ACEROS AREQUIPA

Climate change **risks and opportunities** 2023

Introduction

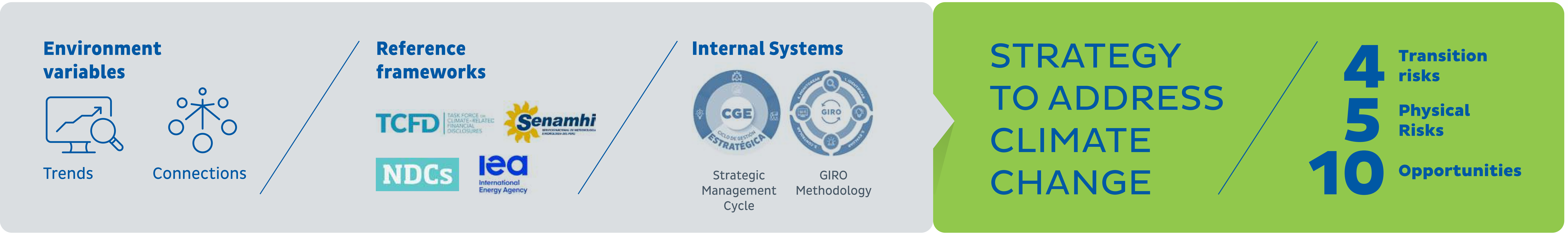
Climate change is a global challenge generated by different human activities that release Greenhouse Gases (GHG). These emissions, at large, cause global warming and disrupt the planet's climate balance, generating extreme weather events, critical changes to global ecosystems, biodiversity loss and natural resource shortages. These factors represent the four more critical risks in the long run, according to the World Economic Forum 2024 Global Risks Report.

Addressing climate change implies transforming productive processes and reducing the use of fossil fuels and start using renewable energies, as well as adapting to new climate conditions and scarcity of resources. These actions will influence development in the XXI century.

For Aceros Arequipa, climate change is a risk, but also a strategic opportunity for our productive process uses Electric Arc Furnace (EAF) technology that generates less CO_2 emissions, compared to Basic Oxygen Furnaces (BOF) technology. All the same, we deploy several initiatives to reduce CO_2 emissions, therefore, we are ranked well below the industry average, 75% less intensity of CO_2 emissions than the global industry average. Although great progress has been made to reduce our climate impact, the challenge that lies ahead of us is to continue implementing measures to become carbon neutral.

Among Aceros Arequipa's climate change initiatives, we assess the global and local trends and connections. This analysis, together with the external and internal methodologic frameworks, allow us to identify the risks and opportunities that Corporación Aceros Arequipa faces regarding climate change. We also carry out climate and water stress tests, as well as simulations of internal carbon pricing to deepen our analysis.

Climate management framework



As a result, we have identified four transition risks related to measures addressed to achieve a low carbon economy, five physical risks related to the vulnerability of our activity, and ten commercial opportunities and generation of efficiencies in our processes.

In order to analyze the transition risks, we consider the Peruvian NDC and the scenarios established by the IEA to try keeping global temperature rise below 2°C. To assess physical risks, we use the IPCC scenarios analyzed by National Service of Meteorology and Hydrology (SENAMHI),including RCP4.5 and RCP8.5. The main risks include damages to CAASA assets due to flooding, and water stress in our Pisco Melt shop, as well as the need for low carbon footprint technologies.

As a result of the stress tests performed, we identify as “High” critical risk the increase of the cost of water as a result of lower underground water availability to supply our production process, causing greater reliance on desalinated water which is more expensive. All the same, we identify Medium Priority as “High” critical risk a scenario of carbon price implementation in Peru, which would result in high payments for GHG emissions.

We explore opportunities such as entering new markets due to the competitive advantages for products with lower emission levels, the participation in government projects and sustainable construction, and alliances with the cement industry to make use pf scrap steel. Finally, we develop an Adaptation Plan with short-, medium- and long-term activities, to address physical risks, and a Decarbonization Plan to move towards zero emissions, in line with the domestic strategy against climate change and the SBTI’s Net-Zero standard.

Among Aceros Arequipa’s climate change initiatives, we assess the global and local trends and connections.

Note: the scope of our analysis includes the activities on the following operational and administrative sites in Peru. (See Annex 1).

Contents Table

01

GLOBAL AND LOCAL ENVIRONMENT

1.1. Global trends
1.2. Peru and climate change

02

STRATEGY AND GOVERNANCE

2.1. Strategy to address climate change
2.2. Governance
2.3. Lobbying with the Paris Agreement

03

RISKS AND OPPORTUNITIES MANAGEMENT

3.1. Analysis methodologies
3.2. Scenarios used
3.3. Identification of risks and opportunities
3.4. Analysis of transition risks
3.5. Analysis of physical risks
3.6. Analysis of opportunities

04

RESPONSE PLANS TO ADDRESS CLIMATE CHANGE

4.1. CAASA Decarbonization Plan
4.2. Adaptation Plan to address Climate Change

05

ANNEXES

01 GLOBAL AND LOCAL ENVIRONMENT

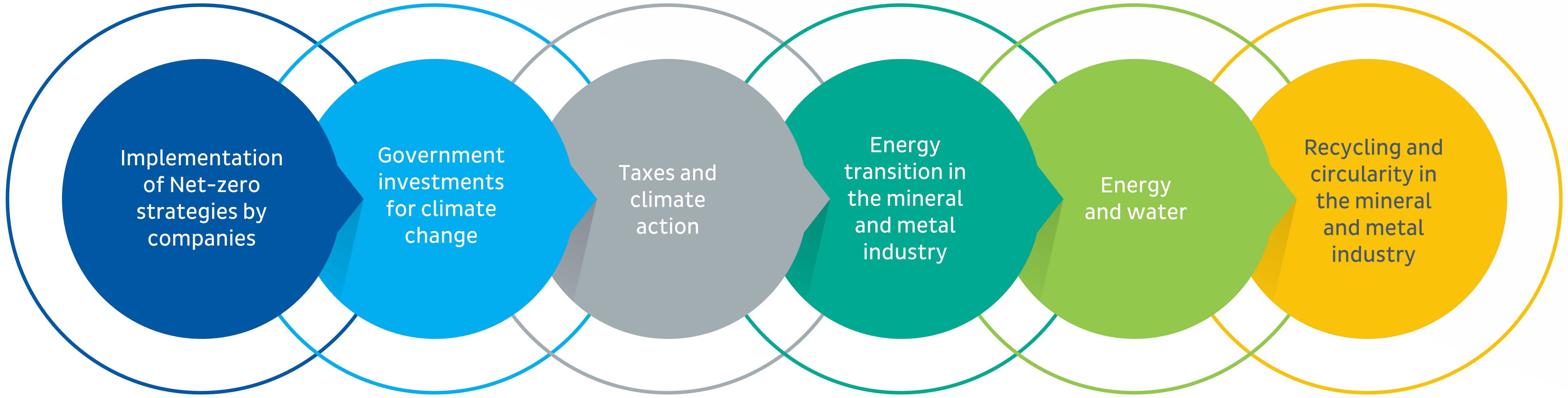
1.1. Global trends

We identified the global trends that may have significant impacts on our operations and on achieving our strategic objectives. The most relevant ones are those related to climate change. For this analysis we have looked into different sources of information, including the World Economic Forum strategic Intelligence Platform, the Global Risks Report, as well as key industry organizations such as WorldSteel, Alacero, OECD, IMF and the Global Forum on Steel Excess Capacity.

The world steel industry plays a crucial role in climate change and is accountable for approximately 7% of global CO2 emissions, according to IEA figures. Consequently, the expectations of the industry companies to reach carbon neutral levels are increasingly higher. These strategies include energy transition towards less pollutant sources such as green hydrogen and the optimization of natural resources and environmental and biodiversity protection.

In Latin America, there are important challenges regarding climate action due to its vulnerability to the effects of climate change and to the lack of effective policies and investment to overcome these

Climate change-related global trends that transform the steel industry



problems. In Peru, where a large part of our operations is located, the implementation of government measures to discourage GHG emissions are not included in the short term due to the need for infrastructure and the necessary conditions to facilitate energy transition and decarbonization.

Currently, the Latin-American steel industry is being affected by the increase of steel imports from China. According to data from la Asociación Latinoamericana del Acero (Alacero), China passed from exporting 80,000 tons of steel in 2000 to 10,000,000 tons in 2023. This situation has affected several companies in the region, which have closed their operations leading to mass layoffs. This, added to the trend to implement government measure s to discourage GHG generation such as the Carbon Border Adjustment Mechanism (CBAM) in Europe, could deviate steel production volumes with high emissions to regions that do not apply such regulations, such as Latin America.

On the other hand, according to estimations of the Global Forum on Steel Excess Capacity (GFSEC), migration to Electric Arc Furnaces (EAF) is projected, because of climate change. This technology, that uses recycled steel as its main raw material, could account for up to 76% of the world production by 2050.

All the same, according to the OECD report on the Latest Developments in Steelmaking Capacity 2024, a significant rise in production capacity under the EAF technology in 2024-2026 is forecasted to increase to 62.5 million tons, which would account for 53% of the new steel production capacity globally during this period.

This trend could generate greater competition for recycled steel worldwide, potentially leading to the implementation of laws to regulate trade of recycled products in different regions to guarantee local supply. Furthermore, an increase in the costs of recycled steel is expected as its use becomes more extended. Given that our operation is based on Electric-Arc Furnaces (EAF) and that we use recycled steel as main raw material, the realization of this risk will have a significant impact in our costs and continuity of our supply.

The severity of climate change effects depends on the actions taken to mitigate them.

The Intergovernmental Panel on Climate Change (IPCC) has developed scenarios to describe the possible climate change impacts derived from different levels of future GHG emissions and the resulting pathways of the atmospheric concentration of such gases.

These scenarios vary according to the decisions and actions taken globally regarding energy, technology, social, economic, and environmental policies. These are some of the main scenarios proposed by the IPCC:

01.

High emissions scenario (RCP8.5): This scenario describes a future in which GHG emissions continue to rise at high rates during the 21st century. It is characterized by a extended dependence on fossil fuels and absence of effective policies to mitigate emissions. GHG atmospheric concentrations increase significantly, leading to pronounced global warming and a severe impact on climate and natural systems.

02.

Medum – high emission scenario (RCP6.0): In this scenario, GHG emissions increase during most part of the 21st century, but at more moderate rates than in the high emission scenario. Mitigation measures are introduced, but they are not enough to prevent significant global warming. GHG atmospheric concentrations continue to increase, resulting in significant and in adverse weather events in many natural and human systems.

03.

Medium – low emission scenario (RCP4.5): This scenario implies a gradual reduction of GHG emissions throughout the 21st century, due to the implementation of more effective mitigation policies and the development of clean technologies. GHG atmospheric concentrations stabilize or reduce towards the half of the century, limiting global warmth and reducing climate effects compared to the higher emission scenarios.

04.

Low emission scenario (RCP2.6): This scenario represents a future in which GHG emissions reduce drastically to very low levels during the 21st century, thanks to a fast implementation of mitigation policies and significant technological development. GHG atmospheric concentrations reduce considerably, limiting global warmth and reducing adverse climate impact to a minimum.

These scenarios provide a range of possible climate futures, based on different levels of human action to reduce GHG emissions. The choice of policies and actions in the next decade will largely determine which climate pathways will be followed and the impacts that the world will experience.

Main RCP scenarios

Impact due to climate change ⟷ **Impacts due to policies to address climate change**

BUSINESS AS USUAL (RCP 8.5)	SOME MITIGATION (RCP 6.0)	STRONG MITIGATION (RCP 4.5)	AGGRESSIVE MITIGATION (RCP 2.6)
Emissions continue to grow at the same rate.	Emissions peak around 2080 and then decline.	Emissions decline half of the levels of today by 2080.	Emissions decline half of the levels of today by 2050
Increase around 4°C	**Probable increase greater than 2°C**	**More probable that it exceeds 2°C**	**Not probable that it exceeds 2°C**
High emissions, consistent with a future of no changes in policies to reduce emissions and characterized by increasing GHG emissions.	**High to intermediate emissions where GHG emissions peak around 2080 and then decline during the rest of the century.**	It is broadly aligned with the GHG emissions profile that would result from implementation of the 2015 NDCs (through 2030), followed quickly by a peak and then **a reduction of global emissions by 50% by 2080**.	This RCP is consistent with the **ambitious reduction of GHG emissions**, which would peak around 2020, then decline on a linear path and **turn negative by 2100**.

(Source: IPCC)

1.2. Peru and climate change

According to the Tyndall Center, England, Peru is the third more vulnerable country to climate change after Bangladesh and Honduras, due to the presence of the Andes and the South Pacific Anticyclone which generate a diversity of climates that make the Peruvian territory prone to natural disasters such as floods, landslides, El Niño phenomenon, and others, which cause economic and social impacts.

GHG emission reduction requires collaboration from all countries. The Paris Agreement, adopted by the parties to the United Nations Framework Convention on Climate Change (UNFCCC), reflects the need for global collective action to mitigate these emissions, independent from the political cycles and national circumstances.

The Paris Agreement entered into force on November 4, 2016, when at least 55 countries, that account for 55% of the GHG world emissions signed the Agreement. Peru signed the Paris Agreement on July 22, 2016, and became the first Hispanic American country to do so.

The Ministry of Environment (MINAM), through the General Directorate of Climate Change and Desertification (DGCCD), is the designated authority to meet Peru's commitments with the UNFCCC and The United Nations Convention to Combat Desertification (CNULD).

During the Lima COP 20, Peru committed its Nationally Determined Contributions (NDC), based on climate reports since 2003 and aligned with the event's urgency and ambition, presenting its NDC formally on September 12, 2015 before the UNFCCC. All the same, Peru highlighted its commitment to both mitigation and adaptation. It prioritized five areas affected by climate change (Water, Agriculture, Forestry, Health, Fisheries and Aquaculture).

In 2021, a process was started to update Peru's NDC to 2030, characterized by an increased ambition in mitigation and adaptation, information transparency, methodological consistency, policy strengthening and articulation with the country's development objectives, especially in the post-COVID-19 context.

Nationally Determined Contributions (NDC) are Peru's commitments to address climate change

A participatory and multilevel process was carried out to ensure the successful formulation, updating and implementation of the national contributions.

As a result, the Peruvian Government committed to limit net greenhouse gas emissions to 208,8 $MtCO_2eq$ by 2030, representing a 30% reduction with respect to 2015 levels, independent from external conditions (unconditional goal). Also, it considers that with external financing and with favorable conditions, it could reach an emission limit of 179,0 $MtCO_2eq$ by 2030, which would imply a 40% reduction comparted to 2015 (conditional goal).

Peru has defined 91 adaptation measures and 62 mitigation measures.

