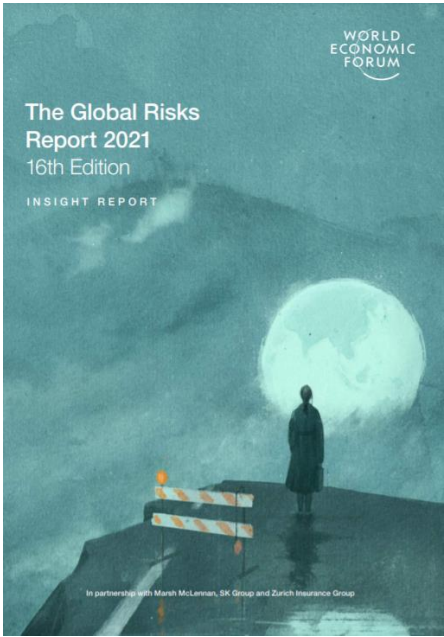


## CONTEXT

- Global trends
- Climate Change Strategy
- Priority actions



# Global trends



The WEF Global Risk Report have mapped climate related risks on the top 5 for more than 10 years

Top Global Risks by Likelihood

	1st	2nd	3rd	4th	5th	6th	7th
2021	Extreme weather	Climate action failure	Human environmental damage	Infectious diseases	Biodiversity loss	Digital power concentration	Digital inequality
2020	Extreme weather	Climate action failure	Natural disasters	Biodiversity loss	Human-made environmental disasters		
2019	Extreme weather	Climate action failure	Natural disasters	Data fraud or theft	Cyberattacks		
2018	Extreme weather	Natural disasters	Cyberattacks	Data fraud or theft	Climate action failure		
2017	Extreme weather	Involuntary migration	Natural disasters	Terrorist attacks	Data fraud or theft		
2016	Involuntary migration	Extreme weather	Climate action failure	Interstate conflict	Natural catastrophes		
2015	Interstate conflict	Extreme weather	Failure of national governance	State collapse or crisis	Unemployment		
2014	Income disparity	Extreme weather	Unemployment	Climate action failure	Cyberattacks		
2013	Income disparity	Fiscal imbalances	Greenhouse gas emissions	Water crises	Population ageing		
2012	Income disparity	Fiscal imbalances	Greenhouse gas emissions	Cyberattacks	Water crises		

Obtained from:  
[http://www3.weforum.org/docs/WEF\\_The\\_Global\\_Risks\\_Report\\_2021.pdf](http://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2021.pdf)

# Global trends



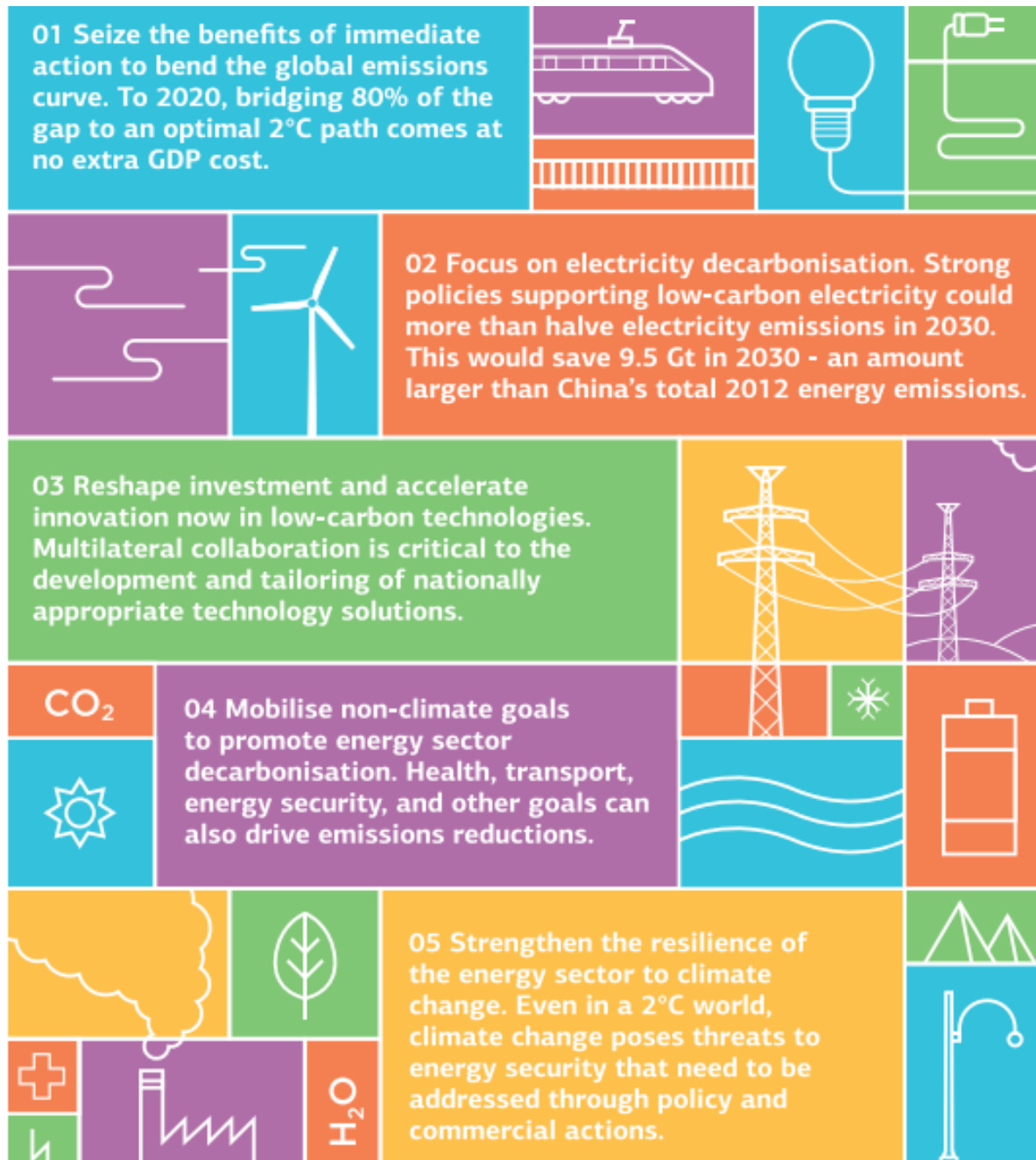
Top Global Risks by Impact



Obtained from:  
[http://www3.weforum.org/docs/WEF\\_The\\_Global\\_Risks\\_Report\\_2021.pdf](http://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2021.pdf)

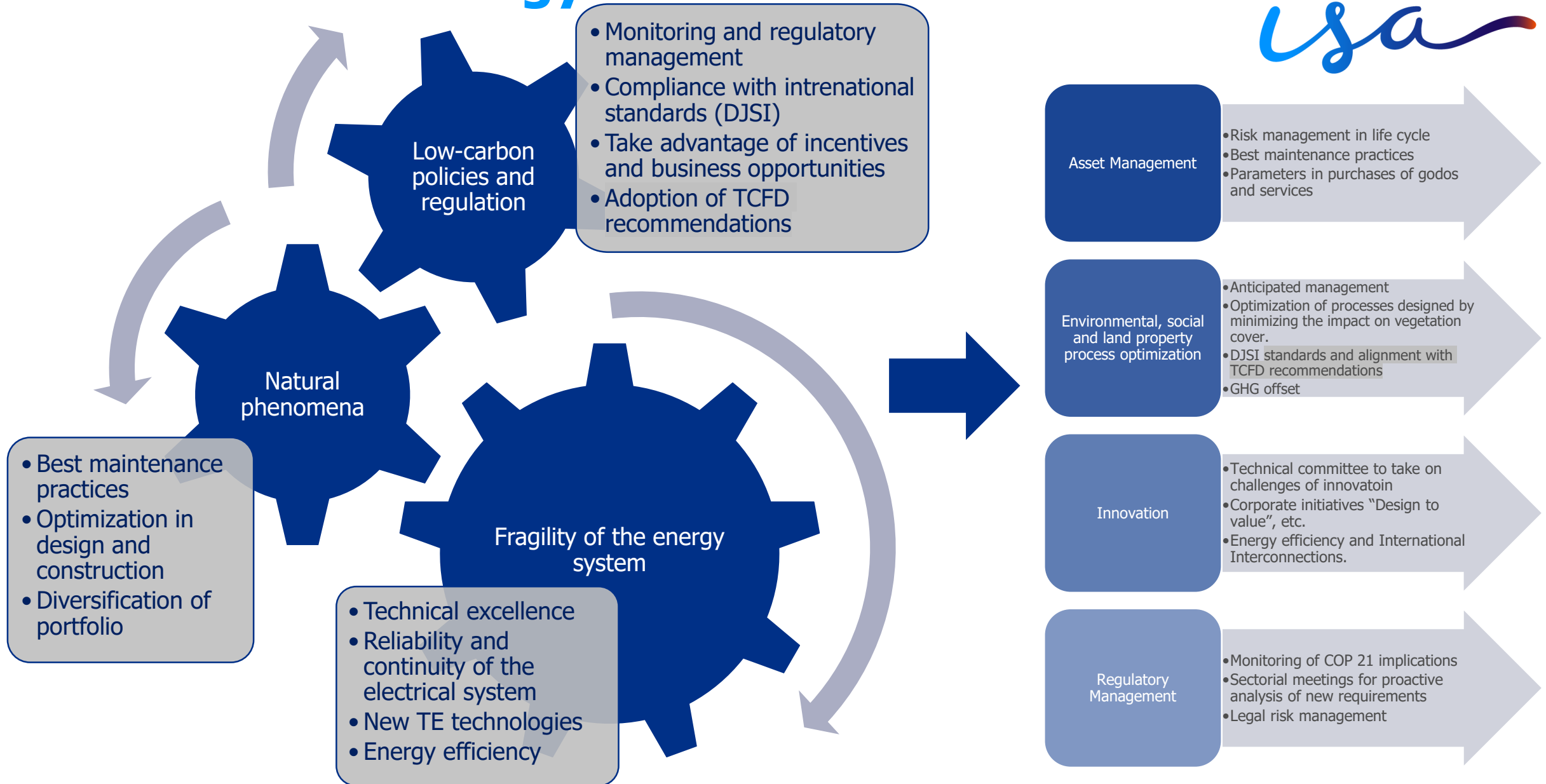
# Global trends

According to the International Energy Agency in its document "The Way Forward", there are five key actions to achieve a low-carbon energy sector...



Obtained from:  
[https://www.iea.org/publications/freepublications/publication/The\\_Way\\_forward.pdf](https://www.iea.org/publications/freepublications/publication/The_Way_forward.pdf)

# ISA Climate Strategy



# Priority actions

- GIS tools with analysis of climatic variables
- Supplier evaluation conditions strategies
- Minimize SF6 leak
- Identification of adaptation measures
- Initiatives of new technologies, products and services
- GHG offset projects: "Carbon Bonds"
- Working table of Ministry of Mines
- Follow-up to tax reform
- Adoption of PAS and sectoral reduction target
- Actions in other countries to be defined



Asset management



Environmental, social  
and land property  
process optimization



Innovation



Regulatory  
management





## CONCEPTS

- Climate change phenomenon
- Extreme weather events
- Global emissions and vulnerability to climate change
- Integrated climate change management plan
- **Task Force on Climate-related Financial Disclosures (TCFD) recommendations**

