

CASE  
STUDY



# AMSAC's Caridad Project

A BENCHMARK IN THE SUCCESSFUL  
IMPLEMENTATION OF ISO 24419-1 IN PERU



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# Presentation

# About AMSAC

We are Activos Mineros S.A.C. (AMSAC), a Peruvian state-owned company under the National Fund for the Financing of State Business Activity (FONAFE), specialized in the management of mining environmental legacies (MEL)<sup>1</sup>. Since 2006, under the mandate of the Ministry of Energy and Mines of Peru (MINEM), we have taken on the mission of remediating areas affected by high- and very high-risk MEL, protecting public health and restoring ecosystems.

At AMSAC, we have consolidated our leadership among the 35 companies within FONAFE in terms of management systems, control, and governance. We also hold four international certifications granted by AENOR: ISO 9001 (Quality Management), ISO 14001 (Environmental Management), ISO 37001 (Anti-bribery), and ISO 45001 (Occupational Health and Safety). These certifications reinforce our commitment to excellence, transparency, and sustainability across all operations.

By the end of 2024, our remediation portfolio included a total of **1,194 MEL** grouped into **65 projects**, 590 of which have been successfully completed. Today, we operate across eleven regions of Peru, convinced that each intervention is not just a technical achievement, but also an opportunity to restore life to ecosystems and trust to communities.

<sup>1</sup> According to Law No. 28271 of the Peruvian State, mining environmental legacies are facilities, effluents, emissions, remnants, or waste deposits produced by mining operations which are currently abandoned or inactive, and which constitute a permanent and potential risk to public health, the surrounding ecosystem, and property.



# Purpose of the case study

**This document shares our experience applying ISO 24419-1 on mine closure and remediation of mining environmental legacies through the successful execution of the Caridad Project.**

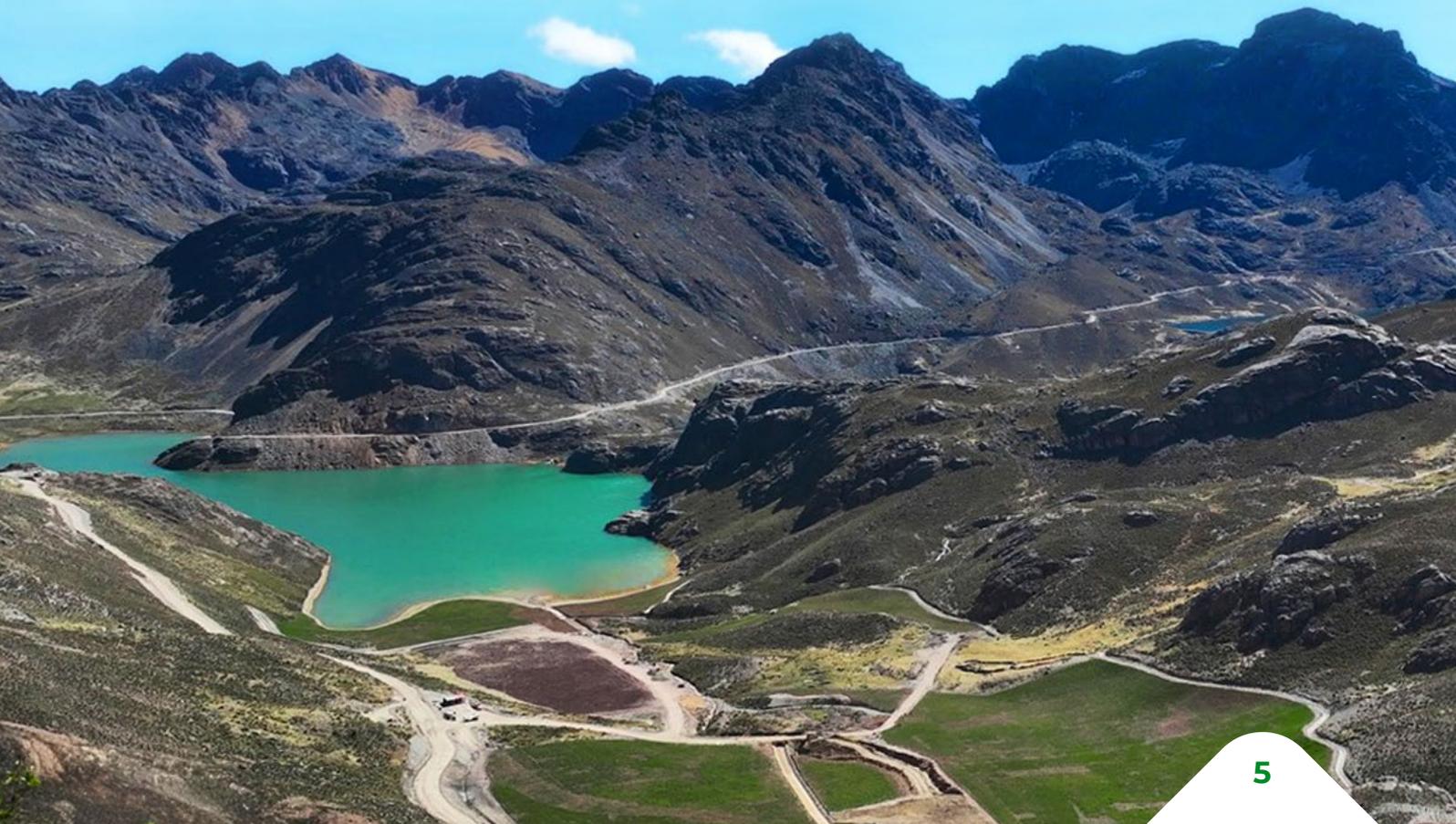
Through this experience, we highlight the value of applying the standard, which establishes specific guidelines for the effective and sustainable management of MEL. The Caridad Project demonstrates how risks can be transformed into opportunities that generate social, environmental, and economic benefits for communities.

