PRACTICAL GUIDE FOR IMPLEMENTING PERFORMANCE STANDARD 1: ASSESSMENT AND MANAGEMENT OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

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Amazon floodplain

IDB Invest

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List of Acronyms

4T	Tolerate, Treat, Transfer, and Terminate
APP	Mobile-phone application
BEMP	Integrated Biological and Ecological Monitoring Plan
CAF	Development Bank of Latin America
CAPs	Corrective Action Plans
CIA	Cumulative Environmental and Social Impact Assessment and Management
COVID-19	Coronavirus disease 2019
CSO	Civil Society Organization
CSR	Corporate Social Responsibility
DIA	Environmental Impact Declaration
E&S	Environmental and Social
EA	Environmental Analysis
EHS	Environment, Health & Safety
EIA	Environmental Impact Assessment
EPC	Engineering, Procurement, and Construction contractor
EPM	Empresas Públicas de Medellín (Public Utilities of Medellín)
ESA	Environmental and Social Assessment
ESAP	Environmental and Social Action Plan
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
ESHS	Environmental, Social, Health and Safety
ESIAd	Detailed Environmental and Social Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESIAp	Preliminary Environmental and Social Impact Assessment
ESIAs	Semi-detailed Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMoP	Environmental and Social Monitoring Plan
ESMS	Environmental and Social Management System
ETSs	Environmental Technical Specifications
FC	Feedback and complaints
FDN	Financiera de Desarrollo Nacional de Colombia (Colombian National Development Finance Institution)
FEMA	Federal Emergency Management Agency of the United States of America

FGM	Feedback and grievance mechanism
FPIC	Free, Prior, and Informed Consultation
GASBOL	Bolivia – Brazil gas pipeline
GIZ	German Agency for International Cooperation
GPS	Global Positioning System
HAZID	Hazard Identification
HAZOP	Hazard and Operability Study
HIV	Human Immunodeficiency Virus
ICE	Instituto Costarricense de Electricidad (Costa Rican Electricity Institute)
IDB	Inter-American Development Bank
IDB Invest	Inter-American Investment Corporation
IFC	International Finance Corporation
INVIAS	Colombian National Roads Institute
IRMA	Initiative for Responsible Mining Assurance
ISO	International Organization for Standardization
IT	Information Technology
KPIs	Key Performance Indicators
MIA	Environmental Impact Manifest
NCRE	Non-Conventional Renewable Energy
NGOs	Non-Governmental Organizations
OHSMS	Occupational Health and Safety Management System
PAGA	Environmental Guide Adaptation Plans
PDCA	Plan–Do–Check–Adjust
PHR	Reventazón Hydroelectric Project
PPP	Policies, Plans, or Programs
PS1	IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
PS	IFC Performance Standards
QRA	Quantitative Risk Assessment
RAE	Real Academia Española
RMP	Risk Management Plan
SARAS	Environmental and Social Risk Management System
SBBD	Barbilla–Destierro Biological Subcorridor
SERP	Specific Emergency Response Procedures
SESA	Strategic Environmental and Social Assessment
SMBC	Sumitomo Mitsui Banking Corporation
SMS	Social Management System
SPV	Special Purpose Vehicle
SRP	Sustainable Roads Project
TCO	Tierras Comunitarias de Origen (Native Community Lands)
UNDP	United Nations Development Program
VC	Valued Component
VEC	Valued Ecosystem Component

Preface

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The enactment of the eight International Finance Corporation Performance Standards on Environmental and Social Sustainability (IFC - PS) and the IFC Guidance Notes on the Performance Standards on Environmental and Social Sustainability in January 2012 marked an unquestionable shift in the approach to the environmental and social management of development projects financed by international banks, moving from a quasi-static focus on safeguard compliance to a broader and more dynamic concept of risk management, using a set of guidelines that reflect international best practices in business.

The Environmental and Social Sustainability Policy of the Inter-American Investment Corporation (today IDB Invest), which was in force from September 2013 to December 2020, and IDB Invest's Environmental and Social Sustainability Policy, which replaced it from that date, incorporate the PSs as one of the main tools for the environmental and social management of projects financed by IDB Invest. This policy reaffirms IDB Invest's commitment to sustainable development as the foundation of its risk management approach and development mandate.

Below are the PSs listed by IFC:

- **PS1: Assessment and management of environmental and social risks and impacts**, which underlines the importance of managing environmental and social performance during a project, through an Environmental and Social Management System (ESMS).
- **PS2: Labor and working conditions**, which recognizes the pursuit of economic growth through job creation and income generation within a framework of protecting the basic rights of workers.
- **PS3: Resource efficiency and pollution prevention**, which seeks to prevent processes that pollute air, water, or land, and rationalize the consumption of natural resources.
- **PS4: Community health, safety, and security**, which aims to identify and avoid or minimize risks and impacts to community health, safety, and security that may arise from project-related activities, with special attention paid to vulnerable groups.
- **PS5: Land acquisition and involuntary resettlement**, which seeks, in the first instance, to avoid, and when unavoidable, to manage forced acquisitions of land and restrictions on its use related to a project, which may result in physical displacement (relocation or loss of housing) or economic displacement (loss of property or access to property that leads to the loss of income sources or other means of subsistence) for the affected population.
- **PS6: Biodiversity conservation and sustainable management of living natural resources**, which identifies the protection and conservation of biodiversity,

the maintenance of ecosystem services, and the sustainable management of living natural resources as fundamental requirements for achieving sustainable development.

- **PS7: Indigenous Peoples,** which, by recognizing these peoples as vulnerable social groups with identities distinct from those of dominant groups in national societies, seeks to protect them from the impacts a project may have—such as loss of identity, culture, and livelihoods dependent on natural resources, as well as increased exposure to impoverishment and disease, among others.
- **PS8: Cultural heritage**, which seeks to ensure the protection of cultural heritage during project development.

While all eight PSs are important, Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts (PS1) is perhaps the most relevant for the following reasons, among others: i) it forms the basis for the other seven standards by laying the foundations for their implementation; ii) it paves the way for effective management of the most significant environmental and social risks associated with a project by focusing on their identification and subsequent management; iii) it sets the minimum levels of engagement a project must achieve and maintain with its stakeholders, promoting participation and ongoing dialogue with workers, potentially affected communities, and other key actors through an Environmental and Social Management System (ESMS); and iv) it promotes sustainable practices that benefit both the environment and society through continuous management of a project's environmental and social performance throughout its life cycle.

With this Guide, IDB Invest aims to provide its clients, government entities, and civil society in general with practical guidance that can be useful when implementing the PS1 requirements in projects they support, in order to achieve environmental and social sustainability and resilience.

This Guide was originally written in Spanish and then translated into English. In the event of any discrepancy between the texts, the Spanish version shall prevail.

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- Arenal Hydroelectric Project I and II, Honduras
- Chaglla Hydroelectric Project, Peru
- Simón Bolívar Hydroelectric Project (Guri), Venezuela
- Manuel Piar Hydroelectric Project (Tocoma), Venezuela
- Proyecto Ferrocarril Central (Central Railway Project), Uruguay
- Paracel Project, Paraguay
- Bogota Perimeter Project, Colombia
- Peru LNG Project, Peru
- Planta Salar Project, Chile
- Outer Harbor Project, Chile
- Puerto de Santos, Brazil
- Panama Canal Expansion Project, Panama
- Instituto Costarricense de Electricidad (ICE) Costa Rica
- Empresas Públicas de Medellín (EPM), Colombia
- Barbados Port Inc., Barbados
- Ituango Hydropower Project, Colombia
- Costanera Norte Project, Chile

1 About this Guide

1.1
TARGET AUDIENCE

The Practical Guide for Implementing Performance Standard 1 is primarily intended for professionals who are part of project teams responsible for implementing PS1[1], including but not limited to: i) members of project teams from IDB Invest and other bilateral and multilateral financial institutions; ii) consultants; iii) project proponents or developers; iv) local or international lenders financing development projects; v) private- and public-sector officials responsible for designing or implementing development projects; vi) academics tasked with training future professionals in environmental and social matters; and vii) representatives of civil society who may be interested in understanding how this requirement—commonly requested by international financial institutions—should be implemented.

Although not its primary purpose, this document could also be useful to regulatory bodies and decision-makers when structuring or implementing projects, by helping them to incorporate environmental and social considerations that can enhance the sustainability and resilience of their projects through the adoption of robust Environmental and Social Management Systems (ESMS).

1.2
PURPOSE OF THIS GUIDE

This Guide aims to provide its target audience with: i) a general and useful overview of how to structure an ESMS for an entity, agency, or project; ii) an analysis of the benefits a robust ESMS brings to a project; iii) practical approaches aligned with international best practices to help project teams incorporate the PS1 requirements into their projects; and iv) a broad understanding of the challenges involved in implementing PS1, in terms of the necessary effort and resources.

1.3
WHEN TO USE THIS GUIDE

By its nature, this Guide should not be understood as a policy in itself, or as a ***straitjacket*** when implementing PS1. In that sense, its application is not mandatory and, under no circumstances, does the content of this document intend to replace the guidelines set out in PS1 or those contained in the IFC's Guidance Notes[2] to the Performance Standards on Environmental and Social Sustainability[3]. For this reason, in the event of any inconsistency or conflict between what is contained in this Guide, the PSs, or their Guidance Notes, the provisions contained in the latter two documents shall prevail over this Guide.

This Guide, which in no way seeks to serve as a step-by-step manual for implementing PS1, assumes that, among other things, its users have basic knowledge and some prior experience in: i) structuring an ESMS within entities, agencies, or projects; ii) formulating environmental and social policies; and iii) designing and implementing environmental and social management plans; emergency preparedness and response plans; stakeholder engagement protocols; feedback and grievance mechanisms for communities; environmental and social monitoring processes for projects; and developing and implementing environmental and social management measures.

[1] https://www.ifc.org/content/dam/ifc/doc/2010/2012-ifc-performance-standard-1-es.pdf
[2] https://www.ifc.org/content/dam/ifc/doc/2010/2012-ifc-performance-standards-guidance-note-es.pdf
[3] https://www.ifc.org/content/dam/ifc/doc/2010/2012-ifc-performance-standards-es.pdf

This Guide is not exhaustive and does not cover all possible situations that may arise during the PS1 implementation process in detail. In this sense, it aims to: i) be applicable to any project and useful to the teams responsible for a project's design or implementation, by providing practical tools to help structure a robust ESMS; ii) suggest practical approaches to implementing the requirements set out in PS1 and its Guidance Note; and iii) recommend ways to meet the challenges faced by management teams when implementing PS1. Consequently, any reference (direct or indirect) to any project or specific case included in this Guide does not, in any way, imply IDB Invest's endorsement of the process followed, nor does it constitute a requirement to be observed in projects financed or supported by IBD Invest.

1.4 STRUCTURE OF THIS GUIDE

The Guide is laid out as follows:

- **Section 1: About this Guide**
  Describes the Guide's purpose, target audience, and limitations of use.

- **Section 2: Environmental and Social Management Systems**
  Explains the basic concept of an ESMS, the components necessary to its elaboration, the benefits of establishing it, and how to assess the system's robustness.

- **Section 3: Environmental Policies**
  Analyzes the importance of having an environmental policy and provides guidance on how to develop one.

- **Section 4: Environmental and Social Management Programs**
  Presents a set of guidelines for identifying and assessing environmental and social impacts, and subsequently translating them into Environmental and Social Management Programs. It also analyzes emergency preparedness and response requirements.

- **Section 5: Human Resources Capacity and Competence**
  Analyzes, in terms of the required human capabilities, the minimum elements a robust ESMS should include based on how it is structured.

- **Section 6: Capacity for Stakeholder Engagement**
  Focuses on stakeholder participation processes, structuring and implementing communication systems, feedback and grievance mechanisms, and providing consistent information to the public.

- **Section 7: ESMS Verification and Adjustment**
  Analyzes the challenges this task presents, including how to monitor the performance of an ESMS, review it, and adjust it through a continuous improvement cycle.

- **Section 8: Resource Availability**
  Evaluates the minimum physical, financial, human, and technological resource requirements needed for an ESMS.

- **Section 9: Practical Examples**
  Provides a series of examples of how the different management tools outlined in PS1 have been used to add value to the environmental and social management of certain development projects.

- **Section 10: References**
  Presents a list of the documents consulted in preparing this Guide.

This Guide, intended for consultants; project proponents or developers; lenders financing development projects; private- or public-sector officials responsible for designing or implementing development projects; academics tasked with training future professionals in environmental and social matters; and representatives of civil society interested in understanding how to implement the PS1 requirements, aims to provide practical advice for implementing the requirements contained in PS1 and its Guidance Notes, with no intention to replace the criteria and guidance contained in those two documents.

2 Environmental and Social Management Systems

As will be seen later in this document, the ultimate goal of a project's Environmental and Social Assessment (ESA) is to develop its corresponding Environmental and Social Management Plan (ESMP), which, among other elements, must include: i) a detailed description of the direct, indirect, and cumulative impacts that will be generated by the activities to be carried out; ii) the management measures that will help to avoid, reduce, or compensate for these impacts; iii) the environmental components that will be affected by both the project and the proposed management measures; iv) the expected effects after implementing the proposed measures; v) a list of those responsible for implementing and monitoring the measures; vi) the timing of each measure's implementation; vii) the frequency of each measure's implementation; viii) the definition of management and success indicators for each measure; and ix) the estimated cost of each proposed measure. In simple words, ESMPs specify what to do; why it's being done; which parts of the environment will be affected; what the intended outcomes are; who will implement the actions and monitor their effectiveness; when and how often they should be carried out; how to determine whether the intended results were achieved; and how much the proposed actions will cost.

As one might expect, effective project management requires more than just well-prepared and developed ESMPs; it also depends on the presence and availability of other elements. Among the most important of these are: i) human resources, as they are ultimately responsible for turning the ESMP into action; ii) the necessary economic and financial resources, since carrying out the actions will inevitably involve associated costs; iii) the logistic and technical resources required to implement the proposed activities; iv) a set of internal procedures and protocols for executing the proposed measures; v) the determination of the environmental and social goals to be achieved; and vi) strong leadership from project management to ensure these goals are met.

It is important to remember that ESAs (and consequently ESMPs) always involve some degree of uncertainty, mainly because their processes are based on analyses conducted at a specific point in time; they are usually carried out using the information available at that moment; and they rely on methodologies and models that often assume simplified starting points, which may not fully reflect the complexity and dynamics of real-world situations, especially when dealing with complex environmental settings

To address the above—that is, to turn ESMPs into actions and give projects the ability to identify and manage associated impacts that were not adequately identified or characterized during the ESA process—projects also need to develop an *Environmental and Social Management System* (ESMS), which includes an *Occupational Health and Safety Management System* (OHSMS).

1.1 THE ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM (ESMS) CONCEPT

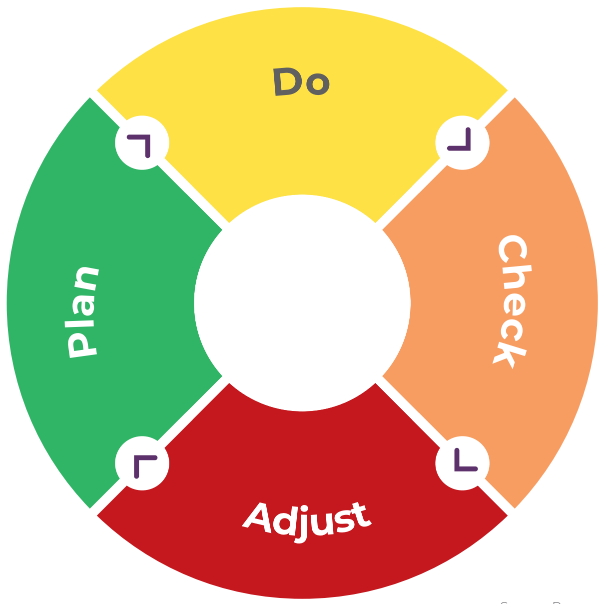
In the simplest terms, an ESMP is nothing more than a list of proposed activities designed to avoid, mitigate, or compensate for undesirable impacts (or to encourage positive impacts) within predetermined timeframes and in specific ways. This set of activities executed in a predefined sequence to achieve a certain goal is known as a **process**.

There are several definitions for the concept of a **system**: one describes it as a unified, organized whole composed of two or more parts, bounded by identifiable limits within an environment; another, derived from the Latin *systema*, defines it as an ordered set of interrelated elements that interact with one another; and the third associates it with a set of functions that operate in harmony or toward a common purpose.

Based on these three definitions, a **system** can be understood as *a unified whole, bounded by identifiable limits within an environment and made up of various parts that interact and interrelate in an orderly manner, either harmoniously or toward a predefined purpose*. From this definition, it can be inferred that a system is defined by the boundaries that separate it from, and connect it to, other systems.

The term **management**, in its turn, refers to a set of actions related to the administration and direction of an organization. **Management**, also referred to as **administration**, is based on four core principles that form the continuous improvement cycle, commonly known as **PDCA:** Plan, Do, Check, and Adjust (see **Figure 1**).

Figure No.1 | Basic management principles



Source: Prepared by the author

If the actions carried out are related to the management of an organization or project for the purpose of achieving its environmental goals, it is referred to as **environmental management**. If greater emphasis is placed on the social component (which, incidentally, is encompassed within the concept of *environment*), the term changes to *environmental and social management or socio-environmental management*.

Based on the definitions of *system* and *environmental or environmental and social management*, an **Environmental and Social Management System (ESMS)** can be understood as a set of related actions composed of: i) an organizational structure that regulates or governs the relationships between the system components; and ii) a series of processes and procedures that include: a) planning activities to carry out the environmental and social commitments assumed under the proposed objectives and keep them up to date; b) undertaking the proposed activities to achieve the pre-established environmental and social objectives; c) verifying, evaluating, and monitoring the activities carried out to achieve the proposed goals; and d) using feedback and adjustment to nourish the planning activities.

An ESMS enables a project to achieve and maintain performance aligned with the environmental, social, and occupational health and safety goals it adopts, while also providing effective responses to changes in environmental conditions, including regulatory, social, financial, and competitive requirements, as well as other risks[4] that may arise over the course of its lifecycle.

Among the objectives a project seeks to achieve by adopting an ESMS are the following: i) proper implementation of the ESMP as originally designed; ii) identification and management (prevention, mitigation, or compensation) of impacts not foreseen during the ESA processes; and iii) appropriate management of the project's engagement with stakeholders.

1.2
ESMS INGREDIENTS

The minimal requirements for any ESMS are the following:

- Determining an environmental (social and occupational safety) objective, which is generally expressed through a specific **policy** that defines the *overall direction* of environmental management.
- **Human, physical, technical, and financial resources** to be able to carry out the activities that lead to achieving the desired objectives.
- An **organizational structure** that defines the levels of authority and responsibilities of each person, and that allows for coordinated and permanent monitoring of all activities to be carried out.
- **Processes and procedures** to regulate, among other things, the following aspects: i) how the individuals within the system interact; ii) how planning, implementation, verification, and adjustment tasks are to be carried out; iii) the processes, activities, and tasks to be performed; iv) the production, management, and monitoring of information over time; v) the measurement and monitoring of processes, activities, and tasks, along with guidelines for recording and verification (evidence); vi) the adoption of corrective measures or the modification of activities or processes that do not achieve the intended goals; vii) the evaluation of system performance; and viii) periodic review of system performance by senior project management.
- **Staff engagement.** The effectiveness of an ESMS depends, to a large extent, on the people charged with implementing it. Thus, it is crucial that the project creates the right conditions for staff to actively support the achievement of the goals it has set out.
- **Leadership.** Every ESMS must have leaders (or *champions*) who make the project's environmental, social, and health and safety (ESHS) objectives their own and motivate the rest of the staff to comply with them.
- **Culture.** The mindset and behavior of the person leading the project—reflected in their actions and attitudes in response to management challenges, opportunities, and necessary changes—strongly influences how project staff will act in the various situations they face.
- **Continuous improvement.** The continuous improvement of a project's environmental performance should be a fixed goal and fully embedded in its ESMS. This will help create positive feedback loops that lead to strong environmental management.
- **Informed decisions.** The best decisions regarding a project are usually those based on solid information and proper analysis of the results obtained over time.

1.3
THE BENEFITS OF ADOPTING A PROJECT ESMS

Throughout their lifecycle, which runs from the pre-implementation stage through decommissioning, projects face a wide range of environmental and social challenges. If not properly assessed and managed, these situations can have serious repercussions on a project's development, profitability, and reputation.

Among other things, adopting a robust ESMS allows for: i) integrating a continuous improvement cycle into the management measures outlined in the ESMP; ii) anticipating and systematically addressing unforeseen situations that arise throughout the project's lifecycle; iii) preventing potential risks from materializing, or managing them properly when they do; and iv) reducing costs by, for example, using inputs and resources (energy and materials) more efficiently or reducing waste and discharges, which typically incur additional treatment and disposal costs. The following are some of the benefits of adopting an ESMS:

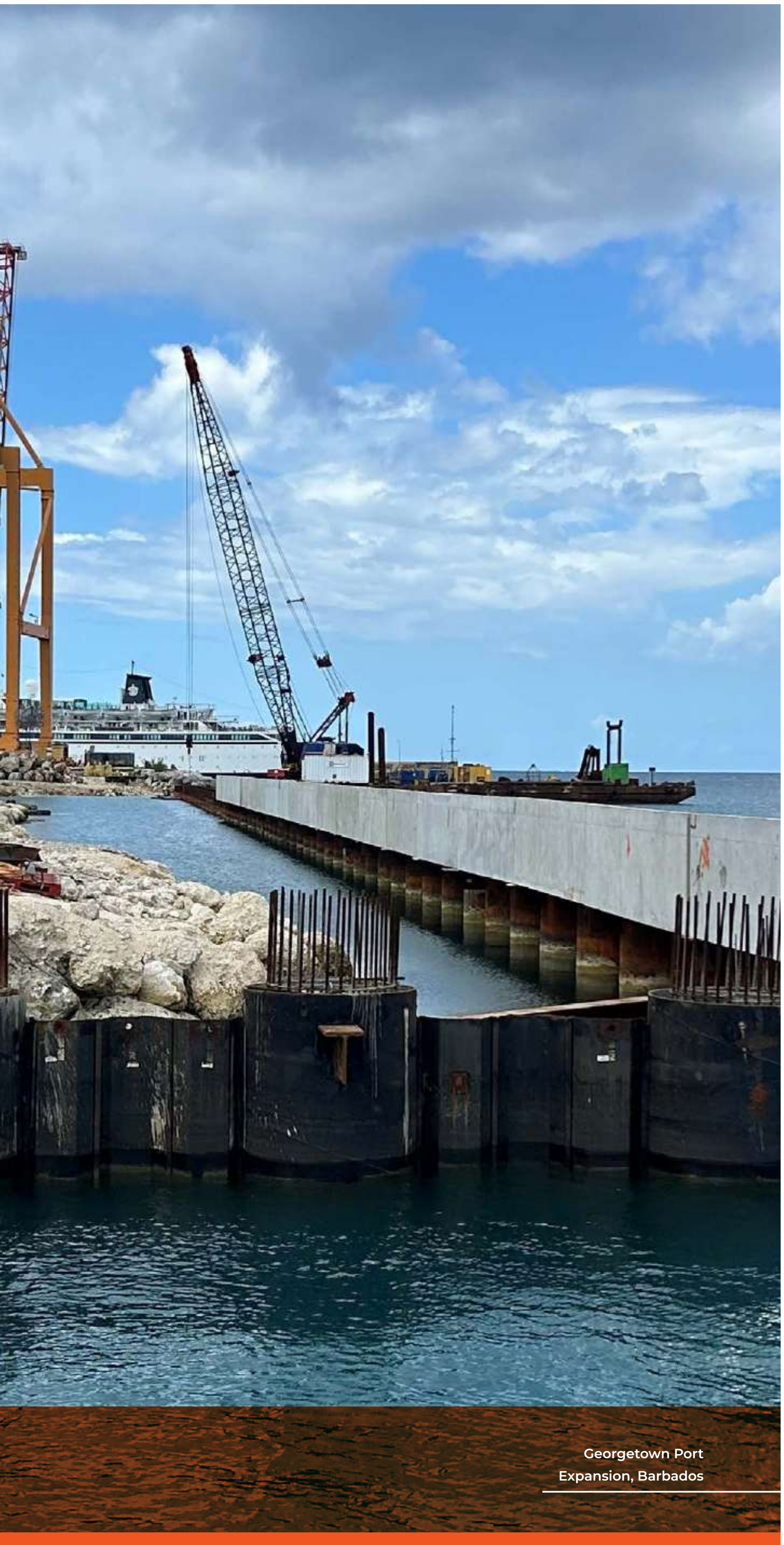
[4] How to identify, gauge, and manage risk situations is discussed in detail later, in Section 4 of this guide: Environmental and Social Management Programs.

- Instrumentalization and implementation of the ESMP.
- The management (prevention, mitigation, and compensation) of impacts not identified during ESA processes.
- Timely response or adjustment to institutional or legal changes that may arise during the project's lifecycle.
- Maintenance or improvement of environmental quality.
- Promoting a preventive approach to new environmental, social, or occupational health and safety scenarios the project may face.
- Improving project competitiveness through better control of investments and direct or derived costs from environmental non-management.
- Creating an internal culture of environmental excellence to strengthen team cohesion, build trust and confidence between management and staff, and encourage creativity and full employee engagement.
- Improving the efficiency of project activities through the definition and documentation of procedures and work instructions, along with the timely adoption of preventive, corrective, and compensatory measures.

1.4
HOW TO ASSESS THE ROBUSTNESS OF AN ESMS

To implement the ESMPs, make adjustments to the project according to legal, institutional, or environmental and social changes that may arise during its lifecycle, and identify and manage unforeseen impacts, the minimal requirements for an ESMS are: i) a **policy** that defines the direction of environmental management; ii) human, physical, technical, and financial resources to carry out the necessary activities; iii) an **organizational structure** that defines levels of authority and responsibilities for each person involved; and iv) **processes and procedures** that govern how the system should operate.

Based on the above, the robustness of a project's ESMS can be assessed according to: i) the clarity of the objectives set out in its policy; ii) the quality, soundness, and feasibility of the management programs included in its ESMPs; iii) the capacity and competence of its human resources to carry out the ESMPs and identify and manage unforeseen impacts and risks; iv) its ability to engage with stakeholders;



Georgetown Port Expansion, Barbados

v) the mechanisms and capacity is has to revise processes and procedures based on the results obtained over time; and vi) the availability of human, physical, technical, financial, and technological resources to carry out its functions (see **Figure 2**).

Figure No. 2 | Aspects to consider in evaluating an ESMS

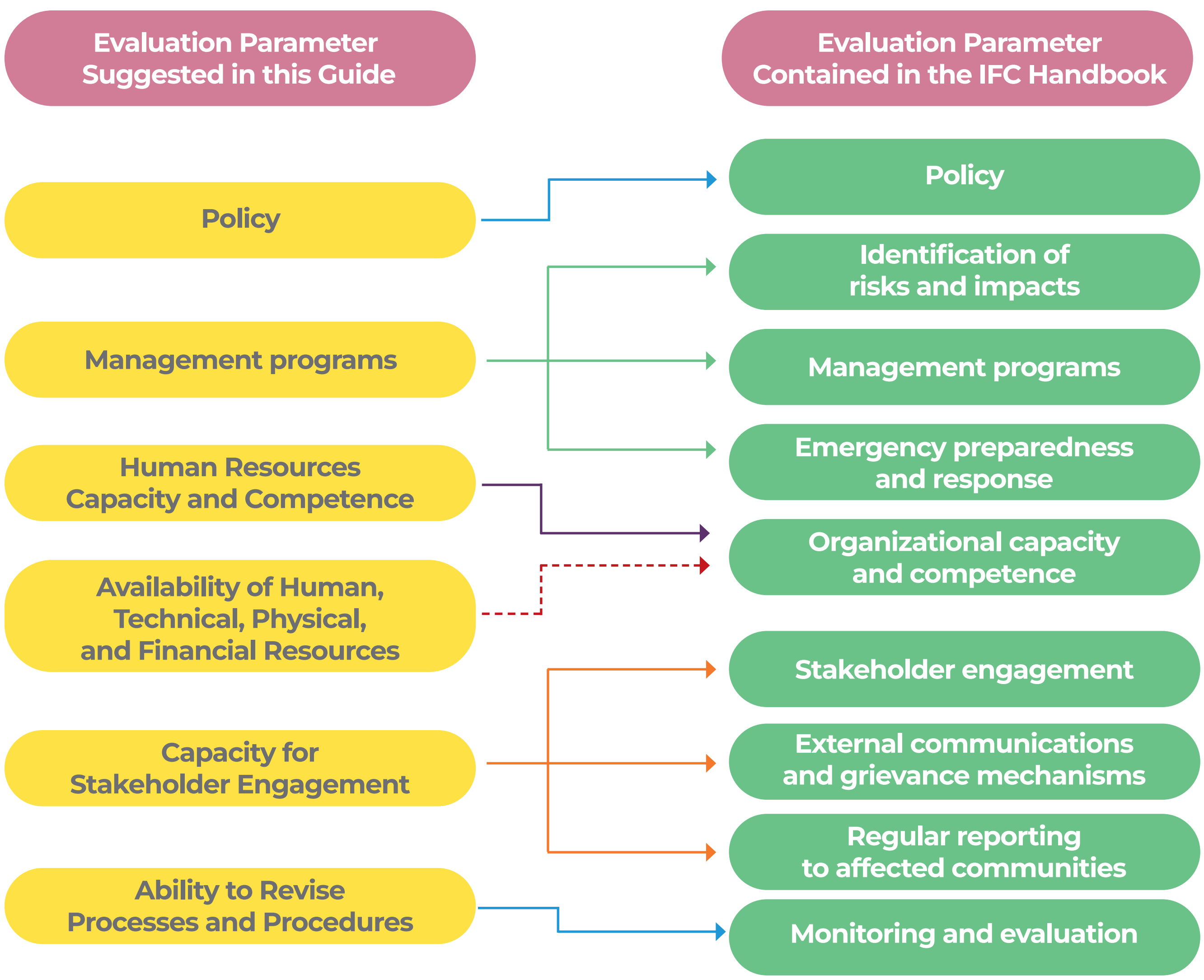
Source: Prepared by the author

[1] IDB Invest Sustainability Policy, para. 18; IFC Performance Standards, paras. 25–32.
[2] IDB Invest 2020 Implementation Manual

The Environmental and Social Management System Implementation Handbook[5] (November 2015), published by the International Finance Corporation (IFC), recommends evaluating an ESMS based on nine key elements: i) policy; ii) risk and impact identification; iii) management programs; iv) organizational capacity and competency; v) emergency preparedness and response; vi) stakeholder engagement; vii) external communications and grievance mechanisms; viii) regular reporting to affected communities; and ix) monitoring and evaluation.

The parallels between the six evaluation parameters suggested in this Guide and the nine aspects included in the IFC handbook are shown in **Figure No. 3**. It should be noted that, although this aspect is somewhat related to organizational capacity and competence, the IFC Handbook does not provide for a specific evaluation of the ESMS based on the availability of human, technical, physical, and financial resources (marked in red with a broken line), an aspect that, as it will be seen later in this document, is not only important, but also vital to guaranteeing sustainability of the ESMS.

Figure No. 3 | Correspondence between the ESMS evaluation parameters used in this Guide and those in the IFC Handbook



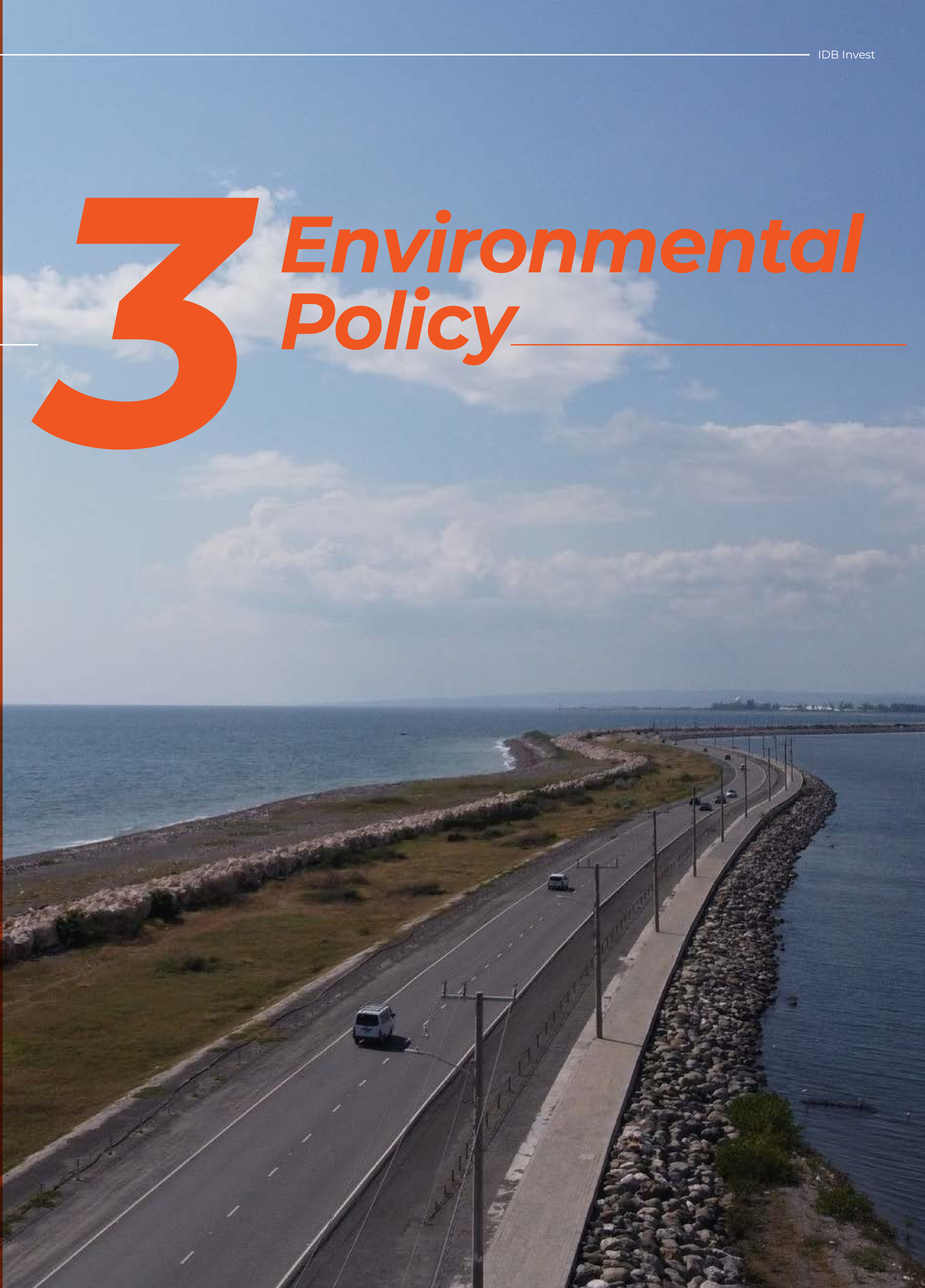
Source: Prepared by the author based on the IFC Implementaion Manual

The following sections of this document describe in more detail how to evaluate an ESMS based on the six parameters suggested in this Guide.

[5] https://www.ifc.org/content/dam/ifc/doc/mgrt/esms-handbook-general-v21-sp.pdf

An Environmental and Social Management System (ESMS) consists of an organizational structure that governs the relationships among its components and is supported by a set of processes and procedures for the planning, implementation, verification, evaluation, and monitoring of activities aimed at achieving predefined environmental and social objectives. Among other things, ESMSs allow for the operationalization and execution of environmental and social management plans (ESMPs), the identification and management of impacts not noted during the environmental and social assessment (ESA) process, improved project competitiveness through better control of investments and environmental costs, and greater efficiency in project activities through the timely elaboration and adoption of preventive, corrective, and compensatory measures for unwanted environmental and social impacts.

3 Environmental Policy



The cornerstone of any ESMS is the **socio-environmental policy** that governs it (usually referred to as an **environmental policy**, since social aspects are also part of the environment). An environmental policy is a statement of the intentions and principles that a project has adopted to govern its relationship with the environment. In this sense, the policy serves as the instrument that: i) defines the environmental, social, and occupational health and safety objectives and principles that will guide the project's actions in pursuing a predetermined performance level; ii) reflects the project's intent and commitment to managing environmental, social, and health and safety risks and impacts related to it; iii) sets the course to follow; and iv) establishes what is permitted and what is prohibited in relation to these issues.

In general, *environmental policies* are framework statements that are neither lengthy nor technical, and do not resemble a legal document. A well-formulated policy must meet three fundamental requirements: i) it must be solid enough to remain in force for many years; ii) should be flexible enough to be adjusted when circumstances require; and iii) must be guided by principles that give the project the attributes it needs to ensure a balance between development and conservation. Some of these attributes are:

- **Caution**, which calls for a step-by-step approach that keeps potential harm in view at all times, aiming to prevent or mitigate unwanted impacts as much as possible.
- **Accountability**, which calls for taking ownership of both the consequences of harm caused to the environment and any necessary remediation.
- **Participation**, which defines how project staff and surrounding communities should work together to manage potential harm and encourage positive impacts.
- **Prevention**, which calls for action to prevent any potential damage to the environment before it occurs.

- **Substitution**, which is nothing more than the commitment to replace practices or processes that pollute with cleaner, more sustainable options.

- **Sustainability**, which requires using and managing resources in a way that meets current needs without compromising those of future generations.

- **Coherence**, which grounds the decision-making process in empirical or scientific evidence.

Basically, the policy's strength is assessed primarily on its content, how it is applied and kept current, how it is reviewed and adjusted, and how deeply the project's senior management is committed to upholding it. It is important to clarify that a project's policy must align with national policies, international agreements, and the applicable legal framework.

At times, a project's **policy** may be divided into: i) an **environmental policy**, focused on environmental objectives and principles; ii) a **social or community health and safety policy**, which governs how the project should interact with the populations it engages with; and iii) an **occupational health and safety policy**, which sets the rules for how internal tasks should be carried out to prevent personal accidents or incidents (see **Figure No. 4**).

Figure No. 4 | Excerpt from a road project's occupational health and safety policy

New Health and Safety Policy

Tolerance

0

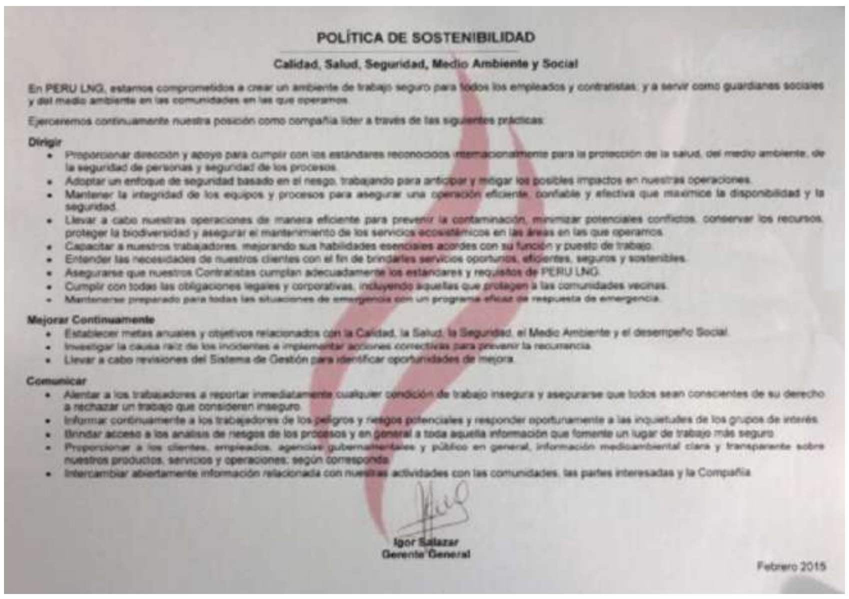
Health and Safety Department

- Our Zero Tolerance policy does not permit, under any circumstances, work that puts people's safety in danger.
- As leaders we encourage all workers and supervisors to stop any tasks that present a health hazard.
- We make every effort to create comfortable, safe, and healthy work environments.
- We plan work in advance and integrate safety into all activities.

Source: Costanera Norte Project

For a **policy** to be effective, it must be communicated both internally (to all staff working on the project) and externally (to the general public). Different means can be used for this, ranging from websites, physical notice boards (see **Photo No. 1**), and flyers to other communication tools. Internal communication and training for project staff on the policy's content are essential to ensure that its principles are fully understood and properly followed. Although the policy must be disclosed in its entirety, it is common for parts of it to be published individually and in strategic places to reinforce certain messages it contains (see **Photo No. 2**).

Photo No. 1| Sustainability Policy posted on the notice board of a hydrocarbon extraction project



POLÍTICA DE SOSTENIBILIDAD

Calidad, Salud, Seguridad, Medio Ambiente y Social

En PERU LNG, estamos comprometidos a crear un ambiente de trabajo seguro para todos los empleados y contratistas, y a servir como guardianes sociales y del medio ambiente en las comunidades en las que operamos.