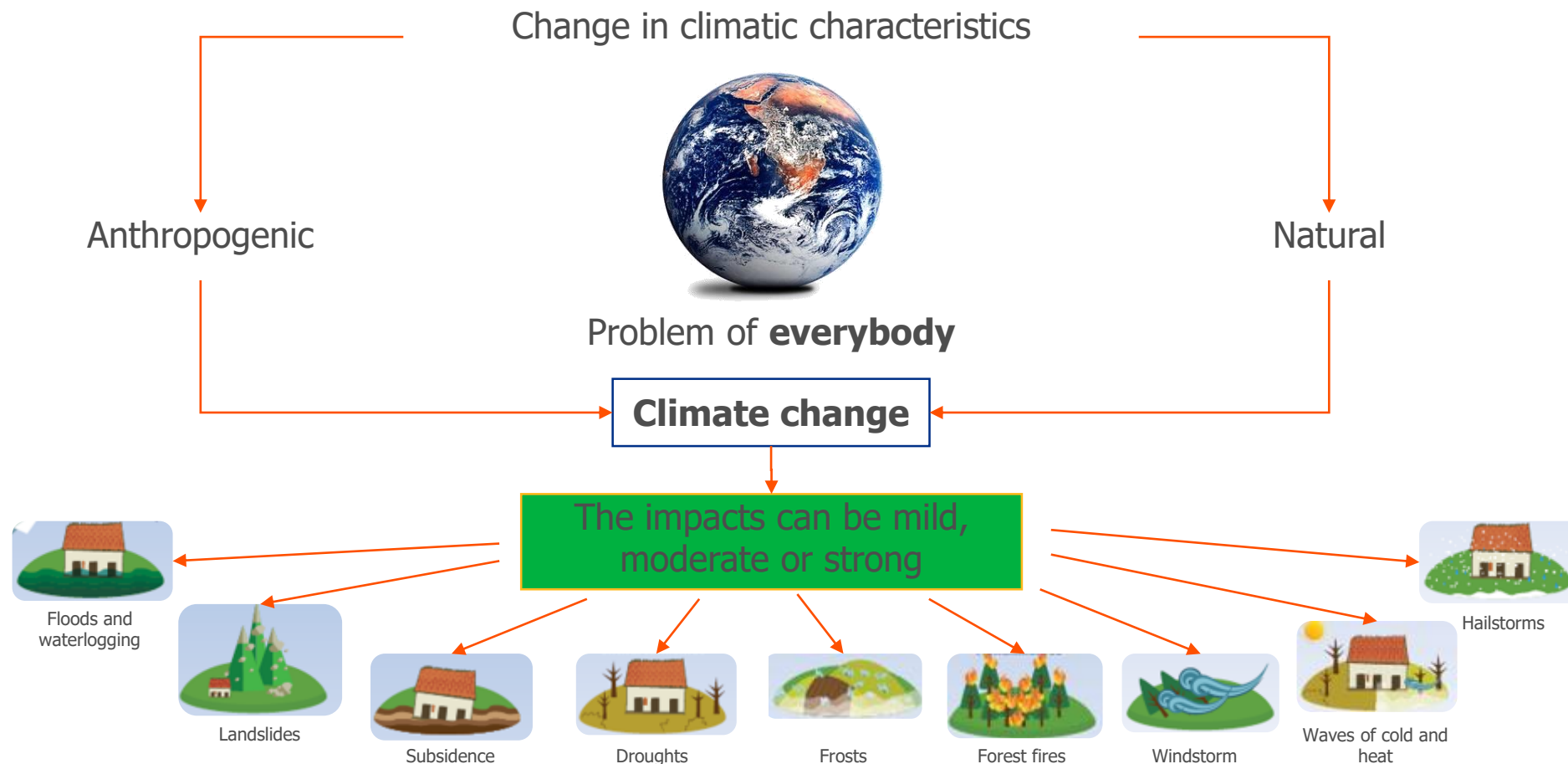


# Climate change phenomenon



## Weather

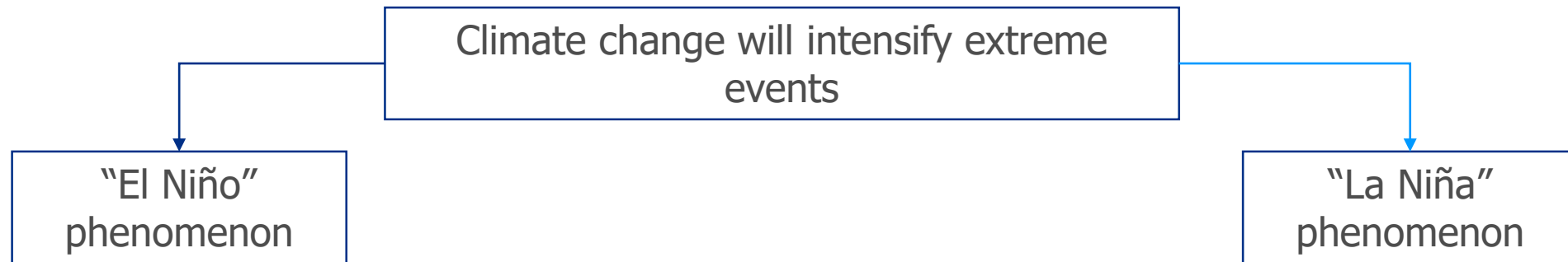
Set of atmospheric conditions typical of a place, consisting of the amount and frequency of rainfall, humidity, temperature, winds, etc.



# Extreme weather events



## Effects of Climate Variability



Drought



Floods



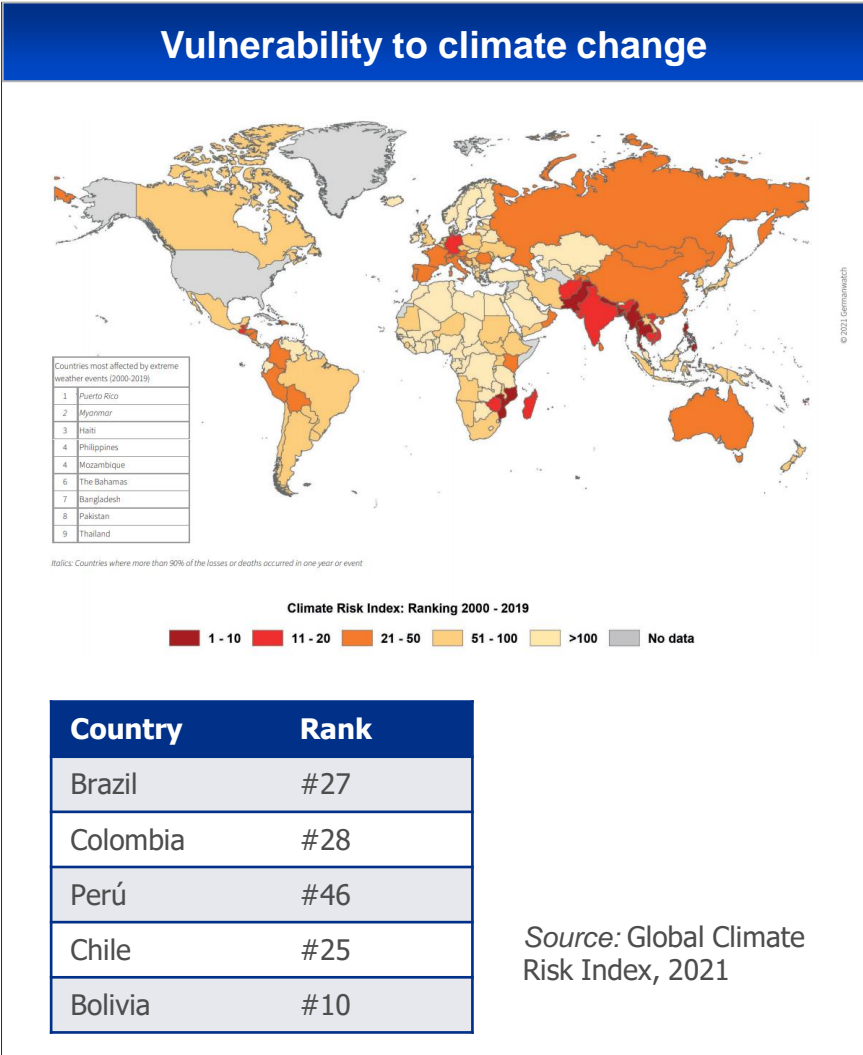
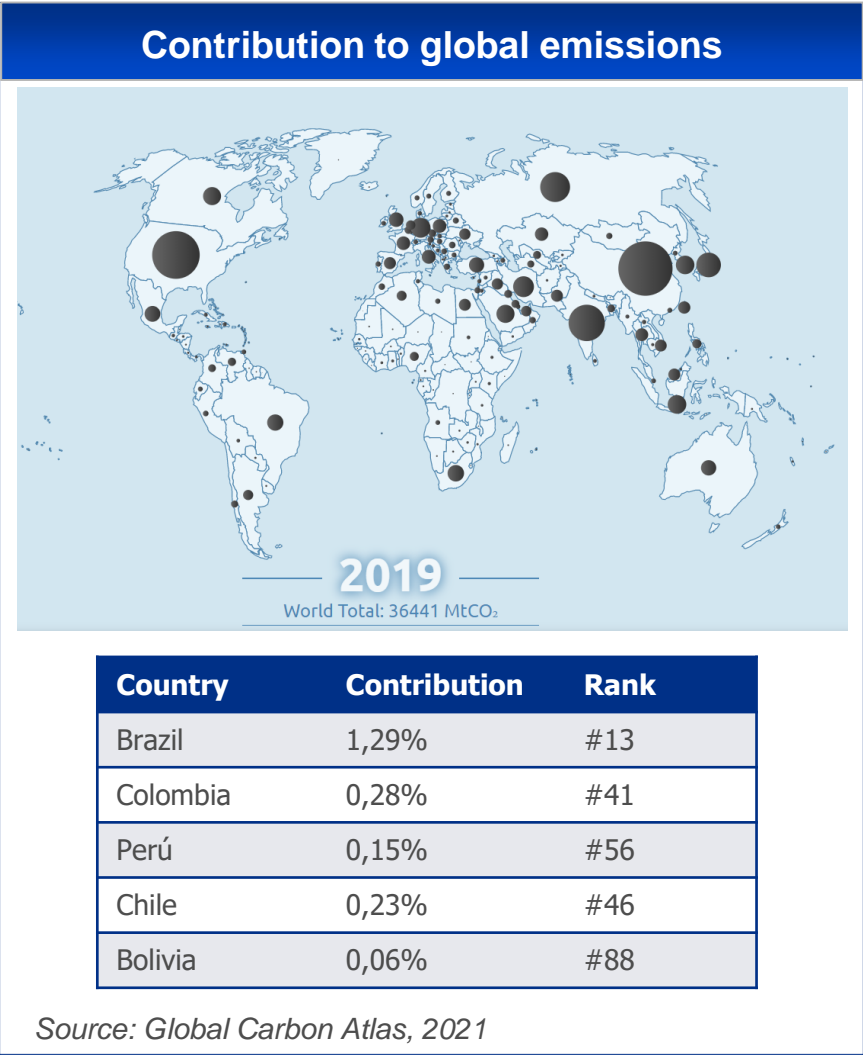
Increase in frequency, intensity and duration



# Global emissions and vulnerability to climate change



In countries where ISA is present, there is a **low contribution** to global emissions but **high vulnerability** to the effects of climate change



# Task Force on Climate-related Financial Disclosures (TCFD) recommendations



## Governance

- a) The organization's governance around climate-related risks and opportunities.
- b) Management's role in assessing and managing climate-related risks and opportunities.

## Strategy

- a) Climate-related risks and opportunities the organization has identified over the short, medium, and long term.
- b) Impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.
- c) Resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

## Risk management

- a) Organization's processes for identifying and assessing climate-related risks.
- b) Organization's processes for managing climate-related risks.
- c) Describe how the processes for **identifying, assessing**, and managing climate-related risks are integrated into the overall risk management of the organization

## Metrics & Targets

- a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
- b) Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks.
- c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

# Adopting the TCFD recommendations, Index



Since 2020 we began the exercise, following our climate strategy with the TCFD recommendations exposing the risks and opportunities related to climate change.

