MANAGING RISKS AND OPPORTUNITIES IN THE FACE OF CLIMATE CHANGE 2022

SUMMARY

ACEROS AREQUIPA

JUNE 2023

ACEROS AREQUIPA

CONTENT

GLOBAL AND LOCAL CONTEXT
GLOBAL

The overexploitation of the natural resources of the land and water, the burning of fossil fuels, the felling of forests, the development of livestock, among others; have caused the greenhouse effect that generates global warming and, as a consequence, climate change, which have as a result the increase in the frequency of natural phenomena, loss of biodiversity, reduction of the availability of fresh water, and others.

Greenhouse effect

Natural phenomenon by which the **heat from the sun's rays is retained within our planet**.

Activities that increase Greenhouse Gases (GHG): fuel burning, deforestation, livestock.

Global warming

Gradual increase of the **atmosphere temperatura**, that is generated by the increase in GHG emissions.

Climate change

Variationof the pattems of **climate** by **natural causes** or for the **human activity**.

It affects all **atmospheric variables**: temperature, rain, humidity, cloudiness, among others.

The World Economic Forum in its Global Risk Report 2023 indicates that failure to mitigate climate change is the least effective risk in its control according to the perception survey carried out among 1,200 academic, business, government and community experts. international.

GLOBAL AND LOCAL CONTEXT
GLOBAL

The IPCC has developed several climate change scenarios to understand and project their possible implications. These scenarios are called Representative Concentration Pathways (RCP - Representative Concentration Pathway) and are used to analyze the impacts of and responses to climate change

The IPCC (Intergovernmental Panel on Climate Change) is a scientific organization established by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP). The IPCC is internationally recognized as the leading authority on climate change assessment.

Main RCP scenarios (Source IPCC)

Impact from climate change → **Policy impact on climate change**

Usual economic activity (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 pace	Emissions peak in 2080 and then decline	Emissions cut in half today in 2080	Emissions cut in half from today in 2050
Increase of about 4°C	**Probable increase greater than 2°C**	**More likely to exceed 2°C than not**	**Not likely to exceed 2°C**
High emissions, consistent with a**future without changes in policies to reduce emissions**, and characterized by the increase in GHG emissions. Broadly aligns with business-as-usual policies and scenario	**High to Medium Emissions**where GHG emissions reach their **peak around 2080** and **then decrease** during the **rest of the century**.	It is broadly aligned with the GHG emissions profile that would result from the implementation of the 2015 NDCs (through 2030), quickly followed by the peak and then the **cut global emissions by 50% by 2080**.	This RCP is consistent with the **ambitious reduction of GHG emissions**, which would reach its **peak around 2020**, **then it would decrease** in a linear path and would become **negative before 2100**.

GLOBAL AND LOCAL CONTEXT
LOCAL

Peru is the third most vulnerable country in the world to climate change due to its location and geography **. The presence of the Andes Mountains and the South Pacific Anticyclone cause a diversity of climates that make the Peruvian territory exposed to natural disasters such as floods, landslides, phenomena such as El Niño, earthquakes, and others (Source: MINAM).

Possible consequences of climate change

- Increase Storms
- Sea level rises
- Species extinction
- Droughts
- Diseases
- Destruction of ecosystems

Some Materialized Events


Cyclone Yaku


El Niño Phenomenon


Dengue regrowth

North Coast

Increase of 20% to 30% of humidity that would cause very heavy rains, especially in Piura and Tumbes by 2050.

Central coast

Deglaciation of the mountains of the Central Sierra projects a significant water deficit that will affect Lima. It is estimated that 40% of water will be lost.

Andes

Increase in minimum temperatures, a situation that will affect the agricultural sector and the local economy.

Snowy

In the last 50 years, 87,072 hectares of glacier area have been lost, that is, 42.64%, and this situation is projected to continue in the coming years.