Ejerceremos continuamente nuestra posición como compañía líder a través de las siguientes prácticas:

Dirigir
- Proporcionar dirección y apoyo para cumplir con los estándares reconocidos internacionalmente para la protección de la salud, del medio ambiente, de la seguridad de personas y seguridad de los procesos.
- Adoptar un enfoque de seguridad basado en el riesgo, trabajando para anticipar y mitigar los posibles impactos en nuestras operaciones.
- Mantener la integridad de los equipos y procesos para asegurar una operación eficiente, confiable y efectiva que maximice la disponibilidad y la seguridad.
- Llevar a cabo nuestras operaciones de manera eficiente para prevenir la contaminación, minimizar potenciales conflictos, conservar los recursos, proteger la biodiversidad y asegurar el mantenimiento de los servicios ecosistémicos en las áreas en las que operamos.
- Capacitar a nuestros trabajadores, mejorando sus habilidades esenciales acordes con su función y puesto de trabajo.
- Entender las necesidades de nuestros clientes con el fin de brindarles servicios oportunos, eficientes, seguros y sostenibles.
- Asegurarse que nuestros Contratistas cumplan adecuadamente los estándares y requisitos de PERU LNG.
- Cumplir con todas las obligaciones legales y corporativas, incluyendo aquellas que protegen a las comunidades vecinas.
- Mantenerse preparado para todas las situaciones de emergencia con un programa eficaz de respuesta de emergencia.

Mejorar Continuamente
- Establecer metas anuales y objetivos relacionados con la Calidad, la Salud, la Seguridad, el Medio Ambiente y el desempeño Social.
- Investigar la causa raíz de los incidentes e implementar acciones correctivas para prevenir la recurrencia.
- Llevar a cabo revisiones del Sistema de Gestión para identificar oportunidades de mejora.

Comunicar
- Alentar a los trabajadores a reportar inmediatamente cualquier condición de trabajo insegura y asegurarse que todos sean conscientes de su derecho a rechazar un trabajo que consideren inseguro.
- Informar continuamente a los trabajadores de los peligros y riesgos potenciales y responder oportunamente a las inquietudes de los grupos de interés.
- Brindar acceso a los análisis de riesgos de los procesos y en general a toda aquella información que fomente un lugar de trabajo más seguro.
- Proporcionar a los clientes, empleados, agencias gubernamentales y público en general, información medioambiental clara y transparente sobre nuestros productos, servicios y operaciones, según corresponda.
- Intercambiar abiertamente información relacionada con nuestras actividades con las comunidades, las partes interesadas y la Compañía.

Igor Salazar
Gerente General

Febrero 2015

Photo; courtesy of Juan Carlos Páez

Photo No. 2 | Poster highlighting equal treatment for workers in a hydroelectric project

Photo; courtesy of Juan Carlos Páez

In order to be effective and successful, a policy requires the following key elements:

- **A mission and values statement**, that is, its purpose and the values that govern it, such as, efficiency, renewability, continuous improvement, or adaptability, among others.
- **A statement of objectives**, usually in terms of environmental and social sustainability.
- **Continuous improvement**, in other words, a commitment to be modified over time to adapt to new technologies and sustainable practices and, of course, to any changes in the applicable legislation.
- **Impact management**, that is, how environmental and social impacts are identified and managed, including but not limited to, reducing emissions, waste management, water conservation, preserving biodiversity, physical resettlement, economic displacement, and impacts on cultural heritage.
- **Legal compliance**, which is simply the project's reaffirmed commitment to adhere to any conditions or requirements established by the applicable legal framework.

The following complementary elements may also be included:

- **Expectations regarding the behavior of third parties,** that is, how suppliers, clients, and other members of the project's supply chain are expected to conduct themselves.
- **Minimum performance levels**, which may be set according to local environmental management requirements or international best practices.
- **Monitoring mechanisms**, which define how and when the policy will be evaluated to check compliance with its objectives.
- **Education and training**, that is, how the project intends to develop its human resources to enable them to put the established goals into practice.
- **Dissemination of results**, that is, how project employees and external stakeholders are informed about the policy's performance.

EXAMPLE No. 1, found in Section 9 of this Guide, shows how a road construction project structured its environmental management policy.

Osorno Volcano - Puelche Sur Project, Chile

An Environmental and Social Policy is a statement of the intentions and principles a project has adopted to guide its relationship with its surroundings. It defines the environmental, social, and occupational health and safety objectives and principles that will govern the project's actions in pursuit of a predefined level of performance; reflects the project's intent and commitment to managing its environmental, social, and health and safety risks and impacts; sets the direction to follow; and establishes what is permitted and prohibited in relation to these issues.

4 Environmental and Social Management Programs

For years, the prevailing view of ESMPs was that these management tools only needed to contain the programs required to address the unwanted risks and impacts identified during environmental and social assessment processes. Today, ESMPs must also include actions and procedures to manage unforeseen situations, in addition to the elements mentioned above. In this context, it is useful to begin by examining what is meant by *risk*.

4.1
RISK ANALYSIS

In general terms, for something to be **at risk**, three conditions must be present: i) the existence of a *hazard*; ii) the *exposure* of that thing to the hazard; and iii) its *vulnerability* to the hazard in question.

A **hazard** is defined as any natural or human-induced phenomenon that can cause material changes in the behavior of certain components of the environment. It typically manifests as loss of human life, material or psychological damage, or environmental degradation in a specific area or region. **Exposure,** in turn, can be understood as the contact an individual, a community, or a part of the environment has, or could have, with a particular hazard. **Vulnerability** is simply the propensity of an individual, community, or environmental component to suffer harm as a result of a hazard. **Risk** results from the combination of hazard, exposure, and vulnerability. Thus, not all vulnerable elements are at risk; not every exposed element is at risk; and not every hazard constitutes a risk *per se*. In this sense, if the *set of vulnerable elements* is represented by the *blue* circle (see **Figure No. 5**), the *hazard* by the *yellow* circle, and *exposure* by the *purple* circle, then *risk* is represented only by the *red* area, where the hazard, exposure, and vulnerability overlap.

Figure No.5 | Relationship between hazard, exposure, vulnerability, and risk

Source: Prepared by the author

Hazard, exposure, and vulnerability analyses are part of risk analysis and these activities should be understood as inseparable from it, even if, methodologically, they may be treated individually.

Risk can be classified based on the *element* that is *exposed* and *vulnerable* to a *hazard*, or based on the nature of the hazard itself. Using the first classification system, the PSs refer to various types of risk, including, for example, those related to loss of biodiversity, impoverishment of vulnerable communities, deterioration of health conditions in communities due to the influx of workers and outsiders (increased traffic, presence of camps, gender-based violence, etc.), and the loss of ecosystem services, among others. Based on the type of *hazard*, risk can be classified into two main categories: *natural* or *human-induced*.

4.1.1 EVALUATING THE HAZARD

Natural hazards are extreme cases of normal events: a hurricane is a magnified wind; an earthquake is a severe version of the energy that is released daily in geological processes; and a flood is the result of extraordinary precipitation. Fortunately, extreme events are rare and do not occur often. Evidence shows that the more extreme an event is, the less frequently it occurs. As will be seen later in this document, these are situations in which a *project is threatened* by external events that can occur at any time.

Human-induced hazards, in turn, are potentially dangerous situations that stem from human activities. These may include, among others: instances of civil unrest (wars, public protests, vandalism, etc.); activities involving the handling of hazardous materials (fuel, explosives, radioactive substances, etc.); or the construction of large-scale engineering works (dams, treatment lagoons, power generation plants, etc.)—in other words, situations *in which a project itself poses a potential hazard* to the surrounding environment or nearby populations.

Hazard assessment seeks to identify, analyze, and document natural or human-induced events likely to cause harm, as well as their potential causes and chains of impact. The scope and depth of these analyses vary from situation to situation: in some cases, simple assessments that do not require much data are more than sufficient; in others, extensive studies are needed to determine the destructive potential of the threat.

Hazard assessment is carried out by combining probabilistic analyses with evaluations of the behavior of the source, using historical event data as a basis (such as the number of recorded occurrences and the intensity of each). For this, it is important to distinguish between *possible* and *probable* events.

A **possible event** refers to a situation that *may* occur as a result of random circumstances. For example, considering that meteorite impacts on the Earth's crust have been recorded throughout history and have occurred randomly in various parts of the world, it is entirely *possible* for one of these space rocks to strike a specific dam, destroy it, and trigger a downstream flood causing death and destruction.

To define a **probable event**, we must refer to the concept of *probability*. *Probability* is the mathematical calculation used to evaluate the likelihood of something happening by chance. It is expressed as the ratio between the number of favorable cases recorded or inferred, and the total number of *possible cases.*

There are several types of probability, but the most common are: i) *frequentist* or *empirical* probability, which uses experimentation to determine how often a phenomenon has occurred based on a given number of trials or opportunities; ii) *logical* probability, which estimates the likelihood of an event based on inductive reasoning, in other words, moving from the particular to the general; and iii) *mathematical* probability, which calculates the number of possible random events using formal logic rather than experimentation.

That said, a *probable event* is a situation that is *expected* because it (or a similar event) has already occurred in the past, or because there are technical-scientific reasons or arguments to believe, with a good level of confidence, that it will *reasonably* occur in the future (*statistical* reasons). Thus, returning to the previous example, even if it is *possible* that a meteorite will hit a dam, destroy it, and generate a downstream flood that causes death and destruction, this is *unlikely*, because, at least so far, there is no record of this event occurring in the past, and, from a technical-scientific perspective, this situation will not occur in the future, at least not in a *reasonable* future.

By definition, no possible event has a probability of occurrence equal to zero, since, if it is possible, it can occur, and therefore, its probability is nonzero. However, this probability can be so small that, in practical terms, it can be considered *not material* or *negligible*.

Although hazard analysis is not a linear process, as it is often informed by elements of vulnerability analysis, the tasks and steps that are typically carried out in this process are as follows:

- **Identification of each hazard,** that is, determination of events that may potentially cause material, spiritual, or environmental damage or destruction.
- **Analysis of each identified hazard,** using the appropriate instruments, tools, and information for each case.
- **Identification and characterization of project components** and threatened sites.
- **Determination of the probability of occurrence for each identified hazard,** eliminating those that are considered unlikely or whose probability is negligible or below certain pre-established values.
- **Building hazard scenarios,** generally taking into account different degrees of potential severity for the hazard in question.
- **Estimation of the magnitude and intensity of each scenario**, that is, forecasting the potential effects that could be produced if the hazard materializes.
- **Identification of the factors that influence the hazard, such as climate change,** destruction of environments, degradation of natural resources, large infrastructure such as dikes, etc.

Evaluating a hazard consists of *anticipating* a future *situation* based on *past* **information**. This anticipation can be short-term, based on the search for or interpretation of warning signs or precursor events; medium-term, when the analysis relies on probabilistic (stochastic) information from indicator parameters; or long-term, when it is based on determining the maximum probable event within a given time period. In the latter case, an important concept to consider when carrying out a hazard analysis is what's called an event's **return period** or recurrence interval, which corresponds to the **average time** between the occurrence of events with similar characteristics.

Mathematically, the **return period** is equal to the inverse of the annual probability of the phenomenon occuring. For example, if the probability of a river flood greater than or equal to a predefined flow rate is 2% (or 0.02), the associated return period would be 50 years (the inverse of 0.02). This does not *necessarily* **mean that** after 50 years the river will certainly register a flow greater than the predetermined rate, nor that this rate will not be reached tomorrow, since the *return period* is only a statistical notion of probability that confers a certain sense of confidence when handling events whose materialization could occur in the future.

When events are *anticipated* in the short term, the process is commonly referred to as **prediction**. This technique aims to determine when, where, and at what magnitude an event will occur with a predefined level of certainty, and is essential for developing early warning systems that serve to inform threatened populations of the imminent occurrence of a hazardous event.

However, extreme events associated with natural hazards are difficult to anticipate and, even more so, to predict, since these events occur irregularly and almost randomly. Their prediction is typically unreliable, given that the databases on which the corresponding calculations are usually based do not contain the minimum historical information necessary to guarantee a *statistically* adequate prediction.

4.1.2 EXPOSURE ANALYSIS

Since **exposure** can be understood as the contact an individual, community, or part of the environment could have with a particular hazard, its analysis typically focuses on determining the existence of such contact over time. In practical terms, a project's risk analyses does not generally include a specific analysis of it's exposure to a hazard, as it is assumed that the project will always be in contact with the hazards included in the risk analysis, and therefore exposed to them.

4.1.3 VULNERABILITY ANALYSIS

Vulnerability analysis is the process of determining the *degree* to which an individual, a community, or an environmental component is likely to be affected by a specific *hazard*. When assessing vulnerability, it is important to consider both the *tangible* aspects (infrastructure, services, environmental damage, etc.) and the *intangible* aspects (perceptions, customs, habits, or preferences, among others) that may be affected by a hazard. In this process, local experience is often a useful guide for identifying what is vulnerable in a given region and understanding the historical consequences of overlooking a proper assessment of that vulnerability. **Table No. 1** provides an overview of what should be considered when analyzing the vulnerability of a territory to a set of the most common natural hazards.

Table No. 1 | Tangible and intangible elements related to a natural hazard

Natural hazard	Main Vulnerable Elements	
	Tangibles	Intangibles
Flooding	Everything located in the area of influence for flooding or tidal waves: crops, livestock, machinery, equipment, infrastructure, services.	Social cohesion, community structures, cultural elements.
Earthquake	Fragile buildings and their occupants, machinery, equipment, infrastructure, service network, transport network.	Social cohesion, community structures, cultural elements.
Volcanic eruption	Infrastructure, crops, equipment, machinery, housing.	Social cohesion, community structures, cultural elements.
Strong winds	Buildings, fences, trees, signage, fishing industries.	Social cohesion, community structures, cultural elements.
Drought or desertification	Crops, livestock, community health.	Migration, environmental destruction or deterioration, cultural losses.

Source: UNDP "Vulnerability and Risk Assessment"

A vulnerability analysis should focus on assessing the ability of a system (or an element) to cope with, circumvent, neutralize, or absorb the effects of certain extreme natural or human-induced phenomena. The most common tasks carried out during a vulnerability analysis are:

- **Identification of the elements that are potentially vulnerable** to the hazards being analyzed. To do this, basic data is collected on the characteristics of the local population (age, population density, gender, ethnicity, socioeconomic status, cultural patterns, etc.); the current infrastructure (buildings, schools, hospitals, health centers, communication networks, etc,); the region's environmental conditions; and the population's ability to react to a hazard (education, training, prevention programs, warning systems, etc.).

- **Identification and analysis (for each type of hazard) of the factors that influence or generate vulnerability** (vulnerability factors). This section should include an analysis of the following aspects: i) **physical or abiotic**, meaning the design and quality of buildings and structures in human settlements; ii) **social**, considering aspects related to education; training; legal security; forms of citizen participation; existence and structure of social organizations and institutions; legal framework; politics; issues related to gender, minorities, dependent or vulnerable populations (elderly, children, the sick); traditional knowledge systems and local wisdom; power structures; access to information; and the existence and use of social networks; iii) **economic**, meaning an assessment of economic levels, poverty, food security, seed availability, access to basic infrastructure (water, energy, healthcare, transportation), reserves, and available financing; and iv) **biotic**, which includes an analysis of arable land, usable water resources, vegetation, biodiversity, forest cover, ecosystem stability, endangered species, and biological corridors, among the main elements.

- **Identification and elaboration of indicators** to measure and characterize vulnerability.

- **Analysis of self-protection capacities**, to identify systems and tools that determine the population's hazard preparedness; the use of monitoring and early warning systems; the use of forecasting systems; the implementation of prevention or mitigation plans for eventualities; the use of contingency management funds; the use of insurance; the enforcement of building codes; the maintenance of basic infrastructure; the installation and maintenance of preventive and protective structures; land-use planning; territorial planning; organization and communication (emergency aid committees); and local knowledge (about hazards), among other aspects.

4.2.
IMPACT IDENTIFICATION

In general terms, the management tool used to assess the future changes that a project or activity may cause to the environment is the **Environmental and Social Assessment** (ESA). An ESA is a set of analytical, participatory, coherent, reproducible, and interdisciplinary procedures carried out by a team of specialists from various fields, aimed at *predicting* material changes in the behavior of environmental components within a territory. This is done by identifying and quantifying the potential alterations (both beneficial and harmful) that may occur in the future as a result of implementing (or intending to implement) an action in the present. To do this, the ESA compares the actions that have the potential to cause material changes in the environment with the environmental components that are susceptible to being affected by those actions.

At a minimum, every ESA must include the following:

- A clear **definition of the area of study or influence** for a project, consisting of the *area of direct influence* (the geographic zone where the effects generated by the planned activities would be clearly and *directly* observed) and the *area of indirect influence* (the territorial zone where *indirect* impacts, or those deriving from direct impacts caused by the project, could be seen).

- An adequate **temporal definition** of the project development phases: preconstruction, construction, operation and maintenance, and decommissioning.

- An **evaluation of the proposed actions** to identify those with the potential to cause some type of environmental or social impact.

- An **analysis of the site** where the proposed works or actions are to be carried out, to identify the environmental components likely to be materially affected by the project's actions.

- A solid **baseline** that allows for an understanding of the *current* behavior (or the behavior at the time of the assessment) of the environmental and social components that could be affected by the proposed actions.

- An analysis that allows for effects **to be identified and impacts to be assessed.**

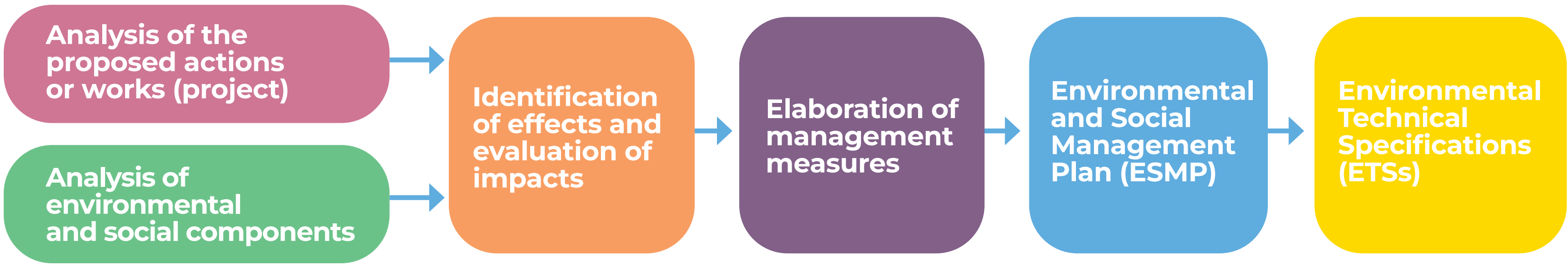
- A detailed description of the **management measures** that will be used to avoid, mitigate, restore, or compensate for unwanted effects, and to stimulate the desired changes.

- An **Environmental and Social Management Plan** (EMSP) summarizing the management measures to be implemented and specifying when, how, and by whom they will be carried out, as well as the criteria for evaluating their effectiveness.

For this to be a comprehensive exercise, the environmental analysis must not focus solely on the impacts that the project's actions could have on the environment, but must also include the induced effects of what we call **associated components**, meaning external elements without which the project would not be able to achieve its intended purpose, as well as **ancillary facilities or installations** (*ancillary infrastructure*), in other words, elements required for the project's construction or development (e.g. access roads, camps, concrete plants, workshops, material sources, disposal sites, waste management facilities).

For practical purposes, the management measures resulting from the ESAs and laid out in the corresponding ESMPs should, where possible, be translated into **Environmental Technical Specifications** (ETSs), so that the person responsible for implementation knows what to do, how to do it, when to do it, how to document what's been done, how to measure the action's success, and, most importantly, how they will be paid for carrying it out. The latter is vital because an action that is not budgeted will most likely not be performed. **Figure No. 6** provides a schematic overview of the full process an ESA should follow.

Figure No. 6 | The ESA process



Source: Prepared by the author

Depending on how in-depth the studies go, ESAs can be classified into the following types:

- **Environmental and Social Impact Assessment (ESIA)**, also known in some countries as a detailed Environmental and Social Impact Assessment (ESIAd). This type of assessment carries out an analysis similar to an Environmental Analysis (EA), but uses primary data, usually generated specifically for that purpose. It involves more complex and in-depth analysis of the interactions between project activities and environmental components that may lead to undesirable impacts. Its conclusions are based on the sound judgment of the assessment team and on more structured processes that often include mathematical or physical modelling, comparative scenario analysis, or methodologies that increase accuracy and reduce subjectivity in the environmental assessment. Consequently, an ESIA allows for, among other things: i) detailed identification of the potential environmental and social impacts resulting from the proposed actions; ii) prioritization of the impacts based on their magnitude and significance; iii) elaboration of specific management measures to avoid, mitigate, or compensate for the most significant negative impacts, or promote positive outcomes; iv) the development of detailed Environmental and Social Management Plans; and v) drafting of technical specifications that allow for the implementation and monitoring of the proposed management measures.

  Most of the legislation in force in the region's countries requires this type of evaluation for works or activities whose execution can produce significant negative impacts[6].

- **Environmental Analysis (EA),** is also known as Environmental Impact Manifest (MIA), Environmental Impact Assessment (DIA), Preliminary Environmental Impact Declaration (ESIAp), Semi-detailed Environmental and Social Impact Assessment (ESIAs), among other names that the legislation in different countries confers on this type of analysis. This type of assessment is usually elaborated using secondary and readily available information (related both to the planned actions and the environment in which they will be carried out) and relies heavily on the experience of the team conducting it. It enables, among other things: i) determination of the environmental and social feasibility of the proposed works and activities; ii) approximate identification of the main potential environmental and social impacts; iii) elaboration of high-level management measures to avoid, mitigate, or compensate for undesirable impacts, or promote positive ones; iv) development of generic but practical environmental and social management plans; v) identification of issues that would require more in-depth analysis during later stages of project planning; and vi) selection of, from a set of proposed alternatives, the most environmentally and socially appropriate options to move forward with the project development cycle.

  Since the identification of impacts based on secondary information, as well as the elaboration of high-level management measures and generic management plans resulting from EAs, is usually sufficient to ensure that low- or medium-risk projects can be managed in an environmentally and socially appropriate manner, much of the current legislation in various countries around the region requires this type of assessment for works or activities with low- or medium- level environmental and social risk.

- **Strategic Environmental and Social Assessment (SESA)**. This type of analysis seeks to identify the repercussions that the adoption of policies or the execution of plans and programs can have on the environment. As in the above-mentioned cases, it does this by comparing the actions contained in the proposed policies, plans, or programs (PPPs) with the environmental components of the region where they will be implemented in order to identify how the PPPs could alter the environment and determine whether, when, and how they should be adopted or carried out. In general, SESAs are limited to identifying the impacts that the PPPs could produce and do not go so far as to propose measures to prevent, mitigate, or compensate for undesirable impacts, since their primary goal is to support strategic decision-making on which policies to adopt or which plans or programs to implement in order to achieve the best intended impact with the least undesirable effects.

- **Cumulative Environmental and Social Impact Assessment (CIA)**, also known as Cumulative Environmental and Social Impact Assessment and Management[7]. Like the SESA, this type of assessment aims to identify the changes that a set of actions could generate in the environment. However, unlike the SESA: i) the analysis focuses exclusively on the potentially affected environmental components considered to be *important* or *valuable* (known as *valued ecosystem components* or *VECs*); and ii) takes

[6] IDB Invest (like most international financial institutions) classifies projects based on type, location, scale, sector, contextual risks, and the likely magnitude of potential environmental and social risks and impacts, into the following categories: i) category A, projects that may result in high or very high environmental and social risks or impacts, which are potentially diverse, irreversible, or unprecedented, and may extend beyond the project site or facilities; ii) category B, projects that may result in environmental and social risks and impacts of moderate intensity, which are reversible, limited to the project site, and can be managed with readily available measures applicable within the context of the operation; and iii) category C, projects expected to have minimal (non-material or no) adverse environmental or social risks or impacts.
[7] See the guides from IDB Invest (https://idbinvest.org/en/download/19140) or IFC (https://www.ifc.org/content/dam/ifc/doc/mgrt/ifc-cia-esp.pdf)

into account the effects past projects have had on VECs, the effects ongoing projects are having at that time, and those likely to result from projects to be carried out in the future. In this sense, a CIA assesses the incremental effect, relative to a spatial and temporal baseline, observed in a VEC when, in addition to the effects caused by a specific action (project), the impacts from past actions (projects), those currently being produced by ongoing actions (projects), and those likely to result from reasonably foreseeable future actions (projects) are also taken into account.

This type of analysis is very similar to an SESA conducted for PPPs, but it differs in three key ways: i) it focuses on the changes that could occur in a small set of environmental components (VECs); ii) it considers the effects on the selected VECs from past actions, ongoing activities, and actions with a high likelihood of being implemented in the future; and iii) it aims to produce a cumulative impact mitigation plan to manage these incremental effects.

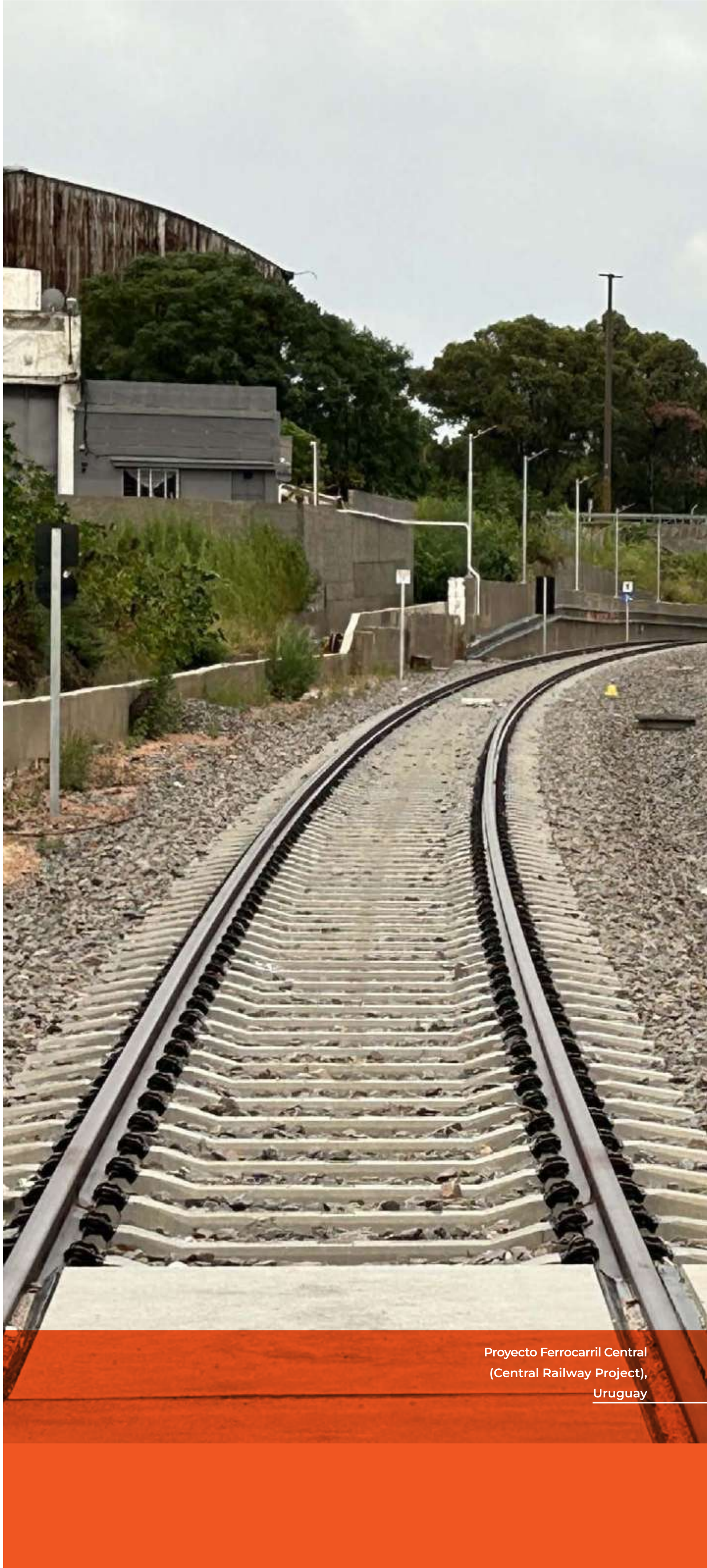
EXAMPLE No. 2, found in Section 9 of this Guide, shows how a hydroelectric power plant construction project minimized, with community input, the risks and impacts it incurred on the neighboring population, especially on school-age children. Similarly, **EXAMPLE No. 3** describes how a financial intermediary identified the environmental and social risks and impacts that may result from its lending operations.

4.3. MANAGEMENT PROGRAMS

The results of the ESA process are meaningless unless they lead to the development of **management measures** (often mistakenly referred to as *mitigation measures*, since, as we'll explain later, these are only a subset of management measures) to address undesirable environmental impacts or promote desired effects. These measures must be implemented by the project's ESMS.

In general, **management measures** can be classified as: i) avoidance; ii) mitigation; iii) prevention; iv) compensation; v) contingency; and vi) enhancement.

Nullification measures involve modifying *the* project *partially* **or** completely *to avoid activities that could cause negative environmental impacts*. These types of measures are generally adopted at the earliest stages of the project



Proyecto Ferrocarril Central (Central Railway Project), Uruguay planning cycle since their adoption necessarily implies modifications to the initial design of the planned activities, a situation that, due to the associated costs or the resources already invested, becomes increasingly complicated as the planning process moves forward. An example of this type of measure is to modify the path of a road to avoid its passage through an ecologically sensitive area.

Mitigation measures aim to minimize, alleviate, or reduce the negative effects caused by an action (or set of actions) through additional or supporting activities beyond those originally planned, in order to lessen the original impact. These measures can be applied at any stage of project planning and are usually classified as: i) *technical measures*, which are incorporated into the project with a specific design elaborated by the ESA team; ii) *legislative measures*, in which regulations are adopted in order to counteract the negative effects caused by a set of actions; and iii) *procedural measures*, which involve specific protocols for managing the environment affected by the proposed actions.

Examples of *technical mitigation measures* include providing lighting to reduce the risk of work-related accidents at night; wetting concrete aggregates to reduce excessive dust; or using tunnel boring machines instead of explosives to build a tunnel, etc. Examples of *legislative mitigation measures* include creating a municipal ordinance to control solid-waste management or developing special regulations to control visitor flows in a national park. Enacting controls to ensure that only authorized personnel have access to the area where the proposed activities are taking place can be considered a *procedural mitigation measure.*

When potential negative impacts have been identified in relation to a proposed action, **prevention measures** are those enacted to avoid their occurrence. The difference with mitigation measures lies in the fact that they are not intended to lessen negative effects, but to prevent them from occurring in the first place. Although they share similar goals, both aiming to prevent undesirable effects from occurring, *prevention measures* differ from *nullification measures* in that the former are generally implemented during the project's execution phase, while the latter are applied in the early stages of the project cycle. Examples of prevention measure include vaccinating project personnel to prevent the occurrence of certain diseases, or fumigating specific areas to avoid the emergence or spread of pests.

There are certain impacts that cannot be prevented or mitigated. In these cases, it may be necessary to implement **compensation measures**. These measures aim to restore the environmental conditions that existed before a set of actions was carried out or to recreate similar conditions to avoid negatively affecting the lives of those directly impacted, and often involve significant economic and sometimes social costs. In general, the effectiveness of these measures cannot be guaranteed, and their implementation always requires ongoing monitoring and control.

Compensation measures can be classified as: i) *indemnification measures*, which generally involve a payment (in cash or in kind) to the affected party to make up for the impact caused; and ii) *restitution measures*, which are implemented when, in exchange for the portion of the environment affected by the actions taken, efforts are made to recreate similar environmental conditions in another location.

Examples of *compensation measures* include: the delivery of new homes and farmland to families who had to be relocated because their original homes were flooded by the formation of a reservoir for a hydroelectric power plant; the construction of public service infrastructure in a town in exchange for the *inconvenience* a project may cause; and the payment of lost profits to businesses whose access points were temporarily obstructed by the construction of a drinking water system.

Examples of *restitution measures* include rescuing and relocating animal species when a road alignment affects ecologically sensitive areas, or establishing biodiversity offset areas to compensate for damage to natural or critical habitats—ensuring no net loss of biodiversity in the first case, and a net positive gain in the second.

Contingency measures, in turn, are designed to address unforeseen situations that could threaten a portion of the environment under analysis, such as natural hazards (earthquakes, volcanic eruptions, and floods) and human-induced factors (spills, pipeline failures, equipment overheating, etc.). Their purpose is to minimize the damage that may result from such events. A more detailed explanation of how these measures are designed and implemented is provided later in this document.

Enhancement measures are actions taken to accentuate the positive impacts that a project can generate. Examples of this type of measure include building scenic viewpoints along a road to visually showcase the surrounding environment; establishing a rewards system for users who make the most efficient use of water in an irrigation program; and publicly recognizing government institutions that adopt policy recommendations under a reform project, among others.

EXAMPLE No. 4, found in Section 9 of this Guide, details how a project designed and implemented a comprehensive solid-waste management program to handle all the waste material it produced during its construction phase.

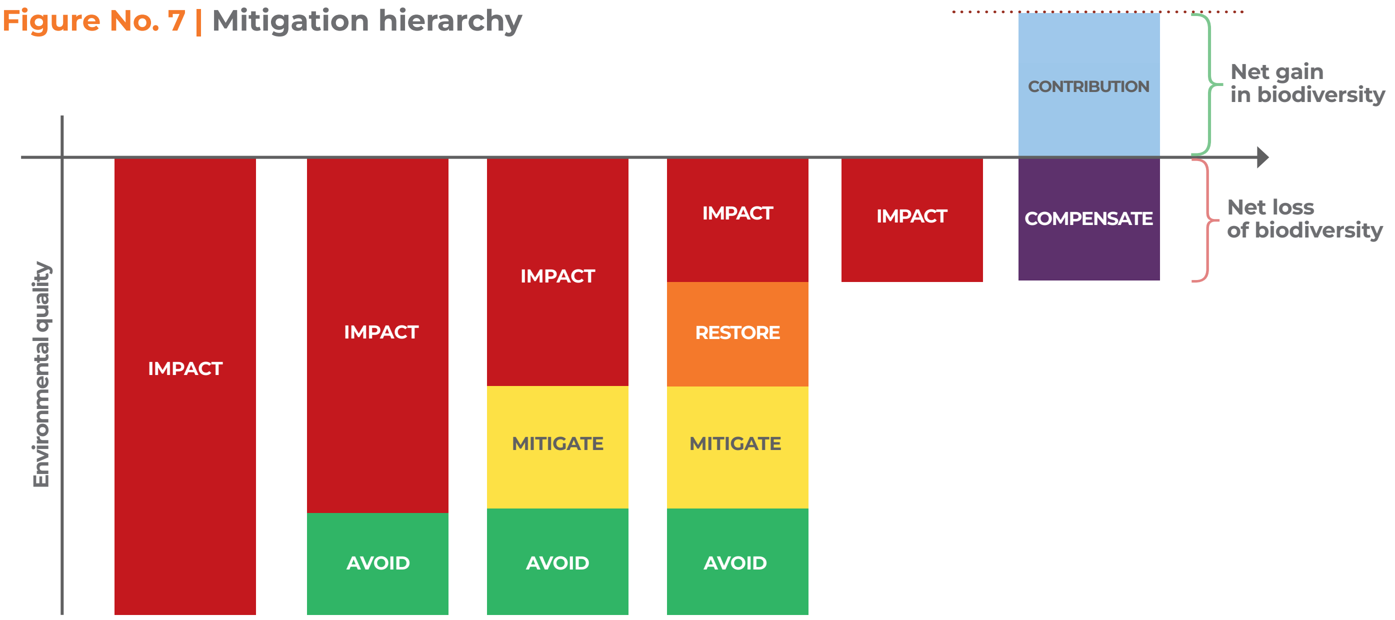
4.3.1. MITIGATION HIERARCHY

When assessing a project's impacts on the biotic component, in terms of biodiversity, it is common to use what's called a **mitigation hierarchy**. This concept can be understood as a reference framework based on the sequential and iterative application of a set of measures used to reduce potential harm to biodiversity by managing the impacts a project generates.

The **mitigation hierarchy** (see **Figure No. 7**), whose ultimate goal is to achieve a zero net loss or a net gain in biodiversity, consists of implementing two types of measures: i) **prevention measures**, which include actions to (a) *avoid* impacts from occurring, and (b) *minimize* or *mitigate* the impacts that do occur; and ii) **remediation** measures, which include actions to (a) *repair* or *restore* (rehabilitate) habitats that were degraded by the project in question, and (b) **compensate**, or make *restitution* for any damage caused by impacts that could not be avoided or minimized (or where restoration was not feasible), through the development of areas that are ecologically equivalent to those degraded.

Chimborazo Volcano - Ambato -Guaranda Highway, Ecuador

Figure No. 7 | Mitigation hierarchy



Source: Business and Biodiversity Offsets Programme (2018).

The first column of **Figure No. 7** shows the impact of a project on the biotic component without any *prevention* or *remediation* measures having been implemented. In this case the residual impact (marked in red) is equal to the project's impact. The second column shows the project's lower residual impact (marked in red) thanks to the application of measures to *avoid* unwanted effects. The third column shows the residual impact (marked in red) after measures to *avoid* and *mitigate* impacts were implemented, while the fourth shows the lower residual impact after measures to *restore* the affected environment were added to the measures to *avoid* and *mitigate* unwanted impacts. The fifth column shows the residual impact of the project after having applied measures to *avoid*, *mitigate* and *restore* the negative effects on the biotic component. The final column shows how *compensation* measures (establishing biodiversity *offset* areas) can make up for the project's residual negative impact and result in either zero net loss (shown in purple) or a net gain in biodiversity (shown in light blue).

EXAMPLE No. 5, presented in Section 9 of this Guide, shows how a project has been evaluating the effectiveness of its measures to offset negative effects on the biotic component in order to ensure a zero net loss or a positive gain in biodiversity.

4.3.2
ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Once the management measures have been formulated, an **Environmental and Social Management Plan** (EMSP) needs to be developed to facilitate their implementation. This is made up of a set of actions condensed into programs or projects designed in operational terms to: i) prevent, mitigate, or compensate for negative impacts; ii) stimulate positive impacts; and iii) monitor and manage the variables the project will affect. Depending on the project's characteristics and the affected component, this type of instrument can include training and dissemination programs, research, etc.

ESMPs are sometimes broken down by component. It is common, for example, to find an ESMP for the *biotic* environment (with programs for environmental offsets, reforestation, vegetation management, and wildlife rescue and management, among others); one for the *abiotic* environment (with programs for emissions control; solid and liquid waste management, including hazardous and non-hazardous waste; and ambient noise control, among others); and a third for the *sociocultural* environment (with programs for emergency preparedness and response; workforce management; environmental, social, and occupational health and safety training; land acquisition; community awareness; social and environmental management; institutional capacity support; environmental education; and support for local businesses, among others).

As a minimum, a well-structured ESMP should include the following: i) the proposed management measure; ii) the factor or component that will be affected by the measure's implementation; iii) the expected results of implementing the measure; iv) the names of those responsible for implementing the measure; v) identification of the individual(s) or entity(ies) responsible for overseeing the measure's implementation; vi) when the measure should be implemented; vii) the frequency at which the measure should be carried out; viii) monitoring indicators to assess how the measure is being implemented; ix) success indicators to check whether the measure is achieving the intended result; x) an estimate of the costs associated with implementing the measure; xi) a list of mandatory implementation commitments; and xii) any other relevant aspects. Often, a project's ESMPs are presented in matrix form, as indicated in **Table 2**.

Table No. 2 | Environmental and Social Management Plan

Proposed measure	Affected components	Expected outcomes	Responsible for		Execution		Indicators		Cost	Implementation commitments	Comments
			Execution	Monitoring	When	Frequency	Monitoring	indicators			

Source: Prepared by the author

For better implementation and monitoring, it is common practice to apply ESMPs according to the project development phase: one ESMP for the pre-construction phase; one for the construction phase; one for the operation phase; and one for the decommissioning phase.

As explained earlier in this document, to be properly implemented, the measures included in the ESMP must be laid out, as far as possible, in the form of **environmental technical specifications** (ETSs). These are detailed instructions on how the proposed measure should be executed, where it should be carried out, and how it should be monitored in order to be eligible for payment (more detail is provided later in this document).

4.3.3 ENVIRONMENTAL AND SOCIAL MONITORING PLANS

All environmental and social assessments, no matter how well structured, are always susceptible to a degree of uncertainty, because the previsions made during the process deal with *probable* scenarios (the determination of which depends, among other factors, on the baseline information used in the assessment and the experiences of the interdisciplinary team who developed it) that are not necessarily *exact*. This means that the results of an ESA are a set of approximate predictions of *what the environment might look like* in the future and not *what it will look like*.

Thus, to ensure the proper management of any project, it is not enough to simply conduct an ESA and implement its recommendations; it is also necessary to continue carrying out assessments of the actual environmental conditions and compare their results with those anticipated in the studies in order to make any necessary adjustments along the way.

Environmental and Social Monitoring Plans (ESMoP), like management plans, also have the basic function of establishing a system that ensures compliance with the indications and management measures contained in the ESA. However, the main differences between these two instruments are: i) environmental and social monitoring plans aim to verify, as the project is being implemented, the severity and distribution of the impacts being observed, as well as to identify and manage unforeseen impacts, ensuring the elaboration of new management measures when needed; whereas environmental and social management plans (ESMPs) are limited to providing instructions on how, when, how often, and by whom the proposed management measures should be implemented and verified; and ii) since monitoring plans gather direct information on how the environment is responding to the implementation of project activities and management measures, their results are often used to update management plans.

The objectives of an environmental and social monitoring plan include but are not limited to the following:

- Based on the results gathered as the project's actions or management measures are implemented: i) provide information for updating the ESMP; and ii) enable the identification of new impacts.
- Evaluate the quality, timeliness, and results of the management measures contained in the ESMP.
- Check whether impacts with a high level of predictive uncertainty are actually occurring.
- Detect impacts not foreseen in the ESA in order to adopt the additional management measures needed.