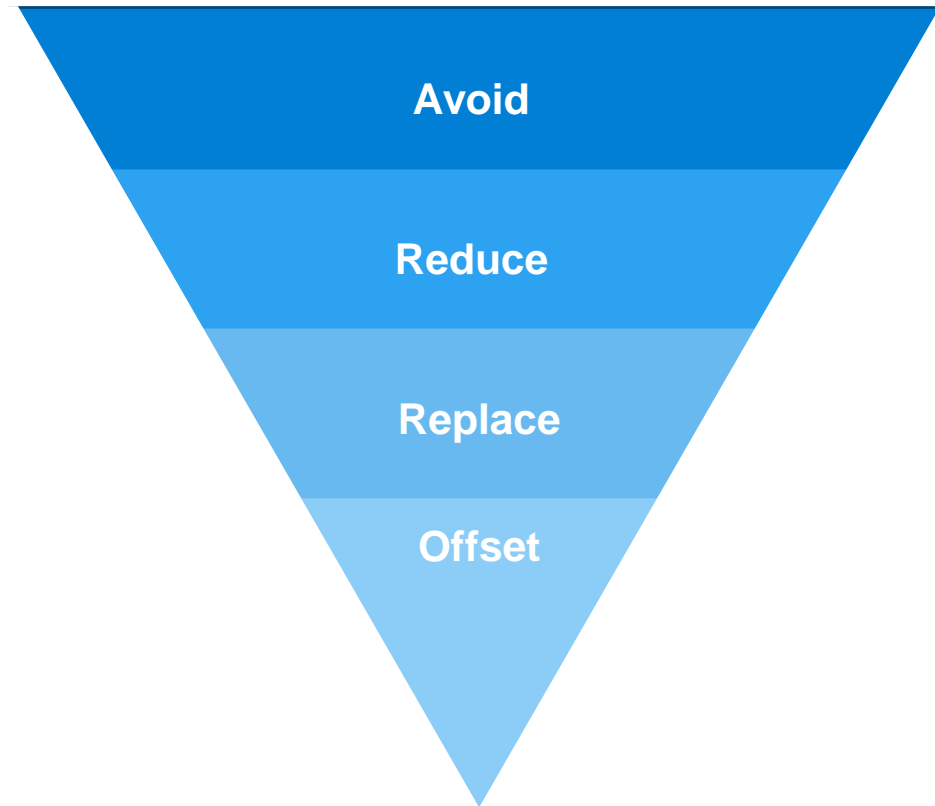
Element	Contents	Location reference
Governance	a) The organization's governance around climate-related risks and opportunities. b) Management's role in assessing and managing climate-related risks and opportunities.	Pages 17-20
Strategy	<ul style="list-style-type: none"><li>• Climate-related risks and opportunities</li><li>• Impact of climate-related risks and opportunities</li><li>• Scenario Analysis</li></ul>	Pages 19-40
Risk Management	Processes to identify, assess and manage climate-related risks and opportunities	Pages 41-45
Metrics and targets	a). Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process. b). Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks. c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	Pages 46-55 b) Environmental performance indicators: <a href="https://www.isa.co/wp-content/uploads/2021/01/Environmental-Performance-Indicators.pdf">https://www.isa.co/wp-content/uploads/2021/01/Environmental-Performance-Indicators.pdf</a>



# References



# Mitigation Hierarchy



Source: Adapt The Impact Mitigation Hierarchy (DEA et al., 2013)



## ADOPTING THE TCFD RECOMMENDATIONS

- **Governance**
- Strategy
- Risk Management
- Metrics and targets

# Climate Change Risks Governance

- a) The organization's governance around climate-related risks and opportunities.
- b) Management's role in assessing and managing climate-related risks and opportunities.



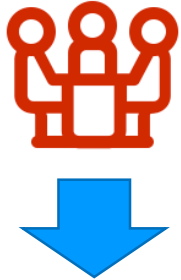
## Board of Directors



- Establish, guide, and review the corporate strategy, guidelines, and policies for the management of the group.
- Define the group's governance model and the organizational, technical, financial, investment, and other guidelines that are required for the consolidation of the Business Group and the achievement of corporate objectives.
- Trace the monthly principal risks of the Company.

Bylaws, Article 34, numerals 1, 2 and 4

## Corporate Governance, Sustainability and Risks Committee(GSR)



- Guides and supervises the management of sustainability, which includes the protection of the environment and the effects of climate change.
- Evaluates and make recommendations to the Board of Directors and management about the initiatives of the business group to address the risks and opportunities obtained from climate change.
- Assists the Board of Directors in its function of guiding and supervising the integral management of risks in the group, including the risk of climate change.

Agreement 118 of the Board of Directors, article 3, functions in matters of sustainability and risks

## Top Management



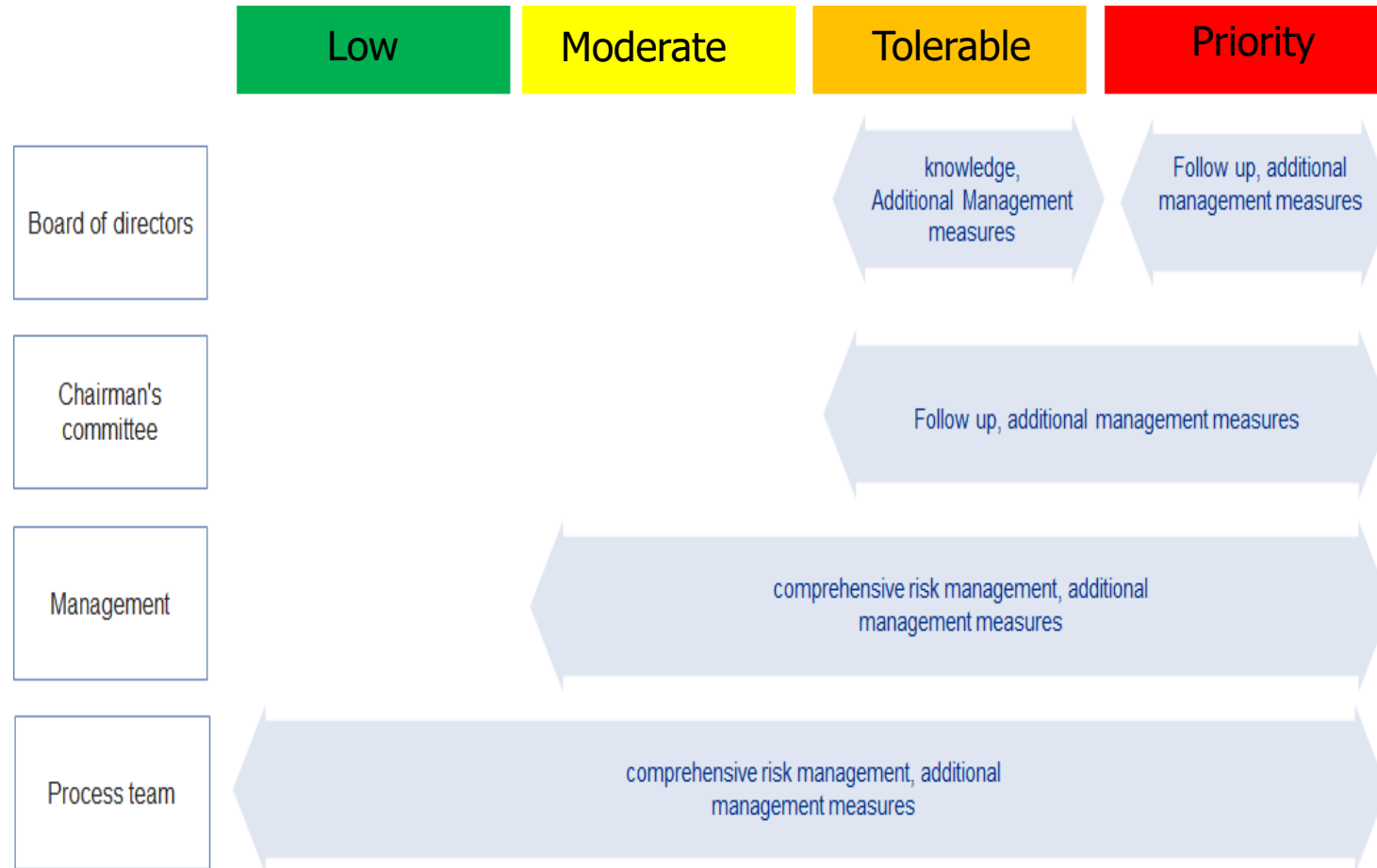
- The President of ISA, through the VP of Strategy and VP of Institutional Relations (Sustainability Director), manages the sustainability and risks following the parameters defined by the GSR Committee.

*Note: review the functions of these areas that support this responsibility.*



# Governance taking into account the Risks

- a) The organization's governance around climate-related risks and opportunities.
- b) Management's role in assessing and managing climate-related risks and opportunities.



The Board of Directors regularly monitors relevant risks across the organization through the Governance, Sustainability, and Risk Committee. Also, every year, it reviews and approves criteria for prioritizing risks, establishing the Group's appetite and tolerance for business and operations.

Each affiliate of the group applies the risk cycle and then generates a map that includes identification, assessment, and administration measures. This information is updated and consolidated on a quarterly basis.

The escalation of risks is related to their prioritization criteria. The risks associated with climate change are integrated into ISA's risk management system . Page 76

[ISA-Reporte-Gestion-2020 INGLES.pdf \(windows.net\)](#)



## ADOPTING THE TCFD RECOMMENDATIONS

- Governance
- **Strategy**
- Risk Management
- Metrics and targets

# Strategy

a) Climate-related risks and opportunities

b) Impacts on business, strategy and financial planning



Risk	Types of Risks	Time horizon	Main impact
Physical Risks	<b>Extreme Natural Phenomena:</b> <ul style="list-style-type: none"> <li>• Change in rainfall patterns</li> <li>• Floods</li> <li>• High temperatures and potential fires</li> <li>• Desertification and Drought</li> <li>• Change in vegetation cover</li> <li>• Winds, Storms - Hurricanes</li> <li>• Mass removal</li> </ul>	Short term/medium term	<ul style="list-style-type: none"> <li>• Infrastructure failure and impact on the energy service</li> <li>• Increased maintenance costs</li> <li>• Increased complexity of the operation of the electrical system due to water stress.</li> <li>• Rationing of energy.</li> <li>• Higher economic offset for service failures</li> </ul>
Transition Risks	<b>Regulatory changes</b> <ul style="list-style-type: none"> <li>• Increased licensing and licensing requirements</li> <li>• Obligation to conduct inventories of Greenhouse Gases.</li> <li>• Denominations to the activities of impact in emissions and felling of trees.</li> <li>• Incentives and Benefits for Clean Low Carbon Businesses</li> </ul>	Medium term/long term	<ul style="list-style-type: none"> <li>• Increased costs and project timelines for new infrastructure projects</li> <li>• Increased maintenance costs</li> </ul>

# Strategy

- a) Climate-related risks and opportunities
- b) Impacts on business, strategy and financial planning



Risk	Types of Risks	Time horizon	Main impact
Transition Risks	<b>Market:</b> <ul style="list-style-type: none"> <li>• Changes in user preferences</li> <li>• Uncertainty over the speed of incorporating the green trend into business and correlation with social demands</li> </ul>	Long term	<ul style="list-style-type: none"> <li>• Decreased need for energy transmission services and decreased road traffic</li> </ul>
Transition Risks	<b>Technology</b> <ul style="list-style-type: none"> <li>• Unsuccessful investment in new technologies.</li> </ul>	Medium term/long term	<ul style="list-style-type: none"> <li>• Direct cost increase</li> </ul>
Transition Risks	<b>Reputation</b> <ul style="list-style-type: none"> <li>• Negative impact on stakeholder confidence, on the attitude of key audiences or press coverage, social networks and channels related to the support of projects or activities with negative impacts on the climate</li> </ul>	Short term/medium term	<ul style="list-style-type: none"> <li>• Higher direct costs</li> <li>• Growth impact</li> </ul>



# Strategy

- a) Climate-related risks and opportunities
- b) Impacts on business, strategy and financial planning



Opportunities	Types of opportunity	Time horizon	Main impact
Resilience	<ul style="list-style-type: none"> <li>• Initiatives of new technologies, products and services</li> <li>• Working table of Ministry of Mines for adaptation measures</li> </ul>	Short term/medium term	<ul style="list-style-type: none"> <li>• Increase of the income</li> <li>• Returns on investment in low-carbon technologies</li> <li>• Lower maintenance costs</li> </ul>
Resource efficiency	<ul style="list-style-type: none"> <li>• Move to more efficient buildings</li> <li>• Use recycling</li> </ul>	Short term/medium term	<ul style="list-style-type: none"> <li>• Decrease direct costs</li> </ul>
Products and services	<ul style="list-style-type: none"> <li>• Development of new products or services through R + D + i.</li> <li>• Ability to diversify business activities</li> </ul>	Medium term/long term	<ul style="list-style-type: none"> <li>• Increase of the income</li> </ul>

# Strategy

c) Resilience of the organization strategy



## Environmental protection and efforts to combat climate change were incorporated into the ISA 2030 strategy from its inception



- The strategic horizon to 2030 is in harmony with the great challenges of humanity, to ensure a timely contribution.
- Compliance with the sustainable development goals is validated.
- The balance is made on the accomplishment of the objectives of COP 21.