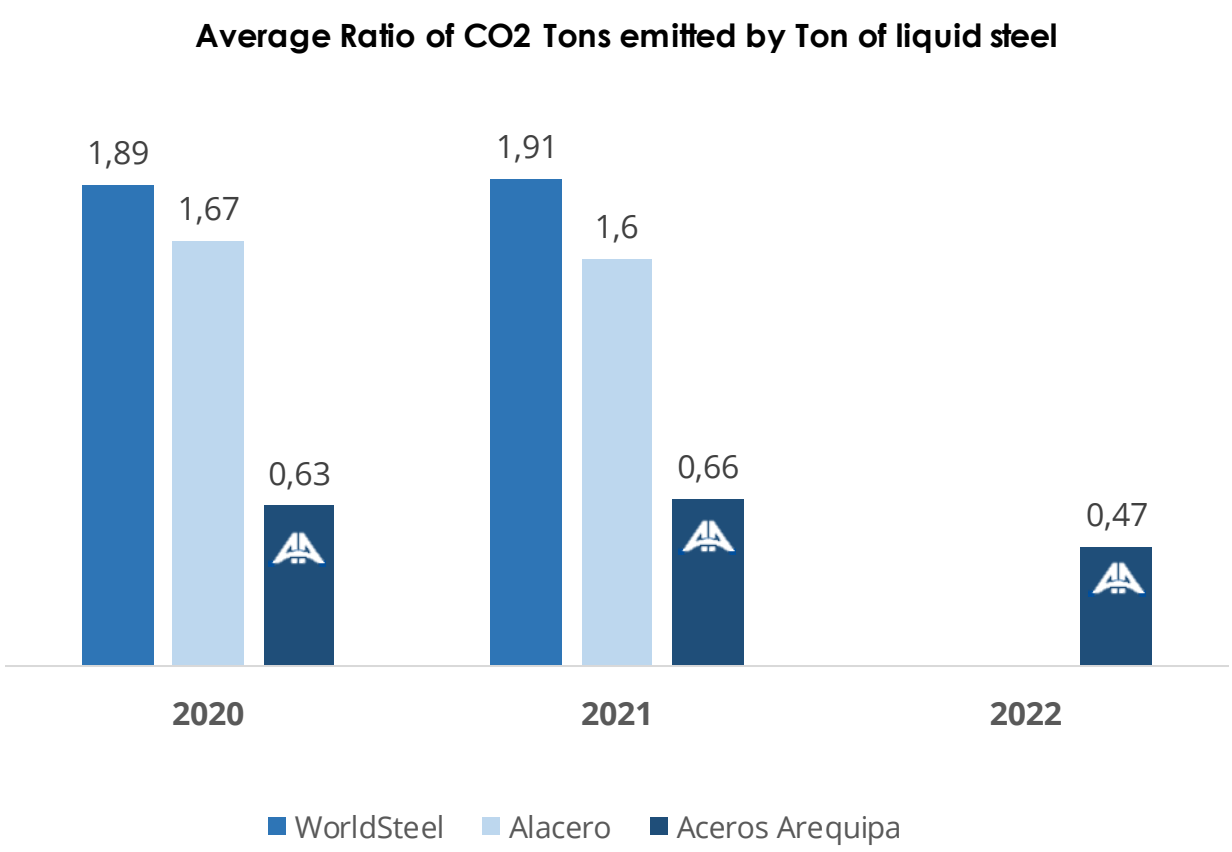
amazon

This region already registers less rain. Tendency to intensify in the coming years causing the forests to go through a process of savannization.

** Source: https://sinia.minam.gob.pe/contenido/libertad-porque-peru-tercer-pais-mas-vulnerable-cambio-climatico

GLOBAL AND LOCAL CONTEXT
OPPORTUNITY IN THE STEEL MARKET

The steel industry is intensive in CO2 emissions because a large part of world production is carried out under BOF technology (70% of world production) that consumes large amounts of coal (coke) as an energy source for the manufacture of steel. However, the **EAF technology has much less CO2 emissions,** since its main source is electricity. **Aceros Arequipa uses EAF technology for production and implements various initiatives to reduce CO2 emissions.** For this reason, we were able to position ourselves well below the industry average in terms of CO2 emissions per ton of liquid steel.

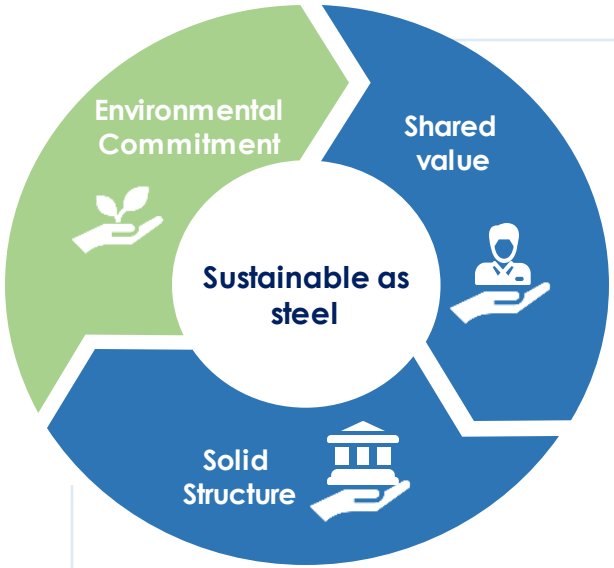


Strategic opportunity

These results give us a **competitive advantage in the face of changes in consumer preferences towards products that generate less environmental impact.**