Similarly, a well-structured environmental and social monitoring plan should include at least the following:

- **The definition of objectives.** The plan must clearly identify the environmental components affected, the impacts on those components, and, above all, the selected *indicators*, which— to ensure the plan's effectiveness—should, as much as possible, be few in number, easy to measure, cost-effective, appropriate, and representative.
- **Data collection and analysis.** This aspect includes the collection or generation of data, its storage and access, and its classification according to project type. Data collection should be carried out based on the established monitoring plan.
- **Interpretation and generation of information.** The most important aspect of a monitoring plan is the transformation of all the data collected (through monitoring) into information – that is, using the data for a specific purpose through targeted interpretation. This phase of the monitoring plan is essential to carry out the next step.

- **Updating based on results.** The results obtained should be used to modify the initial objectives. Therefore, the monitoring plan should be flexible and allow for adjustments to the ESMP required over time.

Executing a monitoring plan should be understood as a cyclical process. Although in theory this process should not end, given the relatively short duration of projects compared to the timescales that govern environmental behavior, it is considered fulfilled when the environmental and social quality indicators in the project's area of influence become relatively stable over time and are consistent with applicable local regulations.

4.3.4
MONITORING MATRICES

One of the tools that every ESMS should have to monitor the actions included in the corresponding ESMP or the requirements established by other management instruments—including those imposed by legal mandate—are what we call monitoring matrices. These include **monitoring matrices** for: i) environmental and social permits; ii) the requirements contained in those permits; iii) legal obligations; iv) risks and impacts; and v) where applicable, requirements issued by financial institutions.

The **environmental and social permits matrix** (see **Table No. 3**) should contain sufficient information to enable effective tracking of the authorizations that must be obtained for project development. This matrix generally contains the following information: i) name of the required permit (environmental licenses, watercourse occupation permits, deforestation permits, etc.); ii) name of the issuing authority; iii) documentation required to obtain the permit (studies, plans, etc.); iv) estimated time the authority takes to issue the permit (regulated by law in some cases); v) the permit's period of validity; vi) documentation required for permit renewal, if applicable; vii) the date when the project needs the permit to avoid forestalling implementation activities; and viii) any other relevant details, whether internal (who is responsible for processing the permit, who will prepare the studies, etc.) or external (related to project site conditions).

Hot joining process - Proyecto Ferrocarril Central (Central Railway Project), Uruguay

Table No. 3 | Environmental and social permits matrix

Permit	Issuer	Requirements for obtaining	Estimated time for issuance	Validity period	Requirements for renewal	Date needed	Comments

Source: Prepared by the author

Once the permit in question has been obtained, it is advisable to document the specific requirements it contains using a **permit compliance tracking matrix** (see **Table No. 4**), which is typically structured with the following information: i) name of the permit; ii) name of the issuing authority; iii) permit requirements; iv) deliverables (reports, records, etc.); v) delivery frequency; vi) submission date for deliverables; vii) proof of submission; viii) approval date; and ix) comments.

Table No. 4 | Environmental and social permit compliance tracking matrix

Permit	Issuing authority	Requirement	Deliverable	Delivery frequency	Submission date	Proof of submission	Approval date	Comments

Source: Prepared by the author

All projects, regardless of their source of funding, are required to comply with applicable legislation in the location where they will be executed. Consequently, the **legal requirements matrix** (see **Table No. 5**) is generally structured to include the following information: i) the aspect being regulated (vegetation cover, wildlife, waste, etc.); ii) the legal provision (law, decree, resolution, ordinance, etc.); iii) the authority issuing the legal provision; iv) its general content (what the instrument addresses); v) the specific applicable requirements (provisions directly related to the project); vi) date of issuance; vii) renewal dates; viii) effective date; and ix) any other relevant details, whether internal (person responsible for updating the matrix, comments, etc.) or external (related to the conditions where the project is being developed).

Table No. 5 | Legal requirements matrix

Regulated aspect	Legal provision	Issued by	Content	Specific applicable requirements	Date of issuance	Renewal dates			Person in charge of renewal	Comments
						1	2	3		

Source: Prepared by the author

The **risk and impact matrix** (see **Table No. 6**) is structured according to the information contained in the ESIA and supplemented with additional information generated by the ESMS. This matrix is generally elaborated with the following information: i) the identified impact or risk, whether it is one the project may be subject to or one it may cause; ii) its nature, (i.e., whether it is positive or negative); iii) its location (where the impact would be felt); iv) the project phase during which it would occur; v) its incidence (whether it is a direct impact or risk); vi) the date or stage at which the impact is expected to occur; vii) its duration; viii) whether it is reversible; ix) its likelihood of occurrence; x) its magnitude; xi) its significance; xii) the type of management proposed (mitigation, transfer, or simple acceptance); xiii) the residual importance of the impact or risk after management; and xiv) details on which program contains the corresponding management measure.

Table No. 6 | Risk and impact matrix

Impacts or risks	Characterization												Proposed management program
	Nature	Location	Project phase for occurrence	Incidence	Date of occurrence	Duration	Reversibility	Probability of occurrence	Magnitude	Importance	Type of management	Residual significance	

Source: Prepared by the author

In some cases, when a project is financed by an international organization, it is common for it to comply not only with local legislation but also with specific requirements set by the financing institutions. These requirements are generally set out either in the corresponding loan agreement or in the Environmental and Social Action Plans (ESAPs), which are developed after the financing institution has carried out the Environmental and Social Due Diligence (ESDD) process.

In these cases, it is advisable to develop a **matrix to keep track of the financial institutions' requirements** (see **Table No. 7**). This matrix can be structured with the following information: i) requirement; ii) details of the requirement; iii) where the requirement is laid out (contract clause or ESAP action); iv) description of the deliverable; v) frequency of delivery; vi) submission date for the deliverable; vii) proof of submission (email, letter, etc.); viii) date of approval or discharge; ix) compliance status; and x) comments.

Table No. 7 | Financial institution requirements tracking matrix

Requirement	Description	Required in	Deliverable	Submission frequency	Date of submission	Proof of submission	Approval date	Compliance status	Comments

Source: Prepared by the author

4.3.5
ENVIRONMENTAL AND SOCIAL MONITORING PLANS

Monitoring is term that comes from *monitor*, an apparatus that takes images through recorders or sensors and that allows visualizing something on a screen. Its Spanish equivalent, **monitoreo**, which is borrowed from English, has recently been included in the dictionary of the Royal Spanish Academy (RAE). It's definition involves observing the course of one or more parameters or other variables to detect possible anomalies. Thus, **environmental monitoring** can be understood as the process of observing and taking measurements of environmental variables, which is carried out over time to obtain information about the behavior of a predefined environmental component. In other words, *monitoring* is simply the act of measuring and generating data over a defined period of time in order to understand or expand knowledge about changes occurring at the observed site.

Strictly speaking, there are three types of environmental monitoring:

- **Baseline monitoring** refers to collecting environmental and social data from an area not subject to project impacts (outside the project's area of influence), but ecologically comparable to it, in order to determine how the project's baseline conditions would evolve in its absence.

- **Effects and impacts monitoring** refers to measuring environmental variables during the different phases of a project (pre-implementation, implementation, and post-implementation) to determine the environmental changes and consequences that have occurred as a result of the actions carried out.

- **Compliance monitoring** involves the periodic measurement of environmental variables required by applicable legislation, including obligations laid out in the relevant permits and authorizations as well as any environmental or social standards that the project has voluntarily adopted in addition to those mandated by law.

As would be expected, monitoring activities require a significant amount of human, physical, financial, and technological resources. For this reason, instead of measuring *all* the environmental variables that the project may affect—which would be extremely costly in terms of resources and budget—environmental monitoring focuses on measuring *representative* variables, commonly referred to as **indicators**.

There is no single definition of the term **indicator**. One approach describes it as a specific, observable, and measurable characteristic that shows the changes being produced by an action toward achieving a desired outcome. Another, somewhat more comprehensive definition states that it is a statistic or parameter that, when monitored over time, provides information on the trends or condition of a phenomenon beyond what is directly associated with the statistic itself (Canadian Ministry of the Environment). However, for practical purposes, an *indicator* can be understood as an observed value that is representative of a predetermined set and that reliably reflects the overall state of that set. Thus, if the set being referred to is the environment or an environmental component, the indicator becomes an **environmental indicator**.

There are various types of indicators. However, the ones most closely associated with the activities to be carried out within the ESMS are the following:

- **Output indicators**, which show the change generated as a direct result of the activities carried out within the project (for example, the number of fish rescued, the percentage of staff trained, the area of land reforested).

- **Outcome indicators**, which are linked to the changes achieved by the project over time (for example, differences in the number of native wildlife killed on a road, or shifts in community behavior patterns in relation to the project). In other words, they compare the situation *before* and *after* the implementation of a specific action.

- **Impact indicators**, which capture the long-term effect of the interventions carried out (for example, a reduction in child mortality and morbidity as a result of the project's influence). In other words, they measure changes in the behavior of an environmental component.

- **Management** or **performance indicators**, also known as KPIs (*key performance indicators*), are metrics that help assess the effectiveness of a specific action or strategy and indicate the level of performance in relation to previously established objectives.

Monitoring plans are usually summarized in tables that identify the environmental component addressed by each monitoring program, an identification code, and the name of the monitoring program (see **Table No. 8**).

Table No. 8 | Environmental monitoring plan summary matrix

Component	Code	Monitoring program
Abiotic	PM-ABI-01	Comprehensive management of solid waste.
	PM-ABI-02	Atmospheric emissions and noise control management.
	PM-ABI-03	Water resources management.
	PM-ABI-04	Vibration monitoring.
	PM-ABI-05	Water table monitoring.
Biotic	PM-BIO-01	Vegetation cover management and removal.
	PM-BIO-02	Silviculture management.
	PM-BIO-03	Landscape visual quality management.
	PM-BIO-04	Wildlife management.
	PM-BIO-05	Management of offset areas.
	PM-BIO-06	Management of areas of ecological importance.
Socio-economic	PM-SOC-01	Public information and communication.
	PM-SOC-02	Community participation.
	PM-SOC-03	Coordination among agencies.
	PM-SOC-04	Protection of third-party infrastructure and assets.
	PM-SOC-05	Resettlement.
	PM-SOC-06	Social and labor inclusion.
	PM-SOC-07	Economic sustainability of formal trade.
	PM-SOC-08	Occupants of public space.
	PM-SOC-09	Land use and value.
	PM-SOC-10	Restoration of the social fabric.

Source: Prepared by the author

Monitoring tasks are typically presented in matrices that contain the following information: i) the task objective, which clearly and specifically states the expected outcome of the proposed monitoring action; ii) the associated management program, indicating the relationship between the proposed task and the relevant section(s) of the ESMP; iii) the actions to be carried out, detailing the specific monitoring tasks required by the ESMP; iv) the indicators to be used, such as (a) the parameter or attribute to be measured, (b) the reference values or effectiveness ranges considered acceptable for that parameter or attribute, and (c) the target value to achieve for that parameter or attribute after applying the corresponding management measures; v) the monitoring site location, meaning the place, area, or route where the monitoring tasks will be carried out; vi) the implementation schedule – that is, the timing and frequency with which the monitoring task must be performed; vii) the name of the person or unit responsible for carrying out the monitoring task and verifying the performance of the indicators; and viii) the associated quantities and costs. **Table No. 9** presents an example of a monitoring task.

Table No. 9 | Environmental monitoring task summary matrix

Domestic wastewater management							FILE: PM-ABI-01	
Measurement type								
Monitoring	X	Prevention	X	Mitigation	X	Compensation		
Phase								
Pre-construction	X	Construction	X	Operation	X	Decommissioning		
Objectives	• Comply with current legal regulations for the collection, transport, and use of water. • Prevent, minimize and/or control impacts on water resources.							
Associated management plan	• Solid-waste management program. • Water quality management program. • Soil quality management program. • Community disturbance management program.							
Actions to be carried out	• Verification of the portable toilets and septic tank in temporary facilities. • Verification of inspections and maintenance compliance.							
Goals	• 100% of portable toilets have been installed. • The septic tank is working. • Inspections and maintenance are carried out according to the relevant plan. • 100% of the volume of domestic wastewater generated is collected by the specialized company. • 100% of the volume of hazardous waste generated is collected by a specialized company. • 100% of spills have been controlled.							
Location	Work fronts and camps throughout the project area.							
Implementation	Leads: Person in charge of work fronts and camp manager.							
	Oversight: Oversight signature.							
Associated cost	According to budget.							

Source: Prepared by the author

Domestic wastewater management		FILE: PM-ABI-01
MONITORING DETAILS		
Indicator	**Frequency**	**Compliance log**
Number of portable toilets installed	At the beginning	Camp inspections, photographic record
Actions to be taken	At the beginning	Camp inspections, photographic record
Number of maintenance visits and cleanings carried out on portable toilets and the septic tank by the authorized company	Weekly	Cleaning and maintenance log
Volume of liquid domestic waste generated, collected by a specialized and authorized company	Monthly	Camp inspections, reports and log photographic record
Volume of dangerous liquid waste generated and collected by a specialized and authorized company	Monthly	Camp inspections, reports, and photographic record
Number of oil, lubricant, or grease spill events	Monthly	Camp inspections, reports and photographic record
REFERENCE VALUES		
Parameter	**At the beginning**	**At the end**
Number of portable toilets installed	0	13
Septic tank installed	0	1
Number of maintenance visits and cleanings	0	2 per month
Volume of domestic liquid waste	0	1 collection per week
Volume of dangerous liquid waste	0	1 collection per week
Number of spills	0	0

Source: Prepared by the author

4.4.
EMERGENCY PREPAREDNESS AND RESPONSE

Until a couple of years ago, emergency management and response plans were usually separate documents and divorced from the ESA or CIA process. Now, it is uncommon to find ESMPs that do not include at least some guidelines for responding to unexpected situations.

However, even when ESMPs include emergency preparedness and response programs that account for the most common risks, a project itself may still generate emergency situations or be subject to them. An example of the latter occurs when certain activities carried out as part of a project exacerbate vulnerabilities in a region and become a hazard in themselves—for instance, the *improper* shaping of road embankments could trigger landslides and lead to a contingency situation, or the construction of a dam whose potential failure could endanger the lives of residents downstream.

A project's implementation and operation are dynamic processes in which, no matter how well planned, unforeseen events may still occur, and often suddenly: excessive rainfall can saturate the soil and cause flooding or landslides; earthquakes or volcanic eruptions may happen without warning; even when all required training has been conducted and preventive measures taken, accidents or near misses can still arise due to human error or unexpected equipment failures. Since these situations are hard to predict, it is essential for the ESMS to have the necessary capacity (personnel and resources) in place to respond effectively and prevent or minimize harm to workers, the community, or the environment. To this end, it is highly advisable for the ESMS to include the following key activities:

- Based on the executive planning of activities to be carried out within the project framework (technical specifications and construction or operational methods to be executed), **identify the work fronts and locations prone to accidents or emergency situations, as well as the individuals and communities that may be affected.**
- Once this has been done, **prepare procedures to prevent or respond to each situation that's been identified, assigning the necessary human, technical, logistical, and financial resources for the purpose.**
- **Assign management, implementation, response, and monitoring responsibilities** so that there is always a person in charge of supervising activities that could potentially trigger an emergency situation and initiating the pre-planned response procedures when deemed necessary.
- Based on the specific characteristics of the project and its personnel, **design, adopt, and implement a communication plan** to ensure that everyone working on the project: i) understands the importance of the emergency preparedness and response system; ii) feels motivated to participate in preparedness and response activities; and iii) knows what to do in these situations.
- **Periodically train all project personnel** so they have a general understanding of the ESMS and a clear grasp of the emergency response plans.
- **Coordinate with government agencies** (national and local) involved in emergency prevention and response, as well as with community groups, to identify common priorities and create synergies for effective emergency response.
- **Periodically run drills** (physical re-enactments of situations in which resources are used in a way that resembles a real emergency) and **simulations** (desktop exercises that test the effectiveness of communication and decision-making protocols) to evaluate how the system functions, and use the results of these exercises in the continuous improvement process.

4.4.1
RISK MANAGEMENT

Risk, as previously mentioned in this document, results from the relationship between the *hazard*, or likelihood of occurrence of a natural phenomenon (geological, hydrological, atmospheric, etc.) or human-induced event (acts of violence, war, large-scale infrastructure construction, handling of hazardous materials, etc.) and the *vulnerability* of the elements *exposed* to it.

Building on the above, every ESA, strictly speaking, serves as a way to assess the risk a project may pose to its surroundings, since by definition, these instruments start by identifying the *vulnerable* elements in the environment that would be *exposed* to the project and comparing them with the actions that could potentially cause a material change in their behavior, in other words, that constitute a *hazard*.

Risk analysis—a dynamic process that must continuously adapt to the changing vulnerabilities of a given area and the hazards it faces—primarily seeks to estimate the potential damage, losses, and consequences that a natural or human-induced hazard may cause to the elements vulnerable to it based on the event's likelihood of occurrence and magnitude. The purpose of this analysis is to determine how to prevent, reduce, transfer, or simply accept the risk, based on a series of management measures that are summarized in **risk management plans** (RMPs), similar to environmental management plans. **Table No. 10** illustrates the phases of risk analysis and management

Table No. 10 | Correspondence between risk analysis and risk management

RISK ANALYSIS		Risk Management	
Hazard analysis	**Vulnerability analysis**	**Management measure**	**Instrument to be used**
Geographic analysis • Location • Extension	Identification of potentially threatened components	Planning measures	Contingency plans Alert systems
Time analysis • Frequency • Duration • Probability of occurrence	Determination of vulnerability factors and cause analysis • Physical • Economic • Social • Environmental	Physical prevention measures	Contingency plans Alert systems
Dimensional analysis • Magnitude • Intensity	Probable estimate of damage or loss	Establishing capacity and conditions	Contingency plans Alert systems

Source: Prepared by the author based on the GIZ Risk Management Manual

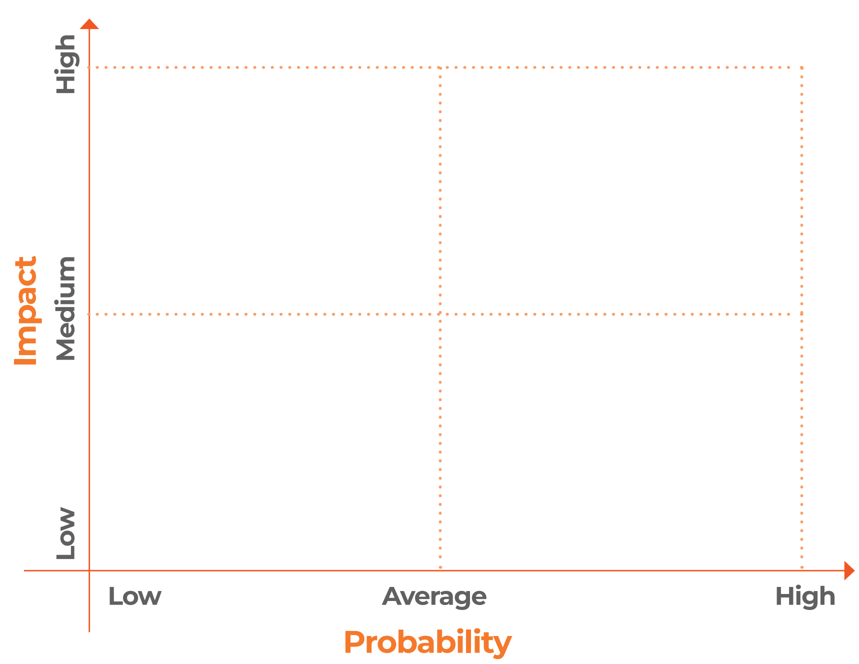
However, whether due to technical or other impediments, it is not always possible to reduce the risk and, even less so, to eliminate it completely. Likewise, the implementation of management measures cannot always prevent the risk from materializing or unwanted environmental consequences from arising. Unless the hazards or vulnerable factors disappear completely, the risk cannot be totally eliminated and its value, however small, will never be zero.

For this reason, the concept of **acceptable risk** was developed, meaning the level of risk a community is willing to tolerate in exchange for a certain rate or level of benefits, outside of which it is not considered justifiable to apply preventive or management measures, either because they are economically unfeasible or because the marginal benefits of implementing them are too small. This concept applies, for example, to a community's decision to use a known floodplain for agriculture since the potential losses from the river overflowing are less than the benefits of using the area's productive capacity the rest of the time.

The scope of risk analyses depends, among other factors, on the following: i) the scale of the geographic area involved; ii) the type of decisions to be made; iii) the information available or feasible and justifiable to obtain; iv) the economic and social importance of the exposed elements; and v) the consistency between the levels of resolution that can be achieved at each stage of the assessment. However, there are no standardized criteria for risk assessment, and it is not uncommon to encounter various methodologies developed for this purpose (*ad hoc*), many of which are highly qualitative or limited in scope. However, there are certain elements that any risk analysis must contain: i) an impact versus probability analysis; ii) the determination of risk thresholds; and iii) a description of how to manage the risk.

To address the first type, it is useful to create a Cartesian system in which the x-axis represents the probability of occurrence of the hazardous event and the y-axis its associated impact. Next, it is necessary to determine different levels of risk, at least approximately, setting thresholds for risks with low, medium, and high probability of occurrence, as well as their associated impacts (see **Figure No. 8**).

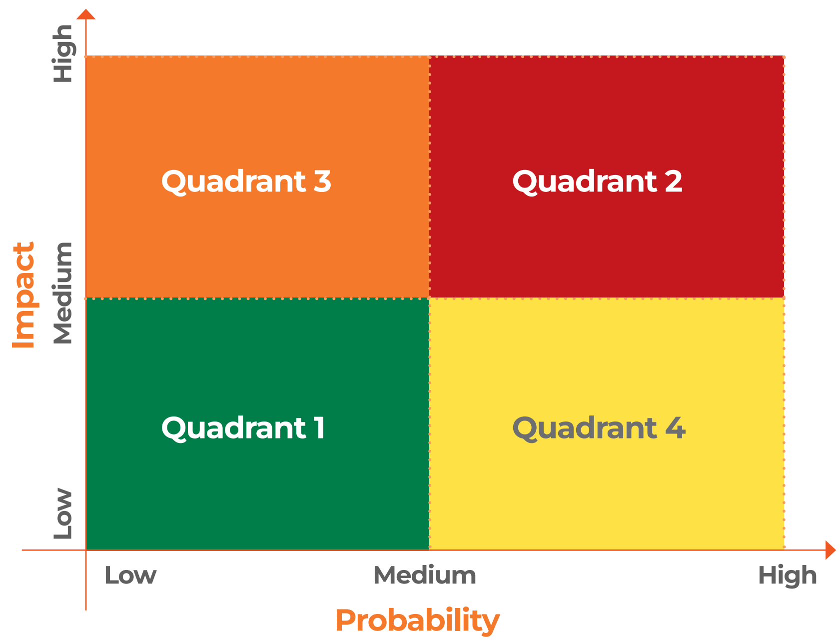
Figure No. 8 | Probability and impact associated with hazardous events



Source: Prepared by the author

In the resulting Cartesian system, four quadrants that show the probability of occurrence of a hazardous event with its associated impacts are identified: a first quadrant where both the probability of occurrence and the associated impact are low (marked in green in **Figure No. 9**); a second quadrant where the probability of occurrence and the associated impact are high (marked in red in **Figure No. 9**); a third quadrant where the probability of occurrence of the event is low, but the associated impact is high (marked in orange in **Figure No. 9**); and a fourth quadrant where the probability of occurrence of the event is high, but the associated impact is low (marked in yellow in **Figure No. 9**).

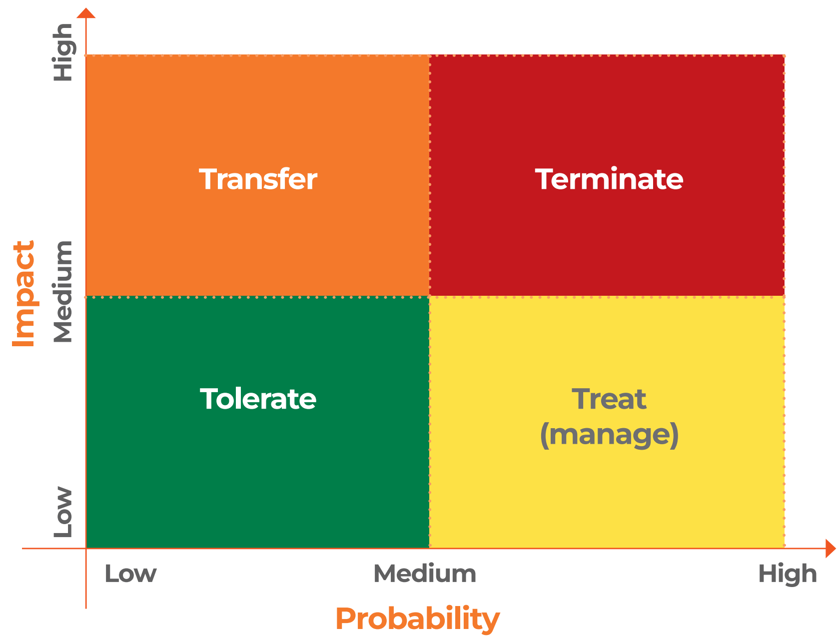
Figure No. 9 | Probability and impact quadrants associated with hazardous events



Source: Prepared by the author

To determine how to manage risk, we need to refer to the concept of **risk appetite**, which is the amount of risk a project is willing to accept in order to achieve its strategic objectives. Based on this definition and relating it to the information in **Figure No. 9**, we can clearly conclude the following: risks located in Quadrant 1, given their low probability of occurrence and associated impact, can generally be *tolerated*; those in Quadrant 2 are clearly inadmissible, as they have both a high probability of occurrence and a high associated impact, so if an excessive number of risks fall in this part of the graph, it is best to *terminate* the project altogether; many of the risks in Quadrant 3 could be *transferred* to other actors (usually insurance companies or trusts), since, although their associated impact is high, their probability of occurrence is low; and most of the risks in Quadrant 4 can be *treated* at the project level, as their probability of occurrence is high but their associated impacts are low. This method of managing risks is known as the *"4Ts": tolerate, treat, transfer, and terminate* (see **Figure No. 10**).

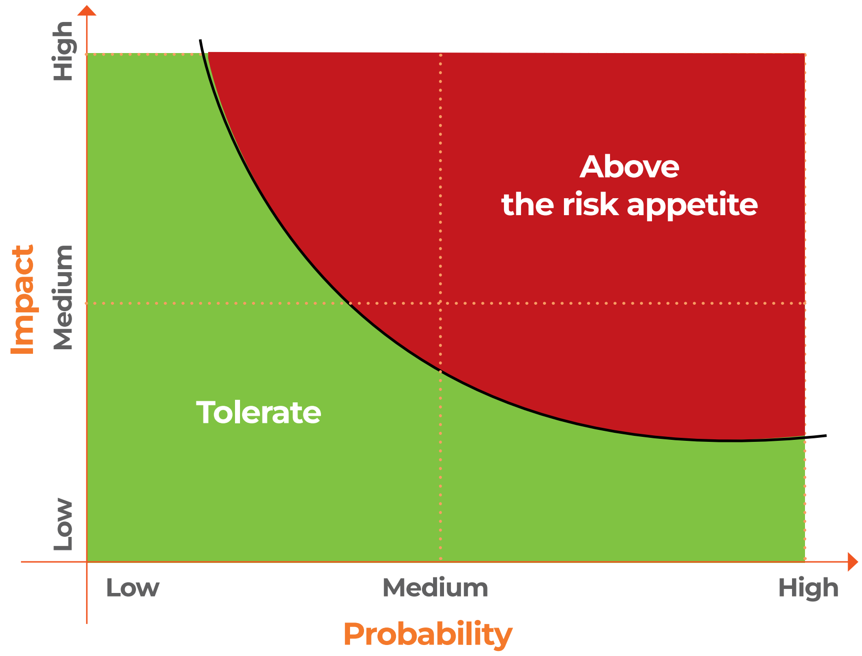
Figure No. 10 | The "4Ts" of risk management



Source: Prepared by the author

Expanding further on the topic, a project's *risk appetite* will generally be limited to situations where: i) both the likelihood of the hazardous events occurring and the associated impacts are low, that is, when risks can be *tolerated*; ii) the likelihood of hazardous events occurring is low even if the associated impacts may be high (*transferable* risks); and iii) the likelihood of hazardous events occurring is high but the associated impacts are low and therefore can be *treated* or managed (see **Figure No. 11**).

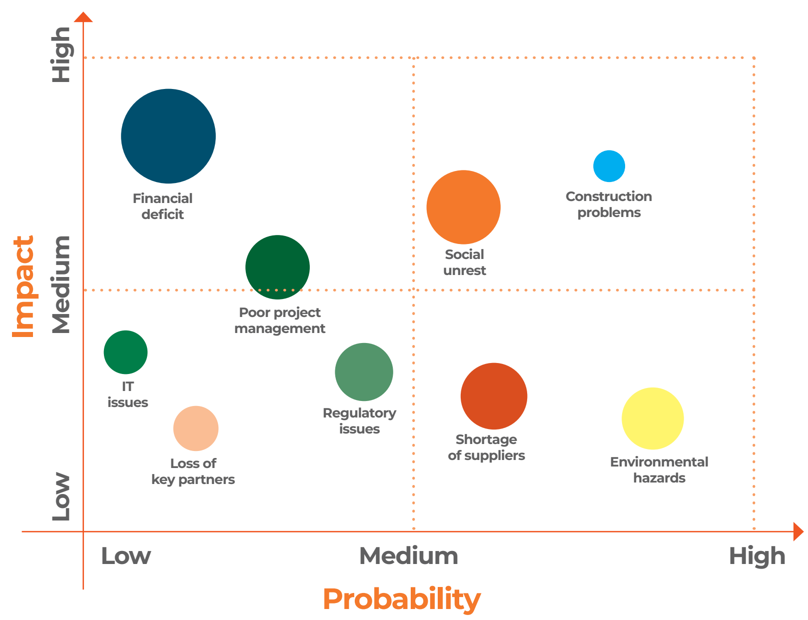
Figure No. 11 | Risk appetite framework for a project



Source: Prepared by the author

Returning to the original Cartesian system, if it is used to plot the probability and associated impact of hazardous events that could undermine the likelihood of project success—such as poor project management, financial shortfalls, technological issues related to IT, environmental hazards, social unrest, the loss of key project partners, changes in national regulatory frameworks, shifts in the economic landscape affecting supplier availability, and unforeseen construction problems—a chart like the one shown in **Figure No. 12** can be produced.

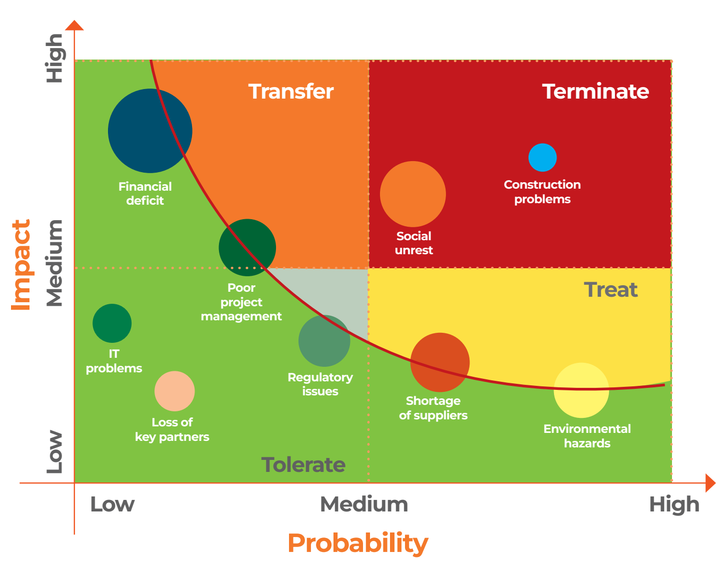
Figure No. 12 | Probability and impact of hazardous events for a project



Source: Prepared by the author

If the resulting graph is superimposed over the risk appetite and 4T graphs (see **Figure No. 13**), it becomes evident that in the case being analyzed most of the risks can be *tolerated* (IT issues, regulatory problems, loss of key partners, and poor project management); some can be *transferred* (financial shortfalls); others can be *treated* or managed (supplier shortages and environmental hazards); but there are some (construction problems and social unrest) that exceed the risk appetite and could lead to *terminating* the plan to execute the project as originally proposed.

Figure No. 13 | Risk appetite, probability and impact associated with hazardous events



Source: Prepared by the author

Although the example presented is theoretical, it allows us to draw some conclusions: risks related to a project's financial and management issues are typically transferred to insurance companies or guaranty trusts in the first case, or management firms in the second; supplier availability is often managed through direct imports, which can be handled by the project itself; and environmental hazards are usually managed through environmental management plans or emergency preparedness and response plans. However, when a project is facing strong opposition from the local population or an extreme social situation (for example, resistance to a land release process for the project), its implementation will likely become so complicated that ultimately, it isn't viable. Likewise, if construction problems are anticipated from the outset, it is very likely that the project will go over budget, require longer execution timelines, or require technologies that are unavailable, to the point that implementation may no longer be feasible.

Risk analysis is often conducted in conjunction with risk identification studies (HAZID), risk and operability studies (HAZOP), and quantitative risk assessments (QRA).

The results of a risk analysis are often presented in various formats: i) as maps showing the spatial distribution of expected losses when the hazard being analyzed occurs and that serve as inputs for decision-making; ii) as risk matrices, which allow risk managers to implement risk management and emergency preparedness plans; or iii) as a combination of maps and matrices.

4.4.1.1 RISK MAPS

Risk maps are graphic spatial representations of the consequences that the occurrence of a hazard would likely have on the exposed and vulnerable elements of the environment (see **Figure No. 14**).

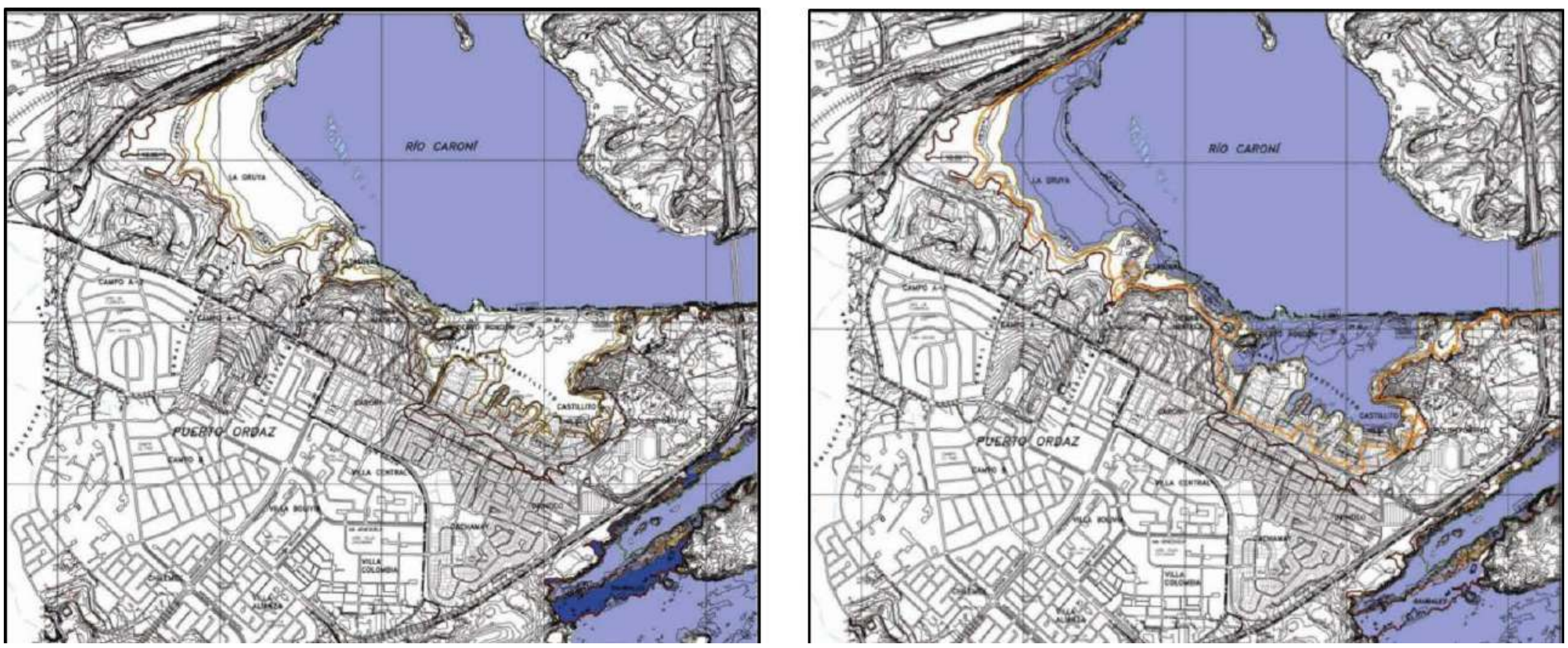
Figure No. 14 | Risk map for a port project

Source: Puerto de Santos, Brazil

The most common ways to present risk maps include:

- **Scenario maps:** These maps show a graphic representation of the effects that different intensities of the same hazard would have on the set of vulnerable elements in a given region. They are generally used to estimate the resources that would be required to manage a potential emergency generated by the analyzed hazard based on its severity (see **Figure No. 15**).

Figure No. 15 | Two flood scenario maps for a river



Source: Tocoma Hydroelectric Plant, Venezuela

- **Potential loss maps:** these are maps that spatially identify the environmental factors (including human communities) most likely to suffer adverse consequences from a hazardous event. This type of map is one of the ways to present risk to decision makers, who usually need to understand the magnitude of the phenomenon being analyzed and its impact on the population or environment.

4.4.1.2 RISK MATRICES

Like risk maps, risk matrices are useful tools for presenting the results of a risk analysis. They are generally structured around the following information (see **Table No. 11**):

- **Reference code**, which is a number assigned to the identified risk to allow for monitoring.
- **Risk scenario**, which describes the hazardous situation being analyzed.
- **Causes**, which analyze the origin of the hazardous situation.
- **Existing preventive controls,** which describe the management tools being used to prevent the risk situation from materializing.
- **Existing corrective controls**, which include a description of the controls currently in place, which will be put into action as soon as signs of the risk materializing are detected.

- **Elements potentially affected by the event,** which detail the infrastructure, population, and environmental components that could be impacted by the materialization of the risk.

- **Probability of occurrence**, which provides an idea of how likely the risk is to materialize and can be expressed in qualitative terms (low, medium, high) or numerical terms (usually linear numerical scales).

- **Consequences or impacts,** which describe the effects of the materialization of the risk in terms of material, human, and environmental damages, expressed either qualitatively (low, medium, high) or numerically (usually on exponential scales to emphasize the importance of avoiding predictable damage).

- **Level of risk**, which results from considering the probability and consequences of the hazardous event. This can be expressed in numerical form (equal to the product of probability and consequence values when numerical scales have been used to characterize these two factors), through color coding, or both, to allow for monitoring the evolution of risk over time.

Table No. 11 | Risk matrix

Code	Scenario	Causes	Controls		Affected elements	Probability	Consequences (impact)	Risk level
			Preventive	Corrective				

Source: Prepared by the author

To determine the level or severity of a risk based on its probability of occurrence and potential consequences, it is common to use a matrix like the one shown in **Table No. 12**, along with a color-coded system that indicates the type of management actions it requires (see **Table No. 13**).

Table No. 12 | Levels of risk based on probability and consequences

Consequences \ Probability	Rare	Improbable	Probable	Highly Probable	Almost Certain
Catastrophic	Orange	Orange	Red	Red	Red
Major	Yellow	Orange	Orange	Red	Red
Moderate	Green	Yellow	Orange	Red	Red
Minor	Green	Green	Yellow	Orange	Red
Insignificant	Green	Green	Green	Yellow	Orange

Source: Prepared by the author

Table No. 13 | Suggested actions by risk type

Color	Type of Risk	Actions
(red)	Extreme	Require an intervention by senior management
(orange)	High	Require an intervention by a group of upper management officials
(yellow)	Tolerable	Actions are performed by a specific person
(green)	Acceptable	Actions are carried out as part of routine processes

Source: Prepared by the author

By assigning numerical values to both the probability of occurrence (usually a simple linear scale as shown by the light blue row in **Table No. 14**) and the consequences (usually exponential to emphasize the resulting changes, as shown by the purple column in Table No. 14) of the hazardous event, a matrix can be generated where each of the cells is the result of multiplying the probability of the event by its consequences. If the value ranges obtained through this process are assigned a color (as shown in **Table No. 15**), the resulting matrix is the one presented in **Table No. 14**.

Table No. 14 | Risk level values based on probability and consequences

Consequences \ Probability		Rare	Improbable	Probable	Highly Probable	Almost Certain
		1	2	3	4	5
Catastrophic	16	16	32	48	64	80
Major	8	8	16	24	32	40
Moderate	4	4	8	12	16	20
Minor	2	2	4	6	8	10
Insignificant	1	1	2	3	4	5

Source: Prepared by the autho

Table No. 15 | Scores by risk type

Color	Range of values	Type of risk
(red)	32-80	Extreme
(orange)	16-24	High
(yellow)	5-12	Tolerable
(green)	1-4	Acceptable

Source: Prepared by the author

Thus, for example, let's assume that a linear scale ranging from 1 to 5 has been chosen to qualify the probability that a hazardous event will materialize, and that an exponential scale has been chosen to reflect the consequences that the materialization of said event would provoke, taking into account that the severity of the risk would be equal to the product of its probability and its consequences, the value of the associated risk for a *highly probable* event (which has been assigned the value of 4) with *moderate* associated consequences (which has been assigned the value of 4), would be 16 (see values in red in **Table No. 16**).