Today, AMSAC has become a benchmark for the application of ISO 24419-1 in Peru and Latin America, showing not only the alignment of our projects with the highest standards of quality and sustainabili-

ty, but also our contribution to building a common framework for the remediation of mining legacies.

## Who is it for?

This case study is intended for national and international audiences, as well as stakeholders interested in learning about the processes, challenges, and lessons from the implementation of ISO 24419-1, to demonstrate its practical value in remediation projects.



# 2



## Implementation of ISO 24419-1 in AMSAC

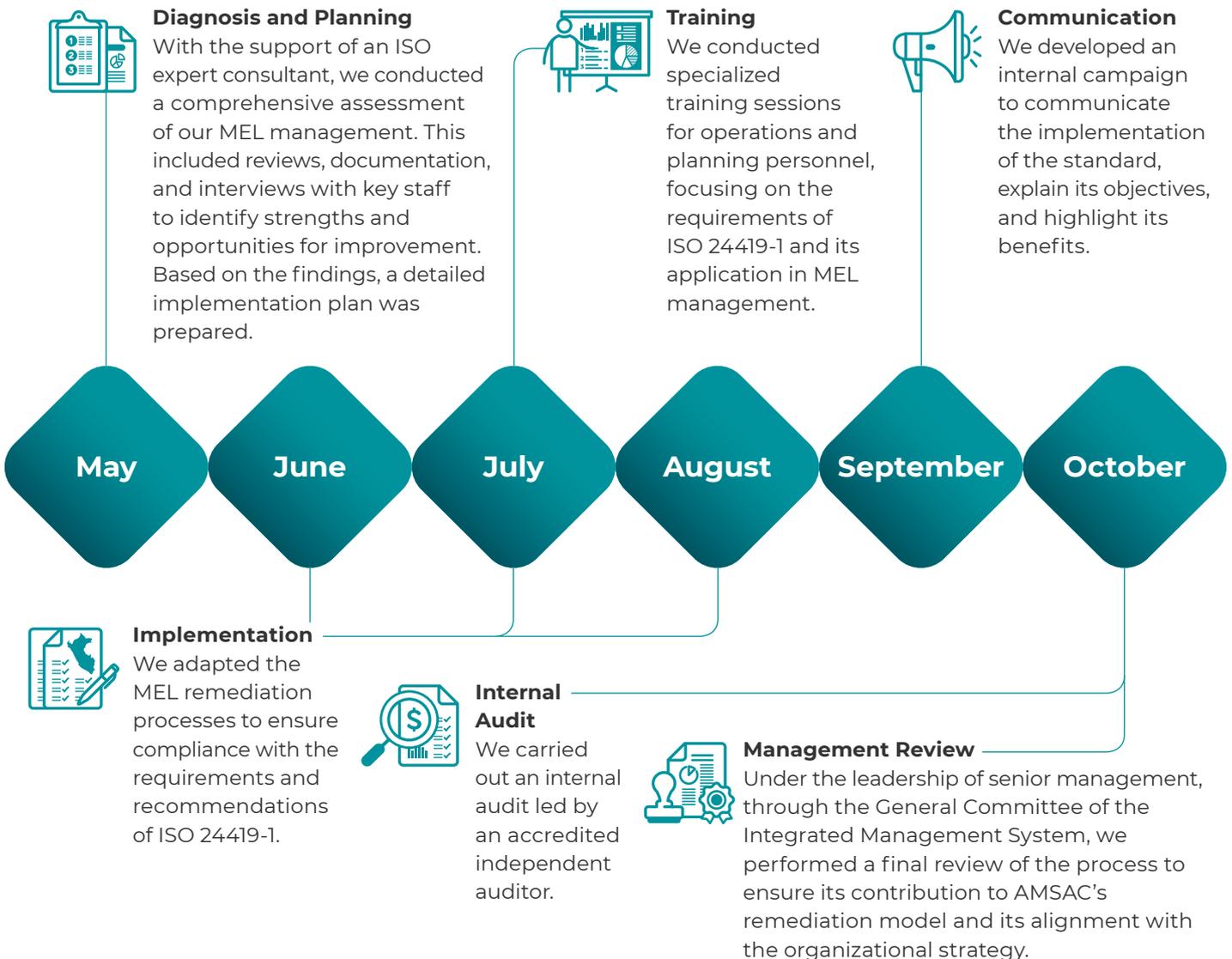
ISO 24419-1:2023 Mine closure and reclamation — Management of mining legacies is the international standard for the management of MEL. This standard establishes the requirements and recommendations for managing MEL under criteria of safety, efficiency, and sustainability, ensuring that each intervention meets high technical and social standards.

standard into our Mining Environmental Legacies Management Manual<sup>2</sup>, with the goal of strengthening our management approach at every stage of the projects—from initial structuring to post closure.

At AMSAC, we decided to take a step forward and, in 2024, incorporated this

The implementation of this standard is a milestone for Peru and Latin America, as it marks the first time that environmental remediation of MEL has been standardized within a public management company.

## PROCESS OF IMPLEMENTATION AT AMSAC, 2024



<sup>2</sup> Manual that establishes, describes, and documents AMSAC's Mining Environmental Legacies Management in accordance with the requirements and recommendations of ISO Standard 24419-1:2023 and the organization's documented information.

## MAIN ACTIONS FOR IMPLEMENTING ISO 24419-1

The main actions carried out to implement ISO 24419-1 at AMSAC included the following:



### Governance and leadership

- Alignment with 14 UN Sustainable Development Goals (SDGs) in the 2024 Sustainability Report.
- Validation of objectives, criteria, and MEL closure plans with a consolidated project portfolio database.
- Secured financing mechanisms (agreements, trusts) and met all legal requirements.