The higher purpose was the starting point of the strategy. 4 out of 11 maxims are associated with the vulnerability of the environment, co-responsibility in conservation

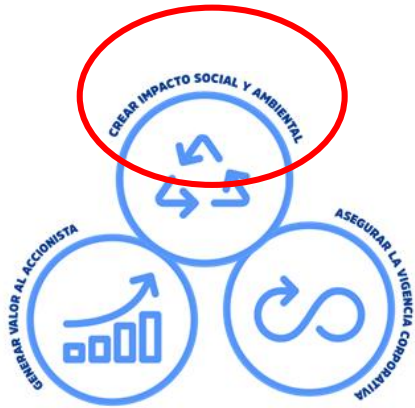
- We recognize that our planet is fragile, and we must take care of it
- We understand that our actions, no matter how small, have an impact
- We are sure that our well-being is linked to everyone's
- We are committed to having constructive and responsible participation in decision-making

# Strategy

## c) Resilience of the organization strategy

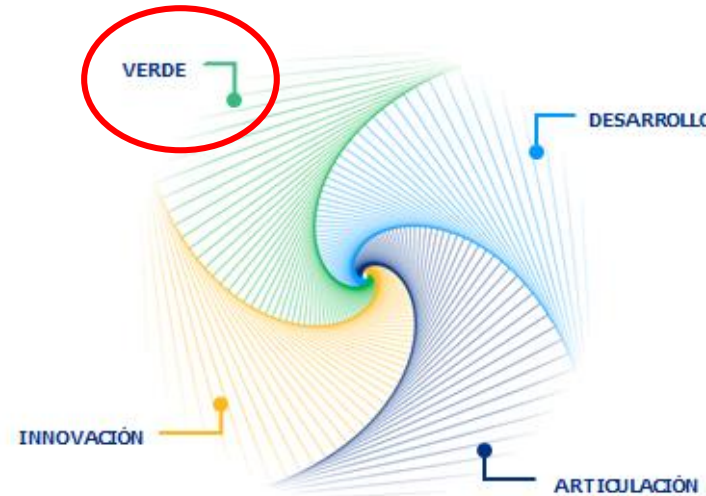


The triad of Growth with sustainable value, in which we are based to define the corporate strategy ISA 2030, is also the base to structure the Climate strategy in order to manage the Climate change as a factor of sustainability for business, society and planet.



### GROWTH WITH SUSTAINABLE VALUE

Add value with potential solutions for social and environmental challenges, among them climate change as a priority



### LIFE

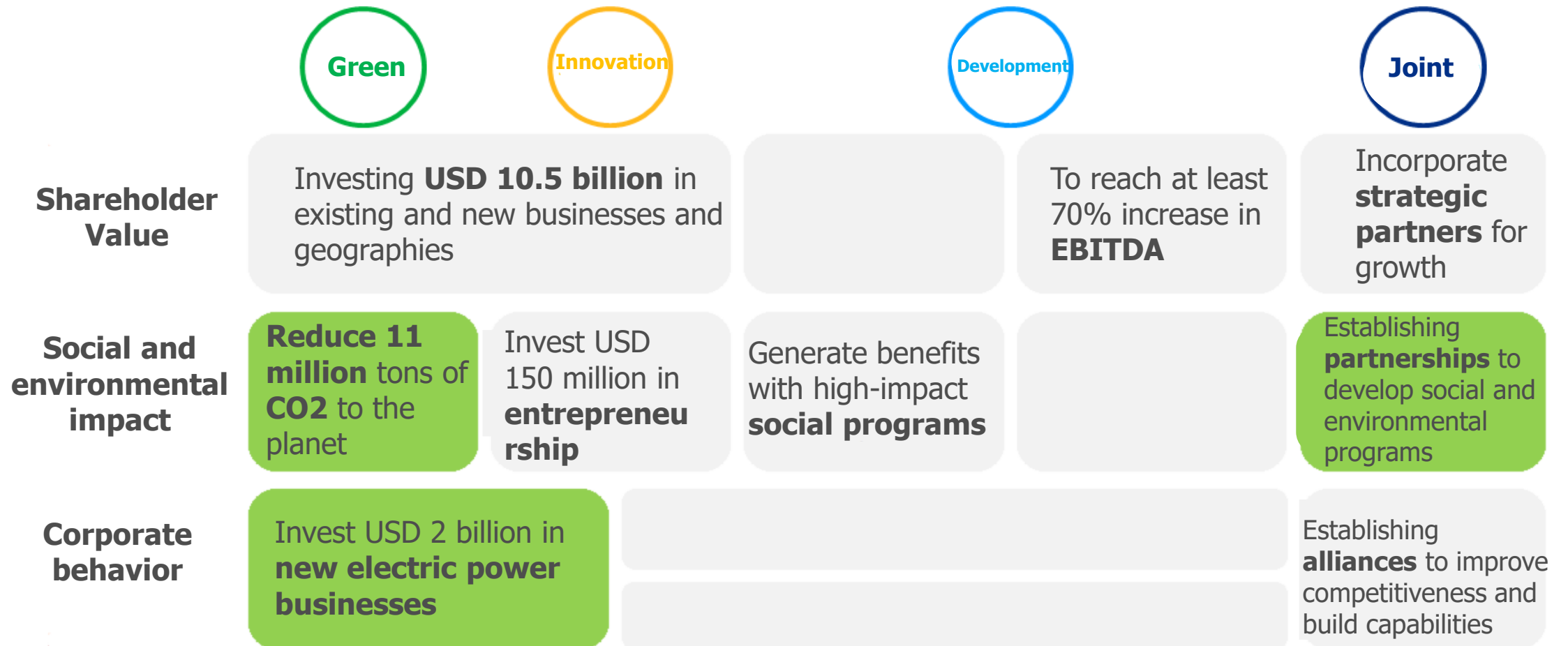
- Minimize environmental impacts in operations
- Promote initiatives that generate positive environmental impact
- Develop businesses with a high contribution to decarbonization



### BALANCED PORTFOLIO

The investment decisions will reflect the balance between businesses and geographies; profitability and risk criteria; adjacency and vision; diversification and concentration

## The environmental dimension of ISA 2030 is reflected in specific high-level strategic objectives





## **Comprehensive risk management policy of the ISA Group, to manage risks that may deviate the achievement of the strategic objectives**

See: <https://isasapaginaswebisa001.blob.core.windows.net/paginawebisawordpress/2021/04/INTEGRATED-RISK-MANAGEMENT-POLICY.pdf>

### OBJECTIVE

To declare the corporate decisions leading Integrated Risk Management, through which it seeks to generate and protect the value of ISA and its companies, the integrity of enterprise resources, the continuity and sustainability of business.

### STATEMENTS

- ISA companies understand risks as uncertain events that may divert them from achieving their strategic objectives or affect business resources.
- ISA companies manage their risks at all levels, in a permanent, standardized and systematic way, through the implementation of the group's integrated risk management model, described in the Risk Management Manual of ISA and its companies, which is aligned to best practices and methodologies. The model is periodically evaluated and feedbacked with internal and external experiences.
- The management of the risks which ISA and its companies are exposed to, is coordinated with the different areas of the companies, promoting a risks holistic view.
- Decision making at different levels of the organization is supported by the results of risk management; which is considered transversal and priority for companies.
- The employees individual commitment is promoted with an active identification, assessment, treatment, monitoring and communication of risks in their activities development.
- Business continuity management and crisis management are promoted for critical processes and scenarios for corporate continuity and sustainability.

**Climate Change Scenarios:** In ISA, possible physical risks derived from climate change and climate variability are evaluated by scenarios.

## Threats

1. Water shortage
2. Floods
3. Mass removal
4. Forest fires
5. Temperature Increase (Heat Waves)
6. Sea level rise and related events
7. Storms - Hurricanes

## Climate variability

1. "La Niña" phenomenon
2. "El Niño" phenomenon

## Climate Change Scenario

RCP 6.0: is one of four GHG concentration scenarios adopted by the IPCC for AR5 in 2014. These scenarios are characterized by possible range of radiative forcing values in the year 2100. RCP 6.0 is a stabilization scenario in which emissions peak around 2080 and then decline. These scenarios consider the effects of policies to limit climate change and is consistent with certain socio-economic assumptions

$$Risk = Threat \times Vulnerability$$

$$Vulnerability = Sensitivity / Adaptive Capacity$$

\* PIGCC led by the Ministry of Mines and Energy with the Energy Sector and the support of the National University and INERCO



## Scenario of prospective risks of La Niña phenomenon

Event	Components and Subcomponents					Transmission
	Generation					
	Big Hidroelectrics	Small Hidroelectrics	Thermal Plants	Wind Plants	Unconventional Energy Sources - Solar Photovoltaic	
Floods	Very Low	Very Low	Very Low			Very Low
Mass removal	High	High		Low		Moderate

The estimated sectoral vulnerability of the sensitivity and adaptive capacity from indexes for both components

## Scenario of prospective risks of the El Niño phenomenon

Event	Components and Subcomponents					Transmission
	Generation					
	Big Hidroelectrics	Small Hidroelectrics	Thermal Plants	Wind Plants	Unconventional Energy Sources - Solar Photovoltaic	
Water shortage	High	High	High			High
Temperature Increase	High	High	Very High	High		High

## Vulnerability of the system for the electric power sector

Aspect	Generation	Transmission
Sensitivity	Low	Low
Adaptive Capacity	High	High
System Vulnerability	Low	Low

\* PIGCC led by the Ministry of Mines and Energy with the Energy Sector and the support of the National University and INERCO



Scenario results of prospective risks per event and component of the system for the electric power sector, caused by climate change































Event	Components and Subcomponents					Transmission
	Generation					
	Big Hidroelectrics	Small Hidroelectrics	Thermal Plants	Wind Plants	Unconventional Energy Sources - Solar Photovoltaic	
Water shortage	Moderate	Moderate	High		High	
Floods	Very Low	Very Low	Very Low		Very Low	Very Low
Mass removal	High	High		Moderate	Moderate	High
Forest fires						High
Temperature Increase (Heat Waves)	Moderate	Moderate	Moderate	High	Moderate	Moderate
Sea level rise and related events			Very Low	Moderate	Moderate	
Storms - Hurricanes			Very Low	Moderate	Moderate	

\* PIGCC led by the Ministry of Mines and Energy with the Energy Sector and the support of the National University and INERCO



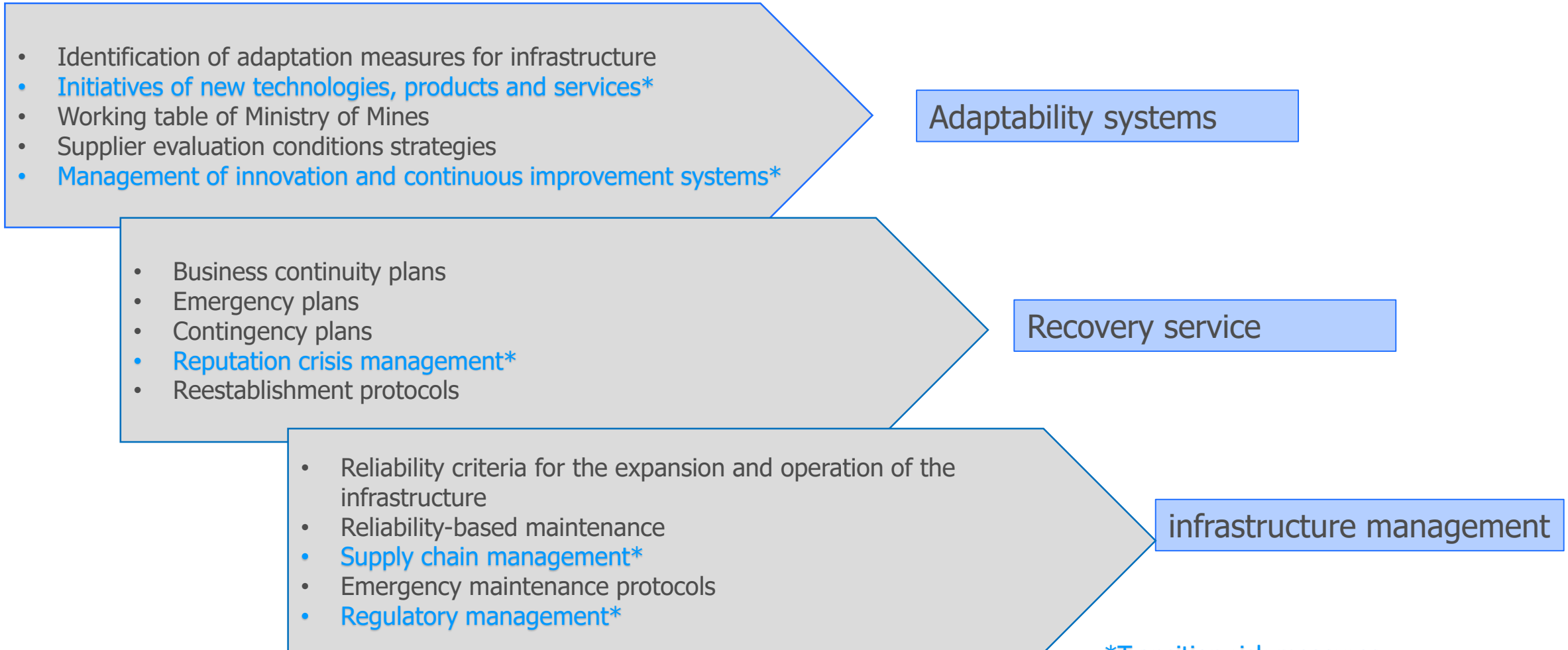


**Climate Change Scenarios:** Possible transition risks derived from climate change are evaluated by scenarios based on DDPP and IRENA