Table No. 16 | Values assigned to risk levels based on probability and consequences

Consequences \ Probability		Rare	Improbable	Probable	Highly Probable	Almost Certain
		1	**2**	**3**	**4**	**5**
Catastrophic	**16**	16	32	48	64	80
Major	**8**	8	16	24	32	40
Moderate	**4**	4	8	12	**16**	20
Minor	**2**	2	4	6	8	10
Insignificant	**1**	1	2	3	4	5

Source: Prepared by the author

As with ESMP monitoring, it is common for a project's risk conditions to also be monitored through tracking matrices (see **Table No. 17**), which are generally built around the following information: i) a code, corresponding to the identifier assigned to the risk event; ii) the proposed measure, which indicates acceptance, management, or transfer of the risk; iii) implementation and monitoring dates for the proposed measure; iv) results of the monitoring process; v) a record of whether the monitoring results triggered an alert (yes or no) and when that decision was made; vi) a record of the start of an alert process, the corresponding notification, who was notified and on what date; and vii) variations in the risk (usually shown by color).

Table No. 17 | Risk-tracking matrix

Code	Proposed measure	Dates		Results	Start of alert			Notification				Risk level	
		Execution	Monitoring		Yes	No	Date	Yes	No	Person notified	Date	Initial	Current

Source: Prepared by the author

4.4.1.3
CONTINGENCY MANAGEMENT AND EMERGENCY RESPONSE PLANS

The terms *contingency* and *emergency* are often used synonymously. Moreover, it is very common to use the word *emergency* to refer to *unforeseen* or *unusual* situations that materialize suddenly, often without warning. However, there is a subtle difference between these two terms.

A **contingency** is a *foreseeable event* that arises from available information or predictive models. In this sense, the occurrence of a contingent event is anticipated, although determining when, where, and to what extent it will occur is limited to a probabilistic statement. For example, floods that occur as a result of one or more natural phenomena or as a result of human activities, or involuntary spills that occur when handling dangerous substances, are contingent events.

An **emergency,** on the other hand, is an *unexpected* and *unforeseeable* event or occurrence that is not reflected in the available information or predictive models. Thus, an emergency usually occurs outside the usual previsions and its management focuses on reactions (actions that are taken *spontaneously*) rather than on a planning process. In an emergency situation, people tend to react with very little information about what is happening (often without even a clear understanding of the magnitude of the events), to make decisions without a defined plan or strategy, and to focus on the most urgent matters in order to restore, as much as possible, the conditions of *normality* that existed before the unexpected event occurred.

Having made this distinction, a **contingency plan** seeks to address situations that *fall outside the norm*, so they can be managed using available knowledge and tools in a coherent and structured way. Based on this distinction, when facing an *emergency,* it is only possible to *react* with what is immediately within reach; when facing a *contingency,* it is possible to *draw up an orderly framework of action* that allows people to act even when there were no indications of its arrival.

Contingency plans are the result of **contingency planning,** which is a process of prior decision-making in which actions are defined based on *likely* hypothetical situations, scenarios, and objectives, and potential systems are structured to manage their occurrence, with the aim of minimizing losses (human and material, in that order). These likely hypothetical situations stem from risk analysis and therefore tend to vary over time. For this reason, *contingency plans* must be dynamic and reviewed regularly to avoid becoming obsolete and to prevent fostering a false sense of security.

Contingency planning is essential to ensure a quick and effective response when an eventuality occurs. Failure to plan implies having to improvise, and improvisation doesn't often provide the best response in terms of time and resources.

As can be guessed, a contingency plan should cover the most likely risk scenarios. It must also be thorough (but without going into too much detail), easy to read, convenient to update, eminently operational, realistic, effective, clearly express what needs to be done, who should do it and when; and strike a balance between flexibility (so it can be applicable in a variety of scenarios) and specificity (with key practical contributions).

As with environmental assessment processes, the best *contingency planning* is achieved through shared and coordinated collaboration between the planning team and the widest possible range of stakeholders implicated in the issue (government, agencies, community representatives, civil organizations, and local experts, among others). For this purpose, holding consultation and discussion meetings or **roundtables** that encourage participation from all stakeholders is a priority. Contingency planning meetings should result in a *draft contingency plan* that includes, at a minimum, the following elements:

- **Scenario identification**: Based on the results of the risk assessment, the team in charge of conducting the contingency planning process should develop scenarios for the hazards and risk levels they consider most likely. A **scenario,** or the point of reference, baseline, or starting point (*benchmark*) from which the contingency planning process begins, is usually defined by a set of hypotheses that, although based on reliable information and analysis, can never eliminate the element of unpredictability inherent in any kind of supposition.

  To develop a *scenario*, it is necessary to take into account the greatest number of possibilities that arise from the risk analysis, but limit the planning process to developing two, or a maximum of three scenarios. The *worst case scenario* (the one that represents the most unfavorable conditions) must always be considered, as well as the *most likely scenario* (the one that has the highest probability of occurrence). The planning process must also anticipate the mechanisms to be used (generally a set of predefined indicators) to compare the conditions observed at a given time with those of the scenario developed, and to implement the corresponding contingency plan accordingly.

- **Determination of strategic objectives:** the actors participating in the *roundtables* **often** approach contingencies from very different perspectives and adopt conflicting positions. If it is not possible to reconcile these positions during the planning process, the differences should at least be acknowledged and understood by all parties. Nonetheless, it is extremely important for the planning process to reach general agreements and establish overarching objectives, since all activities undertaken by the plan must align with those objectives.

- **Definition of objectives and specific activities:** this is the core part of the planning process as it is where each of the plan's components are described in detail, including the tasks to be carried out. In this stage, some of the most important aspects are determined, including the following: i) the people or entities responsible for implementation; ii) the expected timeline; iii) the reference budget; iv) the people or entities in charge of verifying that the task has been properly carried out; and v) the indicators to confirm that the task in question has been effective.

In addition to the aspects mentioned above, contingency plans often include sections that address the following topics: i) legal and regulatory framework; ii) nature of the contingency; iii) operational implications of the contingency; iv) viable responses; v) financial implications of the responses; vi) scope and responsibilities; vii) how the plan relates to other contingency plans; viii) response elements; ix) response operations; x) backup measures; xi) administrative elements; and xii) conclusions.

It is important to emphasize that risk assessment and the development of risk and contingency management plans do not eliminate the possibility that an extraordinary event, whether natural or human in origin, could result the in loss of life or material, cultural damage, or environmental degradation in a given area or region

4.4.1.4 CONSIDERATIONS FOR AVOIDING CONTINGENCY SITUATIONS

The **best contingency is, without a doubt, the one that doesn't happen.** Therefore, it is advisable to have a procedure in place to identify and prevent their materialization. In this context, it is useful to have the following:

- A **good project design**, which allows for most of the reasonably foreseeable contingencies to be avoided.

- Proper **maintenance of equipment and facilities** to prevent failures that may compromise workers, communities, or the environment.

- A breakdown of **preventive measures** such as: i) the construction and maintenance of firebreak strips between the project and adjacent forests; ii) the construction of sea or river defenses to prevent damage from swells or flooding; iii) the implementation of preventive and routine health care programs for workers; iv) the proper management of immigrants attracted by job opportunities on the project; v) the implementation of road safety programs on routes used by construction equipment; and vi) the performance of safety audits at all work fronts.

4.4.1.5
PLANNING AND TRAINING CONTINGENCY MANAGEMENT AND EMERGENCY RESPONSE TEAMS

Although there are semantic and practical differences between how to address a contingency and an emergency, as previously discussed, it is common to use the term *emergency* to encompass both *expected* (contingent) situations and *unpredictable* (emergency) ones. In that sense, any project that has implemented *a contingency prevention and emergency response plan (more commonly known as emergency* preparedness and response plans) will be able to respond quickly and effectively to these events, enabling it to resume normal activities in a short time and minimize potential harm to people, property, and the environment. Planning for these situations should include, at a minimum, the following basic elements:

- **A planning and response team,** composed of members who possess specific knowledge and have the ability to complete specialized tasks to prevent or respond to exceptional situations. This team must: i) receive the training needed to allow it to work in situations of high stress; ii) be empowered to make decisions in the event of interruptions in the chain of command or when its members are not available; and iii) have the human and material capacities to fulfill its task. To ensure the continuous operation of this team (during the day, at night, and on holidays), its composition may vary depending on the work schedules of each of its members. In that regard, many projects tend to display the organizational charts for these teams on their notice boards (and update them regularly), including photos of the team members and their contact details (see **Figure No. 16**).

Figure No. 16 | Information about the emergency brigade members on a seaport's notice board

Source: Puerto de Santos, Brazil

- **Response procedures** with clear goals and objectives for each reasonably-likely emergency situation. These procedures should account for information flows both within the organization and with external stakeholders (such as authorities, communities, local emergency services, contractors, media, and any other identified parties).

- **Protocols for the approval and regular review of response procedures,** to ensure that the preparedness and response plan is always up to date.

- **A revised and updated plan**, at least annually or after each emergency, that continuously validates the composition of the emergency preparedness and response team, as well as its internal operating procedures.

As a general rule, emergency preparedness and response procedures must: i) be communicated to all project personnel; ii) be the subject of broad and periodic training for these groups; and iii) be subject to testing. This process must identify, among other things, the resources needed by the teams responsible for rescue operations; the medical tasks to be carried out; the responses that must be implemented in the face of hazards and incidents (e.g., response to hazardous material spills); and how to control and respond to other specific events. Emergency response procedures can be tested in two ways:

- **Drills,** which are exercises that typically involve first responders and emergency managers and are conducted on site, in actual locations, or in locations prepared for the purpose. During drills, probable events are recreated as realistically as possible through live-action scenarios (meaning controlled tank fires, floods, medical emergencies, etc.).

- **Simulations,** which are primarily desktop exercises that address emergency situations without mobilizing project personnel or members of the community. Their main aim is to evaluate the effectiveness of communication channels and decision-making processes during an emergency.

Drills and *simulations* provide a controlled environment for emergency response teams to make mistakes and learn from them without putting people, communities, or project assets at risk. These exercises are also valuable opportunities to identify gaps in incident preparedness plans, clarify roles and responsibilities, improve inter-

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agency communication, assess resource and equipment needs, and—most importantly—identify areas for improvement.

Regular *drills* and *simulations* are key to ensuring teams and communities are prepared to handle unforeseen situations, as well as to help strengthen their response capacity. The frequency of these events should correlate with the probability of materialization of the hazards identified in the different risk scenarios. Carrying out simulations does not exempt a project from the need to carry out drills, or vice versa. It is advisable to adapt, or even combine these exercises to meet the training needs of project teams or the scenario's requirements.

An essential part of testing emergency response procedures (whether through drills or simulations) is completing an assessment report following the action. This open and honest discussion should be held immediately after the exercise and allow all participants to talk freely about the successes and shortcomings they saw. It is a key component for capturing and identifying critical areas for improvement as far as updating response plans, strengthening capacities in the teams, and identifying training and capacity-building needs for personnel and within the community.

4.4.1.6
SPECIFIC EMERGENCY RESPONSE PROCEDURES

The Emergency Response Plan (ERP) must contain specific protocols tailored to the classification level of the emergency and the corresponding response level. The response level is determined by the identified risk level.

Before an emergency response plan can be developed, it is essential to identify what qualifies as an emergency and determine the appropriate level of response or activation. The Federal Emergency Management Agency (FEMA) of the United States of America recommends three different levels of activation:

- **Level three, normal operations or steady state.** At this level, emergency impacts are on a local scale with minimal threat or impact to public safety or the environment. In general, an incident command is not established since the local site manager or operational authority is typically able to manage the situation.
- **Level two, enhanced steady state or partial activation.** This is the case for events whose impacts are on a local or regional scale with a moderate threat or impact to public safety or the environment. In this situation, it is recommended to establish an incident management committee that includes the person in charge of the site where the event occurred or a specialized internal authority.
- **Level one or full activation.** An emergency at this level has consequences on a regional or national scale and presents a significant threat or has a significant impact on public safety or the environment. At this level, a unified command must be established[8] with representatives from the local, regional, and state or national levels.

The procedures for suspending project activities, shutting down equipment, halting production processes, and beginning the evacuation of personnel to designated and safe assembly points (meeting points, see **Figure No. 17**), must be part of emergency preparedness and response plans. The organizational framework of these plans must include lists of people to contact, identify key contacts, and provide maps of the region or site for both personnel and equipment. Integrating local rapid-response personnel can provide the crucial level of support needed in the initial hours of an incident while specialized teams are being mobilized.

[8] Can include but is not limited to: i) local agencies, emergency services, fire department, emergency medical services (EMS), etc.; ii) local or regional incident management teams; iii) community partnerships; iv) local, regional, or national agencies; v) external investigation committees; and vi) contractors and consultants

Figure No. 17 | Evacuation maps for two sections of a hydroelectric power plant

Source: Porce III Hydroelectric Project, Colombia

Standard emergency response procedures depend on the level of associated risk and may include the following procedures:

- **Shelter in place.** In situations where the risks are outside the project area or cover large geographical areas (forest fires, earthquakes, tsunamis, etc.) it may be advisable to shelter the vulnerable population in a place within the project, since many accidents and losses occur during unnecessary transfers.
- **Isolation.** The materialization of biological risks or others that require quarantines or *sanitary lockdowns* may require potentially affected populations to be isolated to avoid contagion or contamination.
- **Assembling and sheltering outside the affected area.** This is one of the most common procedures within emergency plans, and consists of guiding the population to previously-designated *safe places*, *meeting points* or *shelters* outside the risk area.
- **Evacuation to a safe place.** This procedure is similar to the previous one, but involves moving the population from the pre-designated meeting place to a safe place some distance away. In this case, the safe locations should be determined on a case-by-case basis, depending on the characteristics of the emergency. However, given the economic and psychological impact of this measure[9], it is vital to identify the circumstances in which these procedures should be applied, and when it is best to undertake alternative procedures.

EXAMPLE No. 6, which is included in Section 9 of this Guide, shows how a project is allowing the population access to its emergency plan through an application developed for mobile communication devices (mobile phones or electronic tablets) that provides real-time information about the risks present at any particular moment, as well as meeting points, evacuation routes, health care centers, and other relevant advice in the event of a contingency.

4.4.1.7
MATRIX APPROACH TO RISK ASSESSMENT

Although there are various formats and procedures for assessing risk, the following method offers the possibility to do so using matrices analogous to those used in the environmental assessment process. In this sense, with all the advantages and disadvantages that this type of methodology entails, it can be a good option for quickly assessing risk and tracking it over time.

Thus, if a matrix is laid out so that the columns detail the *hazards* to which a project may be subject (assuming that it will be *exposed* to them in its entirety), and the rows show the *components vulnerable* to the hazards, each of the intersecting cells will represent a partial *risk*. Let's assume that, after the corresponding analyses, six *hazards* (earthquakes, tidal waves, volcanic eruptions, hurricanes, storms, and floods) and five *vulnerable components* in the project have been identified. In that case, a matrix like the one presented in **Figure No. 18** would be generated.

[9] The vulnerable population (people with disabilities, people who speak other languages, and visitors who are not familiar with these procedures), may need specific procedures according to their needs.

Figure No. 18 | Layout of the risk assessment matrix

Matrix method of risk assessment
Interaction matrix

Hazards / Vulnerable components	Earthquakes	Tsunami	Volcanic Eruptions	Hurricanes	Storms	Floods
Component 1						
Component 2						
Component 3						
Component 4						
Component 5						

Source: Prepared by the author

Based on the fact that the project as a whole is *exposed* to the selected *hazards*, each cell of the matrix would represent a partial *risk* since it takes into account the interaction between the *hazard* and the *vulnerability* of the selected component. However, not all hazards have the capacity to generate damage or loss for the vulnerable components in the project. For this reason, the method requires that each hazard be linked with each vulnerable component and, when a material interaction is verified, a diagonal line is drawn in the corresponding cell to mark that interaction (see **Figure No. 19**). This diagonal line divides the cell in two: an upper part called the *numerator,* and a lower one called the *denominator*.

Figure No. 19 | Identification of interactions between hazards and vulnerable project components

Matrix method of risk assessment
Interaction matrix

Hazards / Vulnerable components	Earthquakes	Tsunami	Volcanic Eruptions	Hurricanes	Storms	Floods
Component 1	/	/		/		/
Component 2	/		/		/	
Component 3		/		/		/
Component 4	/		/			/
Component 5		/		/		/

Source: Prepared by the author

If the *denominator* of each cell contains a number that represents the probability of occurrence of each hazard and the *numerator* another that reflects the vulnerability of the project component that will be affected or suffer losses, the product of these two numbers would represent the partial *risk* of that interaction.

To facilitate analysis, the scale used to represent the probability of a hazard occurring and the susceptibility of the vulnerable component could be as simple as a range from one to three—values corresponding to low, medium, and high rates of vulnerability or hazard, respectively. A value of zero would imply the absence of risk due to a zero probability of the hazard's occurrence, or the fact that the element being analyzed is not vulnerable to that specific hazard.

Whatever scale is used, it should always be kept in mind that, since the probability of a hazard occurring is something over which little or no influence can be exerted, it will be the same for all vulnerable components (this assumption applies more clearly to natural hazards). This means that the value placed in the denominator of each cell in a column must always be the same.

Suppose then, that after the corresponding analysis, the probability of occurrence for the six previously-identified hazards has been determined to be high for *Earthquakes* and *Hurricanes*; medium for *Tsunamis* and *Storms;* and low for *Volcanic Eruptions* and *Floods,* and that a scale of 1 to 3 has been used to represent them, where 3 means a high probability and 1 a low one. The matrix that would be generated is shown in **Figure No. 20**.

Figure No. 20 | Evaluation of the analyzed threats

Matrix method of risk assessment

Interaction matrix

Hazards / Vulnerable components	Earthquakes	Tsunami	Volcanic Eruptions	Hurricanes	Storms	Floods
Component 1	3	2		3		1
Component 2	3		1		2	
Component 3		2		3		1
Component 4	3		1			1
Component 5		2		3		1

Source: Prepared by the author

Inversely, *vulnerability* assessment is specific to each component and depends on the type of hazard to which it is subjected. This means that the values placed in the numerators of each cell do not necessarily have to be the same. This method does not accept including symbols in the numerator (as other matrix methods to qualify whether the interaction is beneficial or harmful do), since it is assumed that the risk will always be negative.

Once the *vulnerability* of each element under analysis has been assessed, the interaction matrix could look like the one in **Figure No. 21**.

Figure No. 21 | Vulnerability assessment for project components

Matrix method of risk assessment

Interaction matrix

Hazards / Vulnerable components	Earthquakes	Tsunami	Volcanic Eruptions	Hurricanes	Storms	Floods
Component 1	2 / 3	1 / 2		2 / 3		1 / 1
Component 2	1 / 3		3 / 1		3 / 2	
Component 3		2 / 2		1 / 3		2 / 1
Component 4	2 / 3		3 / 1			2 / 1
Component 5		3 / 2		1 / 3		2 / 1

Source: Prepared by the author

Similar to environmental assessments using matrix methods, interpreting the results requires adding two more rows and columns to the interaction matrix. These contain the number of recorded effects (the number of cells in the row or column with values other than zero), as well as the intensity of those effects (calculated by multiplying the hazard and vulnerability values and adding up the total across the respective row or column). In practice, these final values reflect the partial risk represented by each hazard (when added vertically) or the risk to which each vulnerable component is exposed (when added horizontally). The results of the evaluation reflected in these additional rows and columns make it possible to prioritize actions to reduce the vulnerabilities of the elements under analysis, and to structure a corresponding risk management plan based on them.

For the example in question, the interaction matrix, along with the rows and columns of results, would look like **Figure No. 22**.

Figure No. 22 | Calculating the results of the risk analysis matrix

Matrix method of risk assessment
Interaction matrix

Hazards / Vulnerable components	Earthquakes	Tsunami	Volcanic Eruptions	Hurricanes	Storms	Floods	Effects on the component	Intensity of the effects
Component 1	2 / 3	1 / 2		2 / 3		1 / 1	4	15
Component 2	1 / 3		3 / 1		3 / 2		3	12
Component 3		2 / 2		1 / 3		2 / 1	3	9
Component 4	2 / 3		3 / 1			2 / 1	3	11
Component 5		3 / 2		1 / 3		2 / 1	3	11
Effects caused by the hazard	3	3	2	3	1	4	**Total**	
Intensity of the effects caused by the hazard	15	12	6	12	6	7		**58**

Source: Prepared by the author

By analyzing the rows *Effects caused by the hazard and Intensity of the effects caused by the hazard* that were added to the initial matrix, it becomes clear that the risk from *Earthquakes* is 15 units (Intensity of the effects caused by the hazard), and that this is due to its effect on 3 vulnerable components (Components 1, 2, and 5). Similarly, if we look at the two additional columns, *Component 1* has a risk of 15 that originates from four hazards (*Earthquakes, Tsunamis, Hurricanes and Floods*) to which it is vulnerable.

From these results, it is easy to see that the corresponding risk management plan should focus on reducing the vulnerability of *Component 1* (whose partial risk is 15) to *Earthquakes* and *Hurricanes*. Similarly, the management plan should seek to reduce the vulnerability of *Component 2* (whose partial risk is 12, the second highest) to *Volcanic Eruptions and Storms*, which contribute the most to the aggregate partial risk.

If the values of intensity of effect are added horizontally or vertically, a total number can be established (58, in the example) that would represent the total risk to which the project is subject. This number by itself does not add any information to the analysis, as it does not indicate whether the level of risk identified is good, bad, acceptable, or dangerous. It is simply, for the time being, a reference value that will become meaningful when the risk management plan evaluations are carried out.

The results obtained through this analysis can be represented in a *spider web* or *radar* graph in which each of the radial axes represents the analyzed hazard and the points intersecting them reflect the intensities of the risk (which corresponds to the row *Intensity of the effects caused by the hazard*). The graph obtained would be similar to **Figure No. 23**.

Figure No. 23 | Results chart for matrix-based risk analysis

Source: Prepared by the author

On its own, the figure obtained through this procedure is not very useful, except that it allows us to quickly visualize the most *hazardous* hazards (those whose intersection points are farthest from the origin, in this case *Earthquakes*, *Tsunamis*, and *Hurricanes)*. However, this graph will become important when evaluating the risk management plan.

The results obtained through the analysis make it possible to structure a risk management plan. In this regard, suppose that in the example in question, a plan was produced and that, some time after its implementation, it was necessary to evaluate the relevance of the proposed management measures and verify their effectiveness.

For this purpose, the matrix analysis can be repeated (see **Figure No. 24**), and the new matrix should record the changes in the vulnerability of the analyzed components (marked with a red circle) as a result of implementing the measures included in the risk management plan. Note that the hazard values have not changed, unlike those for the vulnerability of the components being analyzed.

Figure No. 24 | Variation in vulnerability and impact on the results of the matrix-based risk analysis

Matrix method of risk assessment

Interaction matrix

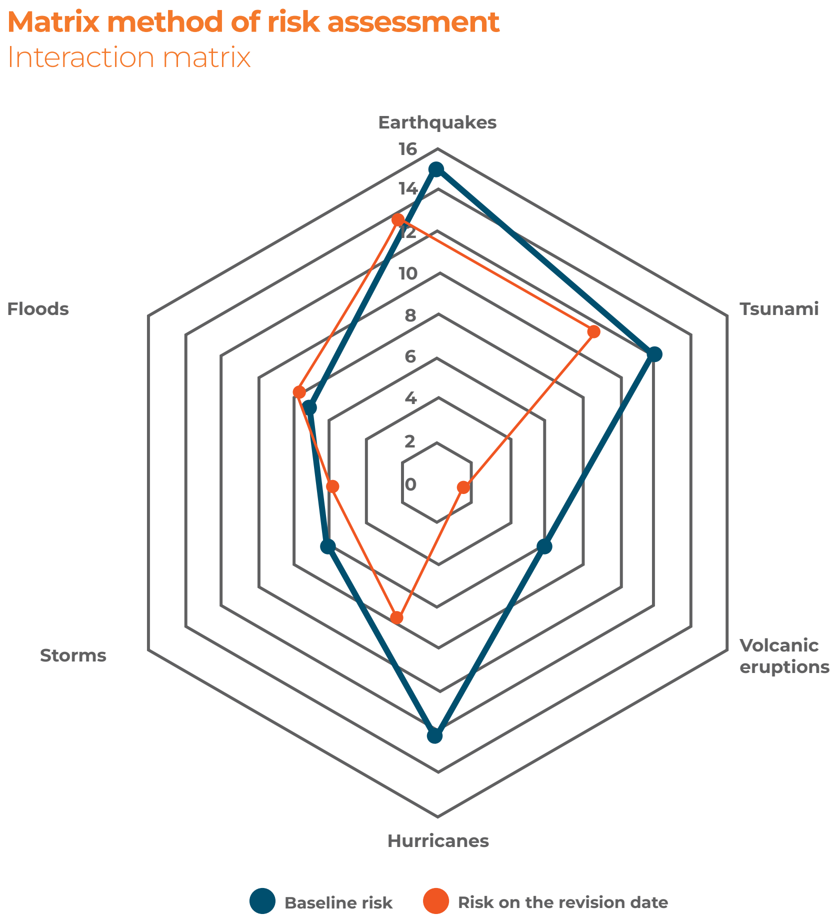
Hazards / Vulnerable components	Earthquakes	Tsunami	Volcanic Eruptions	Hurricanes	Storms	Floods	Effects to the component	Intensity of the effects
Component 1	1 / 3	1 / 2		1 / 3		1 / 1	4	15
Component 2	1 / 3		2 / 1		2 / 2		3	12
Component 3		2 / 2		1 / 3		2 / 1	3	9
Component 4	2 / 3		2 / 1			2 / 1	3	11
Component 5		3 / 2		1 / 3		1 / 1	3	11
Effects caused by the hazard	3	3	2	3	1	4	**Total**	
Intensity of the effects caused by the hazard	15	12	6	12	6	7		47

Source: Prepared by the author

When the new calculations are carried out, the effectiveness of the risk management plan will be determined by the variation in the partial results for each hazard or vulnerable component, as well as in the total risk, when they are compared to the values obtained in the initial (baseline) analysis. If the values obtained after implementing the corresponding plan are analyzed, a reduction in the total risk can be observed—from 58 units to 47. This would mean that the plan is producing the expected results.

The representation of this new analysis, superimposed on the risk graph from the initial assessment, will visually show the effectiveness of the plan: if the new shape is *smaller* than the one in the original graph (as in the example), the plan has achieved, or is on its way to achieving, the desired outcome; if it is larger, it indicates that the proposed risk management measures are not having the intended effect or may even be counterproductive. For the example, the graph that would be obtained in this second analysis would look like **Figure No. 25**.

Figure No. 25 | **Variation in risk as a result of implementing the management plan**



Source: Prepared by the author

If these risk assessments matrices are generated throughout the project's lifecycle, it will be easy to see how the risk is evolving and determine the effectiveness of the management measures that are being implemented. However, it is very likely that after a certain period, the graphs obtained through this procedure would reach a point where the risk can no longer be reduced (that is, the shape can no longer be brought closer to the origin of the coordinates), even if the risk management measures being implemented continue to prove effective. This indicates that the **residual risk** has been reached, meaning that, by definition, the risk can no longer be managed and must instead be accepted or transferred—and contingency plans must be developed to handle it.

Environmental and Social Management Programs (ESMPs), in addition to containing the management programs deemed necessary to address the risks and impacts identified during a project's environmental and social assessment process, must also include actions and procedures to manage unforeseen situations such as risk scenarios, emergencies, or contingencies.

5 Human Resources Capacity and Competence

An effective ESMS requires an ironclad commitment by the project's senior management to instrumentalize its environmental and social policy, implement it, and ensure that all personnel (both internal and subcontracted) observes it. This includes assigning responsibilities, levels of authority, schedules, tasks, and resources to carry out the tasks for which it was created. The ESMS must also include a technical and support team made up of professionals with expertise in environmental, social, and occupational health and safety issues; community relations; communications; operations or production; contracts and procurement; human resources; and other areas related to the type of project to be carried out—and, most importantly, to the type, scale, and complexity of the impacts to be managed.

The team in charge of the ESMS must be led by someone who sets the tone for the group, keeps its members motivated, and, above all, is prepared to manage and guide the team in both typical and contingency situations. The person responsible for leading the ESMS should, if possible, have direct access to the project's senior management.

The ESMS team should not work in isolation, as identifying and, especially, managing the risks and impacts generated by a project often require assistance from other operational areas – for example, the production department, which typically oversees work fronts and can immediately identify planned tasks, or the logistics department, which is responsible for supplying the materials, resources, and inputs needed for those activities.

Training plays a key role in ensuring that the ESMS team is always at the forefront of environmental, social, and occupational health and safety knowledge (both theoretical and practical).

5.1
THE MINIMUM ESMS TEAM

Project management is responsible for setting up, maintaining, and strengthening, as necessary, a structure that allows for the adoption of an ESMS and its use throughout the project's lifecycle. In that regard, it must define the roles, responsibilities, and authority for each person involved in the project, and, above all, provide ongoing administrative support along with sufficient human, technical, and financial resources to ensure effective and sustained environmental and social performance.

At a minimum, the core ESMS team should include at least one person responsible for environmental issues, another in charge of social matters, and a third to manage health and safety themes (see Figure No. 26). Usually, one of these three people chairs the group. For example, if the project's impacts are primarily environmental, it is common for the ESMS team to be led by the person with an environmental background; if the predominant impacts are social in nature, leadership typically falls to the person with expertise in that area; and if the expected impacts are more closely related to health and safety, the expert in those fields often assumes the leadership role.

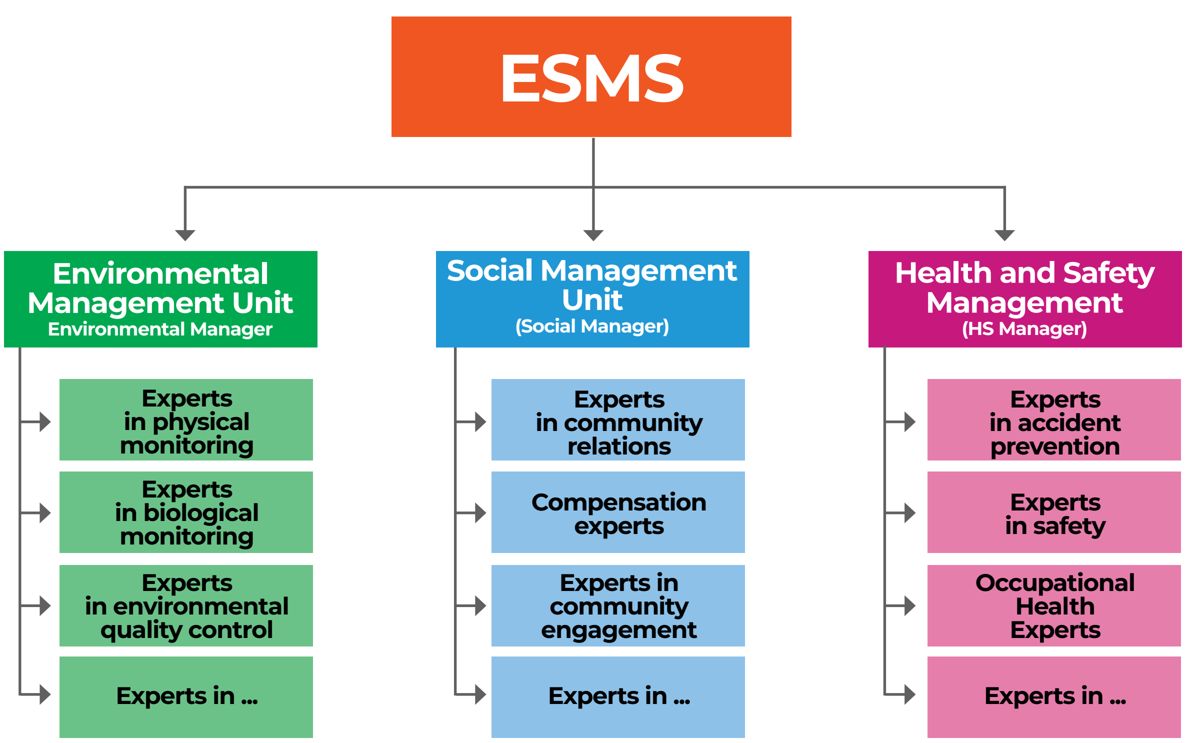
Figure No. 26 | Basic outline of an ESMS

Source: Prepared by the author

As with any rule, there are always exceptions: in small projects or those with low or moderate levels of associated impacts, it is common for social tasks, and even health and safety duties, to be handled by the environmental specialist, thus reducing the team to a single person. In certain types of projects where the most significant impacts relate to health and safety, it is common to have one professional handle environmental and social matters, instead of two separate specialists.

When the needs of a project so require, the expert functions are usually transferred to groups of professionals (see **Figure No. 27**). In such cases, the role of the *expert* (in environmental, social, or health and safety matters) is often replaced by a *management* or *coordination* team (the names can differ), led by a single individual who oversees a group of specialists in specific topics within the same area—for example, an environmental manager overseeing professionals in physical monitoring, biological monitoring, environmental quality control, etc.; or a social manager overseeing professionals handling community relations, compensation, responses to community feedback, and so on.

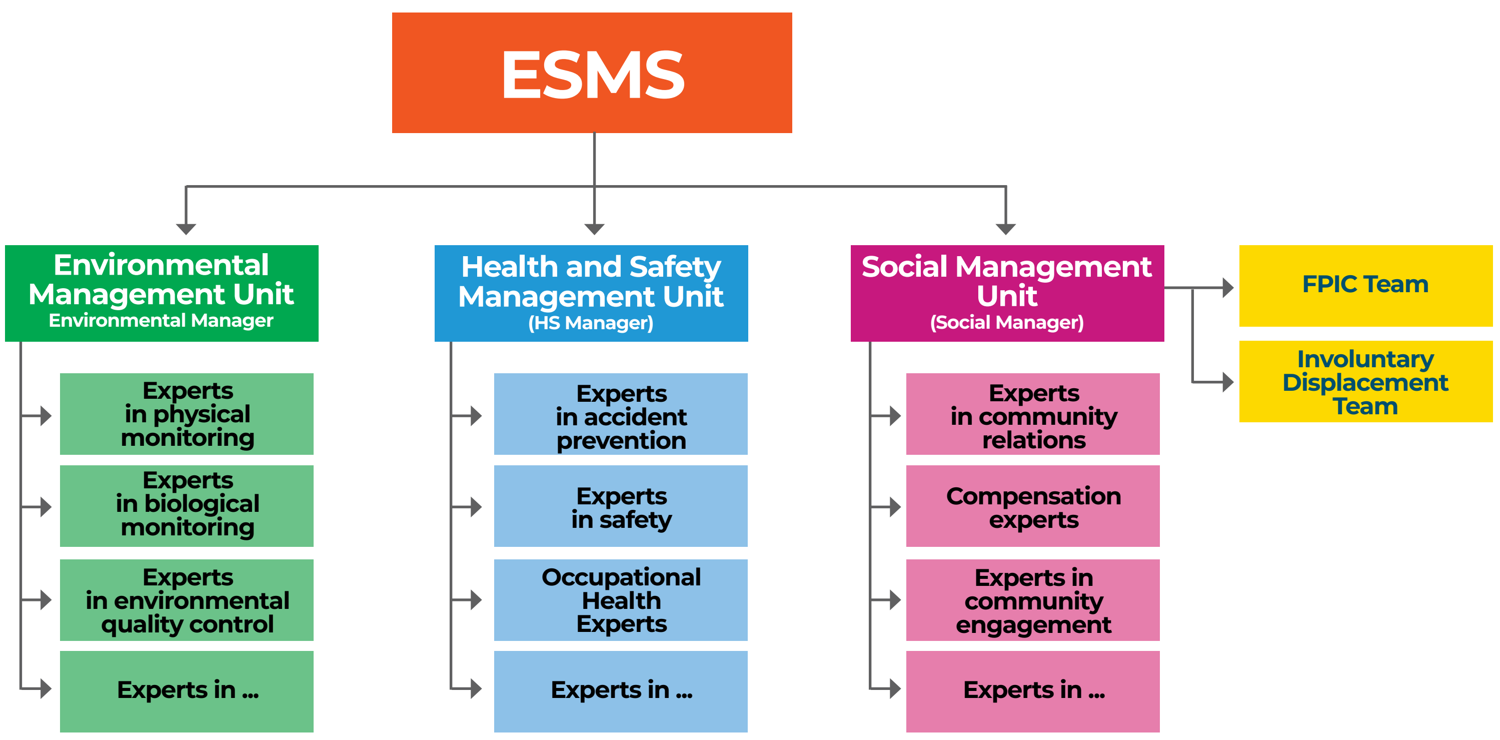
Figure No. 27 | Diagram of an ESMS structured by management areas



Source: Prepared by the author

In cases where a project requires a process of Free, Prior, and Informed Consent (FPIC) with Indigenous communities, it is common for the ESMS team to include professionals with experience in this area to lead both the FPIC process itself and the plans that result from it. In the same way, when the project involves the involuntary displacement of a significant number of people, it is not uncommon for a dedicated professional (or a management or coordination team) to be appointed to handle these matters and implement the compensation and livelihood restoration programs (see **Figure No. 28**).

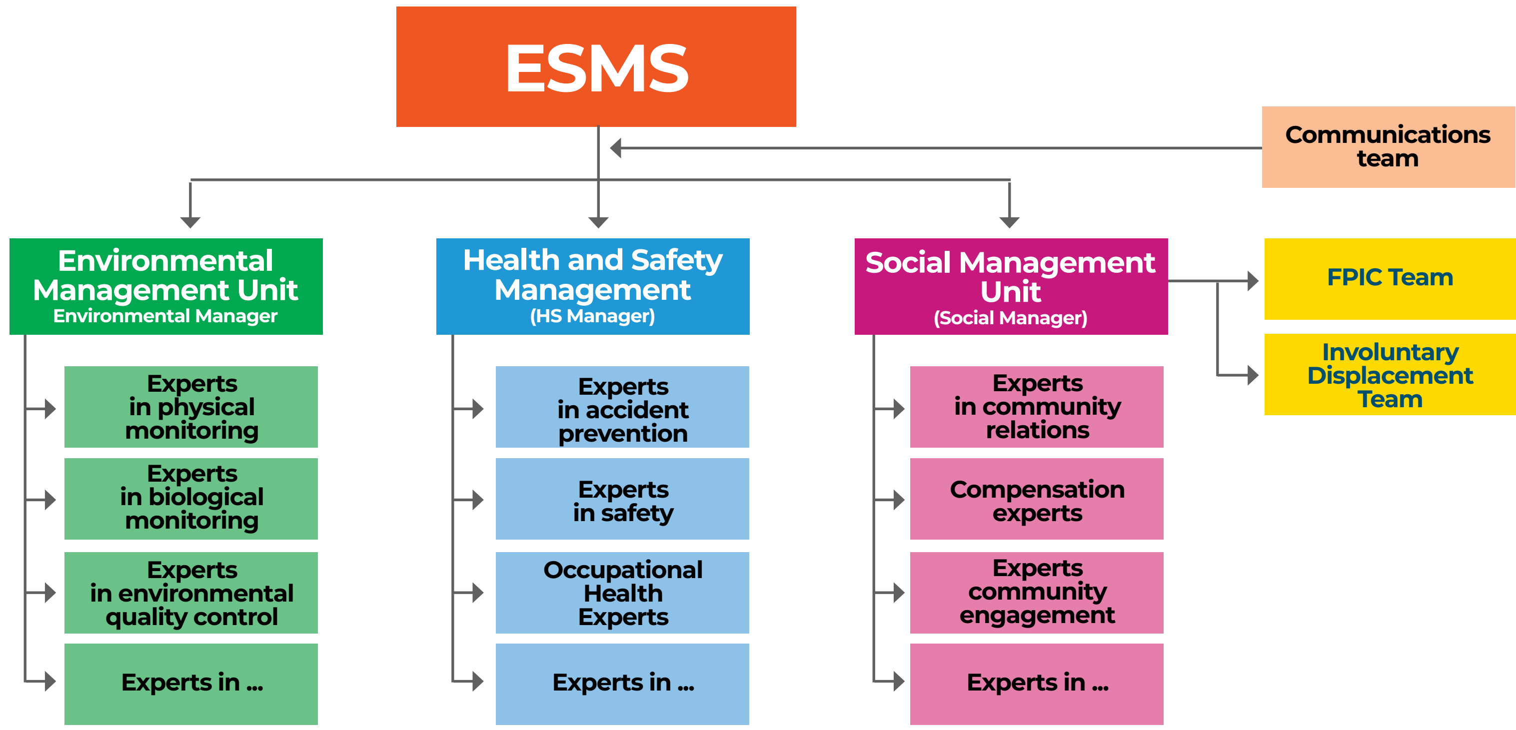
Figure No. 28 | Diagram of an ESMS structured by management areas with teams specializing in social issues



Source: Prepared by the author

Sometimes, when a project is to be located in areas with social conflict, it is advisable to add a specialist (or a group of them) to the ESMS team to handle community relations and communication matters. This group should report directly to the system's leadership and, for greater effectiveness, be placed in the organizational chart above the areas responsible for environmental, social, and occupational health and safety management (see **Figure No. 29**).