### Stakeholder participation

- Validation of mechanisms for identifying, managing, and monitoring stakeholders.
- Implementation of Sustainability Roundtables with key actors as part of preventive social management.
- Execution of social management actions and programs in line with the Community Relations Plans of each project.



### Management planning

- Development of a Risk Management Plan and updated risk management matrices.
- Creation of a Value Opportunities Matrix in remediation (research, innovation, and improvement).
- Confirmation of closure plans, pre-investment studies, and technical files for each project.



### Implementation

- Validation of technical and social diagnostics upon receiving assignments from MINEM.
- Review and strengthening of control measures for identified risks.
- Assurance of implementation for the Emergency Preparedness and Response Plan, Business Continuity Plan, and project contingency plans.
- Execution of remediation works in line with technical files, together with contractors and supervising firms.



### Administration, performance, and reporting

- Execution of post-closure maintenance with contractors.
- Environmental monitoring conducted with accredited laboratories.
- Certification of final closure obtained from the competent authority.
- Periodic reporting to Management, the Board of Directors, and corporate oversight bodies (FONAFE and MINEM).

# Relevance of implementation



The implementation of this standard at AMSAC is unprecedented in the management of mining environmental legacies in Peru and Latin America, positioning us as a reference in applying this international benchmark.



Its adoption allows us to document and carry out standardized processes that make remediation projects more efficient, ensuring they can be replicated in the future.



It also contributes to establishing and promoting a model of environmental remediation management with technical and social impact.



Additionally, the standard reinforces the alignment between the purpose of MEL remediation projects and the UN SDGs, underscoring our contribution to Peru's social, environmental, and economic development.

**“ With the implementation of ISO 24419-1, we reaffirm our commitment to sustainability, consolidating our technical work as an effective model for comprehensive management of mining legacies that maximizes environmental and social benefits for the communities around our projects.”**

**Antonio Montenegro**  
General Manager of AMSAC



A photograph of four workers in safety gear (blue hard hats, orange high-visibility vests, and dark jackets) standing on a grassy hillside. They are holding tools and appear to be engaged in a field activity. The background shows a valley with green hills and a cloudy sky. The image is framed by large, semi-transparent green and teal shapes.

# Application of ISO 24419-1 to the Caridad Project

In this section, we describe how the standard was applied to our emblematic initiative, the Caridad Project, beginning with the context and challenges of the area affected by MEL. We then present the main stages of the project, including the challenges faced, the exercise of leadership, planning, execution of works, and the post closure phase.

# Challenges of the Caridad Project

At 3,950 meters above sea level, in Huarochirí Province, Lima Region (Peru), lies the rural community of Carampoma. For many years, families in this community lived in critical conditions due to the presence of **91 Mining Environmental Legacies (MEL)** left by operations at the former Caridad Mining Unit. These MEL<sup>3</sup> posed a contamination risk to the Canchis lagoon, a tributary of the Rímac River that supplies water to Lima, a city of more than 10 million inhabitants.

For nearly a century, these mining legacies have caused negative impacts, including water pollution, soil degradation, and loss of biodiversity. This was a constant concern for the approximately 1,800 residents of Carampoma, given the direct threats to their health and productive activities.

In response, the Ministry of Energy and Mines (MINEM) entrusted AMSAC with environmental remediation, aiming to mitigate the risks posed by high- and very high-risk MEL and to restore ecosystems in the upper Rímac River basin.

Given the scale and characteristics of the affected area, we deployed our remediation model, this time implementing the requirements and recommendations of ISO 24419-1.

Thanks to this standard, a technical, regulatory, and participatory approach was integrated to guarantee the protection of public health, the recovery of the environment, and the strengthening of social trust.

In the sections that follow, we present our experience applying the standard to the Caridad Project, in line with the requirements and recommendations it sets out.



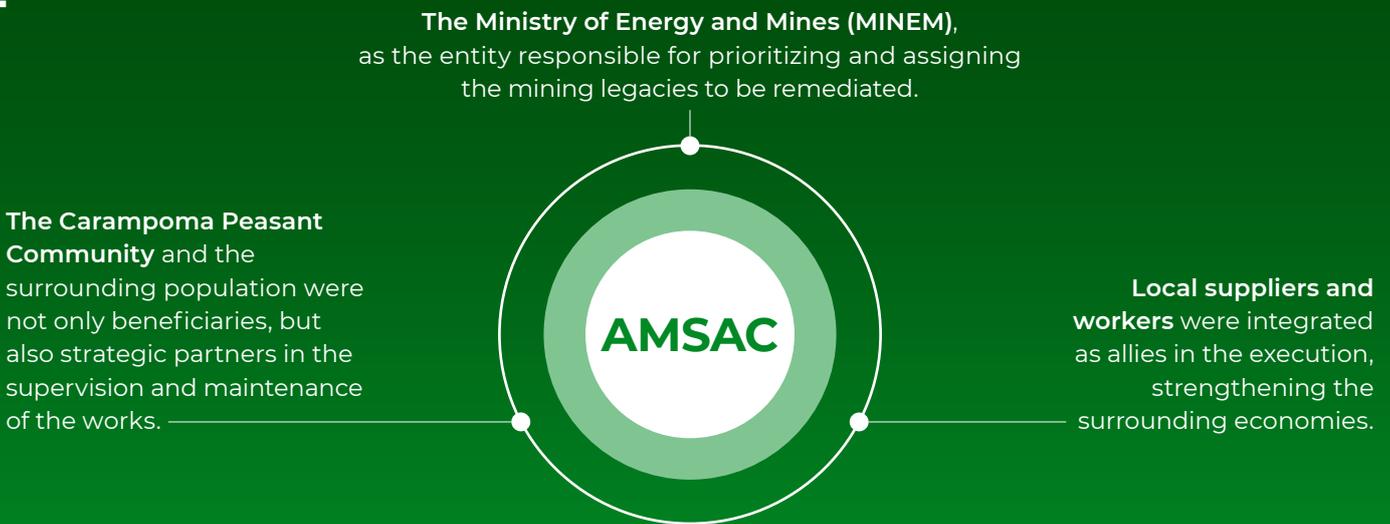
Caridad Project  
Huarochirí,  
Lima

<sup>3</sup> Consisting of mine entrance, shafts, winzes, stopes, half-filled trenches, trenches, open pits, processing plants, tailings, waste rock dumps, and infrastructure in general.