Variables or questions	Hypothesis or Response to 2030		Analysis Scenarios			
	Equal	High	More Probable	Less Probable	More Favorable	Less Favorable
Optimization of energy resources						
Decarbonization						
Market adaptation						
More active social participation						
Digital transformation						

There are made two hypotheses for the year 2030 in the variables of optimization of energy resources, decarbonization, market adaptation, more active partner participation, and digital transformation, among others, the information of the DDPP scenarios was available for the decarbonization and IRENA especially for energy efficiency and the renewable market

## Adaptation measures for the system as well as restoration of service and infrastructure management



\*Transition risk measures  
Measures for physical risks

## Detail of the proposed adaptation measures

Climate variable involved	Consequences for the transmission infrastructure	Proposed adaptation measures
<ul style="list-style-type: none"><li>• Drought</li><li>• Prolongation of periods without rain</li><li>• Decrease in water supply</li><li>• Decrease in plant cover</li></ul>	<ul style="list-style-type: none"><li>• Increased maintenance</li><li>• Accelerated degradation of the elements (useful life) by increased pollution, corrosive processes.</li><li>• Water dents for maintenance that require washing.</li><li>• Damage in the equipment by increased air pollution by loss of vegetation surrounding the substations that serves as a natural barrier</li></ul>	<p>For contamination and corrosion:</p> <ul style="list-style-type: none"><li>• Greater replenishment</li><li>• Change materials in the design of components</li><li>• Greater maintenance (washing, painting, changing components, etc.).</li><li>• Increase inspections.</li><li>• Gummed in substations</li></ul>

## Detail of the proposed adaptation measures

Climate variable involved	Consequences for the transmission infrastructure	Proposed adaptation measures
Landslides on steep slopes	<ul style="list-style-type: none"> <li>• Fall of transmission lines</li> <li>• Allocation of Substations</li> </ul>	<ul style="list-style-type: none"> <li>• Modify Civil Works</li> <li>• Construction of complementary civil works of protection (erosion).</li> <li>• Construction of line variants</li> <li>• Re-foundation of towers</li> </ul>
Strong winds	<ul style="list-style-type: none"> <li>• Fall of transmission lines</li> <li>• Change of design criteria and operation</li> <li>• Disconnections / shots</li> </ul>	<ul style="list-style-type: none"> <li>• Reinforcement of transmission lines in structures in sections where required according to technical studies.</li> <li>• Redesign of the current vulnerable infrastructure</li> <li>• Further inspection and monitoring</li> <li>• Acquisition of new monitoring equipment (technology).</li> <li>• Increased maintenance</li> <li>• Regulatory management (# of departures per year, wind projections).</li> <li>• Design according to the climate projection</li> </ul>



## Detail of the proposed adaptation measures

Climate variable involved	Consequences for the transmission infrastructure	Proposed adaptation measures
<p>Strong rains</p> <p>Flood</p> <p>Breaking of Dams</p>	<ul style="list-style-type: none"> <li>• Flooding of towers: reduction of vain, corrosion, shots and accidents with people.</li> <li>• Weakening of foundations by rivers and streams</li> <li>• Flooding of substations</li> <li>• Need to turn off the SE</li> </ul>	<ul style="list-style-type: none"> <li>• Construction of barriers and pumping in the SE</li> <li>• Modify the conditions of the installation (eg. boards)</li> <li>• Modify Civil Works</li> <li>• Increase of inspections and maintenance (frequency, costs, eg. divers).</li> <li>• Construction of complementary civil works of protection (erosion).</li> <li>• Construction of line variants</li> <li>• Re-foundation of towers</li> </ul>
<p>Forest fires</p>	<ul style="list-style-type: none"> <li>• Disconnections / shots</li> </ul>	<ul style="list-style-type: none"> <li>• Construction of fire barriers (SE)</li> <li>• Further inspection and monitoring</li> <li>• Regulatory management (# of departures per year)</li> </ul>

# Strategy

c) Resilience of the organization strategy



## Detail of the proposed adaptation measures

Climate variable involved	Consequences for the transmission infrastructure	Proposed adaptation measures
Keraunic level rise	<ul style="list-style-type: none"><li>• Change in design and operation criteria</li><li>• Lines out of service</li></ul>	<ul style="list-style-type: none"><li>• Change of design criteria and operation</li><li>• Regulatory management (# of departures per year)</li><li>• Carry out more specialized and coordinated scientific technical studies</li></ul>

## Detail of the proposed adaptation measures

Climate variable involved	Consequences for the transmission infrastructure	Proposed adaptation measures
Overview of climate change	<ul style="list-style-type: none"> <li>Changes in the planning and operation of the electrical system</li> <li>Changes in maintenance strategy</li> <li>Changes in the business model.</li> </ul>	<ul style="list-style-type: none"> <li>Increased electrical expansion in renewables, interconnections, demand management, batteries</li> <li>Incorporation of the criterion of climate change in the expansion plans.</li> <li>OPERATION: for replenishment, improve the restoration, management of inventories (emergency towers) etc.</li> <li>Communication Campaigns</li> <li>Estimation of the allocation of management measures to the business model (profitability)</li> </ul>
Colombian regulation	<ul style="list-style-type: none"> <li>It is not foreseen in the medium term a possible substitution of SF<sub>6</sub> refrigerant gas for the electrical industry</li> <li>The designs obey to (global) norms because a design of greater exigency has a greater value and can affect the competitiveness</li> </ul>	<ul style="list-style-type: none"> <li>ISA participates in a committee with the Colombian Ministry of Mines and Energy to prepare the Action Plan for the Electric Power Sector</li> <li>The gas disposal and management has been strengthened in the maintenance process.</li> <li>It is recommended to relate the environmental requirements of offset for biodiversity with the reduction of CO<sub>2</sub> emissions.</li> <li>Communication Campaigns</li> <li>Estimation of the allocation of management measures to the business model (profitability)</li> </ul>

## Detail of the proposed adaptation measures

Climate variable involved	Consequences for the transmission business	Proposed adaptation measures
Colombian regulation	<ul style="list-style-type: none"> <li>• unfavorable regulatory changes</li> <li>• Affect the competitiveness</li> <li>• Changes in the business model.</li> </ul>	<ul style="list-style-type: none"> <li>• Contribution to commitment to the Colombian government <ul style="list-style-type: none"> <li>○ To increase the resilience and the aptitude of the country, through 10 sectoral and territorial actions prioritized to 2030.</li> <li>○ Promote the exchange of knowledge, technology and financing to accelerate the contributions proposed in terms of adaptation and mitigation of greenhouse gases</li> </ul> </li> </ul>
Brazilian regulation	<ul style="list-style-type: none"> <li>• unfavorable regulatory changes</li> <li>• Affect the competitiveness</li> <li>• Changes in the business model.</li> </ul>	<ul style="list-style-type: none"> <li>• Contribution to commitment to the Brazilian government <ul style="list-style-type: none"> <li>○ The Brazilian plan aims at the implementation of knowledge management systems, to promote research and technology for adaptation, to develop processes and tools that support governmental adaptation initiatives.</li> <li>○ Adaptation policies will take high regard to urbanization processes.</li> <li>○ Strengthen implementation of the national water safety plan and forest code</li> <li>○ Actions for use sustainable of bioenergy, change in the use of earth and forests and Energy supply</li> </ul> </li> </ul>

## Detail of the proposed adaptation measures

Climate variable involved	Consequences for the transmission business	Proposed adaptation measures
Chilean regulation	<ul style="list-style-type: none"> <li>• unfavorable regulatory changes</li> <li>• Affect the competitiveness</li> <li>• Changes in the business model.</li> </ul>	<ul style="list-style-type: none"> <li>• Contribution to commitment to the Chilean government <ul style="list-style-type: none"> <li>○ Recover 100,000 hectares of forest and plant 100,000 hectares more, mainly native, by 2030 conditioned to legislative development of the law of forest development.</li> <li>○ Chile has a National Adaptation Plan for Climate Change, which provides the guidelines for adaptation and provides an operational structure for its coordination and implementation</li> </ul> </li> </ul>
Peruvian regulation	<ul style="list-style-type: none"> <li>• unfavorable regulatory changes</li> <li>• Affect the competitiveness</li> <li>• Changes in the business model.</li> </ul>	<ul style="list-style-type: none"> <li>• Contribution to commitment to the Peruvian government <ul style="list-style-type: none"> <li>○ The commitments made by Peru for adaptation are based on the National Climate Change Strategy, the regional strategies and the Adaptation and Mitigation Action Plan facing climate change.</li> </ul> </li> </ul>



# Strategy

## c) Resilience of the organization strategy



### Opportunities

In the opportunities associated with the infrastructure we identify:

- Development of solutions for light and sustainable transmission lines with different materials that reduce the weight and height of the lines.
- Lines with superconductors without modifying the structure. This allows to repower existing lines, increasing the transport capacity.
- The use of renewable energy has been implemented for the lighting of the substations, as well as the use of rainwater for the energy substations, with zero discharges and moisture condensers.



# Strategy

## c) Resilience of the organization strategy

### Opportunities

The ISA2030 Strategy - Sustainable Value, includes within its goals the incursion into new energy businesses to diversify its business portfolio and impact positively the environment by decarbonization of the energy system.

As an analysis, four lines of business were prioritized for development: Energy Storage, Distributed Energy Resources (DER), Grid connection for renewable energy projects and Regional Energy Integration.

There are incentives aimed at different employees associated with the development of projects that will enable services such as large-scale energy storage and Distributed Energy Resources (DER), projects that contribute directly to the reduction of CO2 emissions in the energy system. For this reason, in the Variable Compensation System of INTERCOLOMBIA, TRANSELCA and INTERCHILE for 2020 it was planned the execution of achievements framed in these goals.

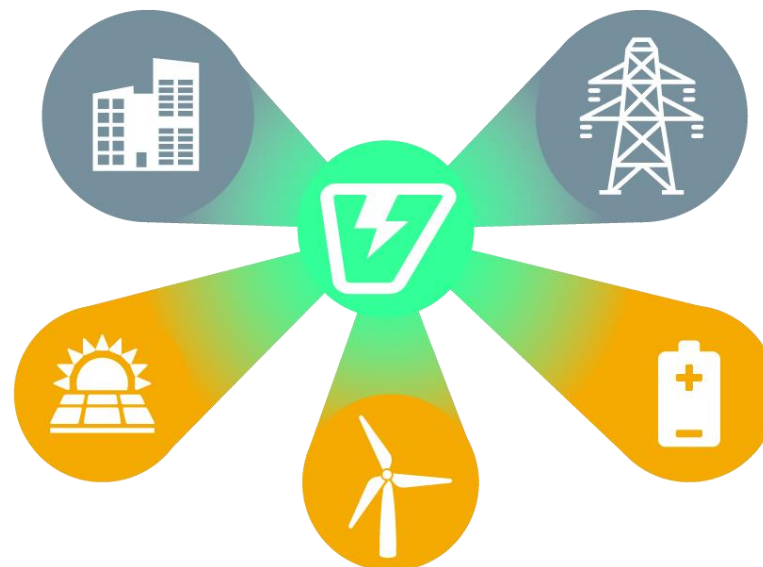
As part of its contribution to the accomplishment of the Sustainable Development Goals, and the Nationally Determined Contributions, the Group ISA has developed different kinds of solutions that will improve the trust in the environmental markets. Solutions like EcoRegistry, EcoGoX, Ecotrade and Appimotion will present new opportunities for the development of sustainable projects.

isa

EcoRegistry. EcoGoX

appimotion

EcoTrade.





