Inter-American Committee on Ports

GUIDE TO ENVIRONMENTAL CERTIFICATION

AND

SUSTAINABILITY REPORTING

FOR PORTS OF THE AMERICAS

2025

INTRODUCTION

The Guide to Environmental Certification and Sustainability Reporting for Ports of the Americas is a reference tool offered by the Inter-American Committee on Ports (CIP) to Latin American ports and terminals to highlight the importance of environmental protection in their business setting.

This tool provides ports with general information to establish a plan of action and make a commitment to continual improvement based on the planning and structure suggested in the Guide.

This document is made up of the following chapters:

CHAPTER I.
CRITICAL ELEMENTS FOR PORT ENVIRONMENTAL MANAGEMENT

In this chapter, the key elements for developing environmental management of ports are laid out, as well as the principal guidelines and principles such management should reflect.

Additionally, the basic guidelines that an Environmental Management System (EMS) should follow, as it applies to a port with an approach of continual improvement, are discussed.

CHAPTER 2.
GREEN PORT MANAGEMENT BEST PRACTICES CATALOGUE.

In this chapter, we will identify the major impacts of port operations on the environment of port terminals in order to set priorities and examine actions that can be pursued for mitigation and control of such impacts. We will also discuss existing best practices in the Latin American port system in terms of managing, mitigating and controlling environmental impacts of those port facilities on the surroundings where they operate.

The main purpose of this section is to highlight previously implemented actions that are in line with environmental management systems standards.

CHAPTER 3.
INTERNATIONALLY RECOGNIZED ENVIRONMENTAL STANDARDS AND CERTIFICATIONS. GENERAL BACKGROUND, PROCEDURES, AND REQUIREMENTS.

In this chapter, we describe the most important and widely used Environmental Management Systems in the world, along with providing the general background information needed to implement them and receive certification in them.

In particular, the main environmental sustainability standards used worldwide will be described, along with the general background necessary for their implementation and certification, such as ISO standards, the World Ports Sustainability Program (WPSP), and the implementation methodology for the ECOPORT and EMAS environmental management systems.

CHAPTER 4.
COMMERCIAL, SOCIAL AND ENVIRONMENTAL BENEFITS AND ADVANTAGES OF BEING A GREEN OR ECOLOGICAL PORT.

In this chapter, we address the (social, commercial and environmental) benefits and advantages of green or ecofriendly practices, either inside or outside of the organization, the reach of which goes beyond mere compliance with the environmental legislation of each country.

CHAPTER 5.
SUCCESSFUL EXPERIENCES OF LATIN AMERICAN PORTS WITH INTERNATIONALLY RECOGNIZED ENVIRONMENTAL CERTIFICATIONS.

In this chapter, we will identify port terminals that, after implementing key aspects of environmental management, have established and developed successful environmental management strategies.

We will also highlight achievements in implementing environmental management systems, such as ISO and EcoPorts, determining the scope and the particular characteristics of their operation and environment. Lastly, we will mention the benefits of these environmental certification practices.

CHAPTER 6.
SUSTAINABILITY INTERNATIONALLY STANDARDS, REPORTING GUIDELINES.

This chapter explains the context in which sustainability reporting is necessary, describes and examines the principles and core content of sustainability reporting using the methodologies of global standards such as GRI (Global Reporting Initiative), SASB (Sustainability Accounting Standards Board) and ESG (Environmental, Social and Corporate Governance).

CHAPTER 7.
COMMERCIAL, SOCIAL AND ENVIRONMENTAL BENEFITS AND ADVANTAGES TO PORTS FROM SUSTAINABILITY REPORTS.

In this chapter, based on the aspects of sustainability defined by the GRI, SABS, ESG Standards, we explain the benefits and advantages of a Sustainability Report, drawing a distinction between internal and external benefits and, in this way, facilitate analysis and comparison between these benefits.

CHAPTER 8.
EXPERIENCIAS EXITOSAS DE PUERTOS LATINOAMERICANOS QUE HAN ELABORADO REPORTES DE SOSTENIBILIDAD.