CONTENT

CAASA STRATEGY AGAINST CLIMATE CHANGE
ENVIRONMENTAL COMMITMENT



Environmental commitment:

We create sustainable value through conscious and responsible production, promoting the circular economy and innovation, which allow us to be more efficient in the use of resources, generate less waste and contribute to caring for our environment.

We achieve this by focusing on the following priorities:


Wetlands near our Pisco plant

- Circular Economy
- Biodiversity Conservation
- Environmental Awareness
- Resource Efficiency
- Actions against Climate Change
- Management Solid Waste & Industrial By-products
- Pollution Control
- Normative Compliance

Actions against climate change

We take climate change as a challenge, but also as an opportunity to generate a competitive advantage; For this reason, we have committed to implementing adaptation and mitigation measures against climate change, with the aim of reducing the organizational carbon footprint related to direct and indirect emissions from electricity consumption, achieving carbon neutrality by 2050 in scope 1. and 2. Thus we also promote the reduction of the carbon footprint (upstream and downstream of our operations) with our main suppliers in the supply chain.

Focus Points

- **Carbon footprint reduction**
- **Risk and opportunity management**
- **Efficient use of resources**
- **Innovation and technology**
- **Green Economy Promotion**

Work methodology for risk and opportunity management

Our team systematically manages the risks and opportunities in the face of climate change, following four stages

1. Identification
2. Analysis and Evaluation
3. Response plan
4. Follow-up


Wetlands near our Pisco plant


Parihuanas in Paracas Bay

Roles in the face of climate change

Sustainability Committee

Management of risks and opportunities in the face of climate change at the entity level.

Management and leaders

Management of risks and opportunities in the face of climate change of the processes under their responsibility.

Support Areas Environment, Strategic Planning and Risks

Provide methodological guidelines, good practices and standards

Sustainability Committee

This strategic and advisory body is responsible for monitoring compliance with sustainability commitments and plans, one of which is strategic planning for the management of risks and opportunities in the face of climate change.

Integrantes del Comité de Sostenibilidad

Among the main achievements of the Committee were find:

- Integration of the sustainability strategy to 2030
- Closing sustainability management gaps 2022
- Promotion of the incorporation of human rights management practices
- Improvements in corporate policies
- Strengthening the culture of sustainability in the company
- Support in the update of the Materiality and Stakeholder Mapping process 2022

CONTENT

RISK IDENTIFICATION AND ANALYSIS
METHODOLOGICAL FRAMEWORK

For the identification, analysis of scenarios, assessment of climate change risks and definition of response plans, the following methodological references were used:

Identification and classification of risks

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

Our methodology focuses on classifying the risks and opportunities in the face of climate change considering what is proposed by the TCFD, which are classified as:

Physical Risks

Natural disasters or environmental events caused by climate change

Transition risks

Changes in policies, legislation, technology and the market for climate change mitigation

Scenario Analysis

The Senamhi has defined Representative Concentration Routes (RCP), which are geographical areas in Peru where climatic and geographical conditions are concentrated for the development of extreme weather events,

Physical Risks

For the analysis of physical risk scenarios, we will use the Representative Concentration Routes (RCP) considered by SENAHMI

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

The IEA has developed climate change scenarios oriented to the demand for energy in the world, to the carbon price commitments of the countries and to the new technologies of the heavy industry (cement, steel and chemicals).

Transition Risks

For the scenario analysis of transition risks, we used the probability of compliance with Peruvian NDCs and IEA scenarios.

Assessment and Response Plans

CAASA's Integrated Risk and Opportunity Management (GIRO) methodology defines guidelines for assessing risks according to appetite and tolerance, and for formulating response plans for risk treatment.

Physical and Transition Risks

We use the GIRO methodology to assess the risks in the different scenarios and define action plans to deal with the risks.