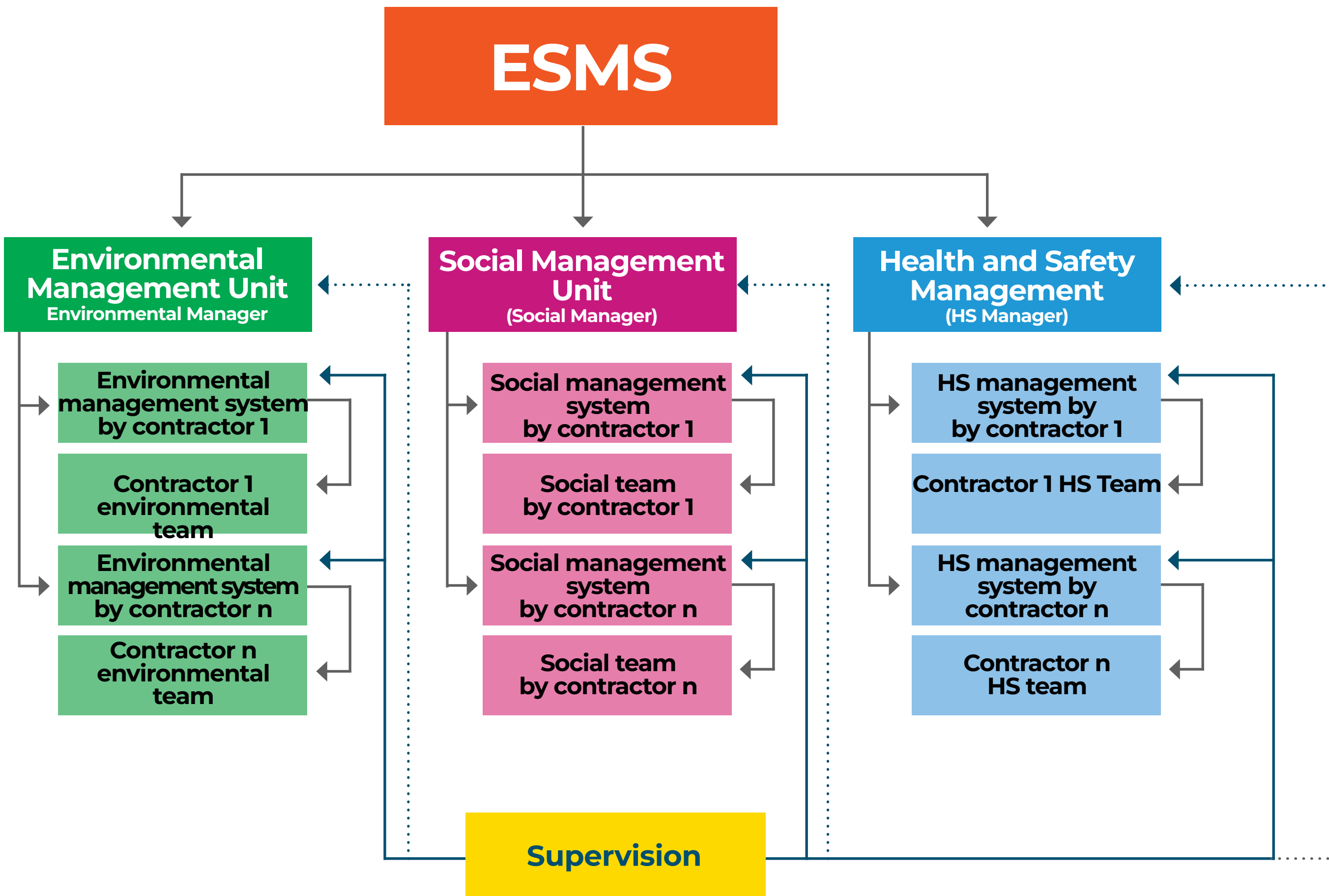
Figure No. 29 | Diagram of an ESMS structured by management areas with teams specializing in social and communication issues



Source: Prepared by the author

The ESMS for large projects tends to be more complex, as they need to incorporate, in addition to their own environmental, social, and health and safety (ESHS) team, the ESHA teams of their contractors, subcontractors, and supervision (sometimes called *inspection, oversight* or *auditing*). In these cases, the project's ESMS team is often reduced to a minimum number of specialists grouped into units (departments, directorates, or coordination offices) responsible for environmental, social, and health and safety issues, while most of the environmental management is delegated to contractors and their subcontractors. The project team's role focuses more on *monitoring* ESHS *management* rather than directly managing these issues; and the supervision team concentrates on overseeing the contractors and providing information to the project's units (see **Figure No. 30**).

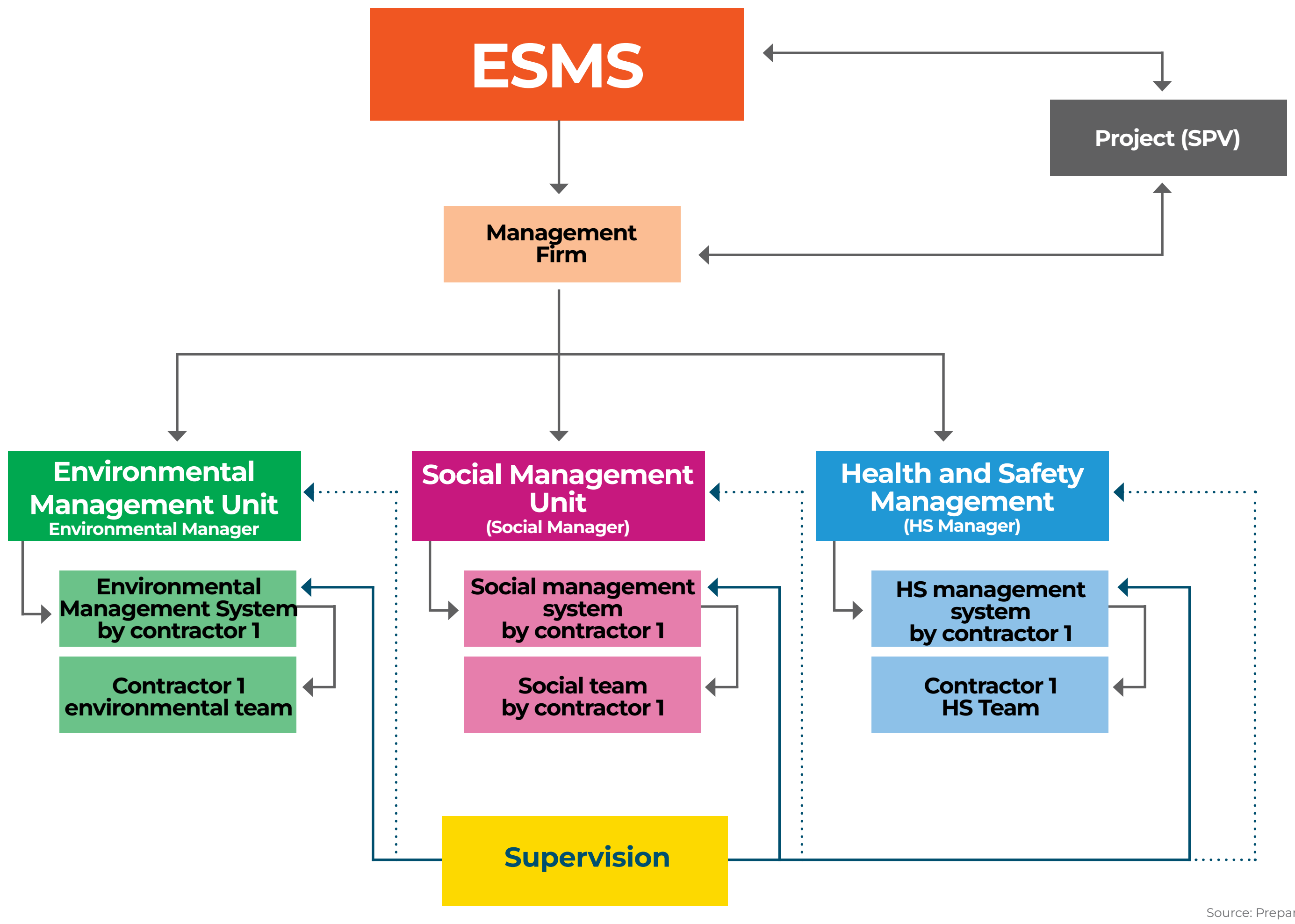
Figure No. 30 | Diagram of an ESMS when environmental and social management is transferred to contractors and supervision teams



Source: Prepared by the author

In some cases, especially when the project is managed by a special purpose vehicle (SPV), ESMS administration is often outsourced to a specialized firm, also known as a *management firm*. In these situations, the management firm ensures the project management and monitoring functions, instead of the project itself (see **Figure No. 31**).

Figure No. 31 | Diagram of an ESMS when environmental and social management is transferred to a specialized firm



Source: Prepared by the author

While the structure of the ESMS must be adapted to the needs of the project developer, the nature of the project itself, and the type of impacts and risks to be managed, among other aspects, there are certain characteristics it must always have. Some of these are:

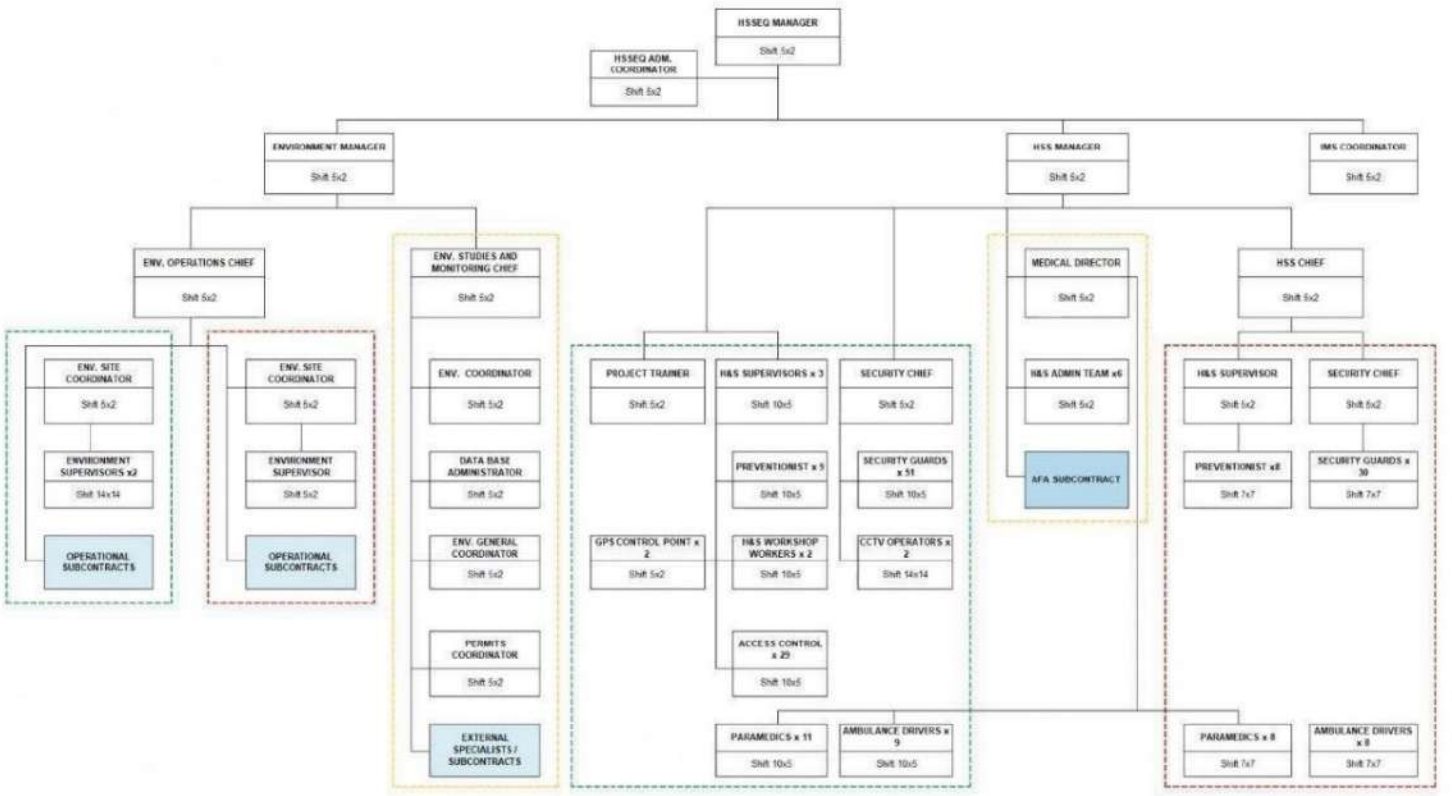
- The designation of **a leader** who sets objectives and priorities, ensures effective coordination, and fosters a collaborative environment that enables the desired outcomes to be reached.
- The assignment or hiring **of a well-trained group of professionals** in the environmental, social, and occupational health and safety fields who possess the skills needed to achieve the established objectives, uphold the highest ethical standards, and are committed to teamwork, placing shared goals above personal interests.
- **Clear and aligned goals and objectives**, allowing the team to focus their efforts on achieving the predetermined goals.
- **Guiding principles for coordination**, which define the strategies and action plan for each team member.
- **Clearly defined responsibilities and decision-making levels** to avoid internal conflicts.

EXAMPLE No. 7, included in Section 9 of this Guide, illustrates how a national-level public agency responsible for road management was internally structured to ensure proper handling of the environmental and social aspects of all the road projects it develops.

5.2
PROVISIONS FOR WHEN THE ESMS IS TO BE ENTRUSTED TO A THIRD PARTY

Depending on the characteristics of the project, the actual *management* of its ESMS may be entrusted to a third party, with the project team retaining *oversight* responsibilities. These arrangements are common in complex projects that, for example, involve a construction firm, often with an engineering, procurement, and construction (EPC) contractor (see **Figure No. 32**) hired to execute the construction, and a firm responsible for works supervision (inspection, oversight, or auditing), appointed to ensure that the project is built properly; or when the project's ESHS management has been assigned to a *management firm* that is not necessarily involved in construction or supervision. In these cases, it is advisable to take the points detailed below into account.

Figure No. 32 | Organizational chart of the environmental management system adopted by the main contractor in a hydroelectric generation project



Source: Alto Maipo Hydroelectric Project

EXAMPLE No. 8, which is included in Section 9 of this Guide, details how a project's ESMS, initially designed to meet the requirements of local legislation, had to be adapted to respond to international best practices and enable access to financing from the Inter-American Development Bank.

5.2.1
PROVISIONS FOR CONTRACTING AN EPC OR MANAGEMENT FIRM

As discussed earlier in this document, the purpose of an ESA, in practical terms, is the elaboration of management measures to prevent, mitigate, restore, or compensate for unwanted effects, or to incentivize the generation of positive effects. In order to be effective, the measures must be integrated into the corresponding Environmental and Social Management Programs (ESMPs) and translated into Environmental Technical Specifications (ETSs) that indicate what to do, who will do it, how it should be done, when it should be carried out, how proper implementation will be recorded, how success will be measured, and most importantly, how its execution will be paid for (see **Table No. 18**). However, having ETSs is not sufficient in itself – it is also necessary to ensure that the project budget includes an investment line item (bill of quantities) to cover the costs of implementing each of the proposed measures.

Table No. 18 | Examples of environmental technical specifications

Specification CO-025	
Targeted environmental impact	Erosion from the removal of plant cover.
Measure	Revegetation and planting.
Implementation lead	Contractor.
Procedure	Planting of grass species on leveled areas with an organic soil layer at least 0.3 m thick. The use of fertilizers to support the establishment of the planted vegetation must be approved by the Oversight team.
Means of verification	Works acceptance certificate approved by Oversight.
Frequency	One time, when needed.
Measurement	Per square meter (m^2) of area that, after one dry season, shows more than 60% of net vegetation recovery relative to the total revegetated area.
Payment method	At the contractual prices (which include labor, equipment, tools, facilities, provision, loading, transportation, and unloading of materials) for revegetation.
Comments	The activity will be carried out in: i) all permanently excavated or filled areas that were originally covered with natural vegetation; ii) sites where gabions are used as the support or stabilization structure; and iii) any other locations indicated by the project Oversight team.

Source: Prepared by the author

Specification CO-028	
Targeted environmental impact	Erosion from pouring water into the waterways at high speeds.
Measure	Building energy dissipators at the outlets of ditches, crown trenches, drainage structures, and areas where water is discharged at high velocities.
Implementation lead	Contractor.
Procedure	The contractor will propose the locations for these works, subject to approval by Oversight. The contractor will submit the plans for the works to Oversight, together with the technical specifications, the execution schedule, and the corresponding budget. Once these have been approved, the contractor will proceed with their construction.
Means of verification	Works acceptance certificate approved by Oversight.
Frequency	One time, when needed.
Measurement	Per cubic meter (m^3) of the material selected to build the energy dissipator (cyclopean concrete, gabions, riprap, etc.). The excavations required for building the dissipator will be measured in cubic meters (m^3) of each type of material excavated and will be paid at contractual prices.
Payment method	At the contractual prices (which include labor, equipment, tools, facilities, provision, loading, transportation, and unloading of materials) for the elements used in building the dissipator (cyclopean concrete, gabions, riprap, earthworks).
Comments	The installation, use, and removal of temporary supports—whether required for construction purposes, for the contractor's convenience, or for personnel safety—will not be measured or paid for, nor will any protective measures taken by the contractor to safeguard excavation faces, excavated sections, or temporary slopes be measured or paid for, as the corresponding costs are considered to be included in the applicable excavation items.

Source: Prepared by the author

There are certain management measures, especially preventive ones, whose translation into an ETS may seem incomplete due to the difficulty of assigning individual costs or defining how it should be measured (see **Table No. 19**). These items may include measures such as avoiding unnecessary intervention in waterways, prohibiting hunting and fishing in the project area, or restricting the use of equipment signaling devices during unauthorized hours. In these cases, execution is most often financed using the *indirect costs* budget item.

Table No. 19 | Example of a preventive environmental technical specification (non-quantifiable)

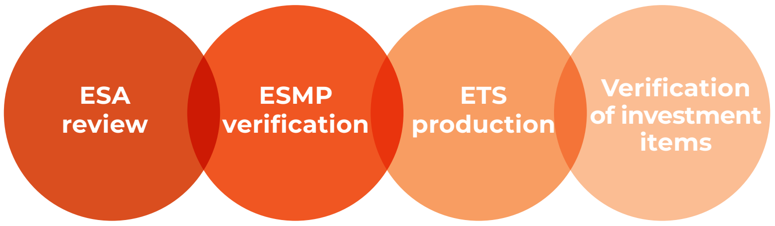
Specification CO-052	
Targeted environmental impact	Air pollution.
Measure	Ongoing preventive maintenance of equipment and machinery powered by internal combustion fossil fuel engines.
Implementation lead	Contractor.
Procedure	The contractor will submit monthly certificates attesting to the maintenance of its equipment and machinery powered by fossil fuel combustion.
Means of verification	Inspection visits by the Oversight team.
Frequency	Monthly.
Measurement	This item will not be measured.
Payment method	This item will not be paid.
Comments	The Oversight team may prohibit the use of equipment or machinery that emits objectionable fumes, odors, or smoke into the atmosphere.

Source: Prepared by the author

As expected, it is always advisable to avoid charging the cost of management measures to the *indirect costs* budget line whenever possible because: i) it is usually limited; ii) once exhausted, it is difficult to renegotiate; and iii) whether it is used or not, it will most likely be charged by the EPC anyway. This last point leads many firms to avoid implementing tasks charged to *indirect costs*, because as this budget line is depleted, the project's profitability also decreases.

The first tasks to be carried out before hiring the EPC or management firm should focus on: i) reviewing the project's ESA, with an emphasis on the practicality and feasibility of implementing the proposed management measures; ii) verifying the ESMP to ensure it includes each of the management measures proposed in the ESA; iii) if not previously done, preparing—or otherwise reviewing—the ETSs for each management measure; and iv) verifying that the project budget includes the investment lines and necessary funds to pay for the implementation of the proposed management measures. Although these tasks can be performed separately, it is important to take the close relationship between them into account (see **Figure No. 33**).

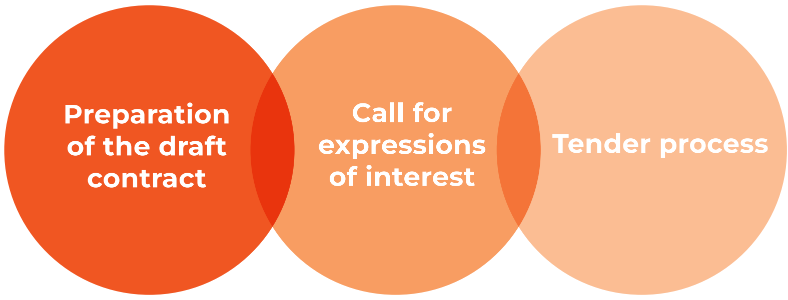
Figure No. 33 | Connections between initial tasks for hiring the EPC or management firm



Source: Prepared by the author

Only after these activities are complete can work begin on: i) reviewing the draft contract that will govern the relationship between the project and the firms to be hired, to ensure it includes the clauses needed to enforce compliance with the project's ESHS requirements; ii) preparing the documents for the call for expressions of interest; and iii) preparing the selection process documents for the firms that express interest (see **Figure No. 34**).

Figure No. 34 | Tasks to accomplish before the EPC or management firm selection process



Source: Prepared by the author

When reviewing the contract, it is important to ensure that it includes the following elements:

- Cross-references to the project's ESA, ESMP, and ETSs, as well as any other environmental or social information that may be of interest to the firm to be hired.
- A clear statement of the obligation to comply with the project's ESHS requirements, especially, but not limited to: i) applicable local legislation; ii) the ESMP; iii) the ETSs; and iv) any other ESHS requirements adopted by the project (e.g., standards set by the financing institutions).
- A description of the inspection and audit mechanisms the project will use to verify the firm's ESHS performance, including but not limited to inspections by: i) competent authorities; ii) firms contracted by the developer to verify the project's ESHS performance and compliance with applicable ESHS requirements; and iii) financial institutions or their representatives.
- Statements of when the firm's responsibility for managing the project's ESHS begins and ends, including any related obligations arising from that responsibility.
- A description of the minimum required personnel the firm must assign to the project to manage ESHS, and the procedure for replacing these staff members if necessary.
- A description of the requirements the firm must meet to strengthen the ESHS management capacity of its personnel.
- A description of the formats and frequency of ESHS reporting.
- Clear instructions on how to proceed to obtain the required licenses or permits, or to modify them when necessary.
- A detail of the sanctions to which the firm will be subject in the event of non-compliance with the contractual ESHS stipulations.
- An ESHS performance guarantee.
- Incentives for good ESHS performance.
- Any other details deemed relevant.

When it comes to the process of calling for expressions of interest, it is recommended that the corresponding documents include the following elements:

- References to the project's ESA, ESMP, and ETSs (usually via electronic links).
- Certification requirements for the firm, for example, ISO 9000 (quality), ISO 14000 (environmental management systems), ISO 45000 (occupational health and safety systems), or ISO 31000 (risk management systems).
- A detailed list of projects carried out by the firm in the country where the project will take place, including a description of the complexity of each project's ESHS aspects: number of workers; number of resettled families; procedures used to manage biodiversity; free, prior, and informed consent processes conducted; social complexities encountered.
- A list of environmental or social proceedings, lawsuits, or legal actions the firm has been involved in over the past 6 to 10 years, including, where possible, the ruling issued by the competent authority in each case.
- A list of key personnel who have been responsible for ESHS management in other projects.

When it comes to the bidding process, it is advisable to take into account the following recommendations:

- Include references to the project's ESA, ESMP, and ETSs in the specifications.
- When possible, break down the ESMP and the ETSs by construction activity so the firm understands what must be completed in each case.
- Require a declaration from the bidder stating that *all* the costs of implementing the ESMP have been included in the bid.
- Require the bidder to submit an ESHS performance guarantee along with their bid.
- Require that the firm designate a minimum full-time ESHS team.
- Include specific requirements for submitting periodic ESHS reports (weekly, monthly).
- Require the firm to submit, upon request, a detailed budget for carrying out ESHS tasks during the project's pre-execution phase (staff mobilization, updates to the ESA and ETSs, obtaining permits, etc.).
- Require the firm to submit specific plans for each stage of project development for the following aspects: health and safety; traffic management; gender-based violence prevention; sexual harassment prevention; prevention of communicable diseases (HIV/AIDS, COVID-19, and sexually transmitted infections); employee well-being; employment and vocational training management; social values management; community engagement management; communications.

During this process, it is important to keep the following in mind:

- With very few exceptions, the firm to be hired (EPC or management firm) will only carry out what it is paid to do, that is, only what it has proposed and budgeted. Consequently, any activity not included in its offer must be financed with additional resources.
- With the exception of the management firm (which is specifically hired to handle these matters), the EPC contractor is generally not only unfamiliar with ESHS principles but often uninterested in them, as their primary objective is to build the project.
- In the country where the project is to be carried out, there may not always be good experience in ESHS management, especially for large projects.
- Generally, the personnel assigned by firms to manage the project's ESHS are not the same individuals who were involved in preparing the bids submitted during the procurement process. Therefore, it is not unusual for them to be unaware of the specific commitments.
- If penalties for non-compliance with the applicable ESHS requirements are not included, it is common for firms to find nothing wrong with non-compliance. Similarly, if incentives for compliance with these requirements are not included, it is common for the firm to find no added value in complying with them.
- With the exception of the co-management firm, which is normally hired under a *consulting* or *service contract*, it is very common for construction firms, which are hired under the *lowest price* model, to "cripple" the project's ESHA management budget to make their offer more competitive.

5.2.2 PROVISIONS FOR PROJECT IMPLEMENTATION

Once the firm responsible for managing the project's ESHS—whether an EPC or management firm—has been selected, project execution may begin. For this, the following points are recommended in relation to ESHS:

- **Simplify the format of reports** that contractors must submit.
- **Reduce the number of reports** that contractors must submit and replace them with joint inspections.
- **Always ensure** to have **access to all project sites and facilities** for inspection.
- **Carry out frequent supervision** of the work being done.

- **Verify** that the contractor is holding **regular talks** with personnel on ESHS **topics**.
- **Prepare and use checklists** to ensure all issues to be evaluated in the contractor monitoring process are verified.
- **Require regular training and supervision** for the contractor's personnel by international consultants who are experts in ESHS.
- **Consistently train contractors** on ESHS issues.
- **Periodically check** the ESHS aspects.

5.3 TRAINING REQUIREMENTS

An ESHS management system requires a team with, among other qualities, solid training and the necessary experience to handle environmental, social, and health and safety matters. While staff must meet these qualifications, they should also undergo continuous training to acquire new skills and knowledge that improve individual performance and contribute to achieving the project's ESHS objectives.

Along with other advantages, training aims to improve individual performance by enabling personnel to develop or strengthen the skills needed to carry out their tasks more efficiently and effectively; it motivates staff by fostering a sense of commitment and belonging to the project; and it helps professionals stay up to date with trends and advances in their field.

A training program should be structured around the following points:

- **Identification of training needs,** which can be done through performance evaluations, employee feedback, and analysis of skills gaps, among other methods.
- **Setting objectives,** by identifying, in a clear and measurable way, what it is hoped to achieve at the end of the process, whether in terms of acquiring or accentuating specific skills, improving performance in certain areas, changing behavior, or preparing the person to play a more advanced role.
- **Selection of the methods to use** to keep employees engaged and attentive: face-to-face classes, online courses, mentoring or tutoring, or hands-on activities.
- **Personalization,** offering individualized training options based on the expected goals and strengths and weaknesses of each team member.
- **Process evaluation and feedback,** which allows for assessment of the impact achieved, verification of goal attainment, and identification of any need to adjust the process.

Training is not a one-time activity but an ongoing process that should be carried out over time and, in theory, never truly end, as new technologies and knowledge products continue to emerge every day.

Among the topics in which ESMS staff should be trained are the following:

- The project's environmental, social, and health and safety policies.
- Ways to implement the specific measures included in the management program.
- Environmental and social technical specifications.
- ESHS regulations applicable to the project (both local and international, including those voluntarily accepted).
- Proposed methodologies for project implementation.
- Forms of interaction with human groups (especially vulnerable ones) that may be impacted by the project.
- The contractors' ESHS management scheme.
- How the oversight team will monitor the project's ESHS performance.
- Use of fire prevention systems.
- Emergency preparedness and response plans.

- How the internal and external mechanisms for collecting and processing complaints and claims work.

- Methodologies for the project's ESHS monitoring.

5.4
ESMS GOVERNANCE

One of the issues that is often overlooked when forming the team in charge of implementing an ESMS is its governance.

The governance of an ESMS consists of the framework, functions, and processes that guide its activities in order to meet the proposed environmental, social, and health and safety goals. This involves overseeing the work of the ESMS team to ensure compliance with applicable policies, standards, and guidelines; defining roles, responsibilities, and delegated decision-making authority for each team member based on an assessment of the associated risk; ensuring the active involvement of all members of the ESMS team and the broader project team; and consistently monitoring the system's performance to address any deviations that may arise.

The framework, functions, and processes that make up the ESMS must be clearly defined during its design so that, once adopted, the system can be implemented smoothly. The following are some of the governance ingredients that should be part of the structuring and subsequent adoption of an ESMS:

- Criteria for: i) acceptance of deliverables (studies, assessments, etc.); ii) management success; iii) use of allocated resources; and iv) performance monitoring.

- Levels of delegated authority based on the associated risk.

- Processes and procedures for: i) aligning internal clients with the project's ESHS requirements; ii) identifying, escalating, and resolving incidents; iii) decision-making; iv) modifying ESHS management plans or programs; and v) communicating information internally and externally.

- Relationships between the ESMS team, other project units (production, logistics, human resources, etc.), and external stakeholders to ensure that environmental and social issues are integrated into decision-making processes and allow for effective use of the mitigation hierarchy.

- Relationships between the members of the ESMS team.

Finally, there are two aspects that directly affect the efficiency of a project's ESMS, i) the level of management autonomy granted to the ESMS team; and ii) the team's placement within the project's overall organizational structure.

For the first point, it is essential to establish in advance which technical, financial, economic, or other types of decisions the ESMS team is authorized to make independently, and which ones must always be approved by the project's senior management. This is essential because the time the ESMS team takes to resolve routine or unforeseen situations will have a direct impact on its efficiency. On the other hand, it's important to keep in mind that project management will not always be able to respond to the needs of the ESMS team, as it will often have to address other issues arising in other areas of the project.

This second issue is also important. The general recommendation is for the ESMS team to be positioned very close to project management in the organizational structure, and above the functional departments. Among other reasons, this is recommended in order to: i) keep project management informed about ESMS-related developments; ii) secure management support for decisions that may also involve actions by other technical or administrative areas of the project; and iii) speed up the review and implementation of measures that require management's approval.

Sometimes, the ESMS team is placed under one of the project's functional departments (for example, construction or production) within the overall organizational structure. While this setup can work reasonably well (and in fact, some projects do operate this way), there is a risk of internal conflict or power struggles when the ESMS team needs to make operational decisions that go beyond the scope of the department to which it reports.

Placing the ESMS team under a functional department within the project disrupts direct communication between the ESMS team and senior management, and forces the functional department to act as an intermediary between the system team and the project's top management.

Vehicle roadways - Ruta del Cacao – Colombia.

An effective ESMS requires, among other things, a highly trained interdisciplinary team that clearly understands its responsibilities, levels of authority, timelines, tasks, and the resources at its disposal to carry out its assigned mission. This team must be led by someone who sets the tone for the group, keeps its members motivated, and, above all, is prepared to manage and guide the team in both routine and emergency situations. It should work in close coordination with other project units and stay at the forefront of both theoretical and practical knowledge in the environmental, social, and occupational health and safety fields.

6 Capacity for Stakeholder Engagement

A project is an external factor that, whether suddenly or gradually, will in some way alter the behavior or way of life of the people living near the site where it is implemented. As an intangible thing, and essentially a vision of what the future will look like once it is implemented, a project must strive to convey that visionary image to the community in a way they understand and encourage their participation in its realization.

As one might expect, engaging with the community on this issue is not easy, and can sometimes be an uphill battle. At best, many projects start from a situation of disbelief and distrust on the part of the population. In extreme cases, projects must start the process of engaging with the community in the face of open opposition, usually stemming from negative past experiences or unfulfilled promises made by other projects.

Whatever the situation, trust and confidence within the community are built gradually as a project: i) shares realistic information about what is happening (even if it's negative); ii) carries out activities in a way that closely matches how they were explained to the community; and iii) follows through on the agreements and commitments it makes with the community.

6.1
PARTICIPATION BY SOCIAL ACTORS

Even when ESMPs include measures to avoid, mitigate, or compensate for the potential negative impacts of a project, it is inevitable that the planned activities will—positively or negatively—affect the lives of people or the operations of certain organizations installed in or near the area where the project will be built.

6.1.1
THE CONCEPT OF PARTICIPATION

The term ***engagement*** can be understood, in the broadest sense, as taking part in something. Thus, **social engagement**—also known as **public engagement, citizen engagement,** or **community engagement**—is the means through which individuals in a society take part in a process that gives them the opportunity to express their interests, expectations, and concerns, with the aim of directly or indirectly influencing decision-making.

Within a development process, *social engagement* aims, among other things, to: i) give the community the opportunity to influence project-related decision-making, generally through its *key actors*; ii) raise awareness among potentially affected populations about the project and its potential impacts; iii) reduce potential internal conflicts; iv) offer empirical knowledge on the relevance and implementation of proposed environmental and social management measures; v) improve transparency and accountability in decision-making; and vi) build trust among the various parties involved in the project–community engagement process. It follows that *social engagement* is essential for establishing solid, constructive, and appropriate relationships between a project and the community potentially affected by its execution.

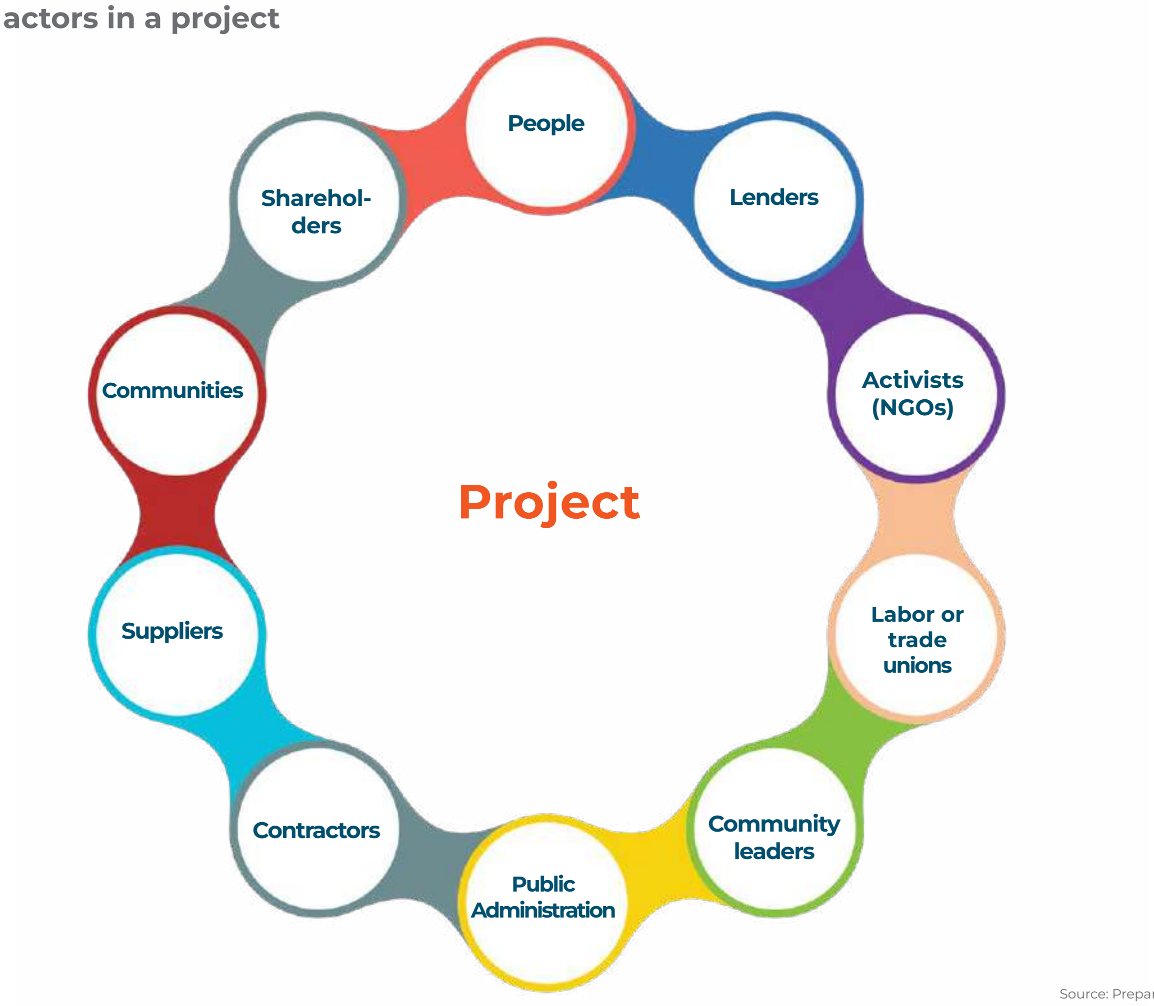
Social engagement must also be understood as an ongoing process that includes a solid stakeholder analysis to define how different *social actors* can influence decision-making, and that relies on two management tools: i) a feedback and grievance mechanism; and ii) external communications. The nature, frequency, and level of effort devoted to social engagement depends, to a large extent, on the adverse impacts a project may have, its stage of development, and the resources available for the purpose.

6.1.2 SOCIAL ACTORS

Individuals, organizations, or groups, whether permanent or temporary, that have the capacity to build influence, develop interests and needs, or take actions that may affect a project's development (C. Matus) are referred to as **social actors** or **stakeholders**. Among other attributes, these groups are characterized by: i) engaging in creative action, usually supported by a solid understanding of the issues; ii) being active participants, rather than mere observers, of what is happening around them; iii) having memory and motivation to act; iv) controlling, or having the ability to control, a resource that may be of interest (or even critical) to the project; v) having power, or the capacity to gain it, to create or disrupt something relevant to the project; and vi) knowing what they want to achieve through their actions.

Social actors or stakeholders include but are not limited to entities financing the project, activists (usually grouped in non-governmental organizations, or *NGOs*), workers, labor or trade unions, community leaders, public authorities, contractors, suppliers, neighboring communities, project shareholders, and individuals or legal entities (see **Figure No. 35**).

Figure No. 35 | Social actors in a project



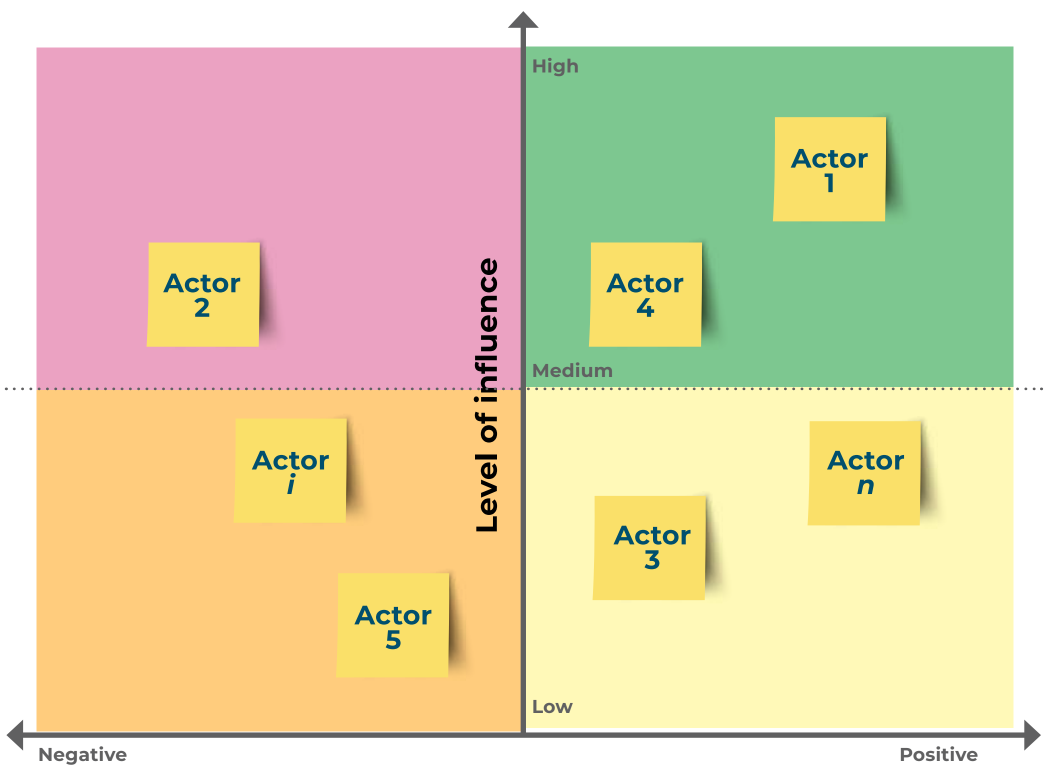
Source: Prepared by the author

The work the ESMS team must carry out with *social actors* should, whenever possible, build on the social and environmental activities the project conducted during the ESA process, as this will help foster trust, credibility, and support for the initiative through a long-term, sustainable relationship.