This chapter aims to identify Sustainability Report publications of Latin American port terminals and explain why these ports are outstanding examples (processes involved, how long they have been reporting, frequency of reporting, communication, and other aspects).

CONTENTS

CHAPTER 1. CRITICAL ELEMENTS FOR PORT ENVIRONMENTAL MANAGEMENT.

The environmental management of a port is a set of actions or tasks, which must be defined and spearheaded by the port authority's upper management, aimed at protecting the environment of the locality where the port operates, while abiding by the statutory requirements prescribed in the environmental legislation of the particular country. It is an ongoing and circular process of continual enhancement that fosters the preservation, restoration, conservation, and sustainable utilization of resources and of the environment where the port does business.

In this chapter, the key elements for developing the environmental management of ports are laid out, as well as the main guidelines and principles such management should reflect. Additionally, the basic guidelines that an Environmental Management System should follow, as it applies to a port entity, are discussed.

1.1 A Port's Environmental Policy.

The environmental policy of a port is a publicly available document, written by the upper management of the port authority, reflecting its commitment to achieving adequate environmental management and fostering sustainable development through the port's operations and processes.

It is very important for the environmental policy of a port to clearly set forth the intentions and principles of its actions as well as to define the strategies and short-, medium-, and long-term objectives to be achieved and to consistently maintain the environmental management and improvement intended by the port authority.

Accordingly, the environmental policy should be based on significant environmental aspects and impacts caused by the port, taking care that its objectives do not commit the organization to carry out actions and/or make statements that fall outside of its purview. The port authority should encourage and promote internal, as well as external participation of its employees and other stakeholders, in developing and crafting environmental policy. It is also advisable to receive input from outside the organization. Only in this way can this policy be successfully understood and adhered to by the port personnel and users and their associates.

Several recommendations for the formulation and implementation of the environmental policy of a port authority are listed hereunder:

- It should have the backing and sign off of the upper management of the port authority, ideally, of the board of directors.
- It should set forth the authority's commitment to abide by the legislation currently in force and all environmental regulations that are applicable and related to significant environmental aspects and the attendant environmental impacts thereof.
- It should be appropriate to the nature, scope, and the significant environmental impacts of the activities, products, and processes of the port facility.

- It should include the commitments to the protection of the environment, to continual improvement of environmental management and prevention of pollution.
- It should be documented, kept up to date, be communicated to all persons working under the control of the port organization, and be available to any stakeholder.
- It should be written in simple, non-technical language in order for it to be more readily understood, both inside and outside the organization.

1.2 Environmental Program.

An environmental program or environmental management program is a written description laying out actions to achieve compliance with the environmental objectives and targets of the port authority, defining who is responsible for them, and earmarking the financial and technical resources required to achieve them.

In order to achieve compliance with the environmental objectives and targets set forth in the Environmental Management Program of a Port Authority, the unequivocal commitment of the entire agency and, especially, of the most senior level management, is essential.

Prior to defining the Environmental Management Program, the port authority must identify all environmental aspects related to its activities, products, or services. This includes both aspects that it is able to control, as well as those that are difficult to predict and that it may be able to influence, such as situations of reasonably predictable emergencies. All of these aspects should be assessed in order to determine the significance of their impact on the environment.

In determining environmental aspects relating to its operations, the standard ISO 14.001 of 2015[1] establishes that, in addition to incorporating those aspects that are inherent to its operations, the organization should take into account:

- Changes, including new and planned developments, and the activities, products and services deriving from them.
- Abnormal conditions and reasonably predictable emergency situations.

To the extent that all significant environmental aspects relating to the activities, products or services provided by a port are adequately identified, the Environmental Management Program will be able to address them, by establishing achievable and useful environmental objectives and targets.

Thus, environmental objectives and targets constitute an environmental goal of a general nature, which should be defined in such a way that they are consistent with the Port's Environmental Policy. The idea is for these environmental objectives to be measurable, subject to follow-up, communicable and updatable. (Diagram No. 1).