RISK IDENTIFICATION AND ANALYSIS
RESULTS OF THE RISK ANALYSIS

Objective

Perform a comprehensive and exhaustive analysis of CAASA's risks and opportunities in the face of climate change

- **14 Risks identified**
- **08 opportunities identified**

Axis	Physical Risks	Transition risks	Opportunities
Water	2	2	
Energy		3	5
Emissions		3	
Emergency	4		
Industrial by-products and recycled steel			2
Sale of finished product			6
TOTAL	**6**	**8**	**13**

PHYSICAL RISK ASSESSMENT

High | Considerable | Moderate | Low

Assessment of identified physical risks

For the evaluation of physical risks, the RCP 4.5 and CPR 8.5 scenarios developed by SENHAMI were considered:

Scenario RCP 4.5

Intermediate emissions scenario, consistent with a future with relatively ambitious emission reductions and a slight increase in GHG emissions before starting to decline around 2040. However, it falls short of the 2°C/1.5°C target agreed in the Paris Agreement.

Scenario RCP 8.5

It is the scenario of high emissions, consistent with a future without changes in policies to reduce emissions and characterized by increasing GHG emissions leading to high atmospheric concentrations of GHGs. Aligns broadly with current policies or business as usual.

		Esce RCP 4.5	Esce RCP 8.5
1	That costs increase due to damage to infrastructure, equipment and products, due to the increase in rainfall in the areas where the different headquarters are located.	Considerable	High
2	That cost overruns are generated due to the interruption of electrical power to the Steel Complex, due to damage to the transmission line due to the overflow of the Pisco River.	Considerable	High
3	That the costs for the use of alternative resources for cooling in the production process increase, due to the limited availability of groundwater in the area where the Steel Complex is located.	Considerable	High
4	That logistics operations be interrupted due to the blocking of access roads due to social conflicts generated by damage to infrastructure and scarcity of resources due to climate vulnerability in the company's areas of influence.	Moderate	Considerable
5	That loss of sales is generated, due to the interruption of access roads and roads due to mudslides and floods.	Moderate	High
6	That the cost of production increase due to the acquisition of more imported scrap, generated by the delay in the supply of local suppliers as a result of the interruption of access roads and roads due to mudslides and floods.	Considerable	High

TRANSITION RISK ASSESSMENT

High | Considerable | Moderate | Low

Assessment of identified transition risks

(Scenarios according to NDC compliance levels)

For the evaluation of transition risks, 4 scenarios were considered according to the level of compliance with Peru's NDCs related to CAASA activities.

Scenario 1: Transformation (Tr)

100% NDC compliance

Scenario 2: Coordination (Coor)

NDC compliance between <100% - 50%]

Scenario 3: Fragmentation (FD-)

NDC compliance between <50% - 30%]

Scenario 4: Fragmentation (FD+)

NDC compliance <30%

		Esce 1	Esce 2	Esce 3	Esce 4
1		Increase in production costs due to the use of alternative water sources, due to the reduction of the volumetric flow in the extraction licenses for the use of groundwater.			
2		Increase of operating costs, due to the increase in the tariff for consumption of electricity from non-renewable sources.			
3		Increase of the logistics costs of transporting raw materials and finished products, due to the increase in the price of fossil fuels due to a higher tax rate.			
4		Increase of the cost of staff transportation, due to the increase in the price of fossil fuels due to a higher tax rate.			
5		Increase of operating costs, due to the change of refrigerants with lower GHG emission factor in air conditioning systems.			
6		Increase of operating costs, due to the implementation of carbon pricing in the country.			
7		That operating costs be increased, due to the abrupt increase in the rate for the use of groundwater as a result of the water stress in the area of influence.			
8		Increase in the costs of ferrous scrap due to greater future dependence for the steel industry, due to the increasing technological migration from BOF to EAF in steel mills worldwide, driven by climate change.			

High Considerable Moderate Low

Assessment of identified transition risks (IEA scenarios)

As a result of the analysis of these scenarios, 5 transition risks were identified taking the NDC compliance scenarios.

For the evaluation of the risks, the scenarios of the IEA (International Energy Agency) were also considered, which establishes three scenarios:

Scenario 1: Net Zero Emissions by 2050 (NZE)

It sets a path for the global energy sector to reach net-zero CO2 emissions by 2050.