If *stakeholder* identification was carried out during the ESA, it must be updated by the ESMS during the project's pre-implementation phase; if not, it must be conducted from scratch. Whether an update or a new assessment, this process must allow for the identification of what we call **priority stakeholders**, or *key social actors*, meaning those whose interaction with the project, whether positive or negative, is considered the most significant. The results of this process, along with the characterization of each identified group and their interactions, is referred to as **a stakeholder map or social actor map.**

Although there is no single way to present a **stakeholder map**, it is often displayed using a Cartesian diagram, with the x-axis representing the perception or attitude of individuals or groups toward the project, and the y-axis showing the level of influence each identified stakeholder may have over public opinion, the community, or authorities (see **Figure No. 36**).

Figure No. 36 | Stakeholder map



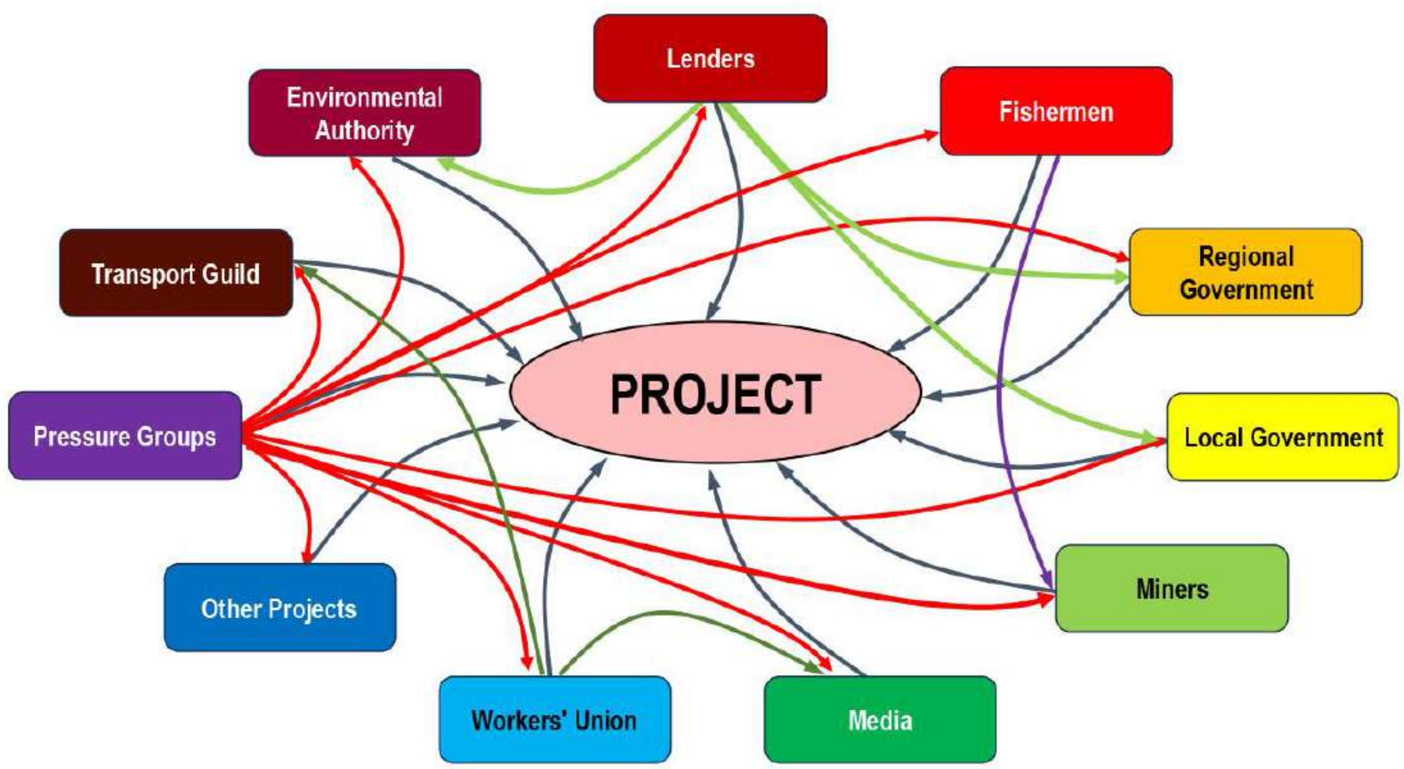
Source: IDB Invest Technical Guide for Mapping Stakeholder Engagement

When the **stakeholder map** is represented this way, four quadrants can be distinguished: i) the lower left (marked in orange in **Figure No. 36**), which represents groups or individuals with a negative perception or attitude toward the project but a low level of influence—these are typically people directly affected by negative impacts (involuntary resettlement, pollution, gender-based violence, noise, dust, vibrations, etc.) but with limited means to make their discontent felt; ii) the upper left (marked in red in **Figure No. 36**), which is groups or individuals with a negative perception of the project and a high level of influence, includes non-governmental organizations (NGOs) or civil society organizations (CSOs) that oppose the project, local elites whose interests are threatened, and opposition political groups; iii) the lower right (marked in yellow in **Figure No. 36**), which is actors with a positive perception of the project but a low level of influence, includes project supporters (developers, boards of corporations, shareholders, etc.) and local politicians or government officials; and iv) the upper right (marked in green in **Figure No. 36**), which brings together actors with a positive perception of the project and a high level of influence, Includes local communities expecting to benefit from the project's positive impacts (improved communication or services, employment, reduced mortality and morbidity, better sanitation conditions, etc.).

This visual representation, which allows for a quick understanding of each type of stakeholder based on their perception of the project and their level of influence within the community, is extremely valuable when structuring the stakeholder engagement plan.

Sometimes, and usually as a complement to this Cartesian representation, the **stakeholder map** is also presented as a flow diagram in which each actor is represented by a geometric shape and the interactions between them and the project are shown using arrows (**Figure No. 37**). This type of representation, in addition to showing the connections among different actors and with the project, makes it possible to anticipate future behavior between closely linked actors—for example, situations where actors who openly oppose the project and have a high level of influence in the community may "pull" other connected actors to join them and adopt more radical positions.

Figure No. 37 | Diagram of social actors

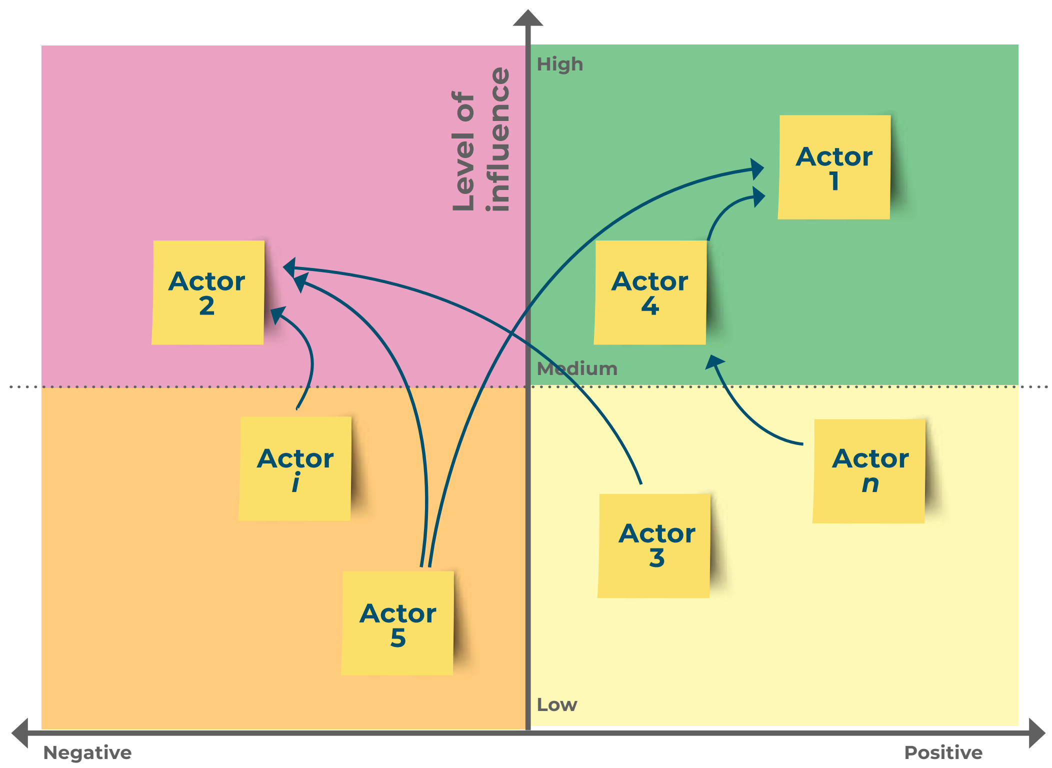


Source: Prepared by the author

It is also common to present a **map of actors** combining these two types of representation (see **Figure No. 38**).

Another method commonly used in some contexts is the representation of key stakeholders through matrices that include the most relevant characteristics of each actor, such as: the actor's name; type of actor (public, private, or mixed); number of members; objectives pursued; potential interests in the project; current level of activity; available resources (human, physical, financial, or technological); stance toward the project (supportive, opposed, or neutral); and connections with individuals or institutions that may play a role in project development (see **Table No. 20**).

Figure No. 38 | Map of social actors



Source: IDB Invest Technical Guide for Mapping Stakeholder Engagement

Table No. 20 | Matrix of social actors

Actor	Type	Number of people	Objectives	Interests	Activity status	Available resources	Attitude toward the project	Connections	Comments

Source: Prepared by the authors=

The connections established between the stakeholders and the project to enhance positive impacts and manage negative ones are formalized in what are known as **stakeholder relations plans, social actor engagement plans**, or simply **stakeholder engagement plans**, which serve as an essential tool for guiding the project's relationship with the community. These plans can also be presented in matrix form, as shown in **Table No. 21**.

Table No. 21 | Model key stakeholder engagement plan

Participating stakeholders	Engagement actions	Expected result	Key dates	Implementation lead	Indicator	Means of verification

Source: Prepared by the author

Some of the key benefits of *adopting a stakeholder engagement* plan include: i) gaining a better understanding of the social context in which the project will take place; ii) identifying, analyzing, and addressing potential social risks; iii) understanding how goods and supplies for the project are sourced and delivered; iv) more effectively addressing issues related to gender, labor policies, recruitment, migration, and local communities; v) anticipating community impacts; vi) fostering innovation; vii) identifying new allies, critics, or opponents; viii) learning about local practices that could enhance the project's positive impact; and ix) testing new approaches that could help build a positive reputation for the project within the community.

EXAMPLE No. 9, found in Section 9 of this Guide, shows how a project incorporated community engagement at the end of its construction phase to minimize the impacts that its demobilization and personnel reduction process would generate. Similarly, **EXAMPLE No. 10** presents how another project incorporated Indigenous communities in the management of a protected area that was intersected by their works.

6.1.3 CONSULTATION PROCESS

A **public consultation process** can be understood as a series of interrelated activities based on dialogue and two-way, participatory communication that takes into account the specific characteristics of the community involved—such as culture, language, customs, traditions, and leadership structures—and includes representatives from different segments of the population, including men, women, older adults, youth, and vulnerable groups. Through this process, the relevant authority or project developer seeks input from the community on the project and its potential environmental and social impacts.

Photo No. 3 | Consultation process with Indigenous communities

For this process to be meaningful and add value to the project's development, it must be: i) inclusive and participatory, allowing for equitable involvement by anyone who wishes to take part, with no discrimination whatsoever; ii) transparent, ensuring that no relevant information on the issues being addressed is withheld; iii) accessible, enabling unrestricted participation by all interested individuals; and iv) continuous, meaning it should not be limited to a single event but maintained over time.

A *public consultation process* consists mainly of *events* held over time to bring together community representatives and address issues related to the proposed project. Public consultation events generally involve the following main steps: i) disseminating information; ii) announcement or invitation; iii) consultation meeting; iv) analysis of the results obtained during the consultation meeting; and v) communication on how the results of the consultation process have been, or will be, taken into account in the project's development.

6.1.3.1 DISSEMINATION OF INFORMATION

Providing objective information in advance of the meeting and in an accessible format—including the scope of the consultation, the topics to be discussed, and the expected outcomes—helps align public expectations, reduce the anxiety that public consultations often generate among participants, and lend legitimacy to the process. To this end, either the competent authority, the project developer, or both must provide high-quality information about the project and its potential risks and impacts well in advance of the scheduled meeting so that the community has time to review it, understand what is being proposed, grasp the associated risks and impacts, and frame an informed opinion about the issues to be discussed.

6.1.3.2 MEETING ANNOUNCEMENT

Regardless of the method used to disseminate it, the invitation to participate in a consultation event must be public, well-informed, timely, and, above all, non-restrictive. In that regard, it must be communicated to as many members of the community as possible; provide, in both substance and form, relevant information on the topics to be presented so that the subject can be easily understood; be announced far enough in advance to allow those being consulted sufficient time to attend the event (in some cases, many people must travel long distances to attend); and must not restrict the free participation of anyone who wishes to take part.

At a minimum, the announcement must include the following: i) the name of the convening party, that is, who is organizing the event; ii) the subject to be addressed, in other words, what will be discussed; iii) the location where information on the topic will be physically available, or how it can be accessed electronically; iv) the location, date, and time of the consultation event; v) the event's agenda; and vi) when necessary, the language in which the meeting will be conducted. This last point is of utmost importance because certain countries have more than one official language, and because some communities (especially those of Indigenous origin) prefer to communicate in their native language.

The announcement of a consultation event must be widely disseminated. To achieve this, various channels may be used, such as press releases, radio announcements, social media messages, and door-to-door outreach, among others. When the topic to be discussed requires the contribution of a particular community stakeholder, it is advisable to send them a personal invitation, confirm receipt, and follow up to encourage their participation. Sometimes, in order to prevent a group that is typically opposed to the project from claiming later that it was not invited to a consultation, and using that to suggest it was intentionally excluded or marginalized from the process, it is advisable to send a personal invitation through a private courier service and require signed proof of delivery.

6.1.3.3 CONSULTATION EVENT

The consultation event must be properly planned so that all necessary logistical, technical, and support aspects are in place. For example, it will be necessary to ensure, among other things, that the event venue is open to receive participants (there have been instances where guests arrived but could not enter because the venue was closed) and in proper condition; that all required equipment (lighting, projectors, sound systems, etc.) has been set up and is working; that all necessary support materials (flip charts, work tables, markers, posters, outreach materials, etc.) have been set out; and that the facilitation team (which can be project staff, representatives of authorities, or personnel hired for the event) is ready and present at the venue before participants begin to arrive.

The event venue should be chosen strategically. It must be easily accessible to potential attendees and provide all the necessary conditions for safety and comfort (lighting, ventilation, availability of restrooms, etc.). Since consultation events can sometimes, and suddenly, become unmanageable and even confrontational, it is advisable to choose a venue that has a rear exit when possible, to allow the consultation team to evacuate the premises and reach safety if needed.

It is important to keep in mind that, at times, even within the same community, it may be necessary to hold separate events to bring together specific individuals whose participation might be overlooked in larger group meetings. For example, it may be worth considering holding events specifically for women, Indigenous populations, or certain groups or unions. It is also essential that each event uses language (not just the spoken language, but also the form and style) that is appropriate for the audience.

The points addressed during the consultation event must include, at a minimum, the following:

- **A description of the meeting format.** Before addressing the main topics, it is recommended that the facilitation team first gives a brief safety talk related to the event site (what to do in case of emergency), and then explains: i) how the meeting will be carried out (rules of conduct, how to request the floor, time limits for interventions, whether filming is allowed, etc.); ii) how the agenda items will be addressed and the time allocated to each topic; iii) the intended outcomes; and iv) any other relevant points (logistical issues, for example).
- **A description of the project.** This section should outline the main activities planned within the project's framework and explain how they are expected to be carried out, using clear language that avoids technical detail and jargon that could cause the audience to lose interest in the topic.
- **A description of the main impacts and risks.** At this point, the main environmental and social impacts that the project's execution could generate (positive and negative) should be described, emphasizing those that relate more closely to the audience convened for the event.
- **A description of the proposed management measures.** Given that ESMPs tend to be quite lengthy and difficult to digest, the aim at this point is to provide the audience with a very brief overview of what the project intends to do to avoid, mitigate, or compensate for undesirable impacts and to enhance the positive effects it could generate.
- **A description of the feedback and grievance mechanism.** This part of the agenda aims to inform the community about the existence of the mechanism, how it works, and, most importantly, how they can access it to submit any complaints, questions, requests, or suggestions they may have during the project implementation phases.
- **Open space for the community.** This is perhaps the most important part of any consultation event, as this is where attendees can intervene to express their feelings or opinions about the project (support, rejection, fear, frustration, expectations, etc.). During this portion, the facilitating team must: i) motivate the members of the community to express themselves freely; ii) refrain from making comments on the points raised by the community; iii) refrain from encouraging deliberation on the points raised, since, usually, team members will not have the authority to make decisions, and even less to reach agreements; and iv) limit themselves to only taking note of what the community expresses.
- **Final clarifications and next steps**. At this point, the facilitating team can clarify any topics that were already explained to participants but still need further clarification—while being careful not to engage in a deliberation process. This is also the moment to explain the next steps in the consultation process, including how the concerns raised by the community will be reviewed by the project's technical teams, and how and when participants will be informed of how these issues were resolved.

It's always recommended to prepare meeting minutes following every public consultation event, summarizing the concerns raised during the *open community participation segment*. Attendees should be invited to sign it voluntarily, as some may prefer not to in order to avoid any appearance of obligation or commitment. Copies of the signed minutes should then be shared with participants, which can be done by providing a digital version.

6.1.3.4 ANALYSIS OF THE CONSULTATION EVENT RESULTS

Once the consultation event is over, the attendees' concerns that were raised during the event must be analyzed, separating those that are directly related to the project from those that are not. This last consideration is important because it is not unusual for the community at public consultation events to express desires or frustrations related more closely to the actions of local authorities than to the project itself.

The technical team must analyze each of the concerns raised about the project and its impacts, and determine the most appropriate way to address them. This may include not taking the recommendation into account, if it isn't feasible; adjusting some of the proposed mitigation measures or developing new ones; or, in extreme cases, redesigning part or all of the project. Whatever solutions are adopted, they should be evaluated in terms of their environmental, social, technical, and economic implications.

The analysis of the consultation process results can be summarized in a matrix (see **Table No. 22**) based on the following elements: i) the concern raised by the community—that is, the issue brought up during the consultation event; ii) the name of the person or group that raised the issue; iii) the relevance of the concern, meaning a preliminary assessment of its connection to the project; iv) whether the concern is accepted or dismissed; v) the rationale for accepting or dismissing it; and vi) the proposed course of action, which may include, among other options: (a) how the concern has been incorporated into the project framework, (b) if unrelated to the project, whether it has been referred to the appropriate authority for further review and follow-up; or (c) no specific action, if the concern lacks merit or cannot be addressed for any reason.

Table No. 22 | Analysis summary matrix of points raised in a consultation event

Community's concern	Person who submitted it	Relevance		Acceptance		Substantiation of the response	Course of action
		Yes	No	Yes	No		

Source: Prepared by the author

6.1.3.5
COMMUNICATION ON HOW CONSULTATION PROCESS RESULTS WERE ADDRESSED

A consultation event is considered closed once the community has been informed of the results of the process of reviewing the issues they raised during the event. This is usually done by sending participants a copy of the summary matrix of the issues raised during the consultation event (through any appropriate means), publishing it somewhere easily accessible to the community (in which case, the column identifying who raised each issue may need to be removed for confidentiality reasons), or organizing a follow-up meeting—typically with only those who raised concerns during the event—to go over the summary.

After the community has been informed of how the project plans to address the concerns raised during the consultation event, some members may still be unsatisfied and request further clarification. In response, the project should consider whether it is appropriate to hold additional events to address the concerns that have not been satisfied. However, it's important to keep in mind that the consultation process is not intended to satisfy the aspirations of *every* individual in the community, but rather those of the *majority*. As such, there may be issues for which full consensus cannot be reached, regardless of how many meetings are held to discuss them.

6.2
EXTERNAL COMMUNICATIONS AND GRIEVANCE MECHANISMS

A project's impacts on the population often produce situations of discomfort, dissatisfaction, and sometimes tension. These feelings can manifest in different ways ranging from verbal or written expressions of discontent, to acts of protest with hints of violence. Communication is vital to avoid the above.

Even when the ESA has not identified any communities directly affected by the planned activities, it is still important to establish and maintain dedicated channels through which the general public can access information about the project directly, easily, and in a timely manner, and express any concerns, complaints, or opinions they may have. For example, this can be done through channels such as a website, fixed or mobile customer service offices, etc. (see **Photo No. 4**).

Photo No. 4 | Fixed customer service office and schedule for a mobile customer service office.

OFICINA MÓVIL DE ATENCIÓN AL USUARIO
HORARIO DE ATENCIÓN

CRONOGRAMA	DÍAS	MES	MUNICIPIO	HORARIO	LUGAR
PRIMER SÁBADO DEL MES	7 4 4	ENERO FEBRERO MARZO	CHOACHI	8-12 A.M	PARQUE PRINCIPAL
SEGUNDO SÁBADO DEL MES	14 11 11	ENERO FEBRERO MARZO	UBAQUE	8-12 A.M	PARQUE PRINCIPAL
TERCER SÁBADO DEL MES	21 18 18	ENERO FEBRERO MARZO	CHOACHI	8-12 A.M	PARQUE PRINCIPAL
CUARTO SÁBADO DEL MES	28 25 25	ENERO FEBRERO MARZO	UBAQUE	8-12 A.M	PARQUE PRINCIPAL
TODOS LOS LUNES Y JUEVES	5-12-16-19-23-26-30-2-6-9-13-16-20-23-27-2-6-9-13-16-23-27-30	ENERO FEBRERO MARZO	CAQUEZA	8-12 A.M	PARQUE PRINCIPAL

Photos: courtesy of Juan Carlos Páez

There are several forms of communication: i) verbal, which involves expressing ideas through spoken words; ii) non-verbal, which refers to a person's attitude as conveyed through posture or reactions to specific situations; iii) active listening, which means fully focusing on the speaker, understanding their message, responding appropriately, and remembering the conversation; iv) written, which includes communicating ideas, thoughts, and information through writing; v) visual, which uses images to convey ideas, overcome language barriers, and enhance understanding and retention; vi) assertive, which involves expressing ideas, facts, and feelings honestly and directly while maintaining respect for others and striking a balance between passivity and confrontation; vii) digital, which relies on digital platforms to send and receive messages quickly and simultaneously to multiple recipients; viii) interpersonal, which focuses on direct, one-on-one communication with the intended recipient or group; ix) group, which involves delivering a message to a group in a way that fosters innovation and effective outcomes through shared knowledge and collaboration; and x) intercultural, which is grounded in recognizing and respecting the cultural and linguistic differences of all intended audiences. The different forms of communication are not mutually exclusive and are often used in a complementary way.

With the constant advancement of technology, the way we communicate is evolving. Now, for example, printed communication is increasingly being replaced by digital tools such as email, social media, and instant messaging; interpersonal communication, which until just a few years ago took place mostly in person, is being conducted through virtual platforms like video conferencing and visual messaging, which eliminate distance barriers; and verbal communication has also evolved so much that some software applications, such as real-time translators, are breaking down language barriers and making it fairly easy to reach groups that were previously excluded or difficult to engage due to language difficulties.

6.2.1 EXTERNAL COMMUNICATION

The relationship between a project and the community (whether through social actors or individual members) is essential for achieving development goals and creating a virtuous cycle in which the community benefits from the project and vice versa. To achieve this, it is necessary to establish a two-way communication channel that, on the one hand, allows the project to provide the public with ongoing information about its activities and, on the other, allows it to receive feedback from the community to improve its environmental and social performance.

An external *communications system* is a set of pre-established procedures to allow a project to provide adequate and timely information to the population, and to receive, document, and respond to requests from them. Although the complexity can vary from case to case, these systems are usually simple, including channels that are easily accessible to the public (telephone, website, email address, links through social media, newsletters, etc.) and include the following basic elements: i) the objectives sought when establishing the form of communication; ii) the principles that will govern the exchange of information; iii) the flow that all communication must follow; iv) the forms of documenting and monitoring the information both provided and received; v) the steps required to process the information; and vi) the people or bodies responsible for carrying them out.

Among other advantages, a strong external communication strategy makes it possible to: i) build a positive image of the project by effectively informing the public about its purpose, values, and vision; ii) establish a two-way channel for communications that allows the project to both share information with the community and listen to community feedback, respond to concerns, and understand their needs and expectations; iii) build trust through the exchange of relevant and timely information, reinforcing the project's commitment to transparency and creating a solid foundation for effective engagement with social actors; and iv) prevent or manage crises and conflicts efficiently, since a well-planned and well-executed communication strategy can help avoid undesirable situations or, when issues do arise, reduce negative impacts and protect the project's reputation.

Considering that external communication activities should be understood as a continuous and dynamic process (not restricted to a single event) that must be maintained throughout all phases of project development, and must also be receptive and sensitive to listening and responding in a timely manner to the population's concerns and queries, the following steps stand out as the most important in building a solid external communications system (see **Figure No. 39**):

- **Context analysis.** This includes a diagnosis of aspects such as the community's culture, social conditions, composition, relevant social actors, history of unfulfilled and fulfilled promises, interests, expectations, anxieties, and frustrations.

- **Goal setting.** This includes determining the desired effects of the communication and emphasizing the attitudes that are to be changed or reinforced.
- **Knowledge of key actors**. Among other things, understanding who the key actors are, where they are, what they are pursuing, who supports them, what instruments of power to which they have access, and what their needs, expectations, and concerns are, are essential to establishing a good communication system with the population.
- **Identifying the target audience.** Establishing *who* is needed to be reached with the message to be conveyed id a fundamental aspect of achieving system effectiveness (and efficiency) as it allows the focusing of efforts on more clearly defined groups whose attitudes need to be changed or reinforced.
- **Preparing messages.** A clear and consistent definition of *what* messages are wanted to be conveyed is essential, because in practice, projects often generate enormous amounts of information, but only a small fraction of it is required (or even desired) by the population.
- **Defining communication channels.** Choosing *how* (through media, social networks, electronic newsletters, corporate events, or other relevant channels) to spread the project's messages and reach the target groups can make the difference between an effective and an ineffective communication system, since, depending on the message and the target audience, one means or channel of communication may be more effective or costly than another.
- **Defining strategy and actions**. Identifying the actions to take and how to carry them out to achieve the proposed objectives is vital to implementing the communication strategy.
- **Determining the timing.** It is necessary to define *when*, *how often*, and *until when* the information will be shared, not only because of the costs involved in these tasks, but also because it influences their effectiveness.
- **Assessment and adjustment.** Like any ongoing improvement process, regularly monitoring external communication activities allows organizations to evaluate their effectiveness, gather relevant feedback and metrics to measure the their impact, and generate information to continuously adjust and improve them.

Figure No. 39 | Diagram of an external communications plan

Source: Prepared by the author

6.2.2
GRIEVANCE MECHANISMS

The tools designed to collect and process **questions, complaints, claims, or suggestions** from the population regarding the project are generally referred to as **feedback and grievance mechanisms**, often shortened to grievance mechanisms.

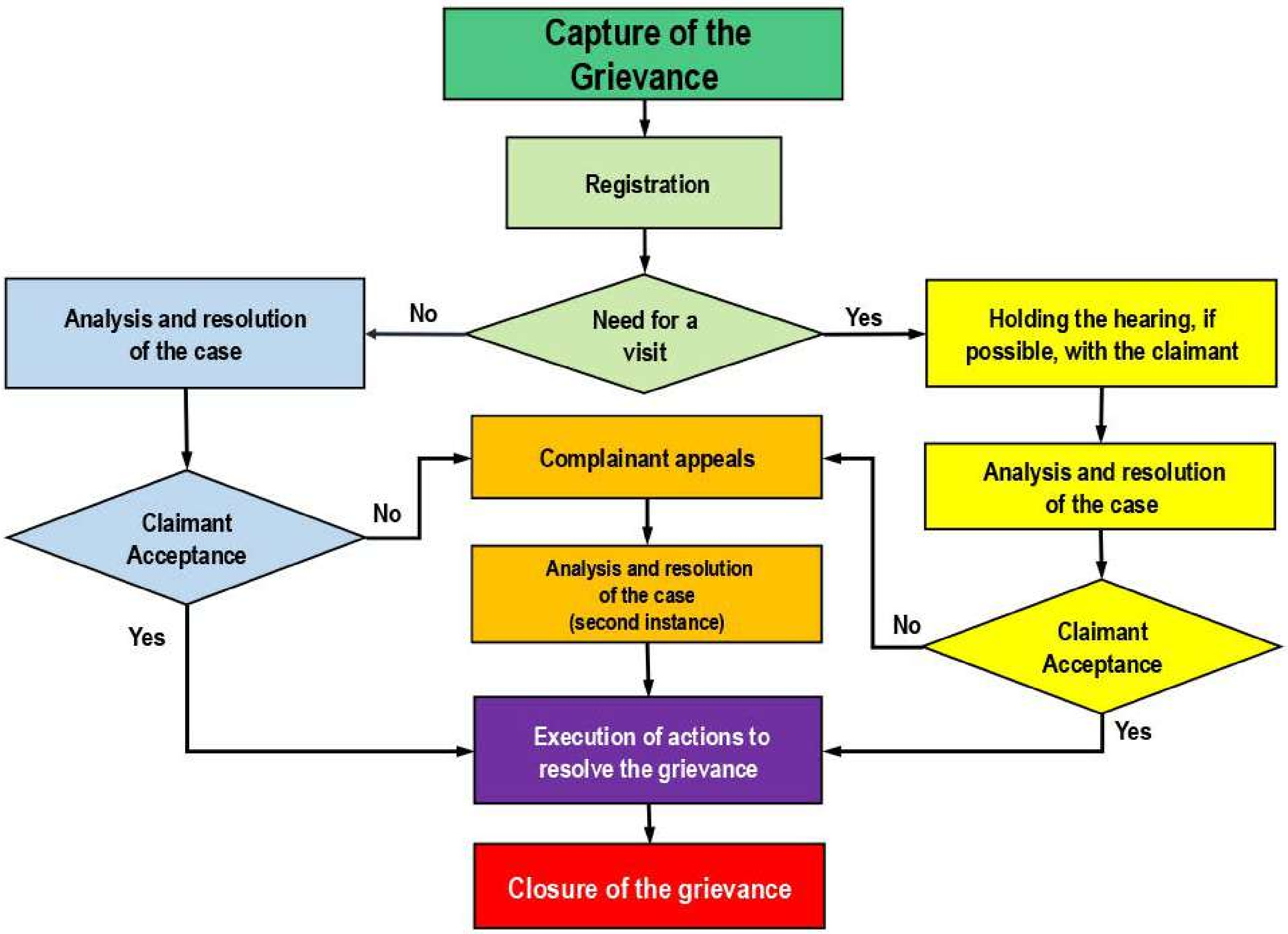
At a minimum, a solid feedback and grievance mechanism must include the following components:

- A clear procedure for **collecting** feedback from the community, either directly or anonymously (for example, suggestion boxes, toll-free hotlines, email addresses, etc.), which guarantees access for vulnerable groups.
- A process to **record, analyze, categorize, and determine** if the feedback is appropriate (e.g., if it is linked to the project).
- A **resolution** procedure for feedback that is relevant to the system.

- A **communication** system that allows applicants to know the status of their feedback.
- An **appeal process** that can be used by the public when they are not satisfied with the outcome of their feedback procedure (without prejudice to any legal actions available to them).
- A **monitoring and verification process** to determine whether the actions required to address feedback were carried out as planned and to the satisfaction of the person who submitted it.
- An **audit or review** process that evaluates the efficiency and effectiveness of the grievance mechanism, while generating recommendations for its improvement.

Figure No. 40 is a general flowchart with the main steps to include in a feedback and grievance mechanism.

Figure No. 40 | Example grievance mechanism flowchart



Source: Prepared by the author

The ESMS must ensure that all project personnel: i) are aware of the mechanism's existence; ii) are able to receive any feedback submitted by the community through them; and iii) know how to properly channel the feedback so it can be recorded, reviewed, and resolved by the grievance mechanism. In this regard, training staff on how the grievance mechanism operates is an essential task that must be carried out on an ongoing basis.

Effective feedback and grievance mechanisms share a common set of characteristics as far as their scope, quality, and effectiveness, which includes the following:

- **Accessibility.** This is a vital condition that allows the population potentially affected by a project to understand and use the mechanism with a sense of safety, comfort, autonomy, and naturalness. This means that the mechanism must: i) establish multiple *access points* or *points of contact* for its potential users (the general population and stakeholders); ii) provide faster and more immediate access points for vulnerable populations; iii) provide flexibility in terms of language (written and spoken) and the formats used to receive feedback; iv) include the possibility of receiving feedback through various methods (in person, website, telephone, mailboxes, etc.); and v) disseminate information on how the grievance mechanism functions so that the population understands how it works, how to use use, and what to expect from it.

- **Transparency.** How the feedback and grievance mechanism works and the procedures that govern it should be open to public scrutiny. Wherever possible, information regarding feedback submissions, responses, and resolution processes, including responsibilities, possible outcomes, and the scope of the intervention, should be made public, except in cases where the complainant requests anonymity or where confidentiality is required to ensure a fair outcome.

- **Independence.** The people who operate the feedback and grievance mechanism must be independent enough to proceed fairly and impartially when analyzing and processing the feedback submitted by the community.

- **Clarity.** The feedback and grievance mechanism must be governed by a clear set of rules and standards that ensure the highest benchmarks of impartiality, integrity, fairness, and predictability. Thus, for example, they must contain clearly defined procedures and deadlines, so that their potential users know what to expect from the process, when the results will be ready, and how follow up to the agreed solutions will be implemented.

- **Equity.** The mechanism must allow users reasonable access to the sources of information it relies on to analyze and manage feedback submissions, and enable the entire population to use them without any preference or bias. The mechanism must also have the necessary resources to allow disadvantaged populations to use it at no expense.

- **Respect.** The process, responses, and agreements that may eventually be reached as a result of the analysis of feedback must be framed within predefined regulatory and legal frameworks that observe unrestricted respect for complainants, protect their rights, and guarantee against discrimination or retaliation. If the complainant so wishes, the feedback and grievance mechanism must be able to guarantee confidentiality of the case.

- **Legitimacy.** Potentially affected populations should perceive the feedback and grievance mechanism as neutral and, above all, reliable.

- **Legality.** Regardless of the outcome of the feedback analysis process, the mechanism should not prevent complainants from asserting their rights and seeking legal remedies for the issues raised in their complaints or concerns.

The establishment and adoption of a feedback and grievance mechanism is a well-planned process, typically carried out following a continuous cycle made up of five phases: i) analysis; ii) design, development, and financing; iii) implementation; iv) monitoring and evaluation; and v) learning and adaptation (see **Figure No. 41**).

Figure No. 40 | Cycle for establishing and adopting a grievance mechanism

Source: Prepared by the author

6.2.2.1 ANALYSIS OF THE CONSTRAINTS WHEN DEVELOPING A GRIEVANCE MECHANISM

In addition to the context in which the project is framed, it is necessary to study and evaluate the social landscape that surrounds it. This will open the door to understanding aspects that may influence the population's ability or intention to submit feedback. In this regard, prior to adopting a grievance mechanism, an analysis should be conducted that includes, at least, the following aspects: i) the types of complaints that are likely to arise as a result of the project; ii) the resources (physical, human, technological, and financial) and the level of delegated authority that should be assigned to the grievance mechanism; iii) the stakeholders likely to use the grievance mechanism; and iv) the capacity of the project and state institutions (local, regional, and national) to receive, respond to, and resolve complaints, either at the operational level in the first case, or as required by law in the second.

Ideally, a feedback and grievance mechanism should be adopted as soon as there is a formal decision to execute a project, but always before its pre-implementation stage. This does not prevent the mechanism from being adopted at a later stage. However, the longer it is postponed, the greater the likelihood that community complaints and grievances escalate, that handling them becomes more complex, and that the population loses confidence in the project. It is also important to remember that the feedback and grievance mechanism should be in place (and ideally already implemented) by the time the public consultation process begins, since, as discussed earlier, it should be included as part of the agenda for each consultation event.

6.2.2.2 GRIEVANCE MECHANISM DESIGN, DEVELOPMENT AND FUNDING PHASE

Based on the results of the analysis phase, the next step is to design the mechanism, develop it, and allocate the necessary resources to ensure it functions as intended.

The mechanism's design must incorporate the characteristics mentioned above: accessibility, transparency, independence, clarity, equity, respect, legitimacy, and legality. It must also be simple, build on existing processes, be capable of addressing concerns from multiple parties and on various issues, and, above all, be adapted to the context in which the project will take place. In this context, it is recommended that this process includes the following:

- Confirmation of the project objectives, their possible impacts, and the potential origins of the feedback that could be presented.
- Determining the mechanism's objectives.
- Defining of the scope of the feedback that will be received, the analysis process, and the expected results.
- Determining possible approaches for resolving complaints according to the needs, capacities, and cultural norms of both the project and the affected population.
- Defining the process for handling complaints, including an appeals process when the analysis results do not satisfy the person who filed the complaint.
- Determining the inputs required for the mechanism's adoption.
- The adoption of a procedure to monitor the feedback submitted to the mechanism, including how it was resolved or transferred to government authorities.
- Designing feedback submission forms.
- Developing an evaluation system based on management and success indicators and designed to contribute to constant improvement of the mechanism through the handling and resolution of previously addressed cases.
- Developing a communication and outreach strategy for both internal users (the project) and external users (the community), conveying the feedback received and how it was addressed, while maintaining confidentiality when necessary.
- Designing an internal and external training program for using the feedback and grievance mechanism.
- Determining the costs associated with implementing and using the mechanism.
- Sharing the feedback and grievance mechanism with senior project management to secure approval.

It is essential to publicize the existence of the feedback and grievance mechanism as part of the project's communication strategy, describing its objectives, features, and processes to all stakeholders, particularly the neighboring population, since no mechanism can be effective or fully operational if the community it is meant to serve is unaware of its existence, finds it out of reach or inaccessible, or perceives it as difficult to use. In this sense, it is common for projects to publicize the existence of the mechanism through notice boards or posters (see **Figure No. 42**) and encourage the population to use it.

Figure No. 42 | Posters informing the community about the existence of a feedback and grievance mechanism and encouraging them to use it.

Source: Huemul Portfolio and Paracel Project

To encourage the community to use the mechanism when they perceive that the project is engaging in practices that harm the community, damage the environment, or pose risks to workers' health or safety, the existence of the grievance mechanism (and how to access it) can also be publicized through banners or adhesive panels placed directly on vehicles or heavy machinery used in the project (see **Figure No. 43**).

Figure No. 43 | Adhesive panels on machinery used in a forest development project

Source: Paracel Project

6.2.2.4
MONITORING AND EVALUATION IN THE DEVELOPMENT OF A GRIEVANCE MECHANISM

Continuous improvement of a feedback and grievance mechanism requires monitoring and evaluation of its operation and performance in terms of effectiveness, responsiveness, and resolution, as well as how its users perceive its benefits. This makes it possible to detect implementation or design problems in order to adjust and improve them, as well as to identify trends and systemic problems in order to correct the way the mechanism functions and improve it.

Like any monitoring and evaluation process, this one begins with establishing appropriate baselines and clear qualitative and quantitative performance and functionality indicators, including, average response time; the number and types of feedback received, reviewed, and resolved; user satisfaction levels; and the percentage of cases resolved. To support this process, it is common to use monitoring matrices, which are generally structured with the following information (see **Table No. 23**): i) case number; ii) date of receipt; iii) form of submission (written, verbal, explicit, anonymous); iv) channel used to submit the feedback; v) name of the complainant, when they have not chosen to remain anonymous; vi) community they belong to; vii) description of the concern; viii) category (question, complaint, claim, suggestion, etc.); ix) project unit or name of the contractor referenced in the feedback; x) resolution date; xi) date the outcome of the review process was communicated; xii) case closure date; xiii) level of satisfaction with the process (unsatisfied, satisfied); xiv) level of satisfaction with the process outcome (unsatisfied, satisfied); and xv) use of the appeals process.

Table No. 23 | Feedback and grievance mechanism tracking matrix

	Reception								Date			Level of satisfaction		Appeal	
No.	Date	Form	Channel	Claimant	Community	Concern	Category	Unit	Resolution	Communication	Closing	Process	Result	Usage	Process

Source: Prepared by the author

6.2.2.5
LEARNING AND ADAPTATION IN THE DEVELOPMENT OF A GRIEVANCE MECHANISM

Even though the lessons are not always obvious and their identification may require a parallel process of dialogue with stakeholders, it is important to identify, compile, and understand the lessons learned from using a feedback and grievance mechanism in order to improve project outcomes and impact management. However, these lessons have little practical value unless they are translated into: i) modifications or updates to the mechanism to make it more useful, agile, effective, and efficient; ii) adjustments to project activities to manage situations with which the community is disatisfied (through prevention, mitigation, restoration, or compensation; iii) improvements to the ESMS that enable smoother interaction between the project and the community; and iv) the creation and use of tools that help identify systemic issues and turn complaint data into knowledge and information that can be used in the project's continuous improvement process, reduce its negative impacts on the population, and strengthen relationships with stakeholders.

EXAMPLE No. 11, contained in Section 9 of this Guide, shows how implementing a solid feedback and grievance mechanism can strengthen the relationship with the communities around a project. In that same vein, **Example No. 12** shows how a feedback and grievance mechanism became a central component in a project's ESMS.

6.3
REGULAR REPORTING TO AFFECTED COMMUNITIES

Nearby communities will become a project's *neighbors* and will be present throughout its lifecycle. For this reason, the ESMS should maintain an excellent relationship with them whenever possible. To achieve this, it is crucial to maintain a flow of information from the project to the community on a regular basis and whenever circumstances require it. This allows the project to establish and maintain good relationships and, above all, generate an atmosphere of trust.