[1] https://www.iso.org/standard/60857.html

DIAGRAM No. 1: IMPROVEMENT AND MAINTENANCE OF ENVIRONMENTAL ASPECTS.

After establishing environmental objectives, actions that directly or indirectly have a repercussion on the intended objective must be identified and planned for.

For each action defined, environmental targets are set to ensure that the objective is reached. These targets constitute the performance requirements applicable to the organization or to parts of the organization. To the extent that these targets are reached, the actions defined will be able to achieve environmental objectives.

When identifying and planning the actions and their respective targets, for achieving of the environmental objectives, it is essential to specify:

- What is going to be done;
- What resources will be required;
- Who will be responsible;
- When will it been considered accomplished; and,
- How will the outcomes be evaluated, including follow-up progress indicators toward achievement of its environmental objectives.

Once the actions, means, responsibilities, time periods and necessary resources to achieve the environmental objectives and their goals are determined, the Environmental Program should be documented, that is, put into writing.

1.3 Organization and Training.

Upper management should define what part of the organization would oversee implementation and control of environmental management, what its responsibilities are, and endow it with the resources it requires to establish, implement, maintain and continually improve this management. For this purpose, the organization should consider key personnel with adequate competencies.

It is the obligation of the upper management of the organization to appoint one or more persons responsible for:

- Making sure that the requirements of the management system are defined, implemented, and documentation thereof is kept up-to-date.
- Maintaining senior officers of the organization properly informed about the management system for its review and ongoing improvement.

The competencies of the persons making up the environmental management team should include environmental training and education, leadership skills to run and coordinate their own internal and external working groups, knowledge of the organization itself (context) and managerial skills.

The knowledge and expertise of those responsible for the environmental management system must be in line with statutory requirements and any other requirements arising from other commitments undertaken by the organization, environmental policy, environmental objectives and targets, environmental aspects caused by the port organization itself, control and management measures for the monitoring and reduction of such aspects, among other things.

Along with the foregoing, the organization must define the level of experience required by the personnel and must ensure their training and professional development so that the performance of their duties is satisfactory in terms of environmental management.

In order to achieve this training objective, the organization must identify the capacity required of its personnel to carry out specific duties that may have a significant environmental impact. Concurrently, it must make sure that all persons working under the control of the organization become aware of the environmental policy and objectives linked to it, significant environmental aspects and related actual or potential impacts associated with their work.

1.4 Implementing an Environmental Management System (EMS).

Port operations have been the cause of environmental impacts and the source of pollutants, which have had an adverse effect on their surroundings and/or areas of influence.

Thus, it is essential for port terminal facilities to engage in environmental conservation and protection of their surrounding areas providing guidance and striking a balance in their development towards consistent environmental management, to not overexploit natural resources and to minimize negative impacts, all in a process of continual improvement.
With a mind towards minimizing and/or controlling environmental impacts caused by port operations and by economic activities in general, international environmental management models or standards have been developed.

Implementing an Environmental Management System (EMS) entails preliminary research efforts, as well as allocation of sufficient resources to put it into operation. In addition to facilitating compliance obligations, with an EMS, the port authority will be able to improve its environmental performance in controlling and lessening environmental impacts, it will strengthen its environmental and business strategy by boosting its own and its stakeholders' market value, and it will potentially be able to reduce operation costs in the medium and/or long term, among other improvements.

Furthermore, by implementing an Environmental Management System the organization is better equipped to detect potential causes of environmental impact in all its operations processes, and thus be in a position to define or set environmental objectives and targets and indicators for the continual improvement of its environmental performance. As was noted above, an Environmental Management System is also an important support to legal review and compliance.

An Environmental Management System is a structured system whose strategic approach is continual improvement, which involves the processes of planning (P), implementing or doing (D), review or verification (V) and of action or acting (A), all of which a port must practice in conducting its operations thus ensuring compliance with its environmental objectives.

Environmental Management Systems can be implemented at different degrees of development, depending on the size and the intended reach of the port, as defined by each particular organization.