ADAPTATION MEASURES

Seek to reduce vulnerability to climate change related risks

- **Agriculture**
- **Forest**
- **Fishing and aquaculture**
- **Health**
- **Water**
- **Tourism and transportation (in process)**

MITIGATION MEASURES

Seek to reduce and/or prevent damages related to climate change

- **Energy – stationary and mobile combustion**
- **Industrial processes and product use (PIUP).**
- **Agriculture.**
- **Land use, change of land use, and silviculture (USCUSS for its acronym in Spanish).**
- **Waste**

02 STRATEGY AND GOVERNANCE

2.1. Strategy to address climate change

At Aceros Arequipa we create sustainable value through conscious and responsible production, fostering circular economy and innovation, that allow us to be more efficient in the use of resources, to generate less waste and to contribute to protect our environment.

We consider climate change as a challenge, but also as an opportunity to generate a competitive advantage; therefore we are committed to implement adaptation and mitigation measures to address climate change, to reduce the organization's carbon footprint related to direct and indirect emissions for electric energy consumption, becoming carbon neutral by 2050 under scope 1 and 2. We also promote carbon footprint reduction (upstream and downstream of our operations) among our main supply chain providers.

We have a Corporate Environmental Policy, distributed in eight priorities, one of them being "Actions to address Climate Change" with the following focuses of action:

01.
Promote adaptation and mitigation strategies to address climate change, to try and reduce the organization's carbon footprint.

02.
Identify, assess, and manage the risks related to climate change based on the GIRO methodology of the organization.

03.
Avoid or minimize power consumption and greenhouse gas effects generated by its activities.

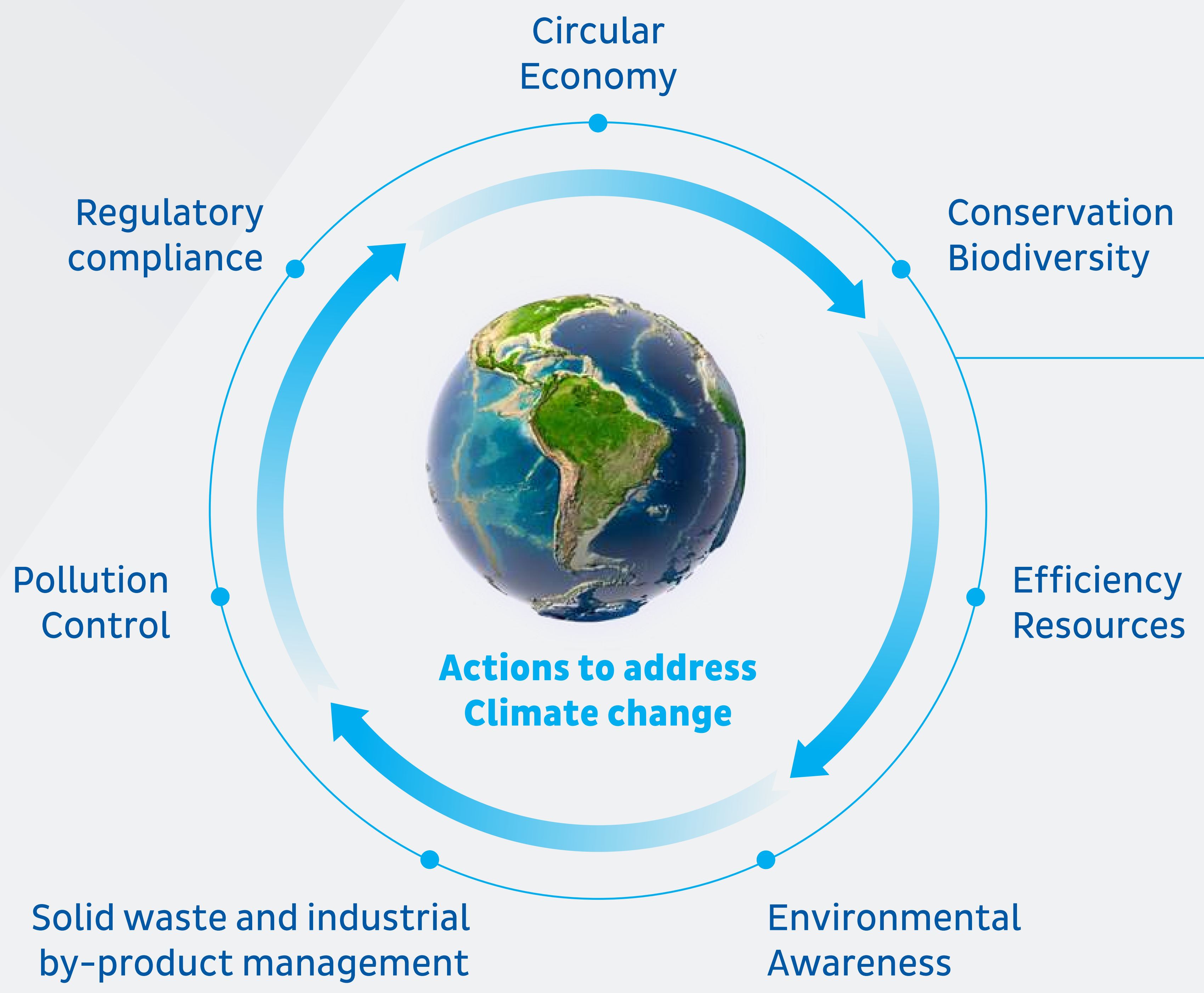
04.
Establish greenhouse gas emissions reduction goals aligned with the latest trends and standards.

05.
Establish a mechanism for managing power use and emissions, to allow objectively measuring performance evolution and decision making.

06.
Identify opportunities to promote environmentally friendly products and services adapted to the possible impacts of climate change, and which contribute to the transition towards a low carbon economy.

07.
Use adequate and appropriate technologies for adaptation to climate change, greenhouse gas mitigation and atmospheric pollution.

Priorities of the Environmental Policy



Action focus to address climate change

- Carbon footprint reduction
- Risks and opportunities management
- Efficient use of resources
- Innovation and technology
- Green economy promotion

OUR GOALS FOR 2030

>98%
ELECTRIC ENERGY CONSUMPTION FROM RENEWABLE SOURCES

620 kWh
ELECTRIC ENERGY CONSUMPTION PER TON OF FINISHED PRODUCT

15%
GHG EMISSIONS REDUCTION (SCOPE 1 + SCOPE 2)

1.3 m^3
WATER CONSUMPTION PER TON OF FINISHED PRODUCT

Sustainability is an instrumental pillar for Aceros Arequipa. In this regard, we work within a framework defined by our sustainability strategy, environmental policy and a comprehensive risk management system. These elements guide the definition of the action plans, metrics, and goas to move forward towards carbon neutrality. Therefore, in 2019, we decided to reduce our scope 1 and 2 emissions by 15% in all our operation sin Peru.

MAIN ACHIEVEMENTS IN 2023

- We achieved **an average reduction of 12.44% in GEI emissions** compared to the period prior to 2022.
- Renewable energy: We renewed our energy contract, guaranteeing **100% renewable supply until 2031.**
- We implemented the calculation of our water and carbon footprint, establishing a baseline for future measurement.
- Automation of the GHG inventory: We developed a bot that automates the monthly carbon footprint calculation, allowing more frequent follow-up.
- We materialized the desalinized sea water supply with an average flow of 3,000 m^3 per day, substituting part of the underground water used.
- We launched the Bolsa de Subproductos Industriales (Industrial by-products exchange – SPI for its acronym in Spanish) in our web site to foster their reuse in new productive chains.
- **US$ 0.9 million invested** to use melt shop powder to recover zinc oxide.
- **US$ 6 million invested** to recover nonferrous materials, by products of the scrap industrialization process, strengthening our commitment with circular economy.
- **US$ 20 million invested in a lime plant** to reduce natural gas consumption and enhance the reactivity of the lime, generating a smaller footprint.

See Annex 2 for further details on our climate management metrics.

2.2. Governance

Our governance model promotes climate change management as a joint effort to move towards a sustainable, effective, and profitable transition that ensures our permanence in the markets and a visible and effective action to address climate change effects.

In this regard, since 2020 CAASA has a Sustainability Committee, made up by different organization leaders, aimed at fostering incorporation of world class sustainability standards and promoting continuous improvement of the company´s practices to generate value for its shareholders, employees, suppliers, environment and population in our area of influence. This strategic and consultative body is responsible for monitoring compliance with commitments and sustainability plans, to address climate change. The following are the pictures of the Sustainability Committee members.

Members of the Sustainability Committee

Ricardo Cillóniz Rey
Project, Mining and Social Responsibility Manager

Tulio Silgado Consiglieri
CEO

Augusto Cornejo Cañedo
Chief Production Officer

Mariana Talavera Rubina
Supply Chain Manager

Juan Manuel Otoya Wherrems
Human Resources Manager

Fernando Bustamante Cillóniz
Strategic Management Control Manager

Ricardo Guzmán Valenzuela
CFO

In 2023, our Sustainability Committee celebrated its third anniversary, playing an instrumental role in the integration of the 2030 sustainability strategy with the management of the different corporation areas.

RISK AND OPPORTUNITIES MANAGEMENT ROLES TO ADDRESS CLIMATE CHANGE

The Sustainability Committee plays an instrumental role in risk and opportunities management to address climate change at a corporate level. This Committee is responsible for the coordination and supervision of actions at company level to manage climate risks, as well as to harness opportunities that may arise from this context.

SUSTAINABILITY COMMITTEE

Risks and opportunities management regarding climate change at a company level.

MANAGER AND LEADERS

Risks and opportunities management regarding climate change related to the processes under their responsibility.

SUPPORT AREAS: ENVIRONMENT, STRATEGIC PLANNING AND RISKS

Provide methodological guidelines, good practices and standards.

Managers and area leaders are responsible for managing the specific risks and opportunities posed by climate change in the processes under their supervision. This means taking the necessary measures to mitigate the climate change related risks and to harness those opportunities that may arise, integrating climate management in the planning and execution of daily activities.

All the same, the support areas play a key role in providing methodological guidelines, good practices and standards for risk management and opportunities to address climate change. These areas include Environment, Quality Management, Continuous Improvement, Strategic Planning and Risks.

Finally, we have an environmental management incentive strategy focused on acknowledging and rewarding our team's performance in environment-related projects. Executives, from managers down to individual workers, have an incentive system to improve Corporación Aeros Arequipa's climate management. These incentives can be monetary and non-monetary and include goals and initiatives that contribute to reduce our emissions and the efficient use of natural resources.

2.3. Lobbying for the Paris Agreement

Our management system includes lobbying activities and memberships in commercial associations, supported by a Code of Ethics. This code establishes guidelines for our relationship with customers, suppliers, the government, society, and the environment. We demand compliance with ethical principles, the current laws, and environmental standards, as well as respect for human rights and socially responsible practices. We expect socially and environmentally responsible behaviors from our suppliers and contractors.

Our actions to address climate change are aligned with the Paris Agreement, with reduction and carbon neutral goals for 2030 and 2050, respectively. Also, our risk analysis is focused on complying with Peru's NDCs and the opportunities thar arise from government policies.

We are a member of the following organizations:

Asociación Latinoamericana del Acero (Latin American Steel Association - Alacero). We are an active member, and we meet periodically in the technical committees where strategic projects for the sector are conducted. There is also a possibility for benchmarking best practices and information and experience access and exchange, regarding steel decarbonization.

Sociedad Nacional de Industrias (National Society of Industries - SNI). We have actively participated in meetings and workshops, and we can highlight our participation in COP 26, on November 2, 2021, where we presented our Perimeter Live Fence as one of our success cases in the panel called "The experience of the Permanent Driving Group (GIP) of the private sector to accelerate climate actions with a Nature-Based Solutions approach in Peru".

Instituto Nacional de Calidad (National Quality Institute - INACAL) GHG Sub Committee. We have participated in a review and a proposal of NTP-ISO 14097, a framework that includes principles and requirements to assess and inform about investments and financial activities related to climate change. In 2023, the Subcommittee was recognized as one of the best performing teams in 2022, within the framework of the World Standards Day.

Since 2020, we participate in the **Ministry of the Environment (MINAM) Peruvian Carbon Footprint Program** where we reported our GHG emissions and verifications. We are one of the first ten organizations of the manufacturing sector to report this on an ongoing basis.

With respect to **Ministry of the Environment (MINAM) INFOCARBONO,** we collaborate with the national institutional agreement to plan, design and manage national GHG inventory (INGEI). We report raw material consumption, resources, and production to contribute to the manufacturing industry GHG inventory.

See Annex 3 for further details about our lobbying diffusion actions for the Paris Agreement.

03 RISKS AND OPPORTUNITIES MANAGEMENT TO ADDRESS CLIMATE CHANGE

3.1. Analysis methodologies

We identify and analyze the risks and opportunities associated with climate change by assessing trends, the current and future situation of the steel sector and the CAASA value chain.

The Task Force on Climate-related Financial Disclosures (TFCD) has classified climate risks in two main categories: physical risks and transition risks. Physical risks include direct and indirect impacts of climate change in the physical assets, operations, and supply chains of an organization, including extreme weather events, such as floods, storms, and draughts. On the other hand, transitions risks refer to changes in policies, technologies and markets related to a transition towards a low carbon economy. These risks may include regulatory changes, stricter climate policies, changes in the demand for products and services, as well as the evolution in consumer preferences, and investment trends.

The TFCD stresses the importance of understanding and managing both physical and transition risks to guarantee the organizations' long term resilience and sustainability in a world affected by climate change.

The starting point of our methodology includes the classification of the risks of climate change, taking into consideration the TCFD proposals. The second step is to identify possible future scenarios: for transition risks we take the Peruvian NDC compliance scenarios, and for physical risks we use the Representative Concentration Pathways (RCP) defined by the International Energy Agency (IEA) and analyzed for the local context by SENAMHI (Peruvian National Service of Meteorology and Hydrology). Last, we use the GIRO methodology to assess risks in the different scenarios. Below, we detail the stages of our methodology:

Stages of our analysis methodology

01. Risk Identification and classification

TCFD | TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

The TFCD (Task Force on Climate-related Financial Disclosures) is an international initiative that offers recommendations for the companies to disclose financial information related to climate, therefore allowing to assess and manage risks and opportunities associated to climate change in their operations and strategies.

Our methodology is focused on classifying the risks and opportunities to address climate change, taking into consideration the TCFD risk classification:

Physical Risks
Natural disasters or environmental events caused by climate change.

Transition Risks
Changes in policies, law, technology, and market to mitigate climate change.

02. Scenario analysis

Senamhi

SENAMHI has defined Representative Concentration Pathways (RCP), which are geographic areas in Peru where climatic and geographic conditions for the development of extreme meteorological events are concentrated.