There are several ways to inform the community about a project's activities. These range from producing informational materials that are distributed or shared with the public on a regular basis, management reports presented to stakeholder groups, and the structured publication (usually annually) of *environmental and social sustainability reports*, which are often intended for audiences that go beyond the boundaries of the communities potentially affected by the project.

The dissemination of **informational materials** must be carried out regularly to ensure that the community stays informed about what is happening with the project. More specifically, the project should: i) provide general information about its implementation status (completed works, planned works, expected benefits after implementation, etc.); ii) share details on current developments that may be of interest to the community (unexpected effects, emergency situations, etc.); iii) communicate any changes in the project's design or construction methods to be used; iv) report on key milestones achieved during implementation; and v) inform about any institutional changes that may affect the planned works or how they will be carried out. This material is usually developed ad hoc, that is, its content, format, and form of dissemination can vary greatly depending on the conditions that motivate its production.

Regular reports to communities are a form of structured communication that allows the project to routinely update the population on its environmental and social performance. These reports generally follow a pre-established format and cover the project's performance for a predefined period of time.

As with any process that includes a continuous improvement component, *regular reports to communities* are typically structured as follows (see **Figure No. 44**): i) identification of the target group; ii) identification of topics relevant to stakeholders; iii) assessment of stakeholder expectations regarding the information they seek from the project; iv) determination of the key issues that should be communicated and their materiality; v) evaluation of the project's status in relation to the environmental and social (E&S) sustainability requirements established by legislation, funders, or corporate responsibility guidelines; vi) an overview of the environmental and social management approach adopted by the project; vii) details of the sustainability strategy adopted; viii) details on implementation of the sustainability strategy; and ix) evaluation of the process and identification of lessons learned to inform continuous improvement.

Figure No. 44 | Process for elaborating a management report for stakeholders

Source: Prepared by the author

Environmental and social sustainability reports are one of the voluntary tools used by various projects to disclose environmental and social information corresponding to a predefined period of activity. Like regular reports to communities, they follow a pre-established format, usually detailing the challenges and risks that a project has dealt with during the period under review and evaluating the aspects related to environmental, social, labor, and human rights issues, as well as corporate strategies that contribute to sustainable environmental development, among other issues.

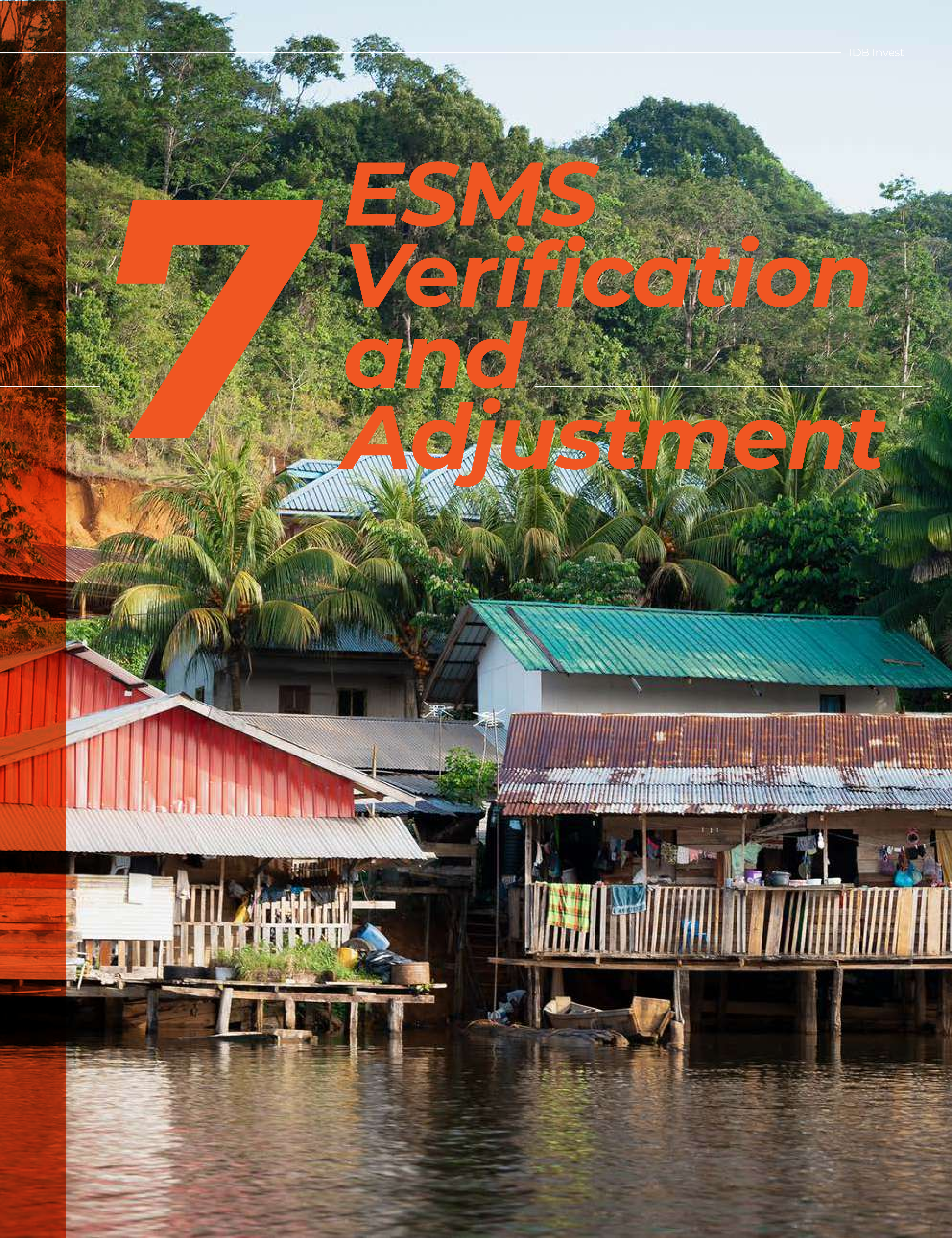
Among the reasons a project may choose to prepare a sustainability report are the following: i) to demonstrate an economic, social, and environmental commitment; ii) to provide useful and relevant information to stakeholders, with a focus on transparency and accountability; iii) to strengthen relationships and build trust with stakeholders; iv) to increase visibility; v) to maintain or improve the project's image; vi) to identify risks and opportunities; and vii) to provide a clear overview of the project's main economic, environmental, and social impacts.

Sustainability reports can be presented in printed or electronic formats, but always involve a process of measurement, disclosure, and accountability to both internal and external stakeholders and report on the issues that are estimated to be relevant to stakeholders.

Regardless of how it intends to inform the population about the project's environmental and social performance, it is clear that this task is essential to establish and maintain good relationships with the community and, above all, to generate an atmosphere of mutual trust that allows the project to progress without setbacks.

A project is the vision of a reality that has not yet occurred, whose implementation, at best, starts from a situation of disbelief and distrust on the part of the population or, in extreme cases, faces open opposition from the community, usually stemming from negative past experiences or unfulfilled promises made by other projects. The ability to interact with the community becomes a critical aspect of the project that, when carried out well, builds trust and confidence within the community as a project shares realistic information about what is happening (even if it's negative), carries out activities in a way that closely matches how they were explained to the community, and follows through on the agreements and commitments made with the community.

7 ESMS Verification and Adjustment



As previously discussed, an ESMS, like any other management system, is based on the PDCA principles of the continuous improvement cycle: i) Plan; ii) Do; iii) Check; and iv) Adjust. In that sense, once the system has been designed (which corresponds to the *planning* phase) and adopted (as part of the *implementation* phase), the remaining step in the continuous improvement cycle is to *verify* whether it is functioning as expected and, if not, to *adjust* the system so it aligns with original plans or new circumstances.

7.1 ESMS VERIFICATION

The **verification** process, which consists of **monitoring** and **review** or **evaluation** activities, is the part of the continuous improvement cycle that provides the inputs needed to adjust the system and make it more efficient and effective.

7.1.1 ESMS MONITORING

As stated earlier in this document, *monitoring* is defined as measuring and generating data over a set period in order to understand or expand knowledge about changes that may occur in the subject matter being measured. In this sense, ESMS monitoring involves the continuous measurement of certain management parameters to determine whether the system is functioning as intended. This process usually involves monitoring both the project's effects and impacts, as well as its compliance.

Monitoring of the effects and impacts of the ESMS focuses mainly on generating information to determine the added value of having a management system in place in terms of the efficiency and effectiveness of the project's ESHS management. *Compliance monitoring*, on the other hand, focuses on determining the system's effectiveness in meeting applicable ESHS requirements (local legislation; the contents of environmental permits and licenses; the requirements of the project's environmental, social, and health and safety certifications; and the standards required by international financing institutions, among others). For this purpose, it is common to use output, results, impact, and management indicators.

Among the examples *of output indicators* we can mention: the number of site visits to work fronts; the number of reports produced; the number of complaints received and addressed; the percentage of contractor personnel trained on ESHS topics; the number of drills conducted; and the number of responses to feedback that relevant environmental or social authorities have provided. Among the *results indicators* we can mention: changes in community perception of the project; changes in the rates of workplace incidents and accidents; variations in the number of environmental contingencies (spills, leaks, etc.); changes in the project's capacity to manage liquid and solid waste; variations in the number of infectious disease cases; and changes in the rates of sexual harassment and gender-based violence.

Examples of *impact indicators* include: a reduction in greenhouse gas emissions; the elimination of untreated waste; reducing gender-based violence and sexual harassment cases to zero; and eliminating unsupervised work fronts. Finally, examples of *management indicators* include: the number of material non-conformities identified in a management audit; the number of corrective action plan (CAP) items that have been completed; and the number of CAPs developed following ESMS supervision exercises.

7.1.2 ESMS REVIEW

The **review** or **evaluation** of a system, in turn, is the process that uses the data generated through monitoring to assess the performance of the ESMS compared with the requirements set out in the project's environmental and social policy, applicable legislation, and any environmental and social commitments voluntarily undertaken (including, for example, standards required by international financial institutions). The main purpose of this **review** process is to ensure that the ESMS remains relevant and that it is appropriate, efficient, and effective.

International best practices (such as ISO 14001) recommend conducting periodic reviews of ESMS performance to assess its suitability and ensure it is responding appropriately to updates in applicable legislation, the ESHS performance standards to which the project has voluntarily committed, changes in the technology used, variations in the activities being carried out or in how they are being implemented, and, more generally, any changes the project has undergone.

The review of an ESMS should be carried out by specialists with the experience needed to ensure that the process is robust, transparent, and impartial. While an internal evaluation of the system is perfectly valid within the continuous improvement cycle, it is recommended that the ESMS review be conducted by teams external to the project or, at the very least, not involved in managing its ESHS matters.

As a general rule, all ESMS reviews should involve the project's senior management at some point in the process, since any proposed changes to the system's functioning may have implications either for how the works are being carried out or for the costs associated with managing ESHS matters. In this sense, when establishing an ESMS, it is also advisable to set a schedule for its periodic review (usually annually), while keeping in mind that the system should be re-evaluated whenever circumstances warrant it, such as changes in legislation, personnel, activities, or construction processes.

The ESMS review process can be applied to the entire system or part of it, depending on the circumstances. A comprehensive review of the system may be warranted in the following scenarios: i) when the results being obtained are not aligned with the goals set out in the project's environmental and social policy, for example, when there are material discrepancies between the project's outcomes and what is required by law; ii) when the system's structure and functioning result in response times that are slower than what the project needs for its normal progress (such as meeting construction milestones); iii) when there is evidence that the system has become reactive and is no longer fulfilling its role of anticipating undesirable situations or identifying potential problems; or iv) when required by the system's certifying agency. A partial review, on the other hand, may be necessary when the ESMS as a whole is functioning well, but a specific component, such as one that, if it continues at its current pace in terms of timely responses, could eventually create a bottleneck for the entire system.

Among other aspects, ESMS reviews must be based on the following: i) the data obtained when carrying out management audits; ii) information received or collected by the different areas of the project's organizational structure that are related to the ESMS, especially those related to the ESHS control measures, as well as those that are being carried out to achieve the objectives set in the project's policies; and iii) the stakeholders' perceptions of the how the system is functioning.

7.2
ESMS ADJUSTMENT

The ESMS review process would be incomplete if, at its conclusion, it merely identified system shortcomings without proposing actions to remedy them. Therefore, to complete the cycle of continuous improvement, what remains is **to adjust** the system based on the results of the previous phase. In general terms, the review of an ESMS typically produces two types of conclusions: i) a list of *mandatory actions* to correct major deviations or inefficiencies in the system; and ii) a set of *optional recommendations* that go beyond the minimum requirements.

Among other possibilities, the first set of *mandatory* measures may include: i) increasing the number of occupational health and safety inspectors; ii) certifying all personnel performing high-risk tasks (such as working at heights, hot work, or working in confined spaces); iii) updating the baseline for a specific environmental or social component; iv) hiring a specialized firm to monitor a specific environmental or social component that requires expertise beyond the capacities of the project staff; v) adopting changes in the chain of decision-making to improve the system's responsiveness to certain situations; and vi) adjusting the method or frequency of work-front supervision to prevent accidents.

Examples of *optional recommendations* resulting from the review process that, if implemented, would improve the functioning of the ESMS include: i) obtaining system certification under an international standard (such as ISO 14000 or ISO 45000); ii) placing decals (typically in specific colors) on workers' protective helmets to easily identify the tasks they are certified to perform (such as working at heights, working in confined spaces, etc.); iii) holding more frequent meetings between ESMS teams and those responsible for different project fronts to strengthen relationships and detect potential ESHS issues early; and iv) facilitating experience-sharing exchanges between the project's ESMS team and the teams managing similar systems in other projects.

Once the adjustments to the ESMS have been adopted, the continuous improvement cycle begins again.

An ESMS, like any other management system based on the principles of a continuous improvement cycle, must be evaluated after implementation and subsequently adjusted to ensure that it remains relevant and continues to be appropriate, efficient, and effective in achieving the environmental and social objectives set out in the project's environmental and social policy, its environmental and social management plans, applicable legislation, and any environmental and social commitments the project has voluntarily undertaken, such as the standards required by international financial institutions.

8 Availability of Resources

An ESMS that does not have the resources necessary to carry out its tasks is a system doomed to fail. In this regard, the project, and more specifically its senior management, must determine and provide the necessary resources (human, physical, financial, and technological, among others) to establish, maintain, and continuously improve the ESMS, and ensure it has the capacity and autonomy needed to: i) cover its operating expenses; ii) hire additional personnel to meet specific, punctual needs; iii) retain external services when required (laboratories, specialized tests, additional monitoring, etc.); iv) acquire equipment and supplies; v) ensure transportation and mobility for its staff without relying on other entities; and vi) cover additional expenses (travel and per diem) needed for staff to carry out their duties.

To ensure the availability of the resources an ESMS requires over time, it is advisable to approach its implementation as an independent project, which involves: i) listing the resources the ESMS will need; ii) estimating the associated costs; iii) creating a reference budget, including a contingency fund; iv) comparing the budget with that of similar projects; v) preparing reference budgets for different scenarios; vi) designing a plan to control spending; and vii) securing budget approval.

The structure of a ESMS should provide as much detail as possible regarding the **human, physical, logistical, technological, and financial resources** needed for its operation, along with their **associated costs.** To do this, it is advisable to identify the main investment items (or expense categories), which usually include the following:

- **Personnel requirements.** This is tied to the intended structure for the ESMS. Based on this structure, it is necessary to define the number of people who will make up the system management team, determine whether they are already part of the project or will need to be hired, and whether temporary staff will need to be brought in to meet specific demands generated by the project (external experts such as advisors or specialists in specific areas, etc.), among other aspects. Based on this information, the associated costs will need to be calculated, along with the level of support needed from other project departments (human resources, procurement and purchasing, communications, etc.). It is important to calculate the actual hiring costs, that is, the agreed salaries plus all related expenses required by applicable law (vacation, additional pay, social security, etc.), depending on the type of contract signed with each member of the ESMS team.

- **Physical requirements.** This includes calculating the costs associated with: i) the space where the ESMS team will work (purchased, donated, or rented), including the rooms needed for meetings, offices, etc.; ii) the "stationary" equipment required (furniture, office supplies, computers, software, internet service, etc.); iii) the mobile equipment needed (land transport vehicles, boats, etc.); iv) personal protective equipment (PPE) provided to the staff; and v) any special tools needed (lab equipment, binoculars, sound-level meters, surveying instruments, etc.), among others.

- **Travel and transportation.** A significant portion of the ESMS team's work will likely take place in the field. This means its members will need to travel outside their usual workplace and will therefore require appropriate transportation and subsistence arrangements while on assignment. It is thus necessary to estimate how many trips will be made and how many days each will last in order to budget for transportation costs (airfare or ground transport, vehicle rental, fuel costs, etc.), lodging, and per diem.

- **Training requirements.** As mentioned earlier in this document, training plays a vital role in keeping the ESMS team's capabilities up to date. In this regard, although training is usually addressed elsewhere for the project in general, it is recommended that training for the ESMS team be budgeted and managed separately so the team can receive the capacity-building it needs without having to depend on decisions made by other functional areas of the project.

- **Research needs.** Although the ESMS team is not a knowledge-generating body per se, it may need to carry out studies, research, surveys, website traffic analyses, etc., in order to perform its assigned functions. In this regard, the costs associated with these studies should be estimated, always allowing some flexibility for modification.

- **Support from other functional areas of the project.** While in most cases ESMS support from other functional areas is provided on an *ad honorem* basis, there are some projects that require it to be monetized and charged to the various departments that provide it. These cost items may include, for example, services from human resources, procurement, or laboratories related to materials or water quality. Occasionally, a functional area may "bill" the ESMS team for the time its staff has spent providing the system with specific inputs (research, analysis of construction methods, infrastructure or system design, in response to specific environmental issues, etc.).

Based on the results of this analysis, it will be possible to develop a **reference budget** for the ESMS team's operations. If possible, it is advisable to compare this budget with the budgets used in similar projects to ensure that the associated costs are neither overestimated nor underestimated, and that the investment categories include those typically required to ensure the system operates effectively. It is also advisable to review lessons learned from similar projects that have already adopted and implemented an ESMS.

The previous year's financial review should also help identify current and future needs, along with the costs related to adopting and maintaining an ESMS. Once this process is completed, it should be possible to answer the following questions:

- How much will it cost to operate and monitor the project in a way that satisfies the applicable ESHS requirements?

- How much will it cost to routinely update the ESMS to meet the applicable ESHS requirements, both curren and future?

- What tasks need to be carried out to achieve the above?

- What technology is required for this purpose?
- What are the deadlines for each project task that requires follow-up and monitoring by the ESMS?
- Are the professionals already assigned or hired for the ESMS sufficient, or will additional staff be needed for specific tasks?
- How much will it cost to adopt and maintain the ESMS in a way that meets its intended objectives?
- What financial resources are available?
- How should resources flow to ensure the proper functioning of the ESMS?

The task of translating the management system's requirements into a budget cannot always be carried out by the technical team responsible for the ESMS, as their skills are usually more aligned with managing the project's ESHS issues than with finances or accounting. Consequently, this task is often assigned to a budget support team made up of subject-matter experts and ESMS team leaders. In any case and regardless of the team's final composition, it must contain the following knowledge and skills:

- A thorough understanding of the technical requirements the project must meet in terms of ESHS.
- An understanding of the project's existing in-house capacities to manage ESHS-related matters.
- The ability to estimate the project's ESHS needs in economic terms.
- A good ability to relate and negotiate with the project's different operational and support areas to create synergies and reduce costs.
- The ability and willingness to discuss the ESHS vision and objectives with employees and senior project management.
- A solid understanding of market dynamics as far as the costs and availability of the resources needed to adopt, operate, and continuously improve the ESMS.

Estimating the costs associated with operating the ESMS can be a challenge when dealing with complex projects subject to a series of effects that are hard to control. For example, consider a road project in which the government began clearing the right-of-way but, after several years of inactivity in this area, handed it over to a concessionaire for management. While the concessionaire would be able to budget for the tasks related to the project's right-of-way clearance based on the information provided by the government, it is very likely that given the time that has passed and the fact that the compensation amounts paid to affected parties by the government do not always meet international requirements, the budget for this task will be insufficient.

In these cases, it is customary to develop a **scenario-based budget** to avoid a lack of resources. Returning to the road project example, the **worst-case scenario** in terms of the budget associated with the ESMS tasks to be carried out (number of people needed for social outreach, number of stakeholder engagement events, field data collection, etc.) would likely disregard what the government has done in the past and start from scratch, as if none of these activities had ever been carried out. A second and **more likely** scenario would be based on reviewing the government data and cross-checking it with first-hand information gathered by the concessionaire. An **optimistic** scenario would be to accept the government's previous work as valid and sufficient.

As far as possible, the ESMS budget should be based on a **likely scenario**, but also include a **contingency fund** for unforeseen events or situations, which can be activated immediately when such events occur, without needing to go through a budget modification process. It is generally advisable to set aside between 5% and 10% of the ESMS budget for contingencies.

Once the ESMS operating budget has been established, it is advisable to design a **spending control plan** that includes, at a minimum: (i) tracking how the resources allocated to the ESMS are being spent; (ii) identifying any unforeseen situations that may require the use of the contingency fund or the approval of additional budgetary resources; and (iii) making good use of any budget surplus generated.

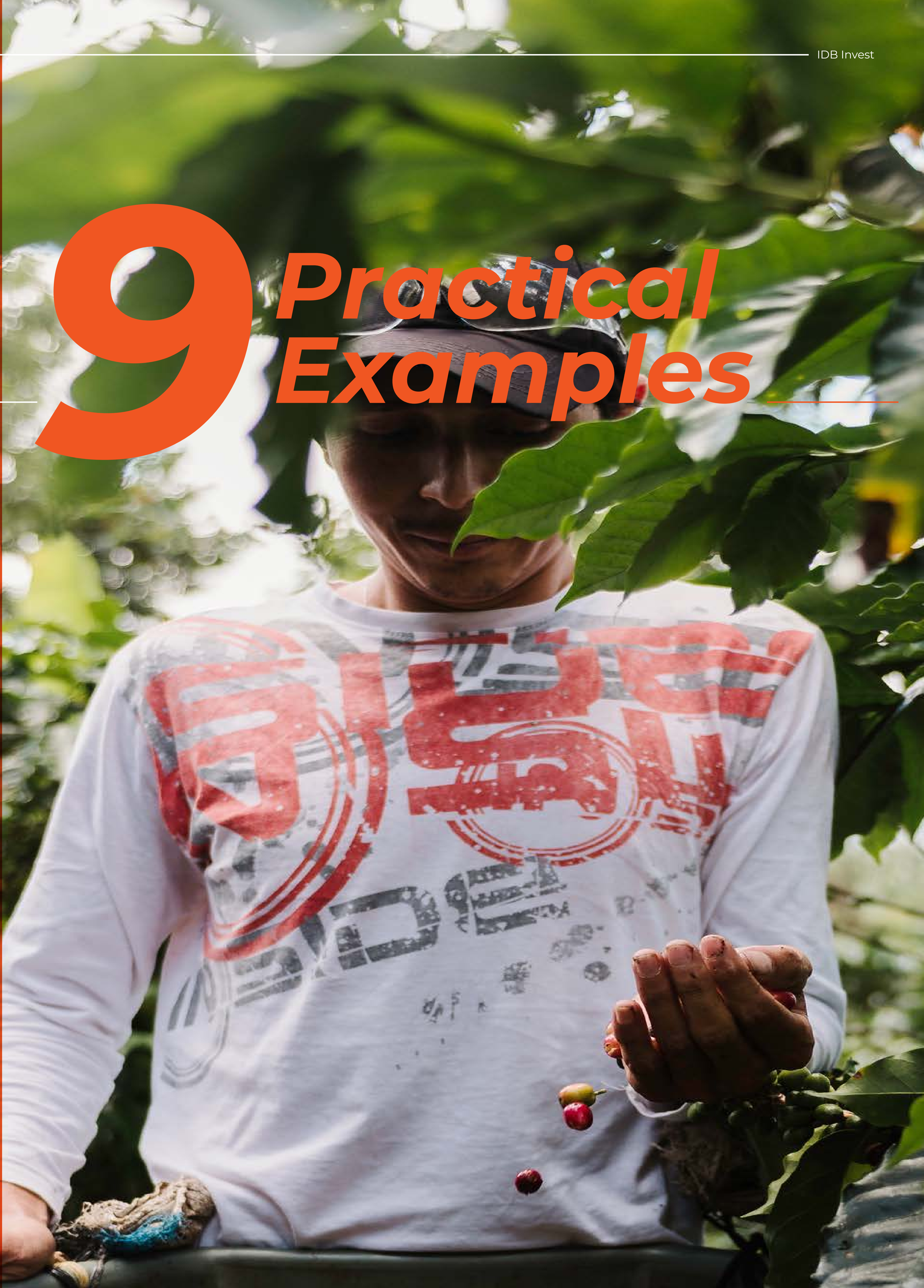
With the budget and the spending control plan finalized, the next step is to get **budget approval**, usually from senior management. To do this, it needs to be shared with the project management team and any relevant functional areas. If the budget is prepared in the right way, it will be easier for decision-makers to approve it. However, experience shows that this task is not simple. It is often necessary to review the budget, make cuts, and adapt it several times before obtaining final approval.

Ultimately, the important thing is to secure sufficient financial resources to guarantee the ESMS functions properly, because without these resources, it will be very difficult (if not impossible) to enact adequate ESHS management.

Inner face of the dam -
Porce III hydroelectric plant
Colombia

To be effective, an ESMS must have sufficient resources as well as the capacity and autonomy to cover its operating expenses, including those related to contracting staff or additional services to address specific needs, purchase equipment and supplies, provide transportation for its personnel without relying on other units, and cover travel and per diem expenses so its team can carry out their responsibilities.

9 Practical Examples



The following are some practical examples of how various projects or institutions working with IDB Invest have translated the PS1 requirements into management tools that enabled them to identify and address the unwanted environmental and social impacts caused by their activities.

Some of the examples refer to a specific project, while we felt it appropriate to omit this information for others since the purpose of this Guide is to examine how the PS1 requirements have been implemented in their management systems.

EXAMPLE NO. 1

STRUCTURING AN ENVIRONMENTAL AND SOCIAL POLICY

As mentioned above, a project's *environmental policy* must include a statement of the intentions and principles it has adopted to comply with applicable legislation, guide its relationship with its surroundings, define the environmental, social, and health and safety objectives and principles it aims to achieve or uphold through its actions, and reflect its willingness and commitment to manage the unwanted risks and impacts it may generate.

The example below corresponds to a real project, whose name has been intentionally changed to maintain anonymity. Nonetheless, the structure and content of the document presented here can serve as a guide when elaborating an environmental policy for a particular project.

THE SRP ENVIRONMENTAL AND SOCIAL MANAGEMENT POLICY

The Sustainable Roads Project (SRP) will provide a high-quality service dedicated to ensuring comprehensive environmental management in the execution of all its activities, avoiding or reducing the impact these activities have on the environment and natural resources. At all levels of our operation, we are committed to complying with current environmental legislation and applying operational best practices, aiming for continuous improvement and the satisfaction of key social actors.

OBJECTIVES

The overall objective of this Environmental Management Policy is to integrate and balance economic, social, and environmental aspects in project operations to align with the concept of sustainable development.

COMMITMENT

SRP is committed to conducting its business and carrying out its activities in an environmentally safe and responsible manner, guided by the concept of sustainable development, through the implementation and enforcement of applicable environmental regulations, and by recognizing the importance of biodiversity and natural resources as a core value at all levels of its work.

RESPONSIBILITIES

We consider the responsibilities outlined below to be a part of our commitment:

- All employees, at all hierarchical levels of the company, are responsible for minimizing the environmental impacts of the activities we carry out.
- Shareholders and directors are responsible for fostering environmental awareness among our employees, guiding them to work in an environmentally responsible manner.
- The director, with the support of the shareholders, will ensure that employees receive training, education, and information on complying with the environmental policy, as well as on other environmental matters relevant to their work.

COMPLIANCE

The implementation of this Environmental and Social Management Policy is based on compliance with the following principles:

- Environmental protection, as a determining factor in the development of our contractual activity.
- Respect for the environment, based on compliance with regulatory requirements and integrating the special characteristics of existing flora and fauna.
- Compliance with legal and voluntarily-adopted environmental requirements.
- Minimizing environmental impacts generated in offices, camps, and construction and work sites.
- Promoting water and energy conservation and efficiency, as well as the rational use of materials and supplies across all facilities.
- The acquisition and use of environmentally-friendly products, avoiding the unnecessary use of materials and products with dangerous ingredients, or seeking their replacement when possible.
- The adoption of an Environmental Management System that: i) is integrated into the company's overall management scheme; ii) is supported by manuals, procedures, and technical instructions that provide clear guidance for the proper execution of activities related to the environment; and iii) encourages all personnel to contribute suggestions for continuous improvement.
- Relying more heavily on prevention versus correction criteria.
- Raising awareness among employees and collaborators to encourage work that respects and values the natural environment.
- Carrying out an annual assessment of the environmental and social impacts derived from our activity in order to maintain and continuously improve our Environmental Management System.
- Periodic review of the established objectives and targets within the framework of environmental best practices known and adopted by the company.
- Dissemination of the company's Environmental and Social Management Policy to managers and employees, collaborators, contractors, and suppliers.
- Continuous improvement of our environmental performance and minimizing the social repercussions and damages provoked by our activities.
- The company's commitment to transparency.

SRP, consistently aligned with environmental stewardship

EXAMPLE NO. 2

MINIMIZING THE RISKS AND IMPACTS GENERATED BY A PROJECT'S CONSTRUCTION WITH HELP FROM THE COMMUNITY

The construction of a compacted concrete arch dam with 93.5 m high rollers and a length of 273 m required about 277,000 m3 of concrete. This required the extraction of gravel and sand from a river quarry located about 15 kilometers from the site where the structure was built. The road from the dam to the identified borrow site passed through several communities with active businesses and rural schools. The volume of traffic before the start of construction was quite low, perhaps due to the poor condition of the road.

The public consultation process carried out with communities in the project's area of influence identified the following as the main risks to the population: i) increased heavy truck traffic on nearby roads; ii) the dust and vibrations generated by this traffic; and iii) a higher risk of accidents, especially for school-aged children who walked along these roads on their way to and from school, and were not accustomed to high-traffic conditions (see **Photo No. 5** and **Photo No. 6**).

Photo No. 5 | Children using the dirt road before the construction project began.

Photo: courtesy of Juan Quintero

Photo No. 6 | Children playing on the roads before the start of the construction project.

Photo: courtesy of Juan Quintero

Based on the risk analysis carried out with the community, the project developed a traffic management plan for its construction phase, which included several measures that were agreed upon with the local population. Among these measures, the following are worth highlighting: i) installing mesh fencing to prevent children from crossing the road at unauthorized points (see **Photo No. 7**); ii) placing signage along the road and speed bumps at key locations (see **Photo No. 8**); iii) building concrete sidewalks along the road to channel pedestrian traffic away from the roadway; iv) building pedestrian paths and footbridges to connect schools with nearby communities and prevent schoolchildren from walking on the main road (see

Photo No. 9); v) assigning chaperones to pick up groups of children from designated community locations (agreed with parents), take them to school, and accompany them home at the end of the school day; vi) hiring traffic flaggers at strategic points to control vehicle flow (see **Photo No. 10**); vii) regularly wetting the road surface, especially near businesses and schools, to control dust (see **Photo No. 11**); viii) requiring the use of tarps to cover fine and granular materials transported by dump trucks to prevent dust dispersion along the route (see **Photo No. 12**); ix) requiring all heavy vehicle drivers to complete defensive driving and accident prevention courses; x) conducting road safety awareness programs in all communities; and xi) training teachers at schools located near the road in road safety topics so they could, in turn, educate their students on the subject.

Photo No. 7 | Sidewalks and fences installed along the road to prevent children from crossing.

Photo: courtesy of Juan Quintero

Photo No. 8 | Widened road with fencing at critical points, signage, speed bumps, ditches, and drainage system.

Photo: courtesy of Juan Quintero

Photo No. 9 | Pedestrian paths and bridges to connect schools with population centers.

Photo: courtesy of Juan Quintero

Photo No. 10 | "Flaggers" (mostly women) placed at strategic sites to control vehicular and pedestrian traffic.

Photo: courtesy of Juan Quintero

Photo No. 11 | Road watering at crossings with populated areas, businesses, schools, and other roads.

Photo: courtesy of Juan Quintero

Photo No. 12 | Elements used to prevent dust dispersion by trucks.

Photo: courtesy of Juan Quintero

EXAMPLE NO. 3

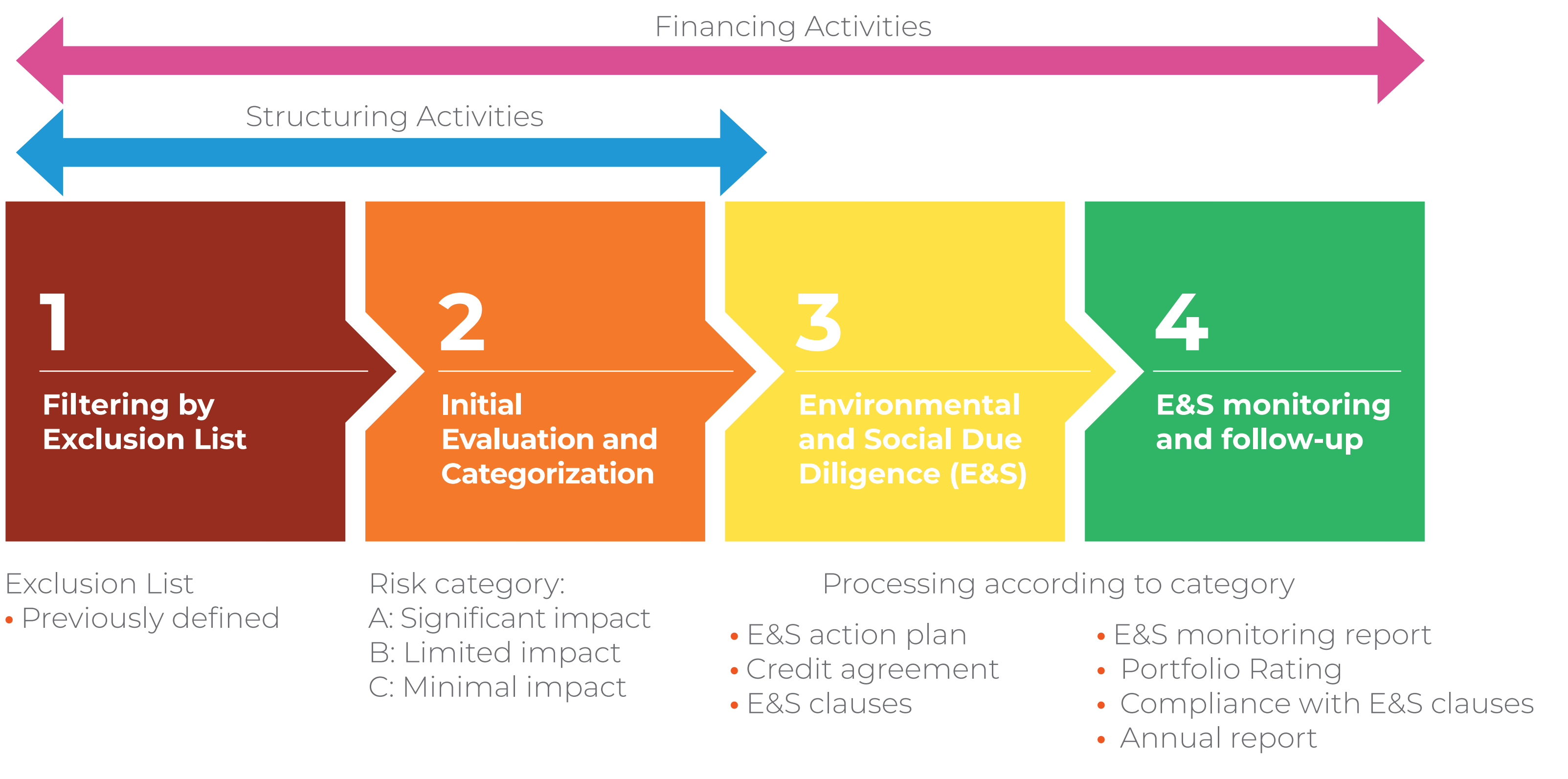
ENVIRONMENTAL AND SOCIAL MANAGEMENT BY FINANCIAL INTERMEDIARIES

The Financiera de Desarrollo Nacional (FDN) of Colombia is a local development bank that promotes private sector participation by providing loans to finance infrastructure projects. It is itself financed by private investors such as IDB Invest, IFC, the Development Bank of Latin America (CAF), and Sumitomo Mitsui Banking Corporation (SMBC), among others.

As part of its Environmental and Social Management System (ESMS), which is a mandatory compliance instrument for contractors and auditors (supervisors, monitors, and inspectors) involved in the projects it finances, FDN has developed a regulatory framework that covers issues related to biodiversity, climate change, human rights, gender, environment, cultural heritage, Indigenous peoples, resettlement, and occupational health and safety. Furthermore, to manage the environmental and social risks associated with its activity, FDN has adopted an Environmental and Social Risk Management System (SARAS), based on: i) the IFC Performance Standards; ii) the FDN Exclusion List; iii) Colombian environmental and social legislation applicable to each project; and iv) the guidelines contained in the "Guide for the Design of an Environmental and Social Risk Management System (SARAS) for Financial Institutions in Latin America and the Caribbean" by the Inter-American Development Bank (IDB)[10].

This SARAS has a solid system of documentary support for each of the components that make it up, namely: i) filtering operations based on the Exclusion List; ii) initial evaluation and categorization; iii) environmental and social due diligence; and iv) environmental and social monitoring and follow-up (see **Figure No. 45**).

Figure No. 45 | Environmental and social risk management system (SARAS)



Source: our elaboration based on information from the FDN

[10] https://publications.iadb.org/publications/spanish/document/Guia-para-el-diseno-de-un-Sistema-de-Administracion-de-Riesgos-Ambientales-y-Sociales-SARAS-para-instituciones-financieras-en-America-Latina-y-el-Caribe.pdf

As with the process followed by development finance institutions, the environmental and social due diligence (ESDD) conducted by FDN for all the projects it finances aims to: i) confirm the project's categorization (based on its potential impacts); ii) identify compliance gaps between the project's current status and what is required under applicable national legislation and the IFC Performance Standards; and iii) develop an Environmental and Social Action Plan (ESAP) to close those gaps and manage the environmental and social impacts and risks the operation may generate.

If the financing operation is approved, the corresponding loan agreement includes environmental and social clauses to ensure that the borrower complies with: i) national legislation; ii) the IFC Performance Standards; iii) the ESAP; and iv) any other obligations FDN deems necessary to minimize its exposure to the environmental and social risks the project may generate.

[1] https://publications.iadb.org/publications/spanish/document/Guia-para-el-diseno-de-un-Sistema-de-Administracion-de-Riesgos-Ambientales-y-Sociales-SARAS-para-instituciones-financieras-en-America-Latina-y-el-Caribe.pdf

EXAMPLE NO. 4

INTEGRATED MANAGEMENT OF PROJECT-GENERATED WASTE

To properly manage the waste generated by the construction of an infrastructure project, the developer implemented an integrated waste management plan from the earliest stages of the project's development. The plan included setting up a management center (see **Photo No. 13**) to receive, sort, and manage the treatment and final disposal of all waste generated. The center consisted of: i) a composting plant to handle organic waste generated in the project's dining areas and kitchens (see **Photo No. 14**); ii) a section for managing wood from vegetation clearing in project areas, equipment packaging, and the demolition of temporary infrastructure, among other sources; iii) a collection plant for oils, oily waste, and lubricants (see **Photo No. 15**); iv) fenced and clearly marked areas for the temporary storage of stone debris, paper and cardboard, metals, polystyrene, and electrical and electronic waste; and v) a primary and secondary wastewater treatment system to handle blackwater from the camp and kitchen facilities (see **Photo No. 16**).

Photo No. 13 | Waste management center.

Photo: courtesy of Juan Quintero

Photo No. 14 | Organic waste composting plant.

Photo: courtesy of Juan Quintero

Photo No. 15 | Oil collection facility for processing lubricants and oily waste.

Photo: courtesy of Juan Quintero

Photo No. 16 | Primary and secondary wastewater treatment system.

Photo: courtesy of Juan Quintero

The waste produced by the project was handled directly or through waste management providers duly certified by the competent authorities. This management included: i) delivering the recovered wood to the communities to be used as construction material or firewood; ii) using the compost to regrow vegetation in areas where the project intervened (access road, powerhouse, deposits of unclassified material and other works that included the temporary clearing of vegetation); iii) delivering oily, electrical, and cardboard waste to coordinators to be transported to authorized treatment centers in nearby cities; and iv) final disposal of non-recyclable or reusable material in a landfill.

At the end of the project, the recordkeeping system adopted (see **Photo No. 17**) made it possible to determine that of the nearly 18,000 tons of waste generated, 83% was recycled; nearly 10,000 tons of wood was donated to local communities; around 2,000 tons of organic waste produced 655 tons of compost that was used to rehabilitate degraded areas (see **Photo No. 18**); and during the construction and dismantling phases of the camp and temporary works, more than twenty community members were employed to manage the waste.

Photo No. 17 | Waste management statistics.