Scenario 2: Announced Commitments (APS)

All climate commitments made by governments around the world are met, including Nationally Determined Contributions (NDCs) and net-zero emissions targets.

Scenario 3: Declared Policies (STPES)

Current political configuration with specific policies that are in place as well as those that have been announced by governments around the world.

		Esce 1	Esce 2	Esce 3
2	Increase of operating costs, due to the increase in the tariff for consumption of electricity from non-renewable sources.	High	Considerable	Considerable
3	Increase of the logistics costs of transporting raw materials and finished products, due to the increase in the price of fossil fuels due to a higher tax rate.	High	High	Considerable
4	Increase of the cost of staff transportation, due to the increase in the price of fossil fuels due to a higher tax rate.	Considerable	Considerable	Moderate
6	Increase of operating costs, due to the implementation of carbon pricing in the country.	High	High	Considerable
8	Increase in the costs of ferrous scrap due to greater future dependence for the steel industry, due to the increasing technological migration from BOF to EAF in steel mills worldwide, driven by climate change.	High	High	Considerable

CONTENT

ACTION PLAN
CLIMATE CHANGE ACTION PLANS

To counteract climate change, we developed several action plans focused on 4 main axis:

- Promote the acquisition of technologies based on energy efficiency.
- Investigate energy storage technologies to reduce grid consumption at peak times.
- Implement the Energy Management System based on ISO 50001.
- Supply electricity, with operators from certified renewable sources.
- Maximize the use of electrical energy in the New Steel Mill.
- Develop projects for self-generation of energy based on renewable sources.
- Optimize the feeding of the hot load in the reheating furnaces and thus reduce the consumption of natural gas.
- Progressively replace the Transportes Barcino fleet with units that consume CNG.

- Analyze vulnerabilities to climate change by location.
- Develop emergency response plans for climate change.
- Continue with the ongoing maintenance of the infrastructure.
- Promote integrated work with the Municipality of Pisco focused on cleaning the banks of the Pisco River prior to the rainy season.

ACTION PLAN
CLIMATE CHANGE ACTION PLANS

To counteract climate change, we developed several action plans focused on 4 main axis:

3. Carbon footprint

- Calculate and verify the organizational carbon footprint under ISO 14064.
- Progressively replace old air conditioning systems with new technologies with less impact on global warming.
- Reinforce the preventive maintenance of the air conditioning system, to avoid refrigerant leaks.
- Replace artificial fertilizers with organic ones.
- Strengthen the Financial Impact Analysis due to Climate Change in the organization.
- Implement a recognition system related to the reduction of the carbon footprint at the level of senior officials in the organization.
- Promote the internal carbon price as an awareness measure that considers variable compensation measures.
- Evaluate the use of artificial intelligence to reduce the consumption of materials that increase the carbon footprint due to their GHG emission factor.
- Implement the new vertical lime kiln project that will allow us to have a better natural gas consumption ratio in the process. We will go from 2500 kcal/kg to 900 kcal/kg of cal.
- Implement scrap cleaning machine to reduce electric power consumption in electric furnace
- Implement new annealing furnaces to improve the efficiency in the use of natural gas in the drawing process

4. Water

- Calculate the organizational Water Footprint.
- Evaluate source water replacement alternatives such as seawater desalination.
- Repower the water treatment system of the steel complex, promoting recirculation.

OPPORTUNITIES IDENTIFIED

On the other hand, we identified opportunities to take advantage of and generate competitive advantages in the implementation of NDCs in Peru:

	Opportunity	Axis	Priority
	Carry out a natural gas cogeneration project at the Pisco plant.	Energy	Medium Priority
	Implement and certify an energy management system based on ISO 50001.	Energy	High Priority
	Co-processing in the steel complex.	Energy	High Priority
	Invest in energy-efficient technology and participate in the State's Cleaner Production projects	Energy	High Priority
	Participate in State projects providing services and / or products of Aceros Arequipa.	Sale of finished product	High Priority
	Reduce unnecessary fuel consumption in delivery and refueling units.	Energy	Medium Priority
	Capture more scrap of national origin.	Industrial By-products and recycled steel	High Priority
	Marketing of steel slag to cement plants	Industrial By-products and recycled steel	Medium Priority

MANAGING RISKS AND OPPORTUNITIES IN THE FACE OF CLIMATE CHANGE 2022

SUMMARY

ACEROS AREQUIPA

JUNE 2023

ACEROS AREQUIPA