# Governance and Leadership

The ISO 24419-1 standard establishes that effective management of MEL requires a solid governance framework, including clearly defined roles, stakeholder participation, coordinated work, and alignment with both national and international frameworks and regulations.

## STAKEHOLDER ROLE DIAGRAM



In the Caridad Project, the main actions that contributed to building a strong governance framework were:

- Consultation and social participation**  
 Development of six Sustainability Roundtables with key stakeholders (including contractors and community), which concluded in agreements and commitments, generating trust and ensuring a social license to operate.
- Technical rigor**  
 Project structured in line with the objectives and criteria of the MEL Closure Plan, ensuring physical, geochemical, and hydrological stability, protection of health, and the responsible use of water and soil.
- Development of social programs**  
 Temporary employment, environmental education, and capacity-building initiatives.
- Monitoring and certifications**  
 Ongoing social and environmental supervision, backed by international certifications (ISO 9001, ISO 14001, ISO 37001, and ISO 45001).

**In 2024, AMSAC achieved first place among 35 state-owned companies in the FONAFE ranking for the maturity level of its Integrated Management System, with 100% compliance.**

## ALIGNMENT WITH THE SDGs

The standard establishes that the purpose of projects must be aligned with global commitments, such as the United Nations principles and Sustainable Development Goals (SDGs), thereby incorporating a direct component of contribution to sustainable development. Within this framework, the Caridad Project contributed to a total of 10 SDGs, including:

 <p><b>1</b> NO POVERTY</p>	<p>Generates temporary employment in the community and contracts local suppliers, creating direct income for families.</p>	 <p><b>11</b> SUSTAINABLE CITIES AND COMMUNITIES</p>	<p>Contributes to improving quality of life through the recovery of degraded territories and the integration of local and regional planning.</p>
 <p><b>3</b> GOOD HEALTH AND WELL-BEING</p>	<p>Reduces health risks by remediating contaminated water and soil sources, improving the quality of life of the community.</p>	 <p><b>13</b> LIFE ON LAND</p>	<p>Implements revegetation and environmental control measures that strengthen the resilience of ecosystems to climate change.</p>
 <p><b>4</b> QUALITY EDUCATION</p>	<p>Trains the community in remediation techniques, safety, nutrition, and sustainable practices, strengthening local capacities.</p>	 <p><b>15</b> LIFE ON LAND</p>	<p>Reverses soil degradation and promotes the restoration of high-Andean ecosystems with native species.</p>
 <p><b>6</b> CLEAN WATER AND SANITATION</p>	<p>Recovers and treats water impacted by MEL, protecting strategic water sources for communities and cities.</p>	 <p><b>16</b> PEACE, JUSTICE, AND STRONG INSTITUTIONS</p>	<p>Ensures transparent processes, fosters social participation, and strengthens governance in the environmental legacies management.</p>
 <p><b>8</b> DECENT WORK AND ECONOMIC GROWTH</p>	<p>Generates direct and indirect employment in intervention areas and promotes sustainable economic opportunities associated with the remediation process.</p>	 <p><b>17</b> PARTNERSHIPS FOR THE GOALS</p>	<p>Works in coordination with strategic partners such as MINEM, regional and local governments, the community, and suppliers, consolidating a collaborative governance model.</p>



# From Planning to Action

ISO 24419-1 establishes that, for managing the risks identified in remediation, as well as for creating opportunities to generate value from MEL for the benefit of communities and society, it is necessary to develop appropriate management plans.

For the remediation of the MEL that affected the community of Carampoma, a comprehensive intervention was designed to mitigate environmental and social risks. The Caridad Project began in 2022 with an investment of **168 million soles**.

In the Caridad Project, we placed strong emphasis on planning from the start, as it is the critical pillar for ensuring success, efficiency, and sustainability in management, with the necessary foresight. In this regard, the most important aspects to highlight in planning are goals, phases, timelines, and responsibilities.

The main goals we set were:

- Close the 91 MEL.
- Restore the main Canchis lagoon, covering an area of 16 hectares.
- Build drainage works.
- Train 100 local residents to ensure the sustainability of the remediation.

To achieve our goals, we identified and managed risks in a planned manner:

Type of risk	Description	Measures adopted	Result
<b>Hydrological</b> 	Potential impact of contaminated water from the lagoon on surrounding ecosystems.	Design of a controlled drainage system and safe sediment extraction techniques.	Remediation was carried out on the mining legacies that were in direct contact with the Canchis lagoon.
<b>Geographical</b> 	Limited accessibility and difficult terrain due to altitude.	Route planning and conditioning of roads for the transport of equipment and materials.	A rapid intervention was achieved for all MEL.
<b>Logistical</b> 	Potential difficulties in coordinating resources, equipment, and personnel in a remote environment.	Detailed logistical planning and phased resource provision.	Adequate procurement was achieved during the execution of the works <sup>4</sup> .

<sup>4</sup> Processes required to procure a good or service from outside the organization, aligned with the project objective, with the required quantity, timing, and quality delivered at the construction site.

In addition, the intervention was designed in **three main stages**. Although ISO 24419-1 came into force in 2023, alignment has been identified between the remediation model implemented by AMSAC and the guidelines of the standard, which will be detailed in the following sections.