## ADOPTING THE TCFD RECOMMENDATIONS

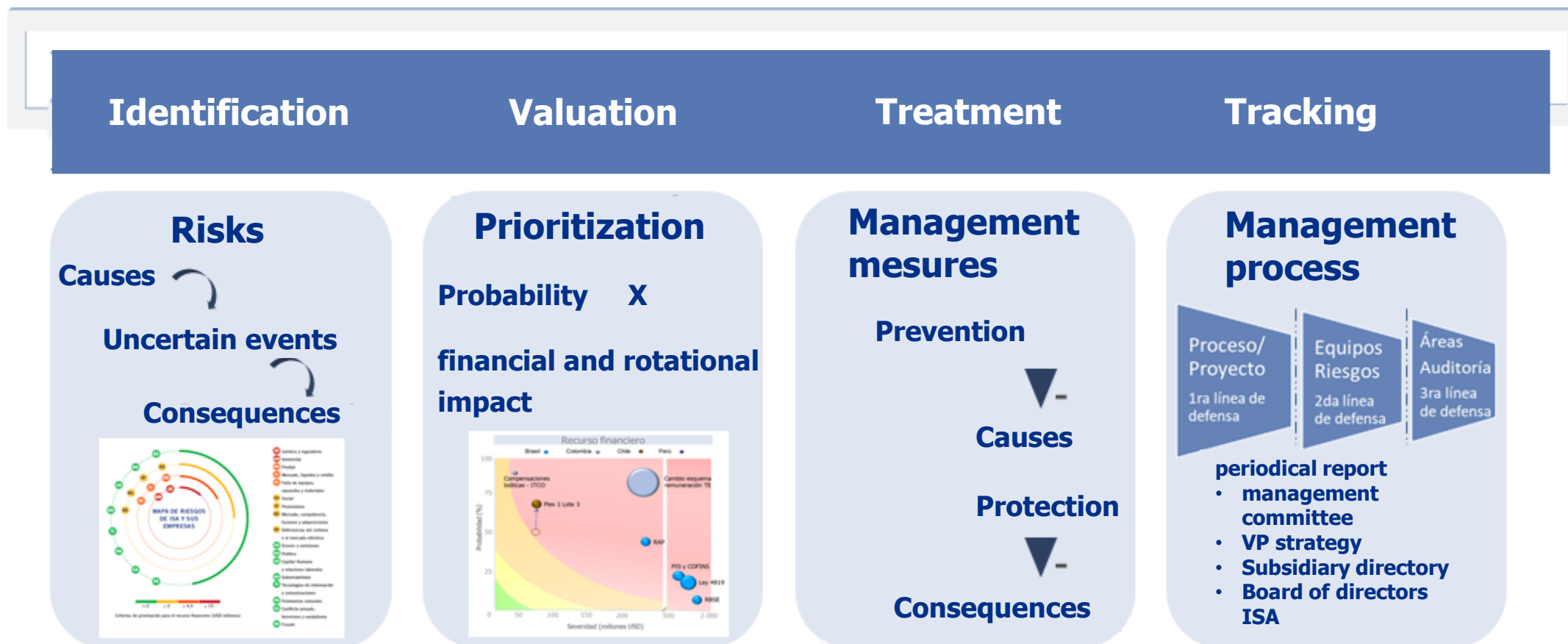
- Governance
- Strategy
- **Risk Management**
- Metrics and targets

# Risk management

- a) Processes for identifying and assessing climate-related risks
- b) Process for managing climate-related risks



## Enterprise Risks Management



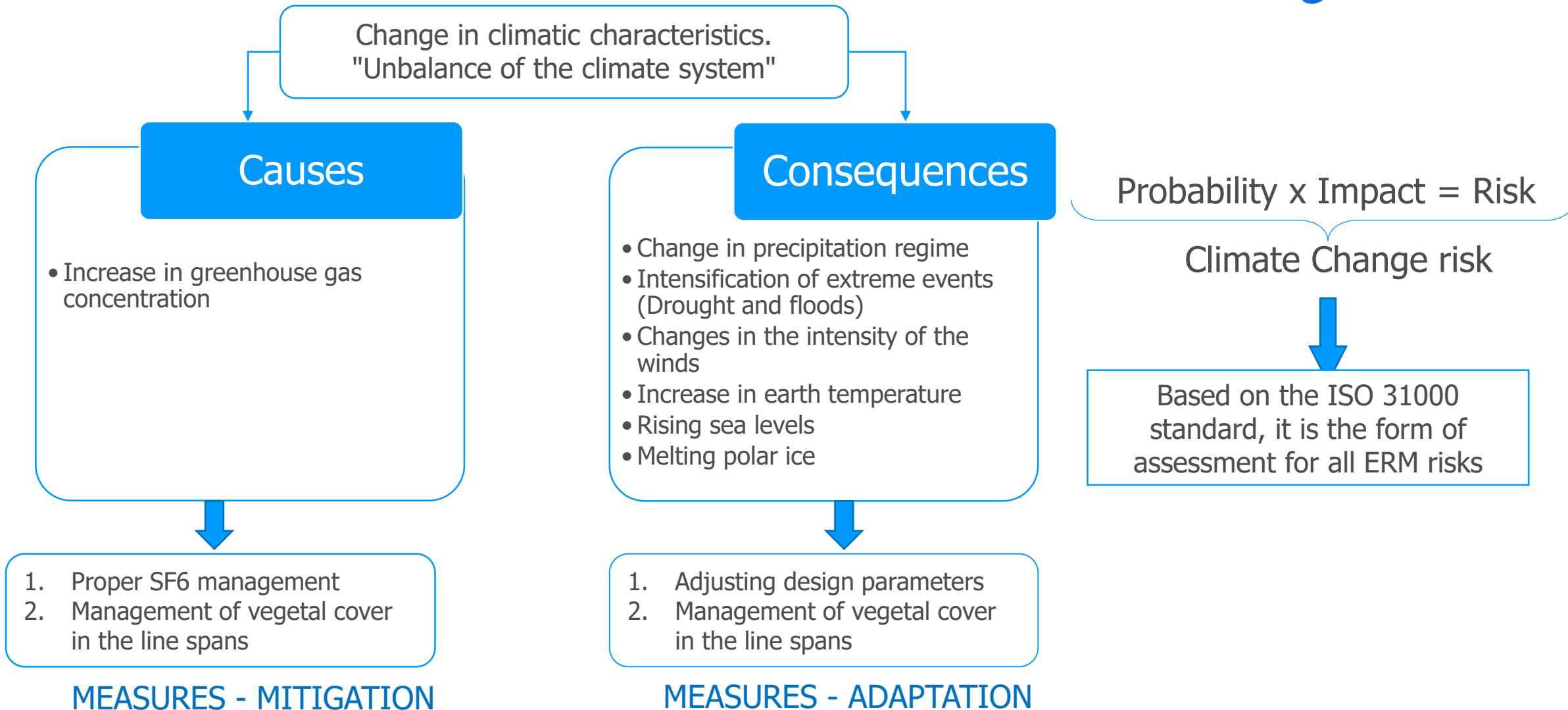
"Risk governance" accompanies the application of the risk cycle - information supports decision making.



# Risk management

a) Processes for identifying and assessing climate-related risks

## Definition of the climate change risk approach and valuation





# Risk management

c) Integration of climate-related risks into the overall risk management  
**Risks Management Framework**



Dimensions	Categories
Economic	<div>Governance Regulatory Legal Politics Market, liquidity, credit Market, competence, mergers, acquisitions</div>
Operational	<div>Business operations<ul style="list-style-type: none"><li>• project design and construction</li><li>• supply chain</li><li>• cybersecurity and information technologies</li><li>• human capital and labor relations</li><li>• occupational health and safety</li><li>• Compliance</li></ul></div>
Social environmental	<div>Environmental Natural phenomena and extreme weather changes Property Tax Social public order and public safety</div>

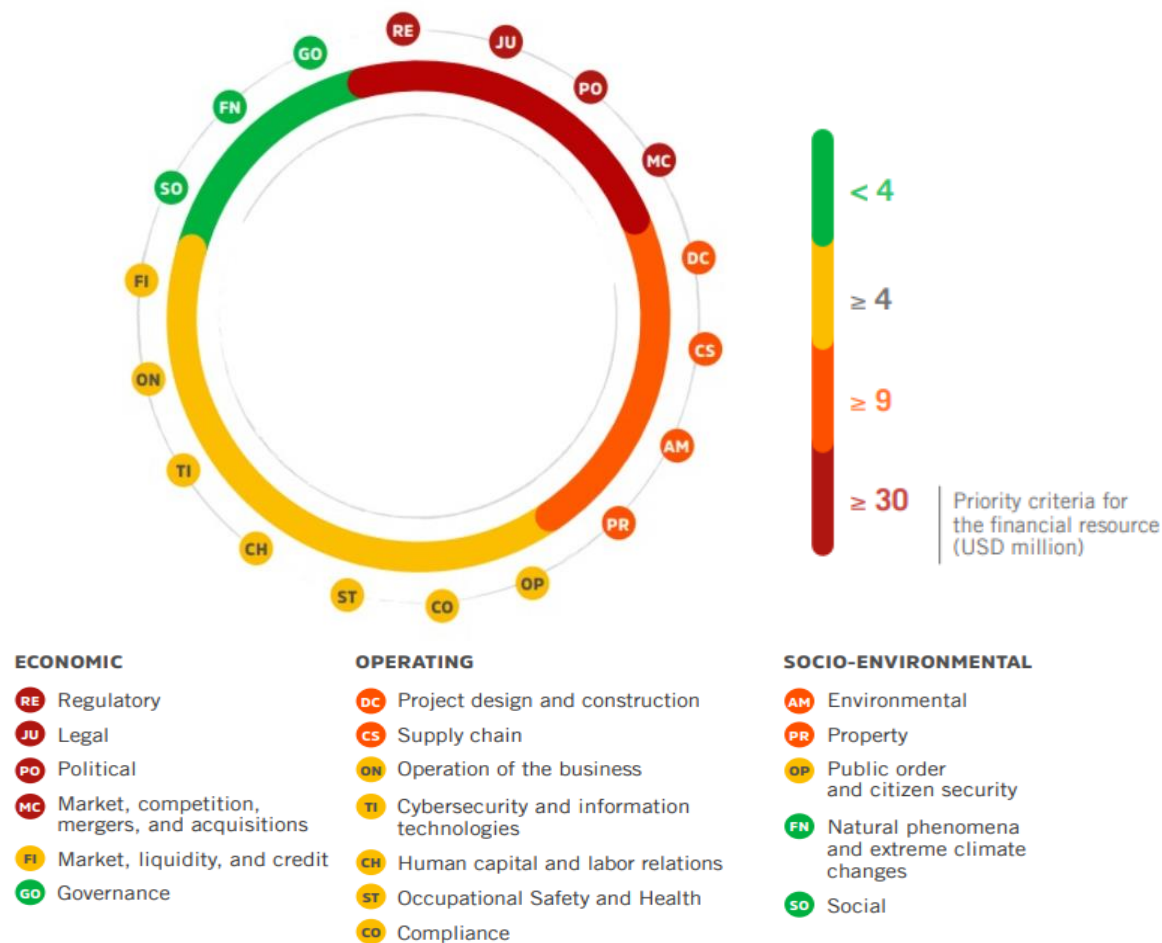
The risks associated with climate change are part of the ERM and are mainly grouped into the category of natural phenomena and extreme weather changes. They are additionally related to the categories of Business Operation, Legal Regulatory, and Environmental