If the port follows an environmental strategy of continual improvement, it must also comply with environmental regulations in force, properly plan its operations, be organized and systematic measuring and evaluating its development or progress, and adjusting its outcomes accordingly.

This entails applying a standardized EMS, which is voluntary, requires commitment to an environmental policy, strict compliance with the pertinent environmental legislation and a commitment to continual improvement.

Currently, three standards for the implementation of an Environmental Management System in ports are widely recognized and mainly used, which are standardized, auditable, and certifiable: a) ISO 14001 in its 2015 version, b) EMAS III (Eco-Management and Audit Scheme) Regulation, and c) ECOPORT PERS.

The ISO 14001 standard is widely used in Latin American ports, while the EMAS III and ECOPORT PERS standards are mainly used in European ports.

Table No. 1 shows the differences between the Standards in terms of requirements.

REQUIREMENTS	ISO 14.001:2015	EMAS III	ECOPORT PERS
Application	Universal application to all types of organizations	Applies to all types of organization through global or corporate registration (currently restricted to some countries)	Specific environmental review application developed exclusively for port terminals.
Initial Environmental Evaluation/Review	Recommended when no prior Environmental Management System in place	Mandatory when no Environmental Management System was in place prior to certification	Mandatory, known as SDM (Self Diagnosis Method) to verify the implementation status of an SGA.
Audit cycle	No established frequency	The cycle will depend on the type of activity performed, at least every 3 years	The cycle will depend on the type of activity carried out, at least every three years.
Scope of audit	Environmental Management System	In addition to the Environmental Management System, it must include: The Environmental Policy The Program Compliance with applicable legislation	In addition to the Environmental Management System, it must include: - The Environmental Policy. - The Program. - Compliance with applicable legislation. - Environmental reports. - Best practices.
Environmental Statement	Not required	Required, it shall be publicly and annually released.	Necessary, it will be public and annual.
Validity	Can be self-certified, although the most usual thing is to be certified by an external accrediting agency	It must be verified by an external accrediting agency, and validation of the Environmental Statement is required.	It must be verified by an accredited external body, contracted by EcoSLC (Sustainable Logistic Chain Foundation).
Registration	Not necessary	The organizations are entered into the registry of companies.	It is recognized by the European Sea Port Organization (ESPO).

TABLE No.1: Differences between the Environmental Management System.

The expected results of an Environmental Management System include:

- Improved environmental performance.
- Compliance with applicable legal requirements and others, in accordance with specific legislation.
- Achievement of environmental objectives.

CHAPTER 2. GREEN PORT MANAGEMENT BEST PRACTICES CATALOGUE.

Proper environmental management of ports must include mitigating and controlling impacts on the environment and surrounding the land, air, and sea that are caused by port facilities and operations, as well as complying with the national framework of environmental law in force. Environmental impacts at working port facilities are the result of maritime traffic, loading and unloading of vessels, cargo storage, shipment consolidation and deconsolidation operations, internal and external conveyances or transportation, maintenance, supplying operations, waste disposal, among other ones, which involve any disturbance to the surroundings, and for which control and mitigation measures must be implemented.

Each facility must identify the main environmental priorities. However, generally speaking, the major issues and impacts pertain to air quality, energy conservation, noise, waste management, and water.

In this chapter, we will identify the major impacts of port operations on the environment of port terminals, in order to set priorities and examine the actions that can be pursued for the mitigation and control of these impacts. Additionally, we will discuss existing best practices in the Latin American port system in terms of managing, mitigating and controlling the environmental impacts of those port facilities on the surroundings where they operate. The main purpose of this section is to highlight previously implemented actions that are in line with environmental management systems standards.

2.1 Summary of port operations-caused impacts on common environmental priorities (air, noise, waste, water, energy).

Table No. 2 shows significant environmental aspects of port operations, which depend on the different circumstances in which they are carried out, as well as the different processes and operations involved, and the associated environmental impact for each aspect.