**Baseline Studies (2022)**

**91 MEL** were identified in the former Caridad Mining Unit, confirming contamination in the Canchis lagoon with risks for Carampoma and Lima.

As a result, a **Closure and Water Treatment Plan** was defined, aligned with the requirements of ISO 24419-1, which prioritized **environmental and social risks** with technical criteria.



**Execution of Works (2022-2024)**

In the former Caridad Mining Unit, the comprehensive closure of **90 MEL\*** was achieved, including:

- 36 waste rock dumps
- 27 mine entrances
- 6 ice, camp, and workshop facilities
- 5 small open pits
- 3 chimneys
- 3 shafts
- 2 surface mines
- 2 pits
- 2 tailings deposits
- 1 processing plant
- 1 trench
- 1 construction waste area
- 1 infrastructure pond



**Post Closure (2024-ongoing)**

We conduct ongoing physicochemical monitoring, maintain infrastructure, and carry out continuous revegetation. In addition, we provide community training in sustainable practices, which strengthens watershed conservation in line with ISO 24419-1, a standard that emphasizes monitoring and social participation.



(\* ) All recorded in MINEM's inventory.

# Baseline Studies

Baseline studies are the first stage of any remediation project, as they provide a detailed understanding of the environmental and social conditions of the intervention area. In the case of the Caridad Project, this phase was carried out in 2022 through **ten technical studies that included physical, biological, and socioeconomic evaluations**, a hazard analysis, and an assessment of social and private sustainability.

The diagnosis made it possible to identify 91 MEL in the former Caridad Mining Unit, confirming that the mine entrances<sup>5</sup> were contaminating the Canchis lagoon, a tributary of the Rímac River. This posed a risk both to the 1,800 inhabitants of the Carampoma community and to more than 10

million people in Metropolitan Lima who depend on this watershed for their water supply.

The results showed:

- **Soil degradation** and loss of vegetation cover across 331 hectares.
- **Impacts** on local biodiversity.
- **Contamination** of water and soils with the presence of metals such as **lead, arsenic, cadmium, barium, chromium, and mercury**.

Based on these results, we drew up a roadmap to close the entrances, to implement drainage and water neutralization systems, to revegetate degraded areas, and to restore ecosystems.

<sup>5</sup> Entrance to an underground mine.

## Alignment with ISO 24419-1 (For more details, see Annex 1)

To ensure a comprehensive understanding of the socio-environmental situation, we worked with:

- A detailed inventory of the MEL.
- Monitoring and collection of technical information on the MEL.
- The use of historical information from the community.
- Assessments of identified risks.



# Execution of Works

The execution of works is the phase of the project in which the planned interventions are carried out on site. In the Caridad Project, this stage took place between 2022 and 2024, following environmental, safety, and social transparency standards, in accordance with ISO 24419-1.

Main actions included:

Action	Description	Innovative techniques applied
<b>Controlled drainage of the Canchis lagoon</b>	We built a drainage system to reduce the level of contaminated water without affecting ecosystems that serve as habitats for different species. In addition, contaminated materials were encapsulated to prevent future leaks into the Rímac watershed.	<ul style="list-style-type: none"> <li>Geogrids and geosynthetics to control drainage and ensure the stability of tailings.</li> </ul>
<b>Restoration of water quality</b>	We applied filtration, neutralization, and clarification processes to reduce acidity and heavy metals in the lagoon and its tributaries. This achieved conditions suitable for protecting biodiversity, enabling safer use in local agriculture, and reducing risks for downstream populations.	<ul style="list-style-type: none"> <li>Adaptation of native species through trials to revegetate high-Andean ecosystems.</li> </ul>
<b>Soil coverage and revegetation</b>	We covered 11,000 m <sup>2</sup> of suitable soil with vegetation and planted native species such as Calamagrostis rigescens, Calamagrostis vacunarum, Calamagrostis antoniana, and Calamagrostis rígida. These grasses help control erosion, improve water retention, and support the natural recovery of the high-Andean ecosystem.	
<b>Installation of geosynthetics (68,000 m<sup>2</sup>)</b>	We placed waterproof membranes over waste rock dumps and tailings to prevent rainwater from carrying contaminants into nearby rivers and soils. These covers reduce acid drainage formation and ensure the physical stability of deposits, thereby protecting the Rímac watershed and the communities that depend on it.	
<b>Construction of complementary works</b>	We carried out closure works at old and unused mining sites such as tunnels, shafts, and open trenches. This reduced risks for people and animals and prevented these sites from continuing to release contaminants into the environment.	
<b>Visualization and information management with Power BI</b>	We used tools such as Power BI to organize and display data in a visual and understandable way. This tool facilitated monitoring of project management, highlighted progress with relevant information, and continued to be useful in the post-closure stage for reporting and ensuring continuity of the process.	<ul style="list-style-type: none"> <li>Use of Power BI to centralize, visualize, and monitor information.</li> <li>RPA for progress reporting and project control.</li> </ul>
<b>Robotic Process Automation (RPA)</b>	We applied Robotic Process Automation (RPA) for the preparation of project valuation reports. This enabled more efficient monitoring of the project's physical and financial progress, reducing time and errors in information generation.	

The success of this phase was the result of our coordinated work with key stakeholders:



**Local contractors  
and suppliers**

Who provided resources  
and specialized labor.



**Community**

Who participated  
in oversight and  
environmental care  
activities.



**Authorities**

Who provided institutional  
support to ensure that  
each stage complied with  
current regulations.

This joint effort enabled us not only to meet our technical goals but also to consolidate an innovative, participatory, and replicable model for the remediation of MEL.