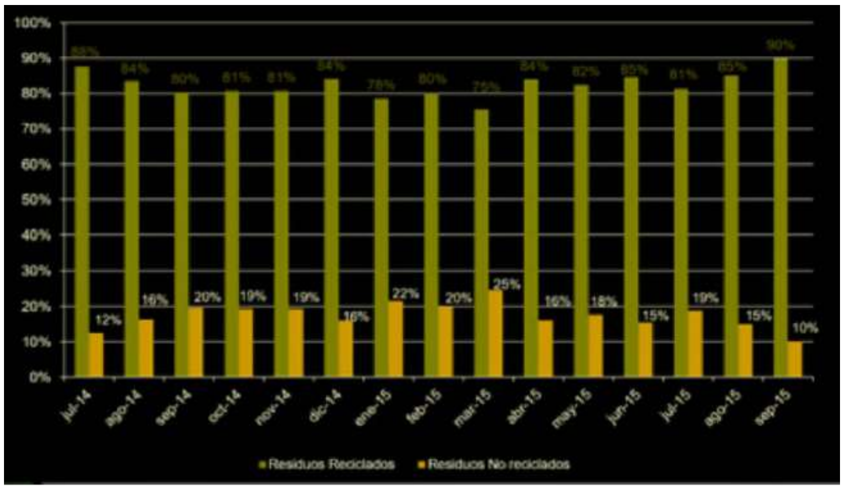


Photo: courtesy of Juan Quintero

Photo No. 18 | Storage of surplus materials at a site under restoration.

Photo: courtesy of the ICE Group

EXAMPLE NO. 5

MONITORING AND EVALUATING THE OUTCOMES OF COMPENSATION MEASURES

The construction and operation of the Reventazón Hydroelectric Project (PHR) in an area that constitutes the shortest route with the best vegetation cover between the Cordillera Volcanica Central Forest Reserve, the Siquirres River Basin Protection Zone and the Río Pacuare Forest Reserve in Costa Rica (see **Photo No. 19**), generated a series of impacts on biodiversity by interrupting, on the one hand, the free transit of terrestrial species that circulated through what is now the project's reservoir, affecting the structural and functional connectivity of the Mesoamerican biological corridor (Paso del Jaguar); and, on the other, by breaking connectivity on the river by building a dam that interrupts the course of the Reventazón River. To offset these undesired effects, the project is implementing biodiversity-loss compensation programs for both terrestrial and aquatic fauna.

The terrestrial compensation program implemented by the project aims to preserve connectivity within the Barbilla-Destierro Biological Subcorridor (SBBD), better known as the Jaguar Corridor (see **Photo No. 20**), through the restoration and maintenance of critical habitats located at the upstream end of its reservoir (see **Photo No. 21**). This includes a series of prioritized reforestation programs, land purchase, payments for environmental services, environmental education, and establishing sustainable agricultural practices within the corridor, as well as actions to ensure the long-term maintenance of the institutional and organizational base that guarantees the SBBD's effective operation.

Photo No. 19 | Location of the PHR reservoir (in light blue) and the region's protected natural area

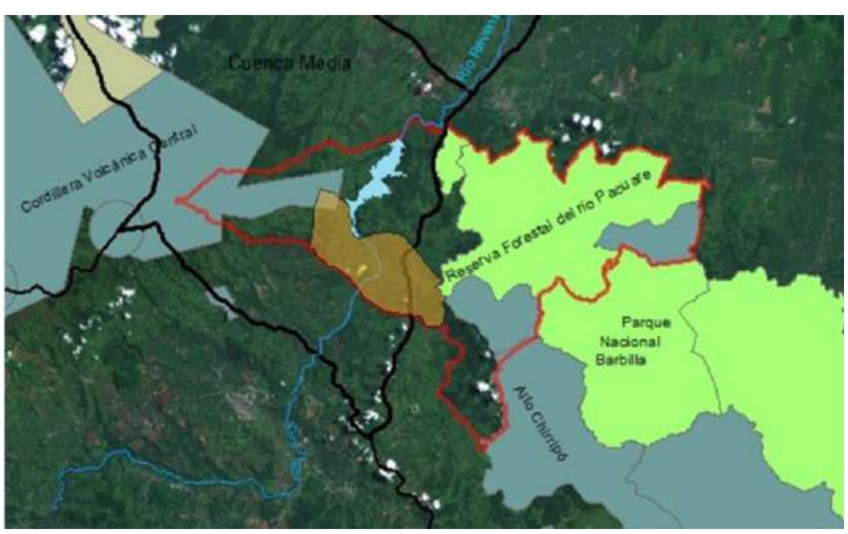


Photo: courtesy of the ICE Group

Photo No. 20 | Sign announcing the entrance to the SBBD (Jaguar Corridor).

Photo: courtesy of Juan Carlos Páez

Photo No. 21 | Land restoration areas located at the upstream end of the reservoir (marked in light blue).

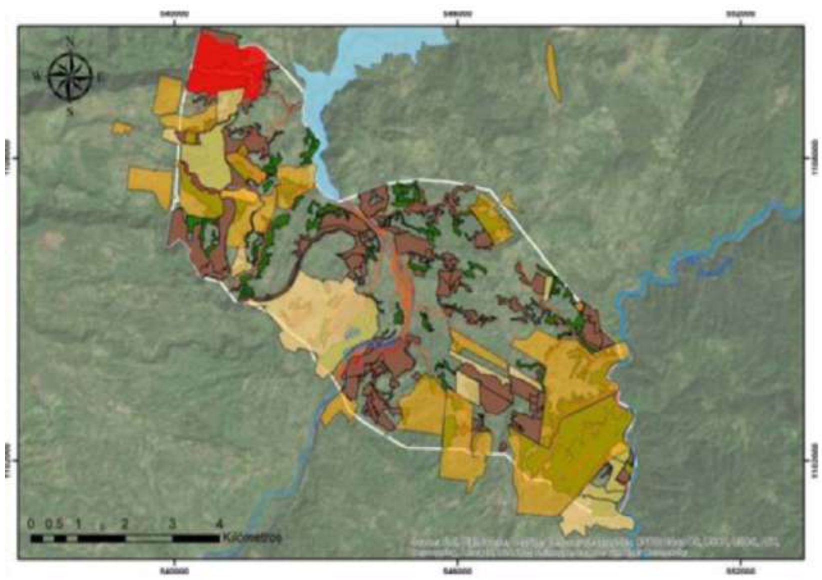


Photo: courtesy of the ICE Group

Photo No. 22 | Parismina fluvial offset site that flows parallel to the Reventazón River (in light blue).

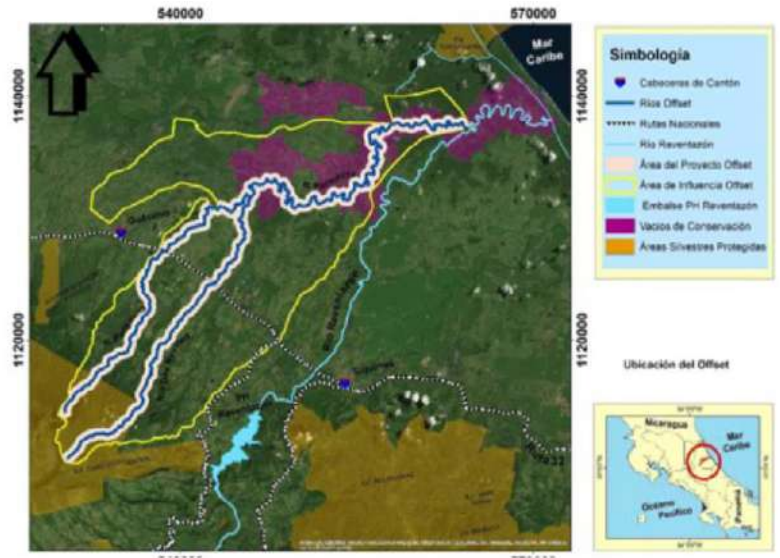


Photo: courtesy of the ICE Group

In recent decades, the aquatic habitats of the Reventazón River have been subject to significant anthropogenic pressures, including the presence of three cascade hydroelectric plants along its upper and middle reaches: Cachí, with an installed capacity of 100.8 MW; Angostura, with 172 MW; and Reventazón, with 305.5 MW. The lower river basin has also been heavily affected by agricultural and livestock activities.

The PHR's operation has caused significant direct and cumulative impacts on the river, including: a shift from a lotic to a lentic regime along 8 km of its course; changes in water quality; disruption of natural sedimentation and deposition processes; and perhaps most notably, the creation of a physical barrier (the dam) that blocks the movement of fish and interrupts the river's connectivity.

Although the project allows a fixed flow of 40 m3/s to pass uninterruptedly downstream of the dam to mitigate the effects of the river's change of regime from lotic to lentic, the other impacts (water quality, modification of dragging and sedimentation processes, barrier effect) are difficult to mitigate. For this reason, the project created a protected area in the Parismina River (see **Photo No. 22**), an ecologically equivalent river system without existing barriers and which flows parallel to the Reventazón River, to compensate for the residual impacts it has had on aquatic habitats, biodiversity, and ecosystem services. In this way, it is expected that when weighing the direct losses caused by the project against the benefits generated by the creation of this new offset area, the result will not be a net loss but, on the contrary, a net gain in terms of biodiversity.

Of course, establishing terrestrial or aquatic offset areas requires a sustained and dedicated effort on the part of the project to ensure that the results being achieved are indeed leading to a net gain in biodiversity. In this regard, although the PHR has been in operation for several years, the activities of the Biological and Ecological Monitoring Plan (BEMP) are ongoing and are providing information on how the functional connectivity goals of the offset areas are being achieved. To this end, the project has installed several camera traps (see **Photo No. 23** and **Photo No. 24**) and has been conducting regular field visits (see **Photo No. 25** and **Photo No. 26**) to check indicators that key species are present (capture and release of individuals, records of food remains, feces, etc.), among other activities.

Photo No. 23 | Ocelot (*Leopardus pardalis*) observed at the upstream end of the reservoir by one of the camera traps.

Photo: courtesy of the ICE Group

Photo No. 24 | Puma (*Puma concolor*) observed at the upstream end of the reservoir by one of the camera traps.

Photo: courtesy of the ICE Group

Photo No. 25 | Greater spear-nosed bat (*Phyllostomus hastatus*) captured and released during field visits.

Photo: courtesy of the ICE Group

Photo No. 26 | White bat (*Ectophylla alba*) captured and released during field visits.

Photo: courtesy of the ICE Group

The partial results to date show a recovery of the terrestrial and aquatic areas impacted by the project, as well as modest gains in biodiversity that do not yet support the conclusion that a net gain has been achieved, but do suggest that this goal may be reached in the future.

EXAMPLE NO. 6

ENABLING AGILE, REAL-TIME COMMUNITY ACCESS TO A PROJECT'S EMERGENCY PLAN

The emergency plan for a hydroelectric plant with a dam measuring 225 meters in height and 650 meters in length, which creates a reservoir covering 3,800 hectares in surface area and 79 kilometers in length, and which has various towns, villages, and municipalities located downstream that could be severely affected if an unforeseen event compromises the dam's stability, was developed to be activated before, during, and after the occurrence of a contingency or emergency situation at the plant.

This plan, which was based on identifying the risks to the community and took into account the information flows the project needed to generate to and from authorities, communities, and local emergency services in the event of an incident, and which included the features that every emergency prevention and response plan must address, incorporated an innovative element: the development and implementation of a mobile application[11] (app) for cell phones and tablets, allowing anyone with a personal device real-time access to 1,425 emergency signage elements, 96 meeting points, and 348 evacuation routes across 137 sectors of the project (see **Photo No. 27** and **Photo No. 28**).

Photo No. 27 | Screenshot of the app: general view of the project's dam area.

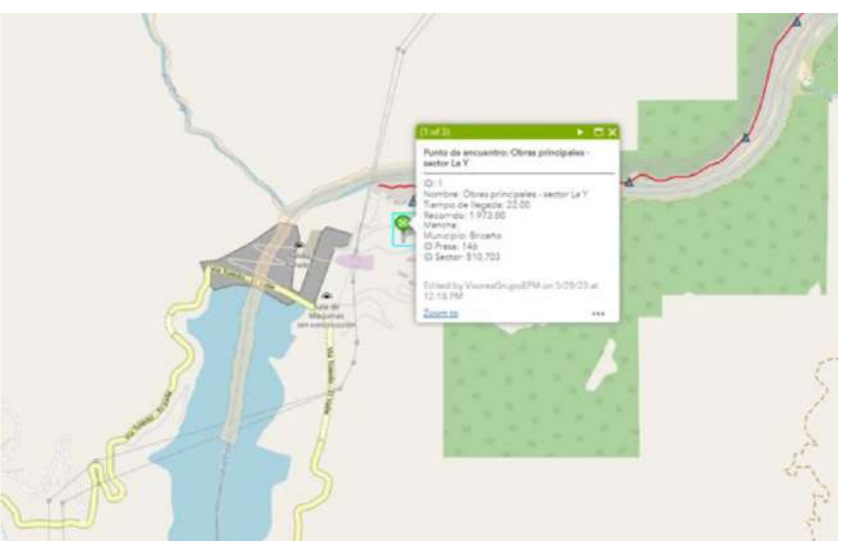


Photo: Ituango Hydroelectric Project APP

Photo No. 28 | Screenshot of the app: detail of the dam area and evacuation routes.

Photo: Ituango Hydroelectric Project APP

The app not only facilitates public access to the emergency plan, but also uses technology to allow anyone, in the event of an emergency, to use the geolocation system (GPS) on their mobile device to navigate to the nearest meeting point, identify the most suitable evacuation route, or reach support services (health centers and hospitals) to request assistance. The app also allows users to receive alerts in the event of an emergency, which complements the other methods used by the project (audible alarms, sirens, phone calls, text messages, mobile loudspeakers, and flyers, among others).

[11] https://grupoepm.maps.arcgis.com/apps/webappviewer/index.html?id=3fe0c02fef6e47bfbe9c699c92a2a26a

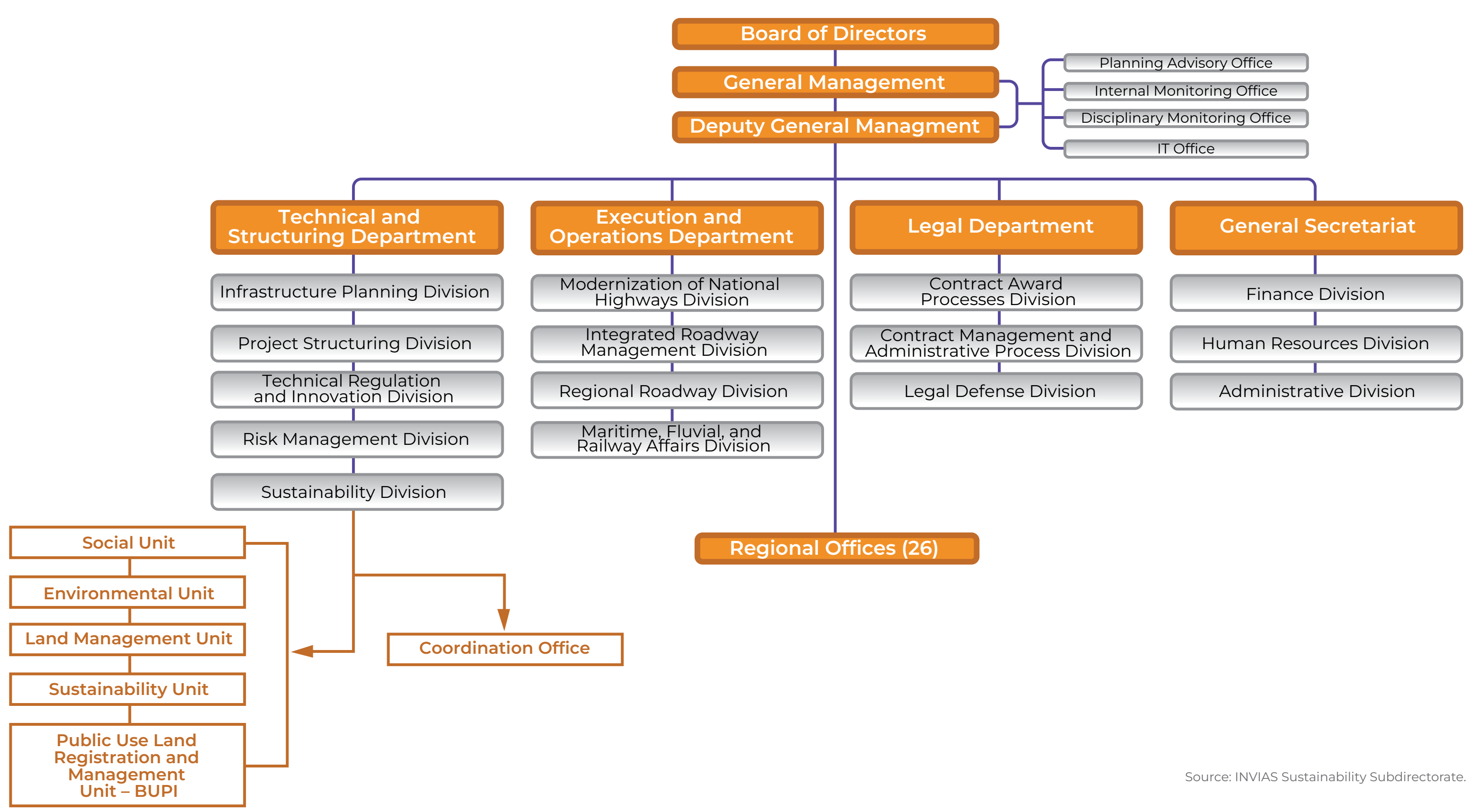
EXAMPLE NO. 7

MANAGING ENVIRONMENTAL AND SOCIAL ASPECTS IN THE ROAD SECTOR

The Colombian National Roads Institute (INVIAS) began operations in 1994 as a national public agency under the Ministry of Transportation charged with implementing road infrastructure projects under the jurisdiction of the national government. To achieve the objectives for which it was created, INVIAS developed an environmental and social management system that has enabled it to address the challenges posed by increasingly complex projects while maintaining the highest standards of environmental and social performance.

Implementation of this system was entrusted to the Sustainability Subdirectorate, which is part of the Technical and Structuring Directorate. This unit carries out its tasks through five working groups: social, environmental, land acquisition, sustainability, and public-use land registry and management (see **Figure No. 46**). These management groups are made up of interdisciplinary technical teams that include 84 professionals responsible for operating each area within the Sustainability Subdirectorate.

Figure No. 46 | Organizational Structure of INVIAS



Source: INVIAS Sustainability Subdirectorate.

To operationalize its management system, INVIAS created an Environmental Management Guide for Infrastructure Projects[12], which provides guidance on: i) classifying road projects; ii) developing the environmental and social baseline and determining the project's area of influence; iii) identifying environmental and social management measures by project type; iv) designing monitoring and control programs; and v) preparing and submitting Environmental Guide Adaptation Plans (PAGA), when applicable. It also has a Public Works Oversight Manual[14] (supervision, building inspection, or monitoring), along with a guideline for monitoring and management of construction contracts in relation to the environmental, land acquisition, social, and sustainability aspects of the project in question.

INVIAS has developed a regulatory framework that covers biodiversity, climate change, human rights, gender, environment, cultural heritage, Indigenous peoples, involuntary resettlement, and occupational health and safety. This framework is incorporated into several documents, including: i) the Environmental Management Guide for Road Infrastructure Projects; ii) the INVIAS Public Works Oversight Manual; and iii) resolutions, as well as other guides and manuals that govern the institution's environmental and social management. A summary of this framework can be found in the Sustainability Policy Procedure, and the corresponding flowchart is shown in **Figure No. 47**.

[12] https://www.invias.gov.co/index.php/regulations/policies-and-lines/technical-documents/13304-environmental-management-guide-of-infrastructure-projects-road-mode-short-version
[13] PAGA is a management instrument for road projects that do not require an environmental license. It defines actions to mitigate, compensate, or prevent the negative environmental and social impacts generated by a project or activity under development.
[13] https://www.invias.gov.co/index.php/archivo-y-documentos/bibilioteca-virtual/resoluciones-circulares-y-otros/12496-manual-de-interventoria-de-obra-publica-2022

Figure No. 47 | Flowchart of the INVIAS environmental and social management system

No.	Flow	Activity	Responsible	Regristry
	Start			
1	Request of the Sustainability Policy	Request+G7+E9:G20+E9:G21+E9:G20+E9:G21+E9:G20	General Management / Sustainability Group	Director-General's directive
2	Lead the development of the Sustainability Policy	Policy development management	INVIAS Dependencies / Sustainability Group	Sustainability Committee
3	Prepare the Sustainability Policy document	Sustainability Policy Development	INVIAS Dependencies / Sustainability Group	Sustainability Committee
4	Adopt the Sustainability Policy	Adoption of Sustainability Policy	General Directorate	Resolution
5	Manage the draft investment plan	Management for the development of the Investment Plan	Sustainability Group	Investment sheet
6	Prepare investment sheet	Preparation of investment sheet with prioritization of activities and allocation of budgets	Sustainability Group	Investment sheet
7	Lead the annual policy implementation plan	Management of the annual plan for the implementation of the Sustainability Policy	INVIAS Unit / Sustainability Group	Sustainability Policy
8	Prepare the final work proposal of the Sustainability Policy	Preparation of the final proposal of the work plan for the implementation of the Sustainability Policy	INVIAS Unit / Sustainability Group	Proposed work plan
9	Approve the annual implementation plan of the Sustainability Policy	Approval of the Annual Implementation Plan of the Sustainability Policy	INVIAS Unit / Sustainability Group	Work plan
10	Execute the annual implementation plan of the Sustainability Policy	Execution of the activities approved in the implementation plan of the Sustainability Policy	INVIAS Unit / Sustainability Group / Sustainability Committee	Annual Work Plan
11	Execute projects according to the annual investment plan	Implementation of annual investment plan activities	Sustainability Group	Contracts for each project, initiation minutes.
12	Monitor the investment plan	Monitoring of the fulfillment of activities	INVIAS Unit / Sustainability Group / Sustainability Committee	Minutes of Monitoring
	End			

Source: Prepared by the authors based on the INVIAS Sustainability Policy Procedure document

EXAMPLE NO. 8

STRUCTURING AN ESMS TO MEET REQUIREMENTS BEYOND THOSE SET BY LOCAL LEGISLATION

As part of the process to obtain its environmental license, a deep-water port construction project (see **Photo No. 29** and **Photo No. 30**), considered one of the most ambitious port projects on the continent, prepared and submitted an Environmental Impact Assessment (EIA) to the relevant authorities. This assessment was developed to comply with the requirements of local environmental and social legislation.

Photo No. 29 | Digital model of the port project: view of the container yard

Photo: courtesy of Pablo Barañao

Photo No. 30 | Digital model of the port project: docks.

Photo: courtesy of Pablo Barañao

Given the scale of the project and the fact that its needs exceeded local financing capacity, the developer decided to approach multilateral development banks to seek a loan to fund the port facility's construction. However, the bank set the condition of conducting a *gap analysis* between the management system outlined in the project's EIA and the one required by international best practices for this type of infrastructure.

This gap analysis identified several inconsistencies between the content of the EIA and the requirements of international best practices in areas such as: i) analysis of location alternatives and the technologies to be used; ii) impact assessment, particularly in relation to the increased risk of gender-based violence that could result from the influx of new workers involved in the port's construction; iii) assessment of cumulative and indirect impacts; iv) disaster risk assessment; v) development of a disaster-risk management plan; vi) evaluation of the potential impact of climate change on port activities; and vii) identification and engagement of stakeholders.

Since the EIA produced and submitted to the authorities was developed to meet the requirements of local legislation, it is expected that the project will be granted the necessary environmental license and permits. However, in order to qualify for funding from international banks, the project must address the shortcomings identified in the *gap analysis.* This means, among other things, that the project will need to carry out additional studies and analyses and establish a robust environmental and social management system that provides potential lenders with assurance that environmental and social issues will be properly addressed in compliance with the highest international standards.

EXAMPLE NO. 9
COMMUNITY PARTICIPATION IN A PROJECT'S DEMOBILIZATION

Toward the end of the construction phase of a major infrastructure project, the loss of demand for local labor was identified as the most significant risk for nearby communities and the broader region. Thanks to the project, many local farmers—through a local production-support program—had received technical assistance and seeds, and had benefited from: i) the creation of business networks to produce fruits, vegetables, greens, and eggs that were sold to the project to feed the approximately 3,500 workers living in its camp; and ii) training, education, and capacity-building programs for unskilled laborers (to become technicians in areas such as electricity, masonry, welding, excavation, cooking, and infrastructure maintenance, among others).

To minimize the impacts that the end of construction would have on the local population, the project designed and implemented a community information and engagement strategy that included setting up Citizen Information and Service Centers (see **Photo No. 31**), through which the population was informed about the demobilization process. According to requests from the communities, this communication strategy included the following activities:

- Information was communicated through radio spots, banners, and flyers several months before the workforce demobilization process began. This included updates on the work fronts that were being closed and alerts to local businesses about the need to inform the project of any outstanding debts owed to them by workers, subcontractors, or suppliers (see **Photo No. 32**), to ensure those debts were acknowledged and settled before the workers' departure.

- Discussions, training sessions, and advisory services were organized for local workers on the following topics: i) saving and money management; ii) résumé preparation; iii) job search strategies within the region and the country; and iv) new employment opportunities.

- The creation of a consultation center to identify potential sources of employment in other projects.

- Handing over to the authorities—through documents signed by the parties and certified by public notaries—storage areas, stockpiles, industrial installations, camps, and other facilities that had been used by the project, in the conditions stipulated in the environmental license.

- Inviting national supermarket chains to visit the area to learn about the availability and quality of local products and discuss the possibility of marketing them.

- Turning over part of the project's infrastructure (local roads, leisure centers, and camp recreation areas) to the communities.

Photo No. 31 | Community service center.

Photo: courtesy of Juan Quintero

Photo No. 32 | Project construction phase closing process.

Photo: courtesy of Juan Quintero

These measures made way for an orderly and gradual transition from the project's construction phase to its operational stage, minimizing the impacts the process had on the population.

EXAMPLE NO. 10

INDIGENOUS PEOPLES' PARTICIPATION IN THE ENVIRONMENTAL AND SOCIAL MANAGEMENT OF A HYDROCARBON PROJECT

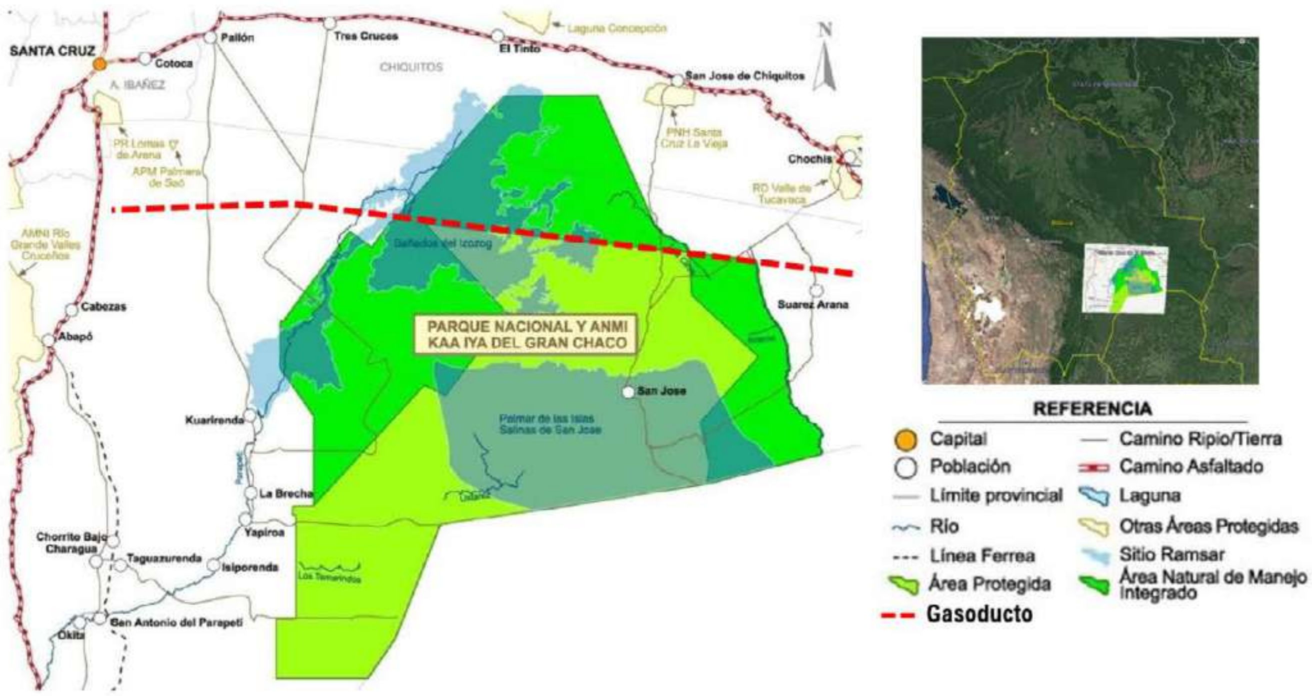
The Bolivia–Brazil gas pipeline (GASBOL) stretches from the outskirts of Santa Cruz de la Sierra, Bolivia to Porto Alegre, Rio Grande do Sul, Brazil and has a total length of 3,150 kilometers. The Bolivian segment is 557 kilometers long and goes from the Rio Grande sector to the city of Puerto Suárez. In Brazil, the pipeline crosses five states: Mato Grosso Sul, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul.

As part of its works, the project's construction included 18 compression stations, 35 valve stations, and the installation of a mostly underground pipeline with a diameter ranging from 80 cm to 40 cm. The project presented a series of unique challenges: i) its binational nature, as it is shared by two countries (Bolivia and Brazil); ii) its size and scale, not only spanning 3,150 km in length but also requiring an investment of over 2.1 billion US dollars; iii) differing regulatory frameworks, particularly regarding environmental issues and relations with Indigenous communities, that the project had to interact with directly in Bolivia and indirectly in Brazil; and iv) the presence of ecologically sensitive areas along its route, such as the Bosque Seco del Chaco and the Pantanos de Izózog in Bolivia, and the Pantanal and Mata Atlântica in Brazil.

On the Bolivian side, the Guaraní-Izoceño, Ayoreo, and Chiquitano Indigenous communities played a key role in every phase of the project by actively participating in coordination, planning, and managing the funds the project allocated to each of them as part of the compensation package for the impacts of project construction. In this sense, perhaps one of the most important achievements was the implementation of the Land Titling Program that successfully provided: i) legal titles to Indigenous peoples through the recognition of Indigenous lands as Native Community Lands (TCO); and ii) the delimitation of private lands at the expense of their owners, a situation that allowed the funds originally intended for this purpose to be released for use in titling community lands in an area twice the size of the original plan.

The pipeline crossed Kaa Iya National Park, the largest protected area of Seco del Chaco Forest in Bolivia (covering nearly 3,500 hectares) and one of the largest protected areas in Latin America, which is managed by Indigenous peoples (see **Figure No. 48**).

Figure No. 48 | Route of the Bolivia – Brazil gas pipeline



Source: Prepared by the author based on information about the Bolivia - Brazil Gas Pipeline Project

As part of the project's strategy for managing biodiversity and engagement with Indigenous communities, a committee was set up to oversee implementation of a park management plan, including representatives of these Indigenous peoples. For each Indigenous community this plan included: i) youth scholarships; ii) technical assistance to promote and improve knowledge about natural resources; iii) specific studies suggested by the communities (ethno- and ecotourism, water resource management); and iv) training in productive activities (horticulture, handicrafts, animal husbandry, beekeeping, and the use of medicinal herbs and plants).

The project also established a US$1 million trust fund, with its financial returns being co-managed by the Indigenous peoples and the project developer and used to finance conservation activities in Kaa Iya National Park, such as: i) payment of salaries, expenses, and per diem for park rangers (most of whom are Indigenous); ii) management and monitoring activities; iii) the construction of fences, camps, and wildlife shelters; iv) park ranger training; and v) the provision and maintenance of vehicles for patrolling the park.

EXAMPLE NO. 11

BUILDING STRONG COMMUNITY RELATIONSHIPS THROUGH THE FULFILLMENT OF AGREEMENTS AND IMPLEMENTATION OF A ROBUST AND TRANSPARENT GRIEVANCE MECHANISM

A lithium extraction project located in the Andean highlands intersects areas of economic, cultural, and heritage significance for 20 Indigenous communities in the region (see **Photo No. 33** and **Photo No. 34**).

Photo No. 33 | View of the wetlands and grasslands used by Indigenous communities for traditional cattle grazing.

Photo: courtesy of Juan Quintero

Photo No. 34 | Working with the communities to identify cultural sites located near the project.

Photo: courtesy of Juan Quintero

For this reason, the project signed a cooperation, sustainability, and mutual benefit agreement with the communities as part of its community engagement and communication plan, through which it committed to: i) allocating 3.5% of its sales to the Indigenous communities to fund investment projects identified and prioritized by the communities themselves (renewable energy, drinking water, sanitation, and education); and ii) keeping these communities constantly informed about its activities, project developments, the results of monitoring for various environmental components, the channels available for community members to submit questions or complaints to the company, and any entry of contractors or company personnel into their territory. As part of this agreement, the communities agreed to take on the responsibility of carrying out environmental monitoring of the project's operations.

In addition to this agreement, the project adopted policies and commitments that require it to ensure care, respect, transparency, honesty, and humility in its conduct toward the host communities. All these actions and commitments are verified by independent third parties, such as auditors from the Initiative for Responsible Mining Assurance (IRMA), considered the most comprehensive and rigorous certification standard in the world for ensuring responsible mining.

The project invited the community to take part in the process of discussing and sharing documents related to environmental and social matters (including policies, procedures, and issues critical to the communities, such as water use, air emissions, discharges into bodies of water, and waste disposal), encouraging them to submit their questions, complaints, claims, and suggestions through channels such as email and phone contacts for their representatives that were widely shared among community members. The timely and transparent handling of feedback and grievances has reaffirmed the project's commitment to respond to all requests from the community and, when necessary, to take appropriate measures to address their concerns, without any form of retaliation against those who use this mechanism.

Maintaining a system like the one adopted by this mining project has required continuous training for its workers, as well as ongoing practical guidance on how staff should engage and interact with neighboring communities. The systematic and continuous fulfillment of all these commitments over several years has allowed the project to build trust and create a strong bond with the surrounding community.

EXAMPLE NO. 12

USE OF A GRIEVANCE MECHANISM AS PART OF A SOCIAL MANAGEMENT SYSTEM

With the aim of applying best practices in social management across each of the initiatives in its portfolio of around ten projects, a non-conventional renewable energy (NCRE) company decided to design and implement a Social Management System (SMS) as part of its Environmental Management System, certified under ISO 14.001[15], and to complement it with the guidelines in ISO 26.000 (corporate social responsibility). This decision was totally innovative because ISO 26.000[16] only provides practical guidance to contribute to sustainable development, and is not intended for certification purposes, as is ISO 14001.

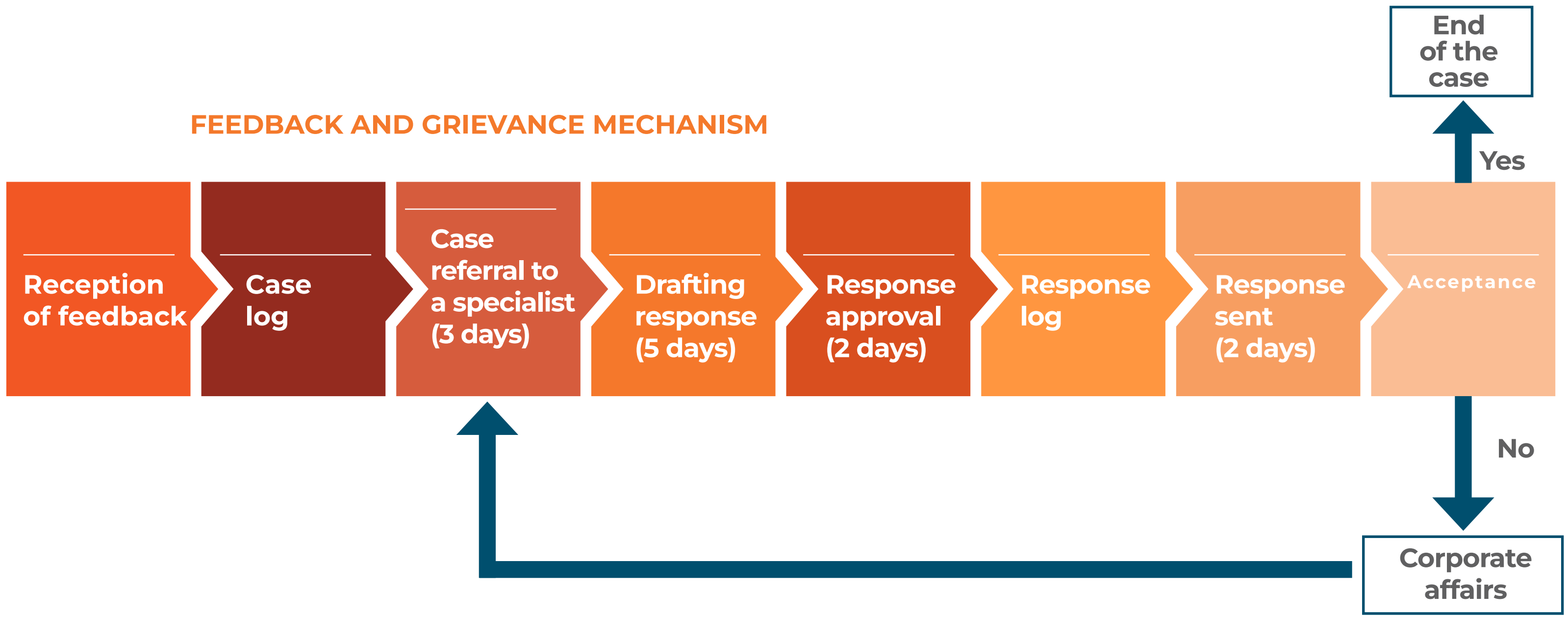
In this context, the company designed a social management and community engagement system with policies, procedures, standards, and reporting procedures to guide the social management of its NCRE projects from the early development stages through to final closure. To comply with the above, the company prepared the following instruments:

- A strategic social and community management plan.
- A social management policy for the company.
- Procedures for mapping key social actors.
- Instruments for evaluating projects with a focus on human rights issues.
- A procedure for developing community engagement plans.
- Grievance and consultation mechanisms for projects.

The development and subsequent adoption of mechanisms to capture, record, and manage feedback and grievances in a timely manner at any stage of each project's lifecycle (pre-construction, construction, operation, and decommissioning) were carried out within the context of a set of parallel processes aimed at effectively managing the social aspects associated with the company's project portfolio. How this mechanism operates is presented schematically in **Figure No. 49**.

[15] ISO certification 14001 – Environmental Management Systems (EMS) is an international standard that enables companies to demonstrate their commitment to protecting the environment.
[16] ISO 26000 is an international corporate social responsibility (CSR) standard that helps organizations assess and address their social responsibilities, providing them with the practical guidance they need to contribute to sustainable development.

Figure No. 49 | Flowchart of the feedback and grievance mechanism for communities potentially affected by the projects



Source: Prepared by the author

The management framework outlined in this mechanism generally follows the guidelines used for any grievance-handling system, but it features three notable distinctions: i) immediately after a piece of feedback is received, the system formally thanks the person who submitted it and provides an estimated response time, clarifying that this timeframe is indicative and may vary slightly depending on the type of feedback and the available resolution options; ii) it automatically guarantees user confidentiality unless the individual explicitly chooses to waive this right (whereas other mechanisms typically require the user to request confidentiality); and iii) it ensures immediate protection for the user against any form of retaliation or reprimand for using the mechanism— a right that is not always explicitly guaranteed in most systems.

The mechanism allows for feedback to be submitted in two ways: i) verbally, in which case the person receiving the complaint must record and enter it into the system; or ii) in writing, either through paper or electronic forms designed for this purpose, similar to those shown in **Figure No. 50** and **Figure No. 51**.

Figure No. 50 | Physical form for submitting feedback and complaints

Date		Time		N	

STAKEHOLDER INFORMATION					
First and last name				Anonymous	
Organization					
Role	Acting on behalf of			Own action	
City				Telephone	
Address		Email			
Assigned Case Officer:		Nature of the Request	By phone ❑ E-mail ❑	Personal ❑ Other:…………….❑	
Description of the situation					
Action Taken					
CLASSIFICATION					
1st	High priority ❑ Medium priority ❑ Complaint ❑ Suggestion ❑ Inquiry ❑				
3rd.	Social ❑ Environmental ❑ Ethical Use of resources ❑ Suppliers Employment ❑ Respect for Private and/or Communal Property ❑ Human ❑ Rights. Others ❑				
Notes:	All inquiries will be recorded in the Registry of Communication with Stakeholders				

ɪg Date: ____________________

______________________ ______________________

ompleted by Verified by

Source: Paracel Project

Figure No. 51 | Electronic form for submitting feedback and complaints

REGISTRY OF A REQUEST, COMPLAINT, CLAM, OR SUGGESTION

Claimant's Name: [ ]

Claimant's Contact Info

Email [ ]

Phone number [ ]

Classification

- Request ○
- Complaint ○
- Claim ○
- Inquiry ○
- Suggestion ○
- Compliment ○

Subject that gives rise to the

- Community ○
- Authority ○
- Worker ○
- Supplier ○
- Contractor ○
- Other ○

Method used to submit feedback

- Telephone ○
- Electronic ○
- Written ○
- Verbal ○
- Suggestion box ○
- Other ○

Interest group where the submission originated

- Labor ○
- Environmental ○
- Social ○
- Safety ○
- Supplier ○
- Other ○

Description of the feedback

[ ]

SEND

Source: Prepared by the author

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