Physical Risks
For the analysis of physical risk scenarios, we will use the Representative Concentration Pathways (RCP) as defined by SENAMHI

NDCs

The NDCs (Nationally Determined Contributions) are commitments of each country to reduce its GHG emissions and to adapt to the impacts of climate change in line with the Paris Agreement. Peru has defined 91 adaptation measures and 62 mitigation measures.

iea International Energy Agency

The IEA has developed climate change scenarios oriented to global energy demand, countries' carbon price commitments and new heavy industry technologies (cement, steel ,and chemicals).

Transition Risks
For the transition risk scenario analysis, we use the probability of compliance with the Peruvian NDCs and the IEA scenarios.

03. Assessment and Response plans

GIRO

CAASA's Integrated Risk and Opportunity Management Methodology (GIRO) defines the guidelines for risk assessment according to the appetite and tolerance and for the design of response plans to address risks.

Physical and transition risks
We use the GIRO methodology to assess the risks in different scenarios and to define action plans to address those risks.

3.2. Scenarios used for assessment

TRANSITION RISKS

For the qualitative analysis of transition risks, we used the scenarios related to Peru's compliance with the Nationally Determined Contributions (NDC) to determine the possible futures according to the policies and actions implemented for a transition to a low-carbon economy and energy security. Taking the analysis performed by Marsh&McLeman, we propose four scenarios:

TRANSFORMATION

100% compliance with the NDCs. Ambitious and strict climate change policies and the mitigation action put the world on track to limit global warming within 1.5°C above pre-industrial temperatures by the end of 2030.

COORDINATION

Compliance with NDCs between 50 % and 100% by 2030. Climate change policy and mitigation actions are aligned and are coherent, keeping global warming within 2.0 °C above pre-industrial temperatures by the end of 2030.

FRAGMENTATION (MINOR DAMAGES)

Compliance with NDCs between 30% and 50% by 2030. Limited climate action and lack of coordination cause warming to increase to more than 2°C above pre-industrial temperatures by the end of 2030.

FRAGMENTATION (HIGH DAMAGES)

NDCs compliance below 30%. Climate action and lack of coordination cause temperatures to increase 4 °C or above pre-industrial temperatures by 2030. The physical impacts of this warming are felt with greater severity.

On the other hand, for the quantitative analysis we use the scenarios that the IEA has produced to develop the Global Energy and Climate Model (GEC), the main tool to generate long term scenarios. The WEO-2022 and ETP-2023 reports, based on the GEC, explore three scenarios: NZE (regulatory), APS and STEPS (exploratory), taking into consideration initial and dynamic conditions of the market to analyze future energy pathways.

NZE (Net Zero Emissions by 2050 Scenario): Sets out a pathway towards carbon neutrality by 2050, prioritizing electrification and renewables, guaranteeing universal access to electricity and clean cooking by 2030.

APS (Announced Pledges): Assesses total and timely compliance with global climate commitments, highlighting gaps with respect to Paris 2015 targets and universal access to energy.

STEPS (Stated Policies): Reflects current energy and climate policies, providing a point of reference to assess the impact of policies under way.

CAASA related NDC

Adaptation NDC

There are no NDC related to CAASA that involve any risk or opportunity.

NDC Mitigation

Energy – Stationary Combustion

E1: Combination of renewable energies.
E2: Cogeneration.
E3: Energy efficiency in the industrial sector.
E4: Use of waste-derived fuels as substitute for fossil fuels in the clinker production furnaces (this measure was considered because CAASA has rotation furnaces where coprocessing can be carried out by producing alternative fuels with the waste from the shredder).
E5: Energy efficiency thorough comprehensive interventions in the industrial manufacturing sector.
E6: Encouraging sustainable construction in new buildings (this measure was considered because among the sustainable building construction materials the construction bar is used; this bar qualifies under the credits for materials and resources under the LEED criteria).

Energy – Mobile Combustion

E7: Implementation of the Lima Integrated Transportation System Complementary Bus lines.
E8: Implementation of Lines 1 and 2 of the Lima and Callao Metro.
E9: Promotion of cleaner fuel use.
E10: Promotion of electric vehicles nationwide (This measure was considered because CAASA outsources this transportation service for the workers at the Pisco site).
E11: Training in efficient driving for professional drivers.
E12: National Scrap Car Removal and Vehicle Renewal Program.
E13: “Trans Andean tunnel” construction project.
E14: Improvement of the railway transportation service between Tacna and Arica.
E15: Integral rehabilitation of the Huancayo – Huancavelica railway.

Industrial processes and product use

M1: Clinker substitution to lower the clinker/cement ratio by producing additive cements (This measure was considered because CAASA generates steel slag, which is one of the materials proposed to replace clinker).

Although currently Peru has not implemented Carbon Pricing, in our analysis we considered the experience of Chile and Colombia this regard, Annex 4 shows the references of those countries that applied carbon pricing to electricity, industries and manufacturing. With respect to the APS and NZE scenarios, we start from the context of an emerging and developing market economy, taking into consideration the Government’s recent commitments assumed in 2021 towards Net Zero emissions.

PHYSICAL RISKS

For our climate analysis, we use relevant physical scenarios for organizations exposed to acute or chronical climate changes, such as those with long term fixed assets, operations in regions sensitive to climate and value chains exposed to these risks.

For this purpose, we base or analysis in RCP scenarios, which are the last generations of scenarios provided by the IPCC. These scenarios describe the possible climate impacts of different levels of greenhouse gas emissions, and the consequent pathways of GHG atmospheric concentrations.

Radiative forcing is a crucial indicator in this analysis, measuring the net change in radiative energy flux to the Earth as a result of changes in the composition of the atmosphere. RCP scenarios characterize different levels of radioactive forcing, from very low to very high, with codes such as RCP2.6, RCP4.5, RCP6.0 and RCP8.5.

To assess possible changes in variables such as rainfall, temperature, evapotranspiration, and surface runoff, we use projections of 2 CMIP5 climatic models and 2 Emission Scenarios: RCP 4.5 and RCP 8.5. These analyses cover the period 2035-2065, focusing in the year 2050

All the same, in our analysis, we have used the 2015 SENAMHI report as a reference on water availability in Peru in the context of climate change. We used historical data of weather stations to forecast possible changes in climate variables and water availability until 2050, **focusing in the "Pacific 3" hydrologic region for this forecast, the region where our melt shop is located.** The results show different traits in every hydrographic region, with significant changes in variables such as rainfall, temperature, and superficial runoff.

Scenarios used for the analysis of physical risks

RCP 4.5 (Radiative Concentration Pathway 4.5)

- This scenario represents a future where the Greenhouse Gases (GHG) stabilize towards the year 2100, leading to a **global temperature increase of approximately 2.4°C** compared to pre-industrial levels.
- In the case of Peru, this would entail significant changes in weather, such **as an increase in average temperature and possible changes in rainfall patterns**. These changes could affect the availability of water and biodiversity, as they could also increase the risk of extreme events such as droughts and flooding.

RCP 8.5 (Radiative Concentration Pathway 8.5)

- This scenario represents a future where the Greenhouse Gases (GHG) continue to increase without significant mitigation measures. This would lead to a **global temperature increase of approximately 4.9°C** compared to pre-industrial levels.
- For Peru, this would imply more drastic climate changes, with **severe impacts on ecosystems, agriculture, water availability and infrastructure**. An increase in the frequency and intensity of extreme weather events, such as prolonged droughts and torrential rains, would be expected.

Main changes expected in the Pacific Hydrographic Region

Expected changes in Maximum Temperature by 2050
RCP 4.5 The greatest changes in maximum temperature are expected in the Pacific Hydrographic region 1, with an annual average temperature increase of 2.7°C under the RCP 4.5 scenario. On the other hand, the lowest thermal warming projection would be observed in the Pacific 6 region, with an annual average temperature increase of 1.5°C under the same RCP 4.5 scenario. **RCP 8.5** The greatest changes in maximum temperature are expected in the Pacific Hydrographic region 1, with an annual average temperature increase of 2.8°C under the RCP 8.5 scenario. On the other hand, the lowest thermal warming projection would be observed in the Pacific 6 region, with an annual average temperature increase of 1.6°C under the same RCP 8.5 scenario.
Expected changes in minimum temperature by 2050
RCP 4.5 The greatest changes in minimum temperature are expected in the Pacific Hydrographic region 1, with an annual average temperature increase of 2.9°C. On the other hand, the lowest thermal warming projection would be observed in the Pacific 5 region, with an annual average minimum temperature of 1.5°C. **RCP 8.5** The greatest changes in minimum temperature are expected in the Pacific Hydrographic region 1, with an annual average temperature increase of 2.8°C. On the other hand, the lowest thermal warming projection would be observed in the Pacific 5 region, with an annual average minimum temperature of 2°C.

Expected changes (%) in rainfall by 2050
RCP 4.5 In the Pacific 1 and Pacific 6 regions, increases of 0.2% and 9.8%, respectively, are projected. In the Pacific 2, **Pacific 3**, Pacific 4 and Pacific 5 regions, decreases in annual rainfall in -1.3%, **-5.5%**, -3.4%, -1.3%, respectively, are projected. **RCP 8.5** In the Pacific 2, **Pacific 3**, Pacific 4, and Pacific 5 regions, increases in annual rainfall in 2.4%, **0.4%**, 5.3%, 6.8% and 24.2%, respectively, are expected; in the Pacific 1 region, there is a projected reduction of annual rainfall in -4.8%.
Expected changes (%) in evapotranspiration by 2050
RCP 4.5 Projected changes in annual evapotranspiration indicate increases ranging from 1.9% to 8.0% in the Pacific 6 and Pacific 1 regions, respectively, according to the RCP 4.5 Emission Scenario. **RCP 8.5** In the RCP 8.5 Scenario, the increases are of greater magnitude, ranging from 3.9% to 11% as an annual average, for these same regions.

The most critical scarcity conditions are anticipated in the Pacific 1 and Pacific 3 hydrological regions, with a reduction of 48% and 42%, respectively, in the annual availability of water.

3.3. Identification of risks and opportunities

We identified and analyzed risks and opportunities associated to climate change by examining the related trends and scenarios that may impact our processes and capabilities, whether financial or operational. All the same, we seek to create strategic opportunities for our company, using external methodological frameworks mentioned in the former chapter, as well as our internal GIRO methodology.

The latter establishes the corporate guidelines to identify, assess, control, and monitor risks, together with risk appetite, tolerance and probability and impact levels. It also contains the guidelines to prioritize opportunities.

Currently we have identified a total of nine risks (four transition, and five physical) which are directly linked to our main strategic and emerging risks. Also, we have identified ten opportunities associated to the global trends and to compliance with the Peruvian NDC.

See Annex 5 with details of the risk evaluation criteria of the GIRO methodology.

UPSTREAM

DIRECT OPERATIONS

DOWNSTREAM

01. Transition risks

TR1:
Increase in imports of steel products with high GHG emissions, to countries in the region, as a result of the implementation of measures against climate change that discourage their trade in developed countries.

TR2:
World trend in the steel industry towards the use of less polluting technologies such as electric arc furnaces, that would increase competition to buy recycled steel and its costs.

TR3:
Increased operational costs due to the implementation of the price of carbon in Peru.

TR4:
Increase in transportation costs (raw materials, finished products and personnel transportation) as a result of fuel costs increase due to a higher tax.

02. Physical Risks

PR1:
Increased costs due to the use of alternative resources (forced air and desalinated water) for cooling in the production process, due to scarce availability of underground water in the steel complex location.

PR2:
Over cost due to the interruption of electric energy to the steel complex, caused by damages to the transmission lines due to the overflowing of the Pisco river.

PR3:
Increased production costs due to a greater purchase of imported scrap, because of the delay in local supplier provision due to the interruption of roads and highways as a result of landslides and floods.

PR4:
Loss of sales due to the interruption of roads and highways as a result of landslides and floods.

PR5:
Increased costs due to damages to the infrastructure, equipment and products caused by an increase in rainfall in the areas where the different sites are located.

03. Opportunities

OP1:
Implement and certify an energy management system based on ISO 50001.

OP2:
Invest in energy efficient technology and participate in the Government´s Cleaner Production projects.

OP3:
Take advantage of potential green energy generation projects in the country to incorporate them into our processes.

OP4:
Entry into new markets due to competitive advantage for products with lower emissions (including net zero plan).

OP5:
Participate in government projects focused on climate change mitigation and adaptation by providing services and/or products.

OP6:
Coprocessing in the Steel Complex.

OP7:
Buy larger amounts of domestic scrap.

OP8:
Carry out a natural gas cogeneration project in the Pisco plant.

OP9:
Reduce consumption of unnecessary fuel by the distribution and preliminary units.

OP10:
Be able to market steel slag to cement companies and meet the NDC target.

3.4. Transition risk analysis

We analyzed the severity of the transition risks under the GIRO Metholodlogy using two scenarios:

1. Tr transformation scenario of the NDC compliance analysis in Peru – See Annex 5.
2. Net Zero Emissions (NZE) by 2050 Scenario developed by the International Energy Agency (IEA) – See Annex 6.

We selected these scenarios because they reflect the objectives that we shoud aim at as a society to effectively mitigate climate changel.

NDC scenario analysis (Transformation)

Criticality	R4	R3	R2	R1
Impact	Considerable	High	High	High
Probability	High	High	High	High

IEA Scenario Analysis (NZE)

Criticality	R4	R3	R2	R1
Impact	Considerable	High	High	High
Probability	High	High	High	High

High · Considerable · Moderate · Low

See Annex 6 for further details on Transition Risk Assessment for each NDC scenario.

TRANSITION RISKS

TR1
Increase of imports of steel products with high GHG emissions, to countries in the region, as a result of the implementation of measures against climate change that discourage their trade in developed countries.

TR2
World trend in the steel industry towards the use of less polluting technologies such as electric arc furnaces, that would increase competition to buy recycled steel and its costs.

TR3
Increased operational costs due to the implementation of the price of carbon in Peru.

TR4
Increase in transportation costs (raw materials, finished products and personnel transportation) as a result of fuel costs increase due to a higher tax.

Transition risks details TR1 and TR2				
Description	**TR1:** Increase of imports of steel products with high GHG emissions, to countries in the region, as a result of the implementation of measures against climate change that discourage their trade in developed countries.		**TR2:** World trend in the steel industry towards the use of less polluting technologies such as electric arc furnaces, that would increase competition to buy recycled steel and its costs.	
Criticality	High	High	High	High
Methodology and scenario	NDC Scenario: Transformation (Tr) 100% NDC compliance	IEA Scenario: NZE - Net zero emissions by 2050	NDC Scenario: Transformation (Tr) 100% NDC compliance	IEA Scenario: NZE - Net zero emissions by 2050
Related NDCs	*Me1	-	*T1	-
Type of risk	Market		Technology	
Financial impact	Not quantified		Not quantified	
Response strategies	**Current strategies** • Continuous monitoring of market variables. • Reinforce our competitive position. • Continuous update of the strategic plan and long-term projections. **Future strategies** • Strengthen trade association actions. • Promote actions to accelerate NDC compliance, to set the foundations to implement measures to regulate GHG generation.		**Current strategies** • Continuous monitoring of the environment. • Keep close to local recycled steel suppliers to ensure domestic supply at the best possible cost. • Loyalty and supplier development program to support recycling activities in the country. **Future strategies** • Develop new local and international raw material supply sources.	