**“ In the meetings, we granted AMSAC and its workers free access to use the land. We also reaffirmed our support for the works with the purpose of improving the living conditions of our community, committing to provide the necessary facilities to achieve remediation.”**

Authorities of the Community of Santiago de Carampoma



# Post Closure

The post closure phase includes the activities carried out once remediation works have been completed, in order to guarantee the maintenance of results over time. In the Caridad Project, this stage has been underway since 2024 and is centered on the sustainability of the works and the community's ownership of the achievements attained. Below, we outline the completed work in this phase and the activities currently being carried out with key stakeholders:

Status	Action	Description
<b>Completed</b> 	Maintenance and monitoring	We carry out maintenance activities as well as environmental, technical, and social controls to ensure the performance of the works.
	Environmental control technologies	We installed geogrids and encapsulation systems to stabilize contaminated materials and prevent leaks.
<b>Ongoing</b> 	Community participation	We strengthened capacities through training in remediation techniques so that the community can take an active role in the care and maintenance of the recovered areas. In addition, we will continue training until we reach the established target of 100 people on the project.
	Institutional coordination	We work jointly with local authorities to define mechanisms for post-closure maintenance and oversight.

It is important that the post-closure phase ensures the sustainability of the Caridad Project, which makes it essential to transfer capacities for shared stewardship. Together with the community and local authorities, we assumed joint responsibility for protecting the lagoon and the restored areas.

In this way, post-closure becomes an exercise in co-responsibility that ensures sustainability and strengthens mutual trust.

### Alignment with ISO 24419-1 (For further details, see Annex 1)

To ensure that the achievements are consolidated over time, the following were carried out:

- Environmental and social monitoring plans
- Post-closure maintenance plans
- Long-term management plans



# 4



# People First

Every MEL remediation project must involve the surrounding population at all stages, through training, dialogue spaces and agreements, and the generation of local employment, in order to build trust-based relationships and guarantee continuity of the process.

In the Caridad Project, people and communities were at the center of management, becoming the key factor for its success. This was made tangible through the following strategic tools:



### Stakeholder Matrix

This tool makes it possible to identify each actor linked to the project, recording their name, position, role, requirements, and expectations. It also includes a classification according to their level of influence and interest, which facilitates the design of participation and transparency strategies throughout the process.



### Community Relations Plan (CRP)

This document defines the engagement strategy, as well as the assignment of roles and responsibilities. It was the foundation to ensure early, transparent, and ongoing dialogue with key stakeholders.



### Sustainability Committee, Thematic Roundtables, and Meeting Minutes

The Sustainability Committee ensured proper coordination of the project; the Thematic Roundtables defined joint actions on relevant issues; and the Meeting Minutes formalized agreements and responsibilities to guarantee compliance.



### Alignment with ISO 24419-1

(For more details, see Annex 1)

The standard establishes that it is essential to ensure transparent engagement, conflict prevention, and effective community participation throughout the entire remediation cycle. The tools we used in this project demonstrate the management carried out to address these aspects.

## A. STAKEHOLDER MATRIX

With this tool, we characterized each actor linked to the project, including their requirements and expectations. We also analyzed variables such as level of influence, phase of greatest interest, internal or external nature, and position regarding the project. This made it possible to identify the most relevant actors and their level of priority:

- **Ministry of Energy and Mines (MI-NEM):** Prioritized the MEL, entrusted us with their remediation, and allocated the resources.
- **Regional Government of Lima:** Coordinated policies and resources at the regional level.
- **Provincial Municipality of Huarochiri:** Carried out local coordination and territorial oversight.
- **District Municipality of Carampoma:** Closely accompanied execution within its jurisdiction.
- **Carampoma Peasant Community:** Beneficiaries and strategic allies in the supervision, maintenance, and sustainability of the project.
- **Population of Carampoma and surrounding areas:** Actively participated in awareness processes, local employment programs, and dialogue spaces.

## B. COMMUNITY RELATIONS PLAN (CRP)

We used this tool to strengthen responsible social management, coordinating and managing engagement with stakeholders, ensuring the implementation of solutions and the prevention of potential social conflicts.

### Alignment with ISO 24419-1

(For more details, see Annex 1)

The standard requires consideration of stakeholder identification, trust-building, the establishment of dialogue channels, and the prevention of social conflicts, which is demonstrated in the Community Relations Plan.



This plan was implemented in six stages:

Stage	Description	Results
<b>1 Collection of predictive information</b>	We defined strategic guidelines for engaging the population in the area of influence.	<b>1,826</b> direct beneficiaries and <b>8,402</b> total beneficiaries.
<b>2 Communication and information</b>	We held meetings, assemblies, workshops, and project presentations to ensure that local stakeholders had clear and accessible information.	<b>300</b> people were informed about the project.
<b>3 Local employment, services, and machinery</b>	We promoted local employment, prioritizing the hiring of workers, goods, and services from the community in line with project demand	<b>93%</b> local labor.
<b>4 Management of complaints and requests</b>	We set up a system for active listening and follow-up on requests, complaints, and commitments.	<b>100%</b> of complaints and requests addressed.
<b>5 Local development</b>	We implemented programs aimed at the sustainability of the remediation project and the development of the community.	<b>2</b> training programs were carried out on environmental education and the Project Code of Conduct, benefiting <b>50</b> participants.
<b>6 Corporate social responsibility</b>	We aligned social actions with FONAFE guidelines and ISO 26000, ensuring consistency with national and international standards.	<b>Leader maturity level</b> in Corporate Social Responsibility. <b>100%</b> compliance with FONAFE's evaluation in 2024.