# Risk management

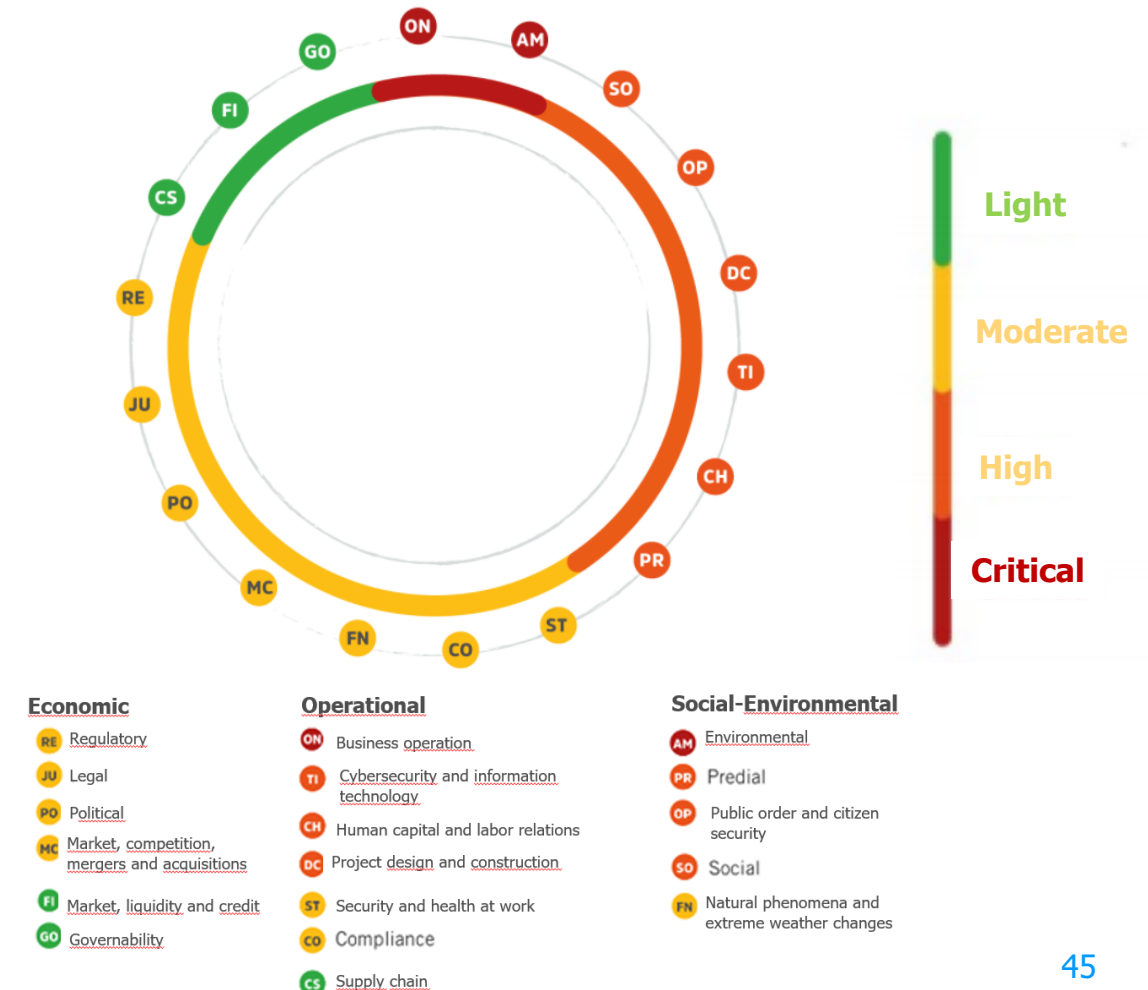
c) Integration of climate-related risks into the overall risk management  
**Risks Management Framework**



Risk profile by categories that impact financial resources



Profile of risks by categories that impact the reputation resource





## ADOPTING THE TCFD RECOMMENDATIONS

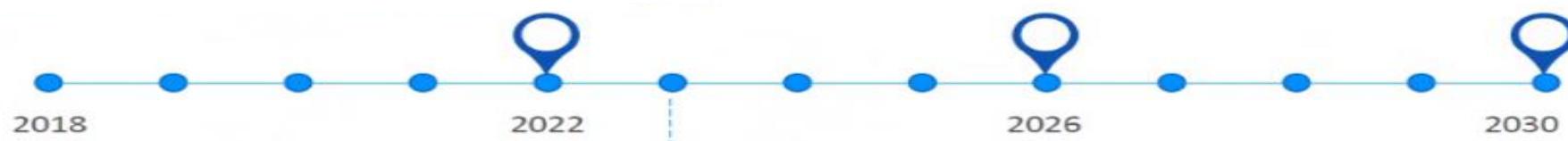
- Governance
- Strategy
- Risk Management
- **Metrics and targets**

# Metrics and targets

## a) Climate-related metrics



## Goals of ISA 2030 strategy, oriented towards creating sustainable value



Shareholders  
value

USD 8,300M in **current** business and geographies  
USD 100M efficiency at **TOTEX**  
USD 2,200M in **new geographies**  
70% **increase** in EBITDA

Social and  
Environment  
impact

**Offset** 11M tCO<sub>2</sub>e for the planet

USD 150M for **entrepreneurship**

USD 2000M in **new energy business**

Corporate  
Validity

**50% of employees with** superior performance

## Management Incentives

- Indicator "CO<sub>2</sub>e emissions reduction by eco-efficiency improvement" is included in our monetary incentive System.
- Under the strategic axis of decarbonization and diversification, the company has established an incentive in the variable salary of the CEO, other executives and other levels.
- En la Movida "program: Incentive given to company's workers by their greater participation in different forms of sustainable mobility like parking fee reduction and employee's redeemable bonuses

# Metrics and targets

## a) Climate-related metrics

The following diagram shows the distribution of target **11 million tCO2e** reduction for the planet, framed in ISA's 2030 strategy

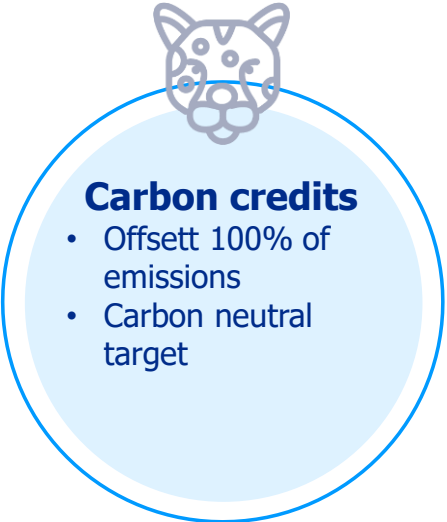
ISA impact

Net zero carbon

Contribution to the planet



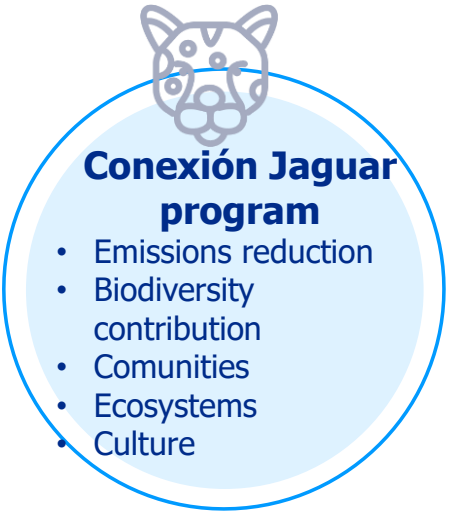
0,1 mm



0,4 mm



1,9 mm



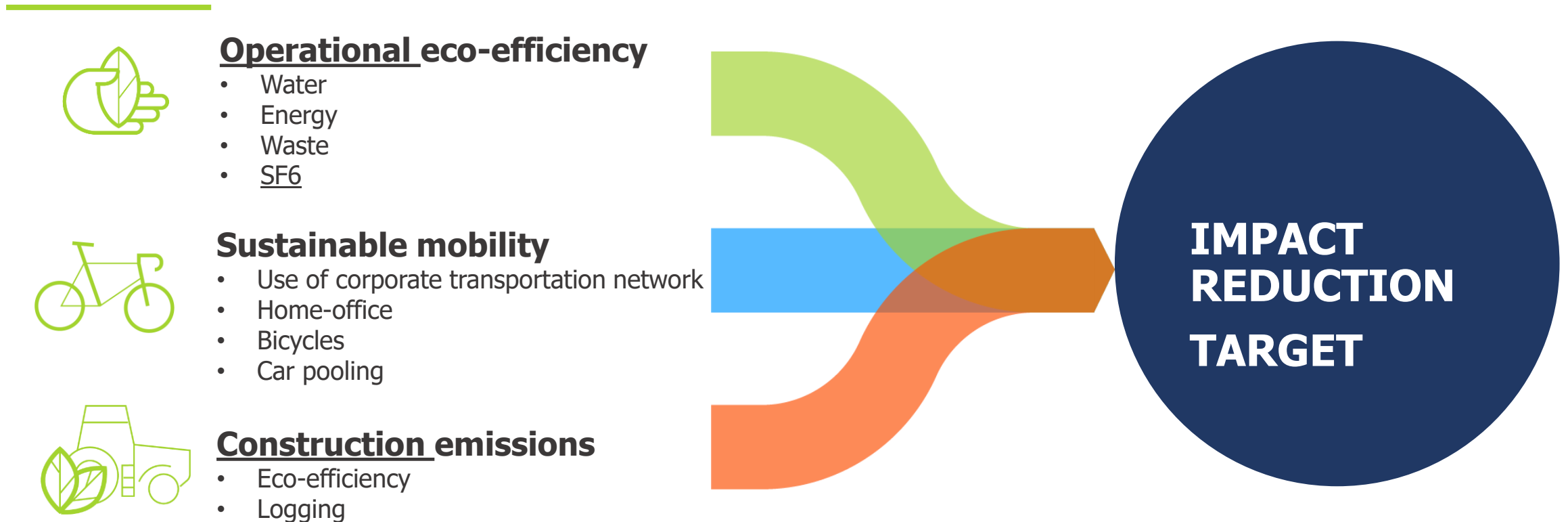
9 mm



# Metrics and targets

## a) Climate-related metrics

The impact reduction target corresponds to the reduction of emissions in the following processes:



# Metrics and targets

## a) Climate-related metrics, c) Climate-related targets



Our climate strategy is aligned with the priorities and joint actions of governments, society and companies. This strategy is based on emissions reduction practices and offset for GHG produced by the operation of the Electric Transmission Business. The Company reviewed its approach to this issue in accordance with the commitments of COP 21 and the phenomena of climate variability in recent years, adjusting its risk map and planning a series of actions by 2020.

### Countries-related targets:

- **Colombian regulation:** Reduce the country's GHG emissions by 51% in relation to projected emissions by 2030.
- **Brazilian regulation:** Reduce GHG emissions by 37% by 2025 target year and 43% by 2030 target year. Taking 2005 as reference year, it considers the entire national territory and all economic sectors
- **Chilean regulation:** Chile is committed to 2030 to reduce its CO2 emissions per unit of GDP by 30% compared to the level reached in 2007 (conditioned to a future economic growth that will enable it to implement the measures and international financing).
- **Peruvian regulation:** 30% reduction in projected GHG emissions by 2030. The Peruvian state considers that a 20% reduction will be implemented with internal resources, public and private, and that the remaining 10% will be contingent on international financing, as well as to favorable economic conditions.

- From our corporate GHG emissions inventories, we identified that direct emissions from SF6 gas leaks, which has a climate change potential of 23,500 times greater than CO2, account for more than 80% of direct CO2 emissions equivalent in the operation of the business. Therefore, ISA and its companies recognize the importance of SF6 as the main greenhouse gas in their operations, which is required in some high-voltage equipment.
- Thus, in order to achieve a better performance in accordance with the international standards for electrical equipment (National Electrical Manufacturers Association -NEMA- and International Electrotechnical Commission Standard -IEC-), which establishes that over a service life of 50 years, the emissions of SF6 gas due to its use in electrical equipment must not exceed 0.5% leakage with respect to the inventory of SF6 installed.
- ISA established as a consolidated corporate target by 2020 that leakage of this gas do not exceed 0.5% of SF6 installed. This value was calculated considering the inventory of equipment in operation and the commitment of reduction of 10% of the leaks yearly to up 2020 for CTEEP. In INTERCOLOMBIA, REP, TRANSELCA, INTERCHILE and ISA BOLIVIA it was established not to exceed the leaks in a 0.5% of the inventory because they are already under the standard value.

# Metrics and targets

b) Scope 1, 2 and 3 of GHG



The different scopes of the GHG inventory are reported annually.