High Considerable Moderate Low

* Sources for transition risks, but not part of the NDCs, only in a stress scenario. Key: L – Legislation Me – Market and T – Technology.
Note 1: Classification topics used for the NDC have the following key: E – Energy, and M – Industrial Processes.
Note 2: The key for the type of transition risks is: PL – Political and legal, Te – Technology, Me – Market, and Re – Reputation.
Note 3: The key for risk-related variables are: Imp – impact, Prob. – Probability, Consid. – Considerable, Mod. - Moderate.

Transition risks details TR3 and TR4				
Description	**TR3:** Increased operational costs due to the implementation of the price of carbon in Peru.		**TR4:** Increase in transportation costs (raw materials, finished products and personnel transportation) as a result of fuel costs increase due to a higher tax.	
Criticality	High	High	High	High
Methodology and scenario	NDC Scenario: Transformation (Tr) 100% NDC compliance	IEA Scenario: NZE - Net zero emissions by 2050	NDC Scenario: Transformation (Tr) 100% NDC compliance	IEA Scenario: NZE - Net zero emissions by 2050
Related NDCs	*L1/ E1	-	E9/ E10	-
Type of risk	Political Legal		Political Legal	
Financial impact	Cost increase by S/ 5,973,989.35 for carbon rates		Cost increase by S/ 3,865,236 increase in fuel costs	
Response strategies	**Current strategies** • We have a supply contract for 85% of electric energy from renewable sources. • The main energy matrix for our processes is Natural Gas, which is the fossil fuel with the lowest GHG emission factor. • Since 2020 to date, we have purchased 6 electric cranes to replace the diesel ones, for the scrap collection yards. This implementation has allowed a reduction of approximately 150 t CO2e/year per equipment. • Every time any high energy consuming machines and/or systems are introduced, we perform electric energy quality audits to diagnose the good operation of the equipment and prevent failures that may generate excess energy consumption and/or equipment downtime. • We perform periodic maintenance to the electric equipment to guarantee their operation, preventing failures that can generate energy leaks. • We have energy meters in the different process to record and follow-up energy consumption. • In 2021, the new melt shop was commissioned. It has a lower electric energy consumption ration. We have passed from 415kWh/t to 375 kWh/t liquid steel. • In 2023 we trained 31 ISO 50001 internal auditors to implement an energy management system in the steel complex.		**Current strategies** • Transportes Barcino, a subsidiary of Aceros Arequipa, has purchased a fleet of 32 trucks that run on natural gas for the transportation of our products and materials. • Monitoring efficient use of fuel per shipment (upstream and downstream) preventing false freights. • Conditioning and compacting scrap for efficient use of the units and fuel in scrap supply.	

High | Considerable | Moderate | Low

Transition risks details TR3 and TR4		
Response strategies	**Future strategies** • Support strategic suppliers in the implementation of their carbon footprint calculation. • Analyze the electric energy contract to ensure supply from a renewable source with renewable source certification. • Implement an energy management system based on ISO 50001. • Implement the new vertical lime furnace that will allow us to have a lower natural gas consumption in the process. We will go from 2500 kcal/ kg to 900 kcal/kg of lime. • Implement the scrap cleaning machine to reduce electric energy consumption and use of scorifying agents in the electric furnace. • Implement new annealing furnaces to improve efficiency in the use of natural gas in the wire drawing process.	**Future strategies** • Support strategic suppliers in the implementation of their carbon footprint calculation. • Support transportation suppliers in their formalization process, encouraging the implementation of good environmental practices. • Identify machinery and personnel transportation services contracts that have cleaner fuels than the current ones, or electric vehicles, in the best of cases.

* Sources for transition risks, but not part of the NDCs, only in a stress scenario. Key: L – Legislation Me – Market and T – Technology.
Note 1: Classification topics used for the NDC have the following key: E – Energy, and M – Industrial Processes.
Note 2: The key for the type of transition risks is: PL – Political and legal, Te – Technology, Me – Market, and Re – Reputation.
Note 3: The key for risk-related variables are: Imp – impact, Prob. – Probability, Consid. - Considerable, Mod. - Moderate.

STRESS ANALYSIS OF THE RISK OF CARBON PRICING IMPLEMENTATION IN PERU

The valuation of CO_2 emissions is the way in which countries and markets assign a monetary value to these emissions, forcing emitters to pay for the impact of the GHGs they release. This measure fosters decisions and investments which are beneficial for the environment, promoting sustainable economic growth. Carbon pricing contributes in a flexible manner and with low costs to society to achieve efficient reduction of GHG emissions. According to the MINAM, in 2019, a proposal was passed in Peru for a social price on carbon, that allows to include the benefits or social costs related with the reduction of increase of GHG emissions in the economic assessments. This value is around US$7.17 per ton of CO_2eq (equal to S/ 26.85 - exchange rate as of the end of 2023 - according to the Peruvian Central Reserve Bank).

Associated Risk TR3: Increased operational costs due to the implementation of the price of carbon in Peru.

Scenario	Carbon footprint (t CO_2e) Scope 1	Price (S//t CO_2e)	Amount (S//year)	Prob.	Impact	Criticality
Current scenario (2023): there is no carbon price fixed in Peru (S/ 0.00/t CO_2e)	222,533	0	0	NA	NA	NA
Stress scenario (2028): in 2028 carbon price is fixed, using MINAM's proposal as reference, using the 2022 exchange rate (S/ 26.85/t CO_2e)	222,533	26.85	5,973,989	High (8)	High (8)	High

INTERNAL CASSA CARBON PRICE

The internal carbon pricing approach involves assigning a hypothetical cost to carbon emissions to understand how greenhouse gas emissions prices affect the organization's business case. This includes mapping financial risks related to climate change and estimating the potential impact of a carbon price on the price of products manufactured.

The implementation of an internal carbon price has several benefits such as:

- Change in internal behavior to raise awareness on climate change and influence on decisions.
- Foster energy efficiency through projects that use renewable energy and reduce GHG emissions.
- Identify and benefit from low carbon emission opportunities to improve competitive advantage in a low carbon economy.
- Foster investments with low carbon emissions through techno logies that reduce the carbon footprint.

The price used by CAASA is a "uniform price" applied throughout the company, irrespective of the geography or subsidiary. Two types of prices can be used: shadow price and internal rate price. The shadow price is the one used by CAASA currently. To make price adjustments, there are four approaches: based on external resources, based on a benchmark among peers, based on internal consultation and based on technical analysis. These approaches help determine a price which is material enough to change the decisions and behavior of a business towards a lower carbon footprint.

Our internal carbon price uses the 2019 MINAM proposal (US$7.17 per ton of CO_2 equivalent)

Internal Carbon Price Distribution for 2023

Sites	Internal carbon price in 2023 (expressed in soles)			Participation
	Scope 1	Scope 2	Total	(%)
Magdalena Administrative Office	1,416.90	1,257.71	2,674.60	0.03
Steel Complex	5,835,723.38	4,412,028.15	10,247,751.53	98.01
CD - Callao	2.15	13,539.19	13,541.34	0.13
DC - Trapiche	-	438.65	438.65	0.00
DC - Arequipa	1.07	2,242.66	2,243.74	0.02
DC - Trujillo	127.25	108.46	235.70	0.00
SY - Oquendo	0.27	3,809.09	3,809.36	0.04
SY - Cajamarquilla	0.54	2,883.46	2,884.00	0.03
SY - Trujillo	0.54	1,605.35	1,605.89	0.02
Steel center – Lima	1.88	2,399.44	2,401.32	0.02
Pipe plant – Cajamarquilla	1,170.99	9,213.33	10,384.32	0.10
Nail planta – Callao	135,410.16	24,233.85	159,644.00	1.53
DC – Piura	67.38	442.41	509.79	0.00
DC - Lurin	66.84	7,448.51	7,515.36	0.07
Total	**5,973,989.35**	**4,481,650.26**	**10,455,639.61**	**100.00**

3.5. Physical risks analysis

For the analysis of physical risks, we used the GIRO Methodology guidelines, and the scenarios developed by the IPCC and analyzed by SENAMHI, the scenarios selected were RCP 4.5, Strong Mitigation, where emissions lower by half the current levels by 2080, and the Business-as-usual RCP 8.5 scenario, in which emissions continue to grow at the same pace, being this the worst case scenario.

RCP 4.5 scenario analysis

Criticality	R5	R4	R3	R2	R1
Impact	Considerable	Considerable	Considerable	Considerable	High
Probability	Moderate	Moderate	Moderate	Moderate	Considerable

RCP 8.5 scenario analysis

Criticality	R5	R4	R3	R2	R1
Impact	Considerable	Considerable	Considerable	Considerable	High
Probability	High	High	High	High	High

High | Considerable | Moderate | Low

PHYSICAL RISKS

PR1
Increased costs due to the use of alternative resources (forced air and desalinated water) for cooling in the production process, due to scarce availability of underground water in the steel complex location.

PR2
Over costs due to the interruption of electric energy to the steel complex, caused by damages to the transmission lines due to the overflowing of the Pisco River.

PR3
Increased production costs due to a greater purchase of imported scrap, because of the delay in local supplier provision due to the interruption of roads and highways as a result of landslides and floods.

PR4
Loss of sales due to the interruption of roads and highways as a result of landslides and floods.

PR5
Increased costs due to damages to the infrastructure, equipment and products caused by an increase in rainfall in the areas where the different sites are located.

Physical risks details PR1, PR2 and PR3

Description	**PR1:** Increased costs due to the use of alternative resources (forced air and desalinated water) for cooling in the production process, due to scarce availability of underground water in the steel complex location.		**PR2:** Over costs due to the interruption of electric energy to the steel complex, caused by damages to the transmission lines due to the overflowing of the Pisco River.		**PR3:** Increased production costs due to a greater purchase of imported scrap, because of the delay in local supplier provision due to the interruption of roads and highways as a result of landslides and floods.	
Criticality	High	High	Considerable	High	Moderate	Considerable
Methodology and scenario	Strong Mitigation (RCP 4.5)	Business as usual (RCP 8.5)	Strong Mitigation (RCP 4.5)	Business as usual (RCP 8.5)	Strong Mitigation (RCP 4.5)	Business as usual (RCP 8.5)
Type of risk	Chronical		Acute		Acute	
Financial impact	Increase in water use costs by S/ 5,228,483 due to the increase in the use of desalinated water, which would represent 50% of the total consumption in our operations.		Total economic loss of S/ 4,334,079 for the costs of a two-day stoppage in our operations at the steel complex representing S/ 2,481,579 and for the costs of repairing the transmission line representing S/ 1,852,500.		Not quantified	
Response strategies	**Current controls** • We have an industrial water treatment plant that allows us to recirculate process water and thus optimize its use. • Since the last quarter of 2021 we have two domestic wastewater treatment plants at the Steel Complex, which have allowed to expand the scope of the treatment. • Since 2021 we have an air cooler system, that allow cooling the water used in the steel manufacturing process, minimizing losses.		**Current controls** • We have a protocol to supervise the increase in the level of Pisco River, and we carry out cleaning activities with heavy machinery. • Contingency Plan to recover the electric energy transmission system.		**Current strategy** • When weather events interrupt the access roads, coordinations are made with the suppliers regarding delivery dates, possibilities of delay and rescheduling. We can manage a change of supplier for timely delivery if necessary. • We have scrap yards distributed in strategic areas of the country to collect and store scrap from the different regions of the country.	

Physical risks details PR1, PR2 and PR3			
Response strategies	• Since 2022 we have a connection to an underground well which due to the different in altitudes with Pisco River, facilitates natural filtration, allowing the use of water which has been lost to the sea for years. • Since 2023 we have a desalinated sea water supply of approximately 3000m³ per day. **Proposed controls** • Implement projects to boost the water treatment system to increase the number of process water cycles. • Implement projects and technology to optimize water consumption in the processes.	**Proposed controls** • Interconnection with the Government's early warning system. • Promote works together with the Pisco Municipality for preventive labors to prevent Pisco River from overflooding.	**Future strategy** • Interconnection with the Government's early warning system.

High | Considerable | Moderate | Low

Physical risks details PR4 and PR5				
Description	**PR4:** Loss of sales due to the interruption of roads and highways as a result of landslides and floods.		**PR5:** Increased costs due to damages to the infrastructure, equipment and products caused by an increase in rainfall in the areas where the different sites are located.	
Criticality	Moderate	Considerable	Moderate	Considerable
Methodology and scenario	Strong Mitigation (RCP 4.5)	Business as usual (RCP 8.5)	Strong Mitigation (RCP 4.5)	Business as usual (RCP 8.5)
Type of risk	Acute		Chronical	
Financial impact	Not quantified		Not quantified	
Response strategies	**Current strategy** • When we know that there will be roadblocks due to weather or scheduled strikes, we program an increase in inventory at distribution centers to support temporary interruptions. • We have finished goods warehoused distributed in strategic areas of the country. **Future strategy** • Interconnection with the Government's early warning system.		**Current strategy** • The plan is made of noble material, the equipment is located on an asphalted floor and under a roof with water drainage. • We have an infrastructure maintenance program. • The land where the plant is located is levelled, and there are no components in slopes. • The main operation units, the Melt shop and the Rolling mill plant are under roof. In the case of the Melt shop, it is inside an airtight hangar due to its fumes treatment system. **Future strategy** • Interconnection with the Government's early warning system.	

High | Considerable | Moderate | Low

STRESS ANALYSIS ON UNDERGROUND WATER SCARCITY IN THE STEEL COMPLEX LOCATION

According to SENAMHI's analysis, which we previously mentioned, we estimate that the main effect of climate change will be a reduction on water availability in several areas of the country. It is expected that the most critical conditions of water scarcity will occur in the Pacific 1 and Pacific 3 hydrologic regions, with a 48% and 42% reduction, respectively of annual water availability. Given that our melt shop and rolling mill are in Pisco, in the Pacific 3 zone, this situation is directly relevant to us.

Although this risk is expected to intensify in the future, we have already begun to experience the effects of the reduced availability of fresh water from the groundwater aquifers which supply our operations. This situation increases our dependency on desalinated water for our operations. The latter has a higher cost than the conventional one, which translates into higher operational costs.