## C. SUSTAINABILITY COMMITTEE, THEMATIC ROUNDTABLES, AND MEETING MINUTES

The Committee was made up of our team, the Carampoma community, local workers, contractors, and the project's supervisory consortium. Through dialogue spaces organized in sustainability roundtables, concrete agreements were reached, including the following:

Focus Area	Concrete action
 <b>Transport and occupational safety</b>	Provision of a bus for the safe transport of workers from the town of Huanza.
 <b>Participatory oversight</b>	Conduct unannounced inspections together with the committee to ensure service quality.
 <b>Environmental management</b>	Implementation of measures to reduce truck-related pollution (watering roads with water tankers).
 <b>Social infrastructure</b>	Construction of a community dining hall and transparent agreements on the use and compensation of quarries.
 <b>Education and youth development</b>	Internships and training programs for Carampoma students.
 <b>Local suppliers</b>	Installation of a kitchen in the project area; public calls with clear terms of reference; training in nutrition, hygiene, and ethics.



# 5



## Results that Drive Change

ISO 24419-1 establishes that all MEL management must demonstrate verifiable results, ensuring sustainability. In the Caridad Project, this principle was reflected in achievements that went beyond the technical, generating positive and lasting impacts on the territory and its people.

## ENVIRONMENTAL MILESTONES

**430,000 m<sup>2</sup>**  
of contaminated  
soils  
removed.

A comprehensive  
**water treatment  
system**

was implemented,  
incorporating  
neutralization, flocculation,  
and clarification processes.

**68,000 m<sup>2</sup>**  
of geosynthetics  
installed

to ensure  
waterproofing  
and leakage control  
in critical areas.

**90**  
**MEL**  
sites  
remediated.

**11,000 m<sup>2</sup>**  
**re-vegetated**  
with grasses to  
restore the local  
ecosystem and control  
erosion.

**Reforestation  
using quinal**  
and other native  
species helped restore  
ecosystems, increase  
carbon capture, and  
regulate water cycles.



## SOCIAL MILESTONES

**50**

**participants** received training on environmental education and the Code of Conduct.

**+8,402**

**people benefited** from the project, including 1,826 direct residents of Carampoma.

**100%**

**of complaints and requests** addressed.

**93%**

**of the workforce was local,** made up of 156 people from the Carampoma community.



## OTHER MILESTONES



**Replicable model,** with innovative practices, for remediation projects in Peru and Latin America.



**Winner of the Business Creativity Award** in the “Management with Purpose: Environmental Impact” category in the Peruvian public sector (2024).



**Learning and research space,** where students and academics can study Andean ecosystems and share knowledge on conservation and environmental remediation.

# 6



## Lessons Learned

The execution of the Caridad Project, aligned with ISO 24419-1, provided valuable lessons, which we share below for those interested in good practices for MEL remediation.

## A. STRATEGIC AND MANAGEMENT LESSONS

- **Public-private collaboration as a strategic point:** In the project, the effective coordination between the AMSAC team, contractors, and the supervisory consortium (provider) ensured efficient execution of the works, showing how cooperation among different actors is key to addressing the remediation of MEL.
- **Applied innovation:** In the project, it was important to integrate science and technology in the execution phase; for example, the use of geogrid to prevent contaminants from being carried into rivers and to improve the physical stability of deposits; Power BI to better organize, visualize, and report information; and RPA to optimize progress monitoring, reducing time and errors.
- **Prevention and planning:** Proper planning of any remediation project must be supported by rigorous studies and social agreements, with the aim of reducing risks during the execution phase.
- **Regulatory alignment:** Maintaining consistency between the technical file and the MEL Closure Plan is fundamental, as it reduces regulatory risks, prevents sanctioning processes from the Environmental Assessment and Oversight Agency (OEFA), and optimizes the financial management of the project.



## B. TECHNICAL LESSONS

- **Quality and quarry permits:** In remediation works, *topsoil*<sup>6</sup> is key to restoring vegetation cover, but its quality depends on material sourced from quarries. Lack of verification or late management of permits can cause delays and cost overruns. Therefore, experience shows that carrying out quality tests, obtaining permits in advance, and allocating a specific budget are essential measures to reduce risks and ensure efficient execution.
- **Water resource management:** A key lesson was to ensure, from the initial study, an adequate estimation of water demand. Once the project is underway, it is recommended to explore alternatives such as underground sources, reuse, and storage. At the same time, work was carried out with the population to guarantee safe, socially accepted, and sustainable access to the resource.

## C. SOCIAL AND GOVERNANCE LESSONS

- **Ensuring free land availability for the continuity of works:** The experience showed that late identification of land ownership issues or social conflicts can cause delays; therefore, early identification of stakeholders, negotiation with communities, cadastral updates, and continuous monitoring of commitments are critical success factors.
- **Community participation management:** It was important to involve the community from the preliminary studies stage, as this makes it possible to legitimize technical decisions, ensure continuity of works, prevent conflicts, and build institutionalized dialogue through instruments such as Sustainability Committees and Sustainability Roundtables.



<sup>6</sup> "Topsoil" or surface organic soil is the uppermost layer of soil, rich in organic matter and nutrients, which is carefully removed before starting a mine so it can be stored and later used in restoring affected areas at the end of operations, allowing vegetation and the original appearance of the land to be recovered.

# 7

An aerial photograph of a construction site, likely a dam or reservoir project. The scene shows a dirt road winding through a landscape with green vegetation and brown earth. Several pieces of heavy machinery are visible, including a yellow excavator and a grey dump truck. A white pickup truck is parked on the road, and a yellow dump truck is parked on the right. In the background, there is a large body of water with a greenish tint, possibly due to sediment. The overall scene is one of active construction in a natural setting.