	Performance Data	Unit	2017*	2018**	2019**	2020***	GRI Standards Indicator
Greenhouse Gas Emissions GHG	Direct Greenhouse Gas Emissions (Scope 1)	Ton CO2eq	25,521.00	21,955.00	25,318.00	28,783.30	305-1
	SF6 Emissions	kg	1,092.00	929.00	1,003.00	1,073.99	305-1
	Indirect Greenhouse Gas Emissions (Scope 2)	Ton CO2eq	4,425.00	4,819.00	5,741.00	4,745.19	305-2
	Other Indirect Greenhouse Gas Emissions (Scope 3)	Ton CO2eq	4,942.00	13,167.00	6,493.00	2,870.68	305-3

For details about other indicators and targets related to water, energy and waste, see environmental performance indicators : <https://www.isa.co/wp-content/uploads/2021/01/Environmental-Performance-Indicators.pdf>

# Metrics and targets

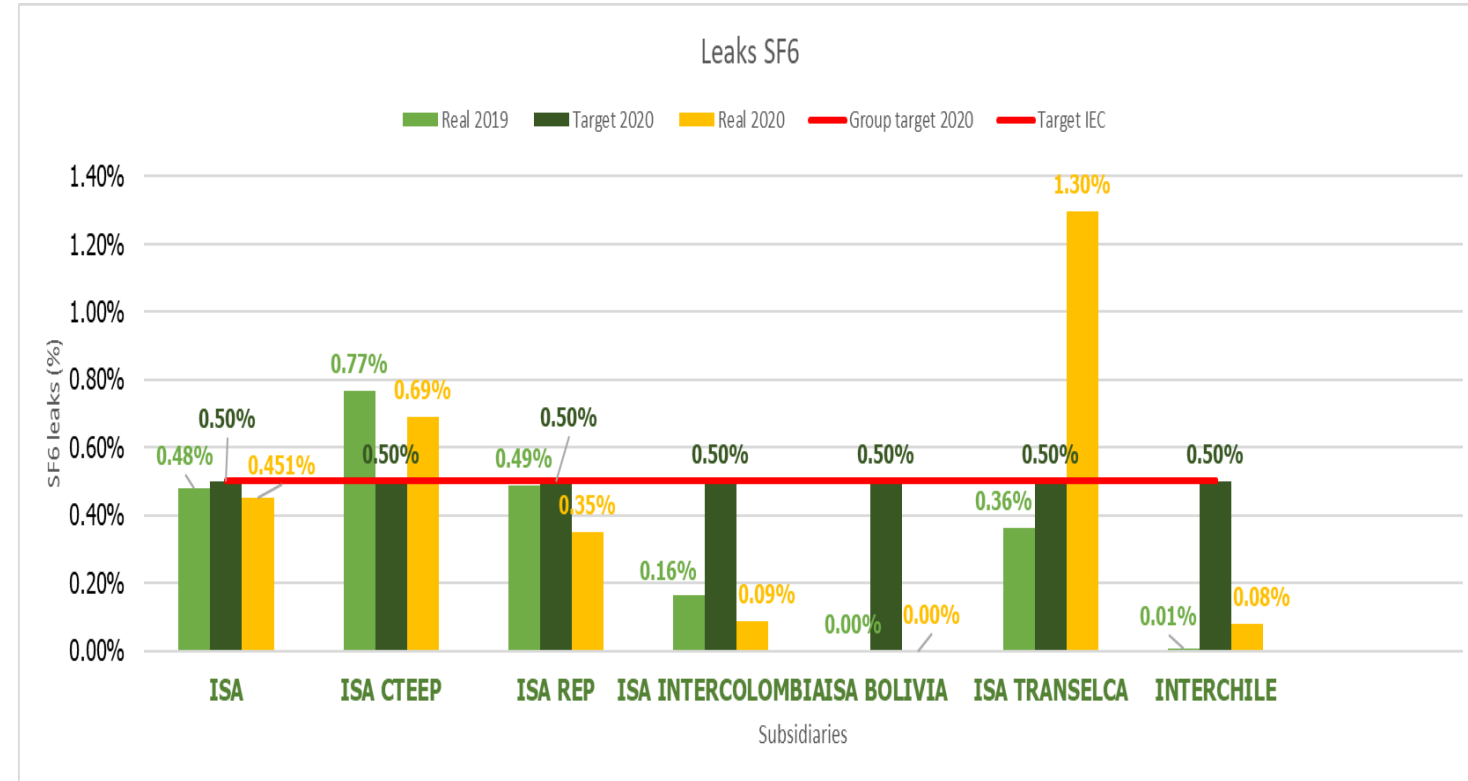
a) Climate-related metrics, c) Climate-related targets



## Mitigation Measures – SF6 Management

Implementation of good practices, proper operation and maintenance of the equipment:

- Renewal of GIS (Gas-insulated Substations) and circuit breakers at the end of their useful life.
- Regular preventive maintenance to GIS and circuit breakers, thus preventing gas leakage, continuous improvement in leak record in the SAP system.
- Use of infrared cameras for the timely detection of uncontrolled leaks during the operation of the equipment, to overhaul or major maintenance to circuit breakers
- We are working in innovative actions to avoid leaks to the atmosphere, capturing and controlling the leaked gas in containers.



The greater amount of leakage of SF6 from CTEEP is because its assets have a high percentage of GIS substations, which represents a higher inventory of SF6 installed. It should be noted that these equipment correspond to previous technological generations that had higher percentages of leaks.

Direct emissions increased in 2020 especially due to an incident (currently under correction) at a substation in ISA TRANSELCA, where SF6 gas leaked.

# Metrics and targets

a) Climate-related metrics, c) Climate-related targets

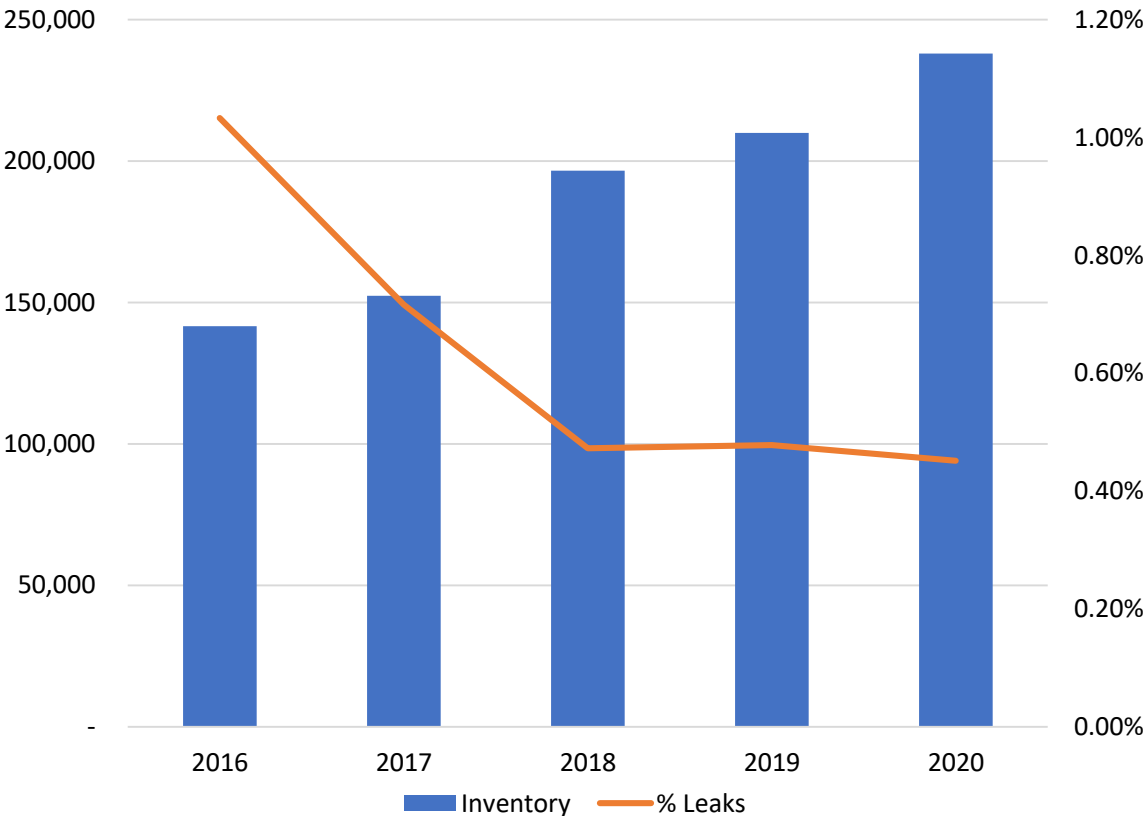


## Mitigation Measures – SF6 Management

Since 2016, ISA set annual reduction targets of 10% for companies in the group with high leakages, so that their levels become equal to or less than 0.5% by 2020, under the International Electrotechnical Commission (IEC) quality standard. The goal was achieved since 2018 at the Group level, and by 2020 the Group achieved a consolidated leakage rate of **0,45%**

- Despite ISA CTEEP, the greatest subsidiary, managed to reduce SF6 leakage level by 34.5% since 2016, this subsidiary has not yet achieved the maximum level established by the IEC. In this sense, ISA CTEEP is implementing a plan to reach the value of 0.5% by 2022, which was designed and approved in conjunction with the country's remunerator for assets renovation. Therefore, the goal of this subsidiary was recalculated, which will continue to reduce annually its leakage by 10% compared to the previous year until 2022.

SF6 Inventory versus leaks





# Metrics and targets

a) Climate-related metrics, c) Climate-related targets

## Mitigation Measures – SF6 Management



	Real 2017	Real 2018	Real 2019	Target 2020	Real 2020
<b>Subsidiary</b>	<b>CTEEP</b>				
SF6 Leaks (kg)	909	721	798		723
Installed SF6 (kg)	96,020	97,103	103,808		104,808
% Leaks	0.95%	0.74%	0.77%	0.50%	0.69%
	<b>REP</b>				
SF6 Leaks (kg)	97	80	108		77
Installed SF6 (kg)	21,801	21,997	21,997		21,997
% Leaks	0.44%	0.36%	0.49%	0.50%	0.35%
	<b>INTERCOLOMBIA</b>				
SF6 Leaks (kg)	38	63	42		45.7
Installed SF6 (kg)	20,614	20,614	25,514		52,485
% Leaks	0.18%	0.31%	0.16%	0.50%	0.09%
	<b>ISA BOLIVIA</b>				
SF6 Leaks (kg)	-	-	-		-
Installed SF6 (kg)	590	590	809		809
% Leaks	0.00%	0.00%	0.00%	0.50%	0.00%
	<b>TRANSELCA</b>				
SF6 Leaks (kg)	48	49	54		194
Installed SF6 (kg)	13,390	13,390	14,965		14,995
% Leaks	0.36%	0.37%	0.36%	0.50%	0.36%
	<b>INTERCHILE</b>				
SF6 Leaks (kg)	-	16	2		35
Installed SF6 (kg)	-	42,905	42,905		42,908
% Leaks		0.04%	0.01%	0.50%	0.08%
	<b>ISA ENERGY TRANSMISSION</b>				
Total leaks (kg)	1,092	929	1,003		1,074
Total Installed SF6 (kg)	152,415	196,598	209,997		238,001
Total % Leaks ISA group	0.72%	0.47%	0.48%	0.50%	0.45%
Total SF6 leakage emissions (tCO2e)	25,662	21,829	23,580		25,239

*Since INTERCOLOMBIA, REP, ISA Bolivia and INTERCHILE are already at a better level than those established by the IEC standard, their goal is to maintain their current performance or at least not to exceed their leakage rate of 0.5%.*

*ISA companies will continue to meet the international standard and, in the interests of continuous improvement a more challenging goal was set, which is to go beyond the 2030 standard by 15% for all energy transmission subsidiaries.*

# Metrics and targets

a) Climate-related metrics, c) Climate-related targets



## Climate-related metrics and targets: Financial impacts, cost savings and internal carbon price

### Climate Strategy Impacts

The financial annual impacts related to climate change are calculated in ISA according to:

- Value of I-REC
- Compliance with the IEC standard to achieve 0.5% leakage in the subsidiaries that have not yet achieved it\*.
- The operation of the micro-grid of solar panels installed at the headquarters of Medellín Colombia.
- In 2020, the investment of the “En la Movida” program was included
- Investment in renovation and maintenance measures for TRANSELCA was added\*.

\* The annual investment required to meet SF6 leak reduction targets involves major circuit breaker and GIS repairs, consisting of chamber gasket replacement and mechanism repair, and in some cases complete overhaul of the devices. equipment.

### Cost savings

The anticipated total cost savings are calculated in ISA based on:

- Savings in the purchase of carbon credits.
- Savings associated with the decrease in the purchase of energy thanks to the microgrid installed at Headquarters,
- Savings generated in equipment maintenance to prevent SF6 leakage from equipment and estimated costs for annual SF6 replacement.

### Internal Carbon Price

ISA defines its internal carbon price as the sum between the savings generated by the reduction of SF6 gas leaks, the purchase of carbon credits for the compensation of GHG emissions and the purchase of certified renewable energy through I-RECs. Currently, ISA is monitoring new commercial developments for high voltage equipment that may allow the replacement of SF6 by another less polluting product.



CONEXIONES QUE INSPIRAN

INTERCONEXIÓN  
ELÉCTRICA S.A E.S.P.  
NIT: 860.016.610 - 3

Calle 12 Sur 18 - 168 Medellín, Colombia  
Tel: +57 4 3252270 | Fax: +57 4 3170848  
A.A. 8915

Carrera 69 25B - 44 Piso 10 Bogotá, Colombia  
Tel: +57 1 4165596 | Fax: +57 1 4165398  
A.A. 55063

[www.isa.co](http://www.isa.co)