2023 base scenario	
Regular water rate (ANA) (for balanced aquifers)	0.0908 soles/m³
Regular water rate (ANA) (for over exploited aquifers)	0.2724 soles/m³
Desalinated water rate	6.58008 soles/m³
Consumption of water from wells in balanced aquifers	409,298 m³ (24%)
Consumption of water from wells in over exploited aquifers	1,255,136 m³ (65%)
Consumption of desalinated water	**17,641 m³ (1%)**
Total consumption 2023 (m³)	1,682,075
Total cost of water consumption in 2023	**S/ 495,142**

Stress scenario: by 2028 underground water scarcity increased the need to use desalinated water by 50%	
Regular water rate (ANA) (for balanced aquifers)	0.0908 soles/m³
Regular water rate (ANA) (for over exploited aquifers)	0.2724 soles/m³
Desalinated water rate	6.58008 soles/m³
Consumption of water from wells in balanced aquifers	204,649 (12%)
Consumption of water from wells in over exploited aquifers	627,568 (37%)
Consumption of desalinated water	**841,038 (50%)**
Total consumption in 2023 (m³)	1,682,075
Total cost of water consumption in 2023	**S/ 5,723,625**
Probability	**RCP 4.5:** considerable **RCP 8.5:** high
Impact	**RCP 4.5:** high **RCP 8.5:** high
Criticality	**RCP 4.5:** high **RCP 8.5:** high

Cost increase of S/ 5,228,483 per year

3.6. Opportunities analysis

To identify opportunities related to climate change, we analyzed global trends and the Nationally Determined Contributions (NDC) defined by the Peruvian Government. We focused on a Transformation scenario, which implies 100% compliance with the NDC. In addition, we prioritize the opportunities identified following the criteria of the GIRO methodology.

This methodology establishes that opportunities are prioritized based on the balance between Cost/Effort and Strategic Alignment. That is, those opportunities with a higher strategic alignment and a lower effort required will receive a higher priority, and vice versa.

Annex 7 details the analysis of the opportunities for each NDC compliance scenario, and Annex 8 shows the criteria for the prioritization of opportunities of the GIRO methodology.

Theme axis

	01. Energy	02. Sale of finished goods	03. Circular economy
High priority	**OP1:** B A Implementation and certification of an ISO50001-based energy management system. **OP2:** B A Investment in energy-efficient technology. **OP3:** B A Take advantage of potential green energy generation projects in the country to incorporate them into our processes.	**OP4:** B A Entry into new markets due to competitive advantage for products with lower emissions. **OP5:** B A Participation in government projects focused on climate change adaptation and mitigation, through the provision of goods and/or services.	**OP6:** A A Coprocessing at the steel complex. **OP7:** B A Purchase larger amounts of domestic origin scrap.
Medium priority	**OP8:** A A Carry out a natural gas cogeneration project at the Pisco plant. **OP9:** A B Optimize fuel consumption or use more eco-efficient fuels in distribution and refueling units.		**OP10:** A A To be able to market steel slag to cement companies so they can meet the NDC target.

Cost / effort A High B Low

Strategic alignment A High B Low

Detail of opportunities

Opportunity	Priority	Related NDC	Type	Response
OP1: Implementation and certification of an ISO50001-based energy management system.	High	• E3: Energy efficiency in the industrial sector	• FE: Energy source	**Current** • We actively participate in reconstruction projects and flagship works of the Government: a.Since 2019 we manufacture ecoblocks from ecogravilla, that are used to signal pedestrian areas and implement walls on the storage area of raw materials and industrial by-products. b. Since 2021 we have implemented the melt shop dust recovery project. c. Since 2023 we have implemented the Eddy Current process that allow to recover non-ferrous metals and reinsert them into the re cycling value chain. **Future** • Assess the possibility to carry out coprocessing in the steel complex and adequate them to the new Maximum Permissible Limits (ppm) for atmospheric emissions. • Take part in government projects with the services offered by CAASA. • Take part in "Eco-driving" trainings, that will be implemented by the government, under NDC E11, so that the drivers of the transportation units use fuel efficiently. • Participate actively in the government's scrap car removal plan and the Scrap storage yards meet the technical specification proposed by the Ministry of transports and Communications. • Assess the possibility of signing agreements with cement companies to supply steel slag. • Develop new circular economy related projects • Move forward with the development of CAASA´s decarbonization plan identifying markets with carbon border adjustment mechanisms. • Identify green energy projects to assess their implementation in our steel production plant.
OP2: Investment in energy-efficient technology and participation in Government Cleaner Production project.	High	• E5: Energy efficiency thorough comprehensive interventions in the industrial manufacturing sector.	• ER: Resource efficiency • FE: Energy source • P and S: Products and Services	
OP3: Take advantage of potential green energy generation projects in the country to incorporate them in our processes.	High	• T2: Potential for increased renewable energy generation in Latin America.	• FE: Energy source	
OP4: Entry into new markets due to competitive advantage for products with lower emission.	High	• *Me: Market.	• P and S: Products and Services • M – Markets	
OP5: Participation in government projects focused on climate change adaptation and mitigation, through the provision of goods and/or services.	High	• E6: Encouraging sustainable construction in new buildings. • E7: Implementation of the Lima Integrated Transportation System Complementary Bus lines. • E8: Implementation of Lines 1 and 2 of the Lima and Callao Metro. • E13: "Trans Andean tunnel" construction project. • E14: Improvement of the railway transportation service between Tacna and Arica. • E15: Integral rehabilitation of the Huancayo – Huancavelica railway.	• P and S: Products and Services	

Opportunity	Priority	Related NDC	Type	Response
OP6: Coprocessing at the steel complex.	High	• E4: Use of waste derived fuels as substitute for fossil fuels in the clinker production furnaces.	• ER: Resource efficiency • FE: Energy source	
OP7: Purchase larger amounts of domestic origin scrap.	Medium	• E12: National Scrap Car Removal and Vehicle Renewal Program.	• ER: Resource efficiency.	
OP8: Carry out a natural gas co-generation project at the Pisco plant.	Medium	• E2: Cogeneration.	• FE: Energy source.	
OP9: Optimize fuel consumption or use more eco-efficient fuels in distribution and refueling units.	Medium	• E11: Training in efficient driving for professional drivers.	• ER: Resource efficiency • FE: Energy source	
OP10: To be able to market ste-el slag to cement companies so they can meet the NDC target.	Medium	• M1: Clinker substitution to reduce the clinker/cement ratio by producing additive cement.	• ER: Resource efficiency • M: Markets	

Source: Our own.
* Sources of opportunities, but not part of the NDC. Key: Me – Market and T – Technology.
Note 1: Classification topics used for the NDC have the following key: E – Energy, and M – Industrial Processes.
Note 2: The key for the type of opportunities is: ER - Resource efficiency, FE - Energy source, P and S - Products and Services, Me – Market

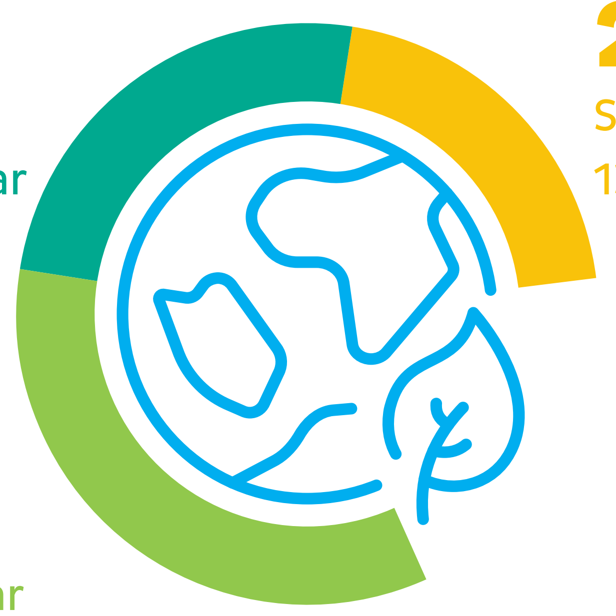
04 RESPONSE PLANS TO ADDRESS CLIMATE CHANGE

4.1. CAASA Decarbonization Plan

OUR 2023 CARBON FOOTPRINT

The following are the results of the 2023 GHG inventory for 100% of our operations corresponding to scope 1 (222,533 tCO_2e), scope 2 (166,943 tCO_2e), and scope 3 (136,298 tCO_2e), with a yearly total of 525,774.64 tCO_2e. With these results we achieved an approximate 25.75 % reduction in our emissions compared to the 2022 result.

2023 Emissions Inventory



ISO 14064-1:2012 Approach and the GHG Protocol	ISO 14064-1: 2018 Approach
Scope 1: Direct GHG emissions	Category 1: Direct GHG emissions and removals.
Scope 2: Indirect GHG emissions associated to electricity	Category 2: Indirect GHG emissions from imported energy.
Scope 3: Other GHG Indirect emissions	Category 3: Indirect GHG emissions from transportation.
	Category 4: Indirect GHG emissions from products used by an organization.
	Category 5: Indirect GHG emissions associated with the use of products from the organization.
	Category 6: Indirect GHG emissions from other sources.

We achieved an average reduction of 25.75% in greenhouse gas emissions Scopes 1, 2 and 3, compared to 2022.

Our SCOPE 1 emissions correspond to

- Natural gas consumption (21.6%), mainly in the electric melt shop furnace, rolling mill reheating furnaces, in the rotary kiln for lime production and in the heat treatment process in the wire drawing process.
- Industrial processes (19.69%), including lime production and consumption of electrodes, pig iron, ferroalloys, pig iron and anthracite.

Our SCOPE 2 emissions correspond to the

- Energy consumption from the National Interconnected Grid (SEIN) (31.75%) in our operations, the melt shop is the most intensive in electricity use.

Our SCOPE 3 emissions correspond to

- Maritime and land transportation upstream (9.91%) and downstream (15.31%) of the production process.

ALIGNMENT WITH THE SCIENCE-BASED TARGETS INITIATIVE (SBTI)

At CAASA, we are in getting aligned with the Science-Based Targets Initiative (SBTI).

The SBTI's Corporate Net Zero Standard provides guidance for setting emissions reduction targets on pathways aligned to 1.5°C. This involves reducing scope 1, 2 and 3 emissions to zero or to a residual level, neutralizing residual emissions and any GHG emissions released to the atmosphere after the net zero target year.

This standard establishes four key elements of corporate net zero targets: a short-term science-based target, a long-term science-based target, mitigation beyond the value chain, and neutralization of residual emissions. In 2023, the Iron and Steel Science-Based Target Setting Guidance was published, which sets out the steps for establishing science-based targets.

Baseline and central limit

We are assessing the election of our baseline, considering that since 2021 we have renewed our technology, and equaled our smelting and hot rolling capacity. All the same, in line with the STBI guideline for our sector, we focus on the Steel Complex as a GHG emission source, for this is the only site where we produce molten steel, and hot rolling takes place. The processes considered in the central limit which area sources of GHG emission are:

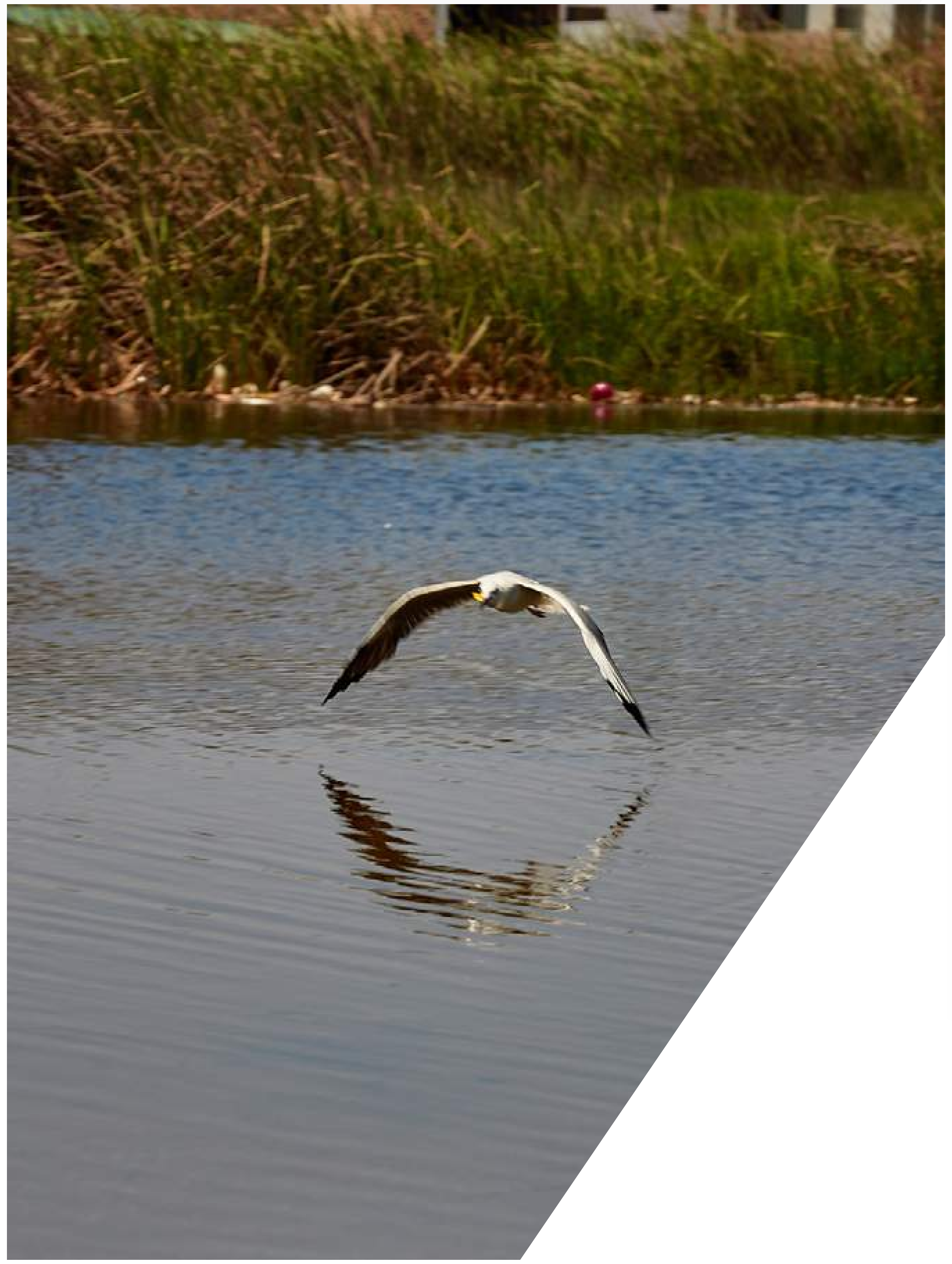
- Energy production (Imported).
- Lime production.
- Electric arc furnace.
- Secondary Metallurgy (Ladle furnace).
- Hot rolling.