## Recommendations for Replicating the Experience

**“ The application of this standard is valuable because it confirms our way of working: communities must participate throughout the entire process to build trust and achieve shared benefits.**

**By being aligned with an international standard, these practices strengthen the achievements of the Caridad Project and open the possibility of being replicated in other contexts.”**

**Deymer Barturén Huamán**

Quality and Process Improvement Specialist at AMSAC

- Our experience shows that ISO 24419-1 provides a solid framework for the management and remediation of remediation of mining environmental legacies. We recommend that public and private institutions, particularly governments and industries with the legal obligation or the right to manage MEL, align with and implement this international standard to strengthen their processes and ensure the success of their projects. In our case, we found that many processes were already aligned with the requirements of the standard, which facilitated its implementation. This situation can be replicated in other institutions, accelerating and simplifying its adoption.
- As we did at AMSAC, we recommend that the implementation of this standard be carried out progressively, beginning with a diagnosis and planning to identify gaps and establish actions, followed by technical training on the standard and the communication of



the process. The next step is to apply the standard in remediation processes, supported by an internal audit and a review by the management of the organization, consolidating its integration into overall management.

- For the application of the standard in projects, ISO 24419-1 suggests using tools that are already common in remediation management: the initial diagnosis, which makes it possible to identify gaps; the stakeholder matrix, which helps identify key actors and manage their expectations; the Community Relations Plans, which strengthen trust and promote social participation; and the Monitoring and

Maintenance Plans, which are essential to ensure the continuity of the works.

*For a visualization of the tools and instruments suggested by the standard, see Annex 1.*

- Finally, as a central component of the standard, it is important that every project ensures participation and social management from its planning, involving not only local communities but also authorities, institutions and other relevant actors in all phases. This comprehensive approach guarantees trust, legitimacy and sustainability of the results.

## THE WAY FORWARD

The implementation of ISO 24419-1 at AMSAC represents a milestone in consolidating a sustainable perspective and strengthening specialized technical management in every project, enabling us to fulfill our purpose of **“Restoring life to the planet.”** Through our experience with the Caridad Project, we have shown how this standard helps raise remediation practices, delivering effective results in both environmental and social dimensions.

As the first publicly managed company in Peru to apply this standard, we are paving the way for other institutions, both public and private, to standardize the management of environmental mining legacies. By sharing this experience, we aim to inspire and support more organizations in adopting international best practices, ensuring the success of their projects and generating lasting positive impacts on sustainable development in Peru and across Latin America.



# 8

# Annexes

## ANNEX 1. Compliance with ISO 24419-1 Requirements in the Caridad Project

Standard Requirements	Evidence of Compliance
<b>4. Governance and Leadership</b>	
<b>4.1. Application of SDGs</b>	Alignment of the Caridad remediation project with 14 SDGs, in accordance with the sustainability report under the GRI standard.
<b>4.2. Shared governance framework and partnerships</b>	Project governance structure, consultation process, and specific social programs and monitoring for the Caridad Project.
<b>4.3. Objectives and criteria</b>	Caridad Project MEL Closure Plan, including defined closure objectives and criteria.
<b>4.4. Legal requirements</b>	Register of obligations and commitments of remediation projects, including 57 legal standards applicable to the Caridad Project, monitored and validated semiannually.
<b>4.5. Inventory</b>	Updated portfolio database, including 47 fields required for the planning and management of MEL in the Caridad Project.
<b>4.6. Cost estimation and liability accounting</b>	Caridad Project budget with periodic execution reports and accounting appropriate to MEL management.
<b>4.7. Financing mechanisms</b>	Financial transfer agreement signed with MINEM and PAR trust fund for financing the Caridad Project.
<b>4.8. Competence, capacity, and resources</b>	Organizational structure with competent professionals in the Operations Management Office, meeting defined and documented job profiles for Caridad Project management.
<b>4.9. Frameworks (Guidelines) and tools</b>	5 processes and 16 procedures applied across the different stages of the Caridad Project remediation.
<b>4.10. Documented information</b>	Implemented procedure for preparing and controlling documented information, applicable to MEL management in the Caridad Project.

Standard Requirements	Evidence of Compliance
<b>5. Stakeholder Engagement</b>	
<b>5.1. Identification and participation of stakeholders</b>	Stakeholder matrix and sustainability roundtables of the Caridad Project with contractors and communities to ensure compliance with obligations and commitments in each project stage.
<b>5.2. Socioeconomic planning</b>	Caridad Project Community Relations Plan for the deployment of social management actions and social programs.

Standard Requirements	Evidence of Compliance
<b>6. Management Planning</b>	
<b>6.1. Risk management</b>	Risk Management Plan for projects listed in the Register of Mining Environmental Legacies (REMEL), along with the updated risk matrix of the Caridad Project
<b>6.2. Opportunity creation</b>	Value Opportunities Matrix in remediation, considering research, innovation, and improvement initiatives under implementation.
<b>6.3. Management plan</b>	Caridad Project MEL Closure Plan, Pre-Investment Study, and Technical File, detailing activities, schedules, budgets, and specifications to be executed.

Standard Requirements	Evidence of Compliance
<b>7. Implementation</b>	
<b>7.1. Site investigations</b>	Technical-social diagnosis of the Caridad Project upon receiving the remediation mandate, prior to the start of studies.
<b>7.2. Risk reduction program</b>	Control measures implemented for risks identified in the technical-social diagnosis and in the hazard identification, risk assessment, and control (HIRAC) matrices.
<b>7.3. Recovery planning</b>	Caridad Project Contingency and Emergency Response Plan.
<b>7.4. Execution of the management plan</b>	Remediation works executed according to the technical file derived from the Caridad Project MEL Closure Plan, through contracting and supervision companies.

Standard Requirements	Evidence of Compliance
<b>8. Administration, Performance, and Reporting</b>	
<b>8.1. Performance evaluation</b>	Periodic progress reports of the Caridad Project.
<b>8.2. Post-closure maintenance, monitoring, and care</b>	Post-closure maintenance activities of remediated MEL in the Caridad Project carried out through contractors, environmental monitoring with accredited laboratories, and social monitoring with community participation.

## ANNEX 2. Mining Environmental Legacies Management Manual – ISO 24419



# Giving life back to the planet



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