Distribution of GHG emissions from 2021 to 2023 (Processes considered in the central limit)

Scope	2021 (t CO_2)	2022 (t CO_2)	2023 (t CO_2)
Scope 1	231,204.30	244,195.09	219,464.68
Scope 2	124,977.32	170,855.90	164,349.73
Scope 3	220,646.82	118,970.42	102,995.06
Total	**576,828.44**	**534,021.41**	**486,809.47**

Note: Scope 3 GHG emissions do not include upstream and downstream transportation of raw materials and finished products.
These emissions include the processes considered as central limit for CAASA accordiing to the STBI methodology.

Scope	Unit	2021	2022	2023
Scope 1	tCO_2 / t hot rolled steel	0.20	0.22	0.20
Scope 2		0.11	0.15	0.15
Scope 3		0.19	0.10	0.09
Total		0.50	0.47	0.44
Hot rolled steel	t	1,149,050	1,133,613	1,096,978
Scrap share	%	90.39	96.55	97.89



CAASA's central limit (processes included in the scope)

Entries	Steel and Iron manufacturing		Downstream	Downstream value chain
Collection and classification of Steel scrap	Coke production	Oxygen Plant	**Hot rolling**	Residual gas emissions exporteds
Transportation upstream	Sintering	**Lime Production**	Cold Rolling	Energy export
Coal mining	Blast furnace	Palleting	Lining	Export of high furnace scrap
Natural gas extraction	Basic oxygen furnace	Boilers and electric Station		Transportation downstream
Energy production (imported)	Smelter	Reducción de fundición		Construction
H2/ Synhtesis Gas Production	DRI	**Electric Arc Furnace**		
Extraction of other oil products		**Secondary Metallurgy**		
Biomass and biogas production				
Limestone mining				
Non-ferrous ore mining				
Ferroalloy production				

Processes included in the STBI framework for the definition of NET ZERO targets for the steel industry.

■ Processes included in the central limit of CAASA.

Source: Own elaboration.

SETTING TARGETS TO REDUCE OUR FOOTPRINT

In 2022, we set preliminary carbon footprint reduction targets for the year 2030 and for the year 2050, considering scope 1 and scope 2.

For the short term, (2030), the targets were set to generate 0.23 tCO_2e (scope 1 + scope 2)/ t of finished products and generate 0.26 tCO_2e (scope 1 + scope 2)/ t of liquid steel.

For the long term (2050), the targets were set to generate 0.11 tCO_2e (scope 1 + scope 2)/ t of finished product and generate 0.11 tCO_2e (scope 1 + scope 2)/ t of liquid steel.

These targets may vary depending on the process of alignment with the STBI standards for the steel industry.

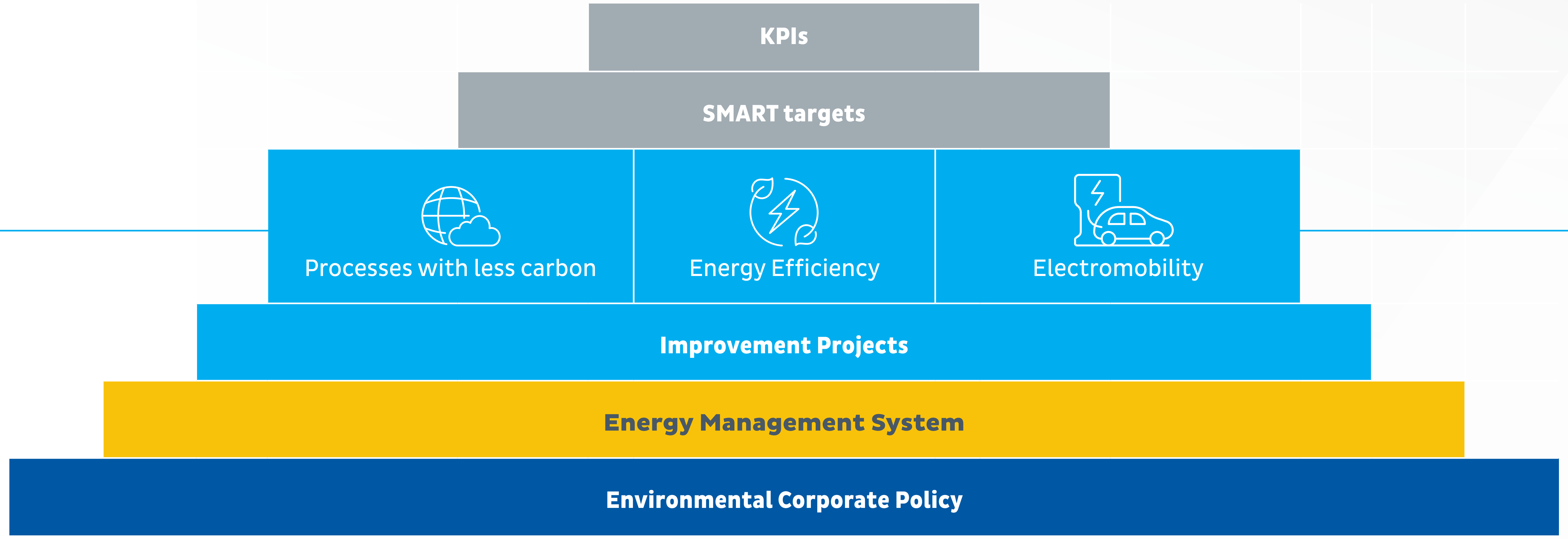
Our decarbonization plan is mainly based on governance, represented by our Board of Directors and written in our Environmental Corporate Policy, which states our commitment and provides the resources to meet the set targets.

Goals to reduce our carbon footprint

	In t CO_2e/t of finished product	In t CO_2e/t of liquid steel
2023	**0.36 t CO_2e/t** of finished product	**0.37 t CO_2e/t** of liquid steel
2030	**0.23 t CO_2e/t** of finished product	**0.26 t CO_2e/t** of liquid steel
2050	**0.11 t CO_2e/t** of finished product	**0.11 t CO_2e/t** of liquid steel

Our steel pathway is based on ferrous scrap, we have one of the smallest CO2 intensities worldwide. The path ahead is oriented to maximize energy efficiency, therefore, we want to implement an energy management system based on ISO 50001 standard, that will enable us to implement improvement projects oriented in three axis of action: (1) Energy efficiency, (2) Processes with less carbon, and (3) Electromobility that allow us to set SMART targets and follow-up indicators within the organization's strategic planning cycle.

The following figure shows CAASA's decarbonization approach:



Action Axis	Actions
Processes with less carbon	• Minimization of dolomitic lime production versus calcium lime. • Maintenance of the ferrous scrap rate in the metallic load.
Energy efficiency	• Energy efficiency in reheating furnaces. • Energy efficiency in the electric furnace and ladle. • Energy efficiency in the vertical lime kiln. • Efficiency in electrode consumption. • Scrap cleaning and industrialization. • Renewal of equipment with obsolete electrical efficiency. • Evaluation of self-generation with solar panels. • Evaluation of natural gas replacement with green hydrogen.
Electromobility	• Electrification of diesel consuming equipment.

4.2. Adaptation plan to overcome physical risks

The physical risk adaptation plan enables us to manage identified risks by reducing vulnerability and adapting our operations to climate change. To achieve this, we implement short-, medium- and long-term response actions to reduce the vulnerability of our sites. All the same, we commit to reduce our water consumption to 1.30 m3/t of finished product by 2030.

For a more specific analysis of physical risks, we have divided our sites into three zones according to their location in the Peruvian territory, analyzing each physical risk by zone.

We commit to reduce our water consumption to 1.30 m^3/t of finished product by 2030.

NORTH ZONE

Trujillo DC
Trujillo SY
Piura DC

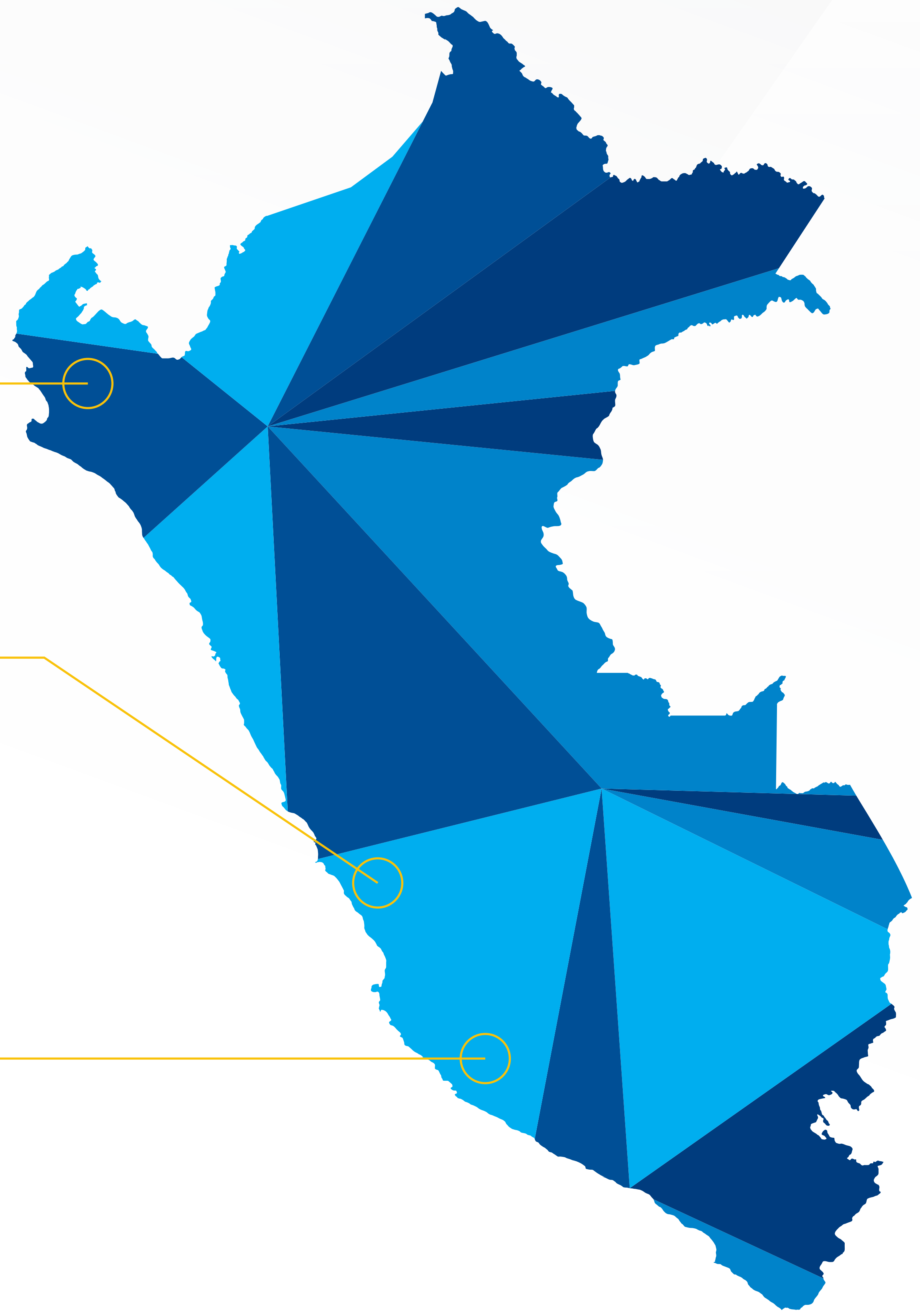
CENTRAL ZONE

LIMA
Administrative Office
Trapiche Pipe DC
Lima Steel center
Cajamarquilla Pipes plant
Huachipa SY

CALLAO
CD - Callao
Lurin DC and Pipe plant
Callao Nail plant
Oquendo SY

SOUTH ZONE

Pisco Steel Complex
Arequipa DC



See Annex 9 Physical risk analysis per zone.

Main Response Actions in Response to Identified Risks

Theme axis: Water		
Code	**Criticality**	**Response Action**
PR1	High	**Short term** • Periodical calculation of the organization's water footprint **(implemented)** • Upgrade of the water treatment system to increase the recirculation of water used in the steel complex. • Optimize the use of wastewater within the plant, either in other operations or in the live fence. **Medium term** • Continue to evaluate source water replacement alternatives. **Long term** • Continue acquiring technologies that can replace the use of water for forced air cooling.

Theme axis: Emergencies		
Code	**Criticality**	**Response Action**
PR2	High	**Short term** • Include in the Site's Emergency Response Plan, the prevention work being carried out by the company in Pisco River **(implemented).** • Develop the Infrastructure Maintenance Program for the Independencia transmission line, especially in towers 7 and 8 due to their proximity to Murga bridge **(implemented).** • Before each change of season, review and disseminate the weather forecast of the Peruvian National Meteorological and Hydrological Service (SENAMHI) focused on the Pisco River basin, including its sources. **Medium term** • Coordinate integrated work with the Municipality of Pisco focused on cleaning the banks of the Pisco River before the rainy season in the mountains. • Interconnection with the government's early warning system to be able to forecast events that may affect the company's activities. **Long term** • Every time the organization identifies a new site, the area's vulnerability regarding climate change must be taken into consideration (landslides, rockfall, roadblocks, etc.).

Theme axis: Emergencies		
Code	**Criticality**	**Response Action**
PR3	High	**Short term**
		• Verify the latest news and media to make sure there are no roadblocks on the distribution routes. (If there were any, the distribution is rescheduled until the road is free). It a roadblock occurs during the trip; the driver must look for a safe area until the road is free **(implemented)**.
		Medium term
		• Interconnection with the government's early warning system to be able to forecast events that may affect the company's activities. • Before each change of season, review and disseminate the weather forecast of the Peruvian National Meteorological and Hydrological Service (SENAMHI) focused on the organization's main transportation routes.
		Long term
		• Carry out activities to increase scrap collection nationwide, assessing the possibility to open new sites in the country.

Theme axis: Emergencies		
Code	**Criticality**	**Response Action**
PR4	High	**Short term**
		• Verify the latest news and media to make sure there are no roadblocks on the distribution routes. (If there were any, the distribution is rescheduled until the road is free). It a roadblock occurs during the trip; the driver must look for a safe area until the road is free **(implemented)**. • When we are informed that there will be roadblocks due to El Niño phenomenon, or to programmed strikes, an increase of inventory should be scheduled in the distribution centers to be able to withstand temporary interruptions **(implemented)**.
		Medium term
		• Interconnection with the government's early warning system to be able to forecast events that may affect the company's activities. • Before each change of season, review and disseminate the weather forecast of the National Meteorological and Hydrological Service of Peru (SENAMHI) focused on the organization's main transportation routes.
		Long term
		• Assess the possibility to open new sites in the country, to prevent undersupplying our customers.

Theme axis: Emergencies		
Code	**Criticality**	**Response Action**
PR5	High	**Short term** • Implement the Emergency Response Plan (flooding) in all our CAASA sites, assessing their vulnerability depending on their zone, and identifying the most important material assets. • Develop the Infrastructure Maintenance Program at each of the organization's sites. • Before each change of season, review and disseminate the weather forecast of the National Meteorological and Hydrological Service of Peru (SENAMHI) focused on the areas where the sites are locateds. **Medium term** • Interconnection with the government's early warning system to be able to forecast events that may affect the company's activities. **Long term** • Every time the organization identifies a new site, the area's vulnerability regarding climate change must be taken into consideration (landslides, rockfall, roadblocks, etc.).

05 ANNEXES

Annex 1: Scope of CAASA's Climate Risk Management

Upstream	Process		Downstream
Raw material supply (scrap iron) • Trujillo SY • Huachipa SY • Oquendo SY	**Operation support** • Administrative Office		**Supply and distribution of finished products** • Trapiche Pipes DC • Steel center – Lima • Piura DC • Arequipa DC • Trujillo DC
	Raw steel production • Pisco Steel Complex	**Steel transformation** • Pipes plant - Cajamarquilla • Callao DC • Callao Nail plant • Lurin DC and Pipes plant	
Physical risks Transition risks	Physical risks Transition risks		Physical risks Transition risks

Annex 2: Metrics Follow-up

Metric	Unit	Year					Target (2030)	Target (2050)
		2019	2020	2021	2022	2023		
Water consumption per finished product	m^3/ t finished product	1.40	1.36	1.27	1.44	1.41	1.30	---
GHG emissions per finished product[1]	tCO_2e/ t finished product	0.33	0.32	0.31	0.37	0.36	0.23	0.11
GHG emissions per liquid steel[1]	tCO_2e/ t liquid steel	0.38	0.38	0.39	0.35	0.37	0.26	0.11
CO_2 emissions per liquid steel (WE)[2]	tCO_2/ t liquid steel	0.68	0.65	0.66	0.47	0.45	---	---
CO_2 emissions per liquid steel (WE)[3]	tCO_2/ t liquid steel	0.37	0.37	0.38	0.34	0.35	0.31	---
CO_2 emissions per hot rolled steel (SBTi)[4]	tCO_2/ t hot rolled steel	0.33	0.31	0.31	0.36	0.34	0.28	---
Organizational Carbon footprint (Scope 1 + Scope 2)	tCO_2e	331,426.00	240,607.00	358,480.00	418,374.00	389,476.00	85% of the baseline	10% of the baseline
Carbon footprint (Scope 3)	tCO_2e	130,152.00	137,335.00	281,773.00	289,979.00	136,298.00	---	20% of the baseline
Total carbon footprint (Scope 1 + Scope 2 + Scope 3)	tCO_2e	461,578.00	377,942.00	640,253.00	708,353.00	525,774.00	----	---
Electric energy consumption per finished product	kWh/t	661.34	642.76	625.57	751.55	701.10	620.00	---
Use of industrial by products	%	37.8	52.0	40.0	24.4	33.0	60.00	---

Note: t finished product = t hot rolled steel.
(1) The tons in the numerator are the sum of scopes 1 and 2 of all CAASA's operations.
(2) The calculation is developed using the Worldsteel Association methodology considering scopes 1, 2 and 3.
(3) The calculation is developed using the Worldsteel Association methodology considering scopes 1 and 2 only.
(4) The calculation is developed under the SBTi alignment framework, considering scopes 1 and 2 only.

Annex 3: Dissemination of CASSA lobbying with respect to the Paris Agreement

Description	Evidence
Sociedad Nacional de Industrias (National Industries Assocation – SNI)	
CAASA participates as a speaker in the training sessions open to the public with the topic "Carbon footprint: Measurement and Impact of the Carbon Footprint".	https://www.linkedin.com/posts/acerosarequipa_acerosarequipa-activity-6978798899125755904-t_D1?utm_source=share&utm_medium=member_desktop
Our perimetric live fence was presented by the SNI and considered as a Nature Based Solution in COP 26.	**SNI publication:** https://www.linkedin.com/posts/sociedad-nacional-de-industrias_soluciones-basadas-en-la-naturaleza-activity-6865283013027213312-_xEx?utm_source=linkedin_share&utm_medium=android_app **CAASA publication:** https://www.linkedin.com/posts/acerosarequipa_corporaci%C3%B3n-aceros-arequipa-en-la-cop26-activity-6863846672439611392-H6rY?utm_source=linkedin_share&utm_medium=android_app
INACAL GHG Subcommittee	
CAASA is part of INACAL GHG committee and has participated in the design of the NTP-ISO 14097 proposal: Greenhouse gas effects management and related activities: framework that includes principles and requirements to assess and inform investments and financial activities related to climate change.	https://www.gob.pe/institucion/inacal/institucional
As part of this committee, in 2023 we were recognized as one of the best performing teams in 2022.	https://www.linkedin.com/posts/acerosarequipa_inacal-activity-7124775438358335489-Wtyb?utm_source=share&utm_medium=member_desktop

Description	Evidence
Peru Ministry of the Environment (MINAM) Carbon footprint Program	
CAASA participates in the Carbon Footprint Peru Program, reporting its inventories from 2019 onwards.	https://huellacarbonoperu.minam.gob.pe/huellaperu/#/listadoInscritos/99 **Link to the awards:** https://acerosarequipa.com/pe/es/gestion-de-medio-ambiente
MINAM's Infocarbono	
CAASA reports information to INFOCARBONO for the calculation of the National GHG Inventory within the sector "Industrial Processes and Product Use".	https://infocarbono.minam.gob.pe/annios-inventarios-nacionales-gei/ingei-2000/
Awareness Raising Program for employees	
CAASA has an Environmental Awareness Raising Program for employees which is carried out on a quarterly basis and includes different topics, this time in dealt with: Biodiversity Conservation and Carbon footprint at CAASA.	**Biodiversity Conservation:** https://youtu.be/UopQV3Eyqog **Carbon footprint at CAASA:** https://www.youtube.com/watch?v=GStZg-E74bo

Annex 4: Carbon Pricing of Electricity, Industry and Energy Production, in Selected Regions by Scenario

Price (US$/t CO_2)	2030	2040	2050
STEPS scenario			
Canada	54	62	77
Chile, Colombia	13	21	29
China	28	43	53
European Union	90	98	113
Korea	42	68	89
APS scenario			
Advanced economies with pledges of net zero emissions	135	175	200
Emerging and developing economies with pledges of net zero emissions	40	110	160
Other emerging markets and developing economies	---	17	47
NZE 2050 scenario			
Advanced economies with pledges of net zero emissions	140	205	250
Emerging and developing economies with pledges of net zero emissions	90	160	200
Other emerging markets and developing economies	25	85	180

Source: Adapted from IEA, Global Energy and Climate Model.

Annex 5: Risk appetite – assessment criteria

Impact	Low	Moderate	Considerable	High
Economic (Oper. pr > 50 MM) Applicable if the average operating profit for the last 3 years is greater than 50 million soles.	Less than 0.25% of the average operating profit for the last 3 years.	Between 0.25% and 0.5% of the average operating profit for the last 3 years.	Between 0.5% and 1% of the average operating profit for the last 3 years.	Greater than 1% of the average operating profit for the last 3 years.
Economic (Oper pr. < 50 MM) Applicable if the average operating profit for the last 3 years is lower than 50 million soles	Less than 250 mil soles.	Between 250 thousand and 500 thousand soles.	Between 500 thousand and 1 million soles.	Greater than 1 million soles.
Impact on operations and information systems (qualitative)	Interruption of operations for less than 1 hour. Does not affect the integrity and/or opportunity of the information.	Interruption of operations between 1 and 8 hours. Affects the integrity and/or opportunity of the critical information.	Interruption of operations between 8 and 24 hours. Loss of CAASA's or third parties' noncritical information that can't be recovered.	Interruption of operations for more than 24 hours. Loss of CAASA's or third parties' noncritical information that can't be recovered.
Impact on image and reputation (qualitative)	Minimal public knowledge and low or no company responsibility.	Moderate public knowledge. There can be some responsibility.	Wide media coverage. Perception of corporate responsibility.	Massive public awareness and high frequency or permanence in the media. Receives political interest. Perception of corporate responsibility.

Impact	Low	Moderate	Considerable	High
Regulatory and legal impact (qualitative)	This could result in non-compliance with internal or legal, sector, labor, or tax regulations.	It originates the non-compliance with internal or legal, sectorial, labor or tax regulations, but does not generate the payment of penalties.	Failure to comply with legal, sectorial, labor or tax regulations will result in the payment of penalties. Ethical misconducts that do not comply with internal regulations, do not constitute a crime.	Severe non-compliance with legal, sectorial, labor or tax regulations, determines the payment of penalties, could result in criminal sanctions for the entity or representative, and/or the intervention of the regulator. Systematic ethical misconducts in violation of internal regulations and/or the commission of criminal offenses.
Environmental Impact (Nature of the event/ impact)	The scope of the impact is at the activity level. Impact on of the company's facilities and infrastructure on pavement.	The scope of the impact involves the entire process. Impact on 1 environmental factor (air, soil, water, flora, and fauna).	The scope of the impact involves other processes. Impact on 2 or more environmental factors (air, soil, water, flora, and fauna).	The scope of the impact goes beyond the boundaries of the company. Impact on the sensitive natural environment or population (natural reserves)
Occupational health and safety (Nature of incident and damage)	Very minor injuries, may cause uneasiness or discomfort	Slight injuries, no sick leave, no disability, may require first aid.	Temporary disability. Reversible health damage.	Permanent total or partial disability. Irreversible/mortal damage.

Annex 6: Assessment of Transition Risks for each NDC scenario

NDC	Risk		Scenarios											
	Type	Description	Transformation (Tr) 100% NDC compliance			Coordination (Coor) NDC compliance between <100% - 50%]			Fragmentation (FD-) NDC compliance between <50% - 30%]			Fragmentation (FD+) NDC Compliance <30%		
			Imp.	Prob.	High	Imp.	Prob.	Level	Imp.	Prob.	Level	Imp.	Prob.	Level
***Me1**	**Me**	**TR1:** Increase of imports of steel products with high GHG emissions, to countries in the region, as a result of the implementation of measures against climate change that discourage their trade in developed countries.	High (8)	High (8)	**High (64)**	High (8)	Consid. (4)	**High (32)**	High (8)	Mod. (2)	**Consid. (16)**	High (8)	Low (1)	**Consid. (8)**
***T1**	**Te**	**TR2:** World trend in the steel industry towards the use of less polluting technologies such as electric arc furnaces, that would increase competition to buy recycled steel and its costs.	High (8)	High (8)	**High (64)**	High (8)	Consid. (4)	**High (32)**	High (8)	Mod. (2)	**Consid. (16)**	High (8)	Low (1)	**Consid. (8)**
***L1/ E1**	**PL**	**TR3:** Increased operational costs due to the implementation of the price of carbon in Peru.	High (8)	High (8)	**High (64)**	High (8)	Consid. (4)	**High (32)**	High (8)	Mod. (2)	**Consid. (16)**	High (8)	Low (1)	**Consid. (8)**
E9/ E10	**PL**	**TR4:** Increase in transportation costs (raw materials, finished products and personnel transportation) as a result of fuel costs increase due to a higher tax.	Consid. (16)	High (8)	**High (64)**	High (8)	Consid. (4)	**High (32)**	High (8)	Mod. (2)	**Consid. (16)**	High (8)	Low (1)	**Consid. (8)**

Source: Our own.
* Sources for transition risks, but not part of the NDCs, only in a stress scenario. Key: L – Legislation Me – Market and T – Technology.
Note 1: Classification topics used for the NDC have the following key: E – Energy, and M – Industrial Processes.
Note 2: The key for the type of transition risks is: PL – Political and legal, Te – Technology, Me – Market, and Re – Reputation.
Note 3: The key for risk-related variables is: Imp – impact, Prob. – Probability, Consid. – Considerable, Mod. – Moderate.

Annex 7: Assessment of Transition Risks under each IEA scenario

Risk		Scenarios								
		Net zero emissions by 2050 (NZE)			Announced Pledges (APS)			Stated Policies (STEPS)		
Type	Description	Imp.	Prob.	Level	Imp.	Prob.	Level	Imp.	Prob.	Level
Me	**TR1:** Increase of imports of steel products with high GHG emissions, to countries in the region, as a result of the implementation of measures against climate change that discourage their trade in developed countries.	High (8)	High (8)	**High (64)**	High (8)	High (8)	**High (64)**	High (8)	Consid. (4)	**High (32)**
Te	**TR2:** World trend in the steel industry towards the use of less polluting technologies such as electric arc furnaces, that would increase competition to buy recycled steel and its costs.	High (8)	High (8)	**High (64)**	High (8)	High (8)	**High (64)**	High (8)	Consid. (4)	**High (32)**
PL	**TR3:** Increased operational costs due to the implementation of the price of carbon in Peru.	High (8)	High (8)	**High (64)**	High (8)	High (8)	**High (64)**	High (8)	Consid. (4)	**High (32)**
PL	**TR4:** Increase in transportation costs (raw materials, finished products and personnel transportation) as a result of fuel costs increase due to a higher tax.	Consid. (16)	High (8)	**High (64)**	High (8)	High (8)	**High (64)**	High (8)	Consid. (4)	**High (32)**

Source: Our own.
* Sources for transition risks, but not part of the NDCs, only in a stress scenario. Key: L – Legislation Me – Market and T – Technology.
Note 1: The key for the type of transition risks is: PL – Political and legal, Te – Technology, and Me – Market.
Note 2: The key related to risk related variables is: Imp. – impact, Prob. – Probability, Consid. – Considerable, Mod. – Moderate.

Annex 8: Assessment of Opportunities for each NDC scenario

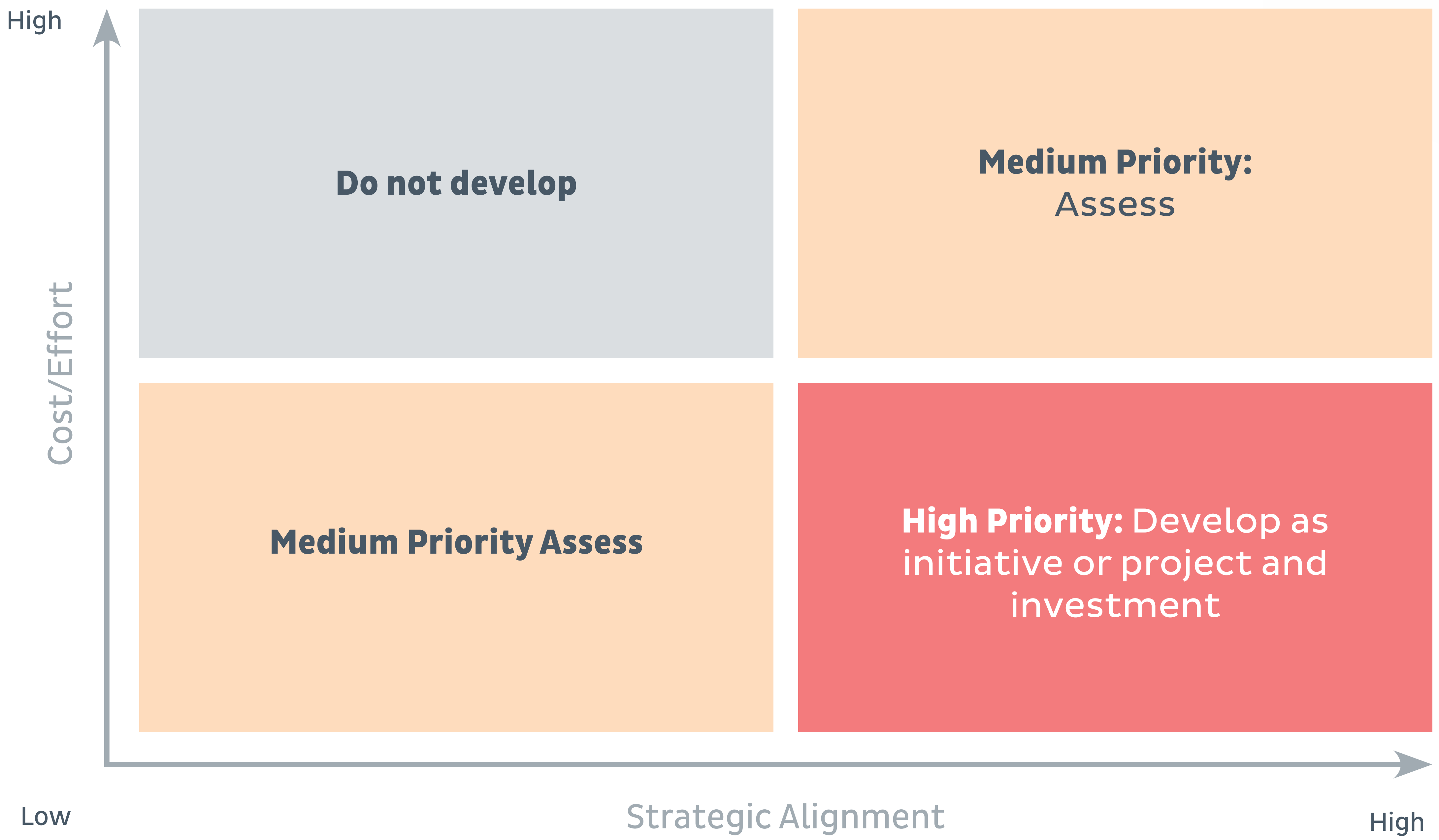
NDC	Opportunity		Scenarios											
	Type	Description	Transformation (Tr) 100% NDC compliance			Coordination (Coor) NDC compliance between <100% - 50%]			Fragmentation (FD-) NDC compliance between <50% - 30%]			Fragmentation (FD+) NDC Compliance <30%		
			Cost/Effort	Strat. Align.	Level	Cost/Effort	Strat. Align.	Level	Cost/Effort	Strat. Align.	Level	Cost/Effort	Strat. Align.	Level
E2	**FE**	**OP1:** Carry out a natural gas cogeneration project at the Pisco plant.	High	High	**Medium Priority**	High	High	**Medium Priority**	High	Low	Do Not Develop	High	Low	Do Not Develop
E3	**FE**	**OP2:** Implementation and certification of an ISO50001-based energy management system.	Low	High	**High priority**	Low	High	**High priority**	Low	Low	**Medium Priority**	Low	Low	**Medium Priority**
E4	**ER/ FE**	**OP3:** Coprocessing at the steel complex.	High	High	**High priority**	High	High	**High priority**	High	High	**High priority**	High	Low	**Medium Priority**
E5	**ER/ FE/ PS**	**OP4:** Investment in energy-efficient technology and participation in Government Cleaner Production project.	Low	High	**High priority**	Low	High	**High priority**	Low	Low	**Medium Priority**	Low	Low	**Medium Priority**
E6	**PS**	**OP5-A:** Participate in the Project with CAASA's services and/or products supporting our clients to receive bonds related to sustainable construction.	Low	High	**High priority**	Low	High	**High priority**	Low	High	**High priority**	Low	Low	**Medium Priority**

NDC	Opportunity		Scenarios											
			Transformation (Tr) 100% NDC compliance			Coordination (Coor) NDC compliance between <100% - 50%]			Fragmentation (FD-) NDC compliance between <50% - 30%]			Fragmentation (FD+) NDC Compliance <30%		
	Type	Description	Cost/Effort	Strat. Align.	Level	Cost/Effort	Strat. Align.	Level	Cost/Effort	Strat. Align.	Level	Cost/Effort	Strat. Align.	Level
E7	**PS**	**OP5-B:** Participation in the Project "Lima Integrated Transportation System Complementary Bus lines", with CAASA services and/or products.	Low	High	**High priority**	Low	High	**High priority**	Low	High	**High priority**	Low	Low	**Medium Priority**
E8	**PS**	**OP5-C:** Participation in the Project "Lima and Callao Metro Lines 1 and 2" with CAASA services and/or products.	Low	High	**High priority**	Low	High	**High priority**	Low	High	**High priority**	Low	Low	**Medium Priority**
E11	**ER/ FE**	**OP6:** Reduce consumption of unnecessary fuel in the delivery and distribution units.	High	Low	**Medium Priority**	High	Low	**Medium Priority**	High	Low	**Medium Priority**	High	Low	**Medium Priority**
E12	**ER**	**OP7:** Purchase larger amounts of domestic origin scrap.	Low	High	**High priority**	Low	High	**High priority**	Low	Low	**Medium Priority**	Low	Low	**Medium Priority**
E13	**PS**	**OP5-D:** Participation in the "Trans Andean tunnel" construction project", with CAASA services and/or products.	Low	High	**High priority**	Low	High	**High priority**	Low	High	**High priority**	Low	Low	**Medium Priority**
E14	**PS**	**OP5-E:** Participation in the "Improvement of the railway transportation service between Tacna and Arica" project with CAASA services and/or products.	Low	High	**High priority**	Low	High	**High priority**	Low	High	**High priority**	Low	Low	**Medium Priority**

NDC	Opportunity		Scenarios											
	Type	Description	Transformation (Tr) 100% NDC compliance			Coordination (Coor) NDC compliance between <100% - 50%]			Fragmentation (FD-) NDC compliance between <50% - 30%]			Fragmentation (FD+) NDC Compliance <30%		
			Cost/Effort	Strat. Align.	Level	Cost/Effort	Strat. Align.	Level	Cost/Effort	Strat. Align.	Level	Cost/Effort	Strat. Align.	Level
E15	**PS**	**OP5-F:** Participation in the "Integral rehabilitation of the Huancayo – Huancavelica railway" project with CAASA services and / or products.	Low	High	**High priority**	Low	High	**High priority**	Low	High	**High priority**	Low	Low	**Priorid. media**
M1	**ER/ M**	**OP8:** To be able to market steel slag to cement companies so they can meet the NDC target.	High	High	**Medium Priority**	High	High	**Medium Priority**	Low	Low	**Medium Priority**	Low	Low	**Priorid. media**
***Me**	**PyS/ Me**	**OP9:** Entry into new markets due to competitive advantage for products with lower emission.	Low	High	**High priority**	Low	High	**High priority**	High	High	**Medium Priority**	High	High	**Priorid. media**
***T2**	**FE**	**OP10:** Take advantage of potential green energy generation projects in the country to incorporate them in our processes.	Low	High	**High priority**	Low	High	**High priority**	High	High	**Medium Priority**	High	High	**Priorid. media**

Source: Our own.
* Sources of opportunities, but not part of the NDCs except for a scenario dealing with decision making to address climate change. Key: Me – Market and T – Technology.
Note 1: Classification topics used for the NDC have the following key: E – Energy, and M – Industrial Processes.
Note 2: The key for the type of opportunities is: ER - Resource efficiency, FE - Energy source, P and S - Products and Services, Me – Market and R – Resilience.
Note 3: The key for variables related to Opportunity are: Priority: Priority/ Strat. Align. – Strategic Alignment, Dev.: Development.

Annex 9: Response to the Analysis of Opportunities (GIRO Methodology)



High Priority
Develop, due to high strategic alignment and low-cost effort required.

Medium Priority
Evaluate, analysis should be completed to identify if this is a necessary improvement opportunity for CAASA.

Do not develop
Has a low strategic alignment and a year cost to the organization.

Annex 10: Physical Risks Analysis per zone

Risk analysis in the North Zone

Risk Code	DC Trujillo	SY Trujillo	DC Piura	Impact/explanation
PR1	High	Not applicable	High	Risk is inherent to the Pisco Steel Complex, but it can have repercussions mainly on the distribution centers. We could even assess, in the worst-case scenario, the operation of the DCs in Trujillo and Piura. In the case of the Trujillo Storage Yard, this is not applicable for its operations are upstream of the site where the risk could materialize.
PR2	Considerable	Not applicable	Considerable	Risk is inherent to the Pisco Steel Complex, but it can have repercussions mainly on the distribution centers. We could even assess, in the worst-case scenario, the operation of the Distribution Centers in Trujillo and Piura. This could mean that the Trujillo and Piura DCs could become undersupplied and customers in the northern part of the country would be lost. In the case of the Trujillo Storage Yard, this is not applicable for its operations are upstream of the site where the risk could materialize.
PR3	High	High	High	The collapse of land communication routes could prevent supplying scrap to the Pisco Steel Complex, therefore the Trujillo storage yard would not be able to supply scrap, in addition, the Steel Complex would need to use virgin and/or foreign raw materials, that would increase production cost and therefore, impact the supply price for the Trujillo and Piura DCs.
PR4	High	Not applicable	High	This risk may occur due to rockfalls, landslides, collapse of bridges, which will cause a shortage of supplies in the north of the country, generating sales losses for the organization.
PR5	Considerable	Considerable	Considerable	This risk is because we have finished products and equipment in the Trujillo DC and Piura DC and in the Trujillo SY we have our electric crane, therefore causing losses of more than S/0.6 million per year.

Risk analysis in the Center Zone (Lima)

Risk Code	Site						Impact/explanation
	Admin. Offices	Trapiche pipes DC	Steel Center - Lima	Cajamarquilla Pipes plant	Huachipa SY	Luring DC and Pipes Plant	
PR1	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
PR2	Not applicable	**Considerable***	Not applicable	Not applicable	Not applicable	Not applicable	* This risk is applicable to damage to the Trapiche pipes DC and interruption of electric energy due to its proximity to the Chillon River (0.92 km).
PR3	Not applicable	Not applicable	Not applicable	Not applicable	**High**	Not applicable	The collapse of land communication routes could prevent supplying scrap to the Pisco Steel Complex, therefore the Huachipa storage yard would become isolated, and would not be able to supply scrap. This risk is not applicable to the other sites because the Steel Complex currently does not supply them with materials.
PR4	Not applicable	**High**	**High**	**High**	Not applicable	**High**	This risk may occur due to rockfalls, landslides, collapse of bridges, which will cause a shortage of raw materials and finished product between these sites. generating lost sales for the organization.
PR5	**Moderate**	**Considerable**	**Considerable**	**High**	**High**	**High**	This risk is because we have finished products, and in the Huachipa Yard, we have our electric crane, therefore losses could range between S/0.6 million and S/2.5 million per year. In the case of the administrative offices, impacts are minimal because we don't have equipment or infrastructure of our own. In addition, the sites in Cajamarquilla and Huachipa are the most vulnerable to flooding and landslides, given that the relief is considered a gorge, and because of Huaycoloro River overflowing.

Risk analysis in the Callao Zone

Risk Code	Site			Impact/explanation
	Callao DC	Callao Nail Plant	Oquendo SY	
PR1	High	High	Not applicable	This risk is inherent to the Pisco Steel Complex, but it can have repercussions mainly on the distribution centers. In the case of the Oquendo Storage Yard, this is not applicable for its operations are upstream of the site where the risk could materialize.
PR2	High	High	Not applicable	This risk is inherent to the Pisco Steel Complex, but it can have repercussions mainly on the distribution centers. In the case of the Callao DC, there could be a shortage of finished product in the Callao nail plant, due to a cost increase in raw material (wire rods).
PR3	High	High	High	The collapse of land communication routes could prevent supplying scrap to the Pisco Steel Complex, therefore the Oquendo storage yard would not be able to supply scrap, in addition, the Steel Complex would need to use virgin and/or foreign raw materials, that would increase production cost and therefore, impact the supply price for the other sites of the center zone.
PR4	High	High	Not applicable	This risk can occur due to rockfall, landslides, collapse of bridges, causing a shortage of supply to in the north of the country, generating lost sales to the organization.
PR5	High	High	High	This risk is because we have finished products, and in the Oquendo Yard, we have our electric crane, therefore losses could reach S/2.5 million per year. In addition, the storage yard is the most vulnerable in the central zone due to its proximity to the sea (0.7km).

Risk analysis in the South Zone

Risk Code	Site		Impact/explanation
	Pisco Steel Complex	Arequipa DC	
PR1	High	High	Due to the water stress zone where the Steel Complex is located, it is necessary to identify other water sources or water savings and efficient use projects, this would entail additional costs that would be transferred to the sales prices on the distribution centers, such as the Arequipa DC.
PR2	High	High	The Steel Complex is supplied with electric energy from Independencia transmission line, which is close to the Pisco River, which flow increases in the summer months (January to March) because of the rainfall on the mountains. This could affect the towers closer to the line, leaving the Steel Complex without electricity for more than 2 days. This risk has repercussions mainly in the distribution centers such as the Arequipa DC.
PR3	High	High	The collapse of land communication routes could prevent supplying scrap to the Pisco Steel Complex, in addition, the Steel Complex would need to use virgin and/or foreign raw materials, that would increase production cost and therefore, impact the supply price for the Arequipa DC.
PR4	High	High	This risk may occur due to rockfalls, landslides, collapse of bridges, which will cause undersupply in the south of the country, generating lost sales for the organization.
PR5	High	High	In the province of Pisco, rainfall is unlikely, but if it does occur frequently, it could damage a large part of the infrastructure, equipment and products that are not protected under roof. There is also a risk at the DC, because it is in an area of heavy rainfall.

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