ENVIRONMENTAL ASPECTS OF OPERATIONS	
ENVIRONMENTAL ASPECT	ASSOCIATED IMPACT
Waste Generation	Air pollution
Particulate matter emission	Air pollution
Water use	Exhaustion of natural resources
Energy use	Exhaustion of natural resources
Special waste generation	Contamination of soil, water, flora, and fauna
Gas and smoke emission	Air pollution

TABLE No. 2: SIGNIFICANT ENVIRONMENTAL ASPECTS OF PORT OPERATIONS.

Particulate Matter Emission. Particulate matter can be produced in port operations by the following activities: infrastructure works, demolitions, operating equipment and means of conveyance, handling bulk solids.

Waste Generation. Waste can be hazardous. Examples include sludge, used oil filters, solvents and paints, contaminated materials and equipment, dangerous chemicals and their containers, among other things. Waste can also be non-hazardous. Examples can include plastics, wood, scrap metal, screens, cables, etc. This category can also include bulk solid and liquid spills at the different stages of port operations (handling, conveyance, clean up, etc.).

Special Waste Generation. MARPOL waste[2], includes garbage, oil cargo waste, bilge water, noxious liquid substances, sewage, solids and other waste and residues, originating in seafaring vessels.

Gas and Smoke Emission. Potential atmospheric emissions can be associated with the use of air conditioners for refrigerated containers, gas and smoke emission from the use of means of conveyance or transfer (mobile gantries), boiler fumes, emission of volatile organic compounds, emission of foul odors, among others.

A more specific listing of environmental impacts linked to port operations appears below in Table No. 3[3].

COMPONENT	IMPACT	DESCRIPTION
WATER	Fluvial and maritime dynamics	Expanding a section of river or shore for mooring docks and laying piles to support the docks
	Disturbing the water absorption	Impacting the ability of soil to absorb water.
	Increased turbidity from repeated suspension of sediments on the floor	Change in water quality due to increased dissolved solids
	Pollution from bilge water	Increased concentration of oil residues in the water, caused by discharge of bilge water in in vessel operations
	Changes in floor topography	Changing the current sea floor or riverbed.
	Floor sediment pollution	Changes in the quality of the sea floor or river bed sediments due to polluting agents
	Pollution by potentially hazardous and toxic substance spills	Changes in water quality due to the presence of hazardous or toxic elements.
	Pollution by solid and liquid discharges	Increased concentration of solid or liquid waste in the water
	Pollution by organic residue and substances	Increased concentration of organic substances in the water
	Increased water demand	Increase in the amount of water to be used.
	Pollution by potential fuel, grease and oil spills	Change in the water quality due to increased concentration of fuel, grease, and oil.
	Saltwater intrusion	Partial encroachment of marine saltwater inland.

[2] MARPOL – International Convention for the Prevention of Pollution from Ships.

[3] Evironmental Guide to Port Terminals (Guía Ambiental Terminales Portuarios). Convenio No. 370-2016 MADS-INVERMAR (2016), pgs. 105-107.

COMPONENT	IMPACT	DESCRIPTION
AIR	Pollution by increased gas concentration	Increased concentration of gases such as SO2, CO, volatile organic compounds, nitrogen oxide, CO2, methane (CH4) and Chlorofluorocarbons (CFC) in the atmosphere
	Increased noise pollution	Higher decibel level in the air
	Deteriorating air quality from increased concentration of particulate matter	Increased concentration of particles suspended in the air
	Increased temperature	Increased base air temperature at the ground surface level in the port's area of influence
SOIL	Silting, accretion, erosion, and undermining	Solid material building up on the sea floor or river bed, growth by addition of smaller objects, removal or wearing away of the soil and/or deep excavation caused by water
	Compacting	The artificial process whereby soil particles are forced to be in closer contact with one another.
	Change in natural drainage pattern of the ground	Shifting of the natural channels which collect all water of the watershed, whose final destination is spilling into the river
	Pollution by potential fuel, grease, and oil spills	Change in soil quality due to increased concentration of fuel, greases, and oils
	Solid waste generation	Presence of solid waste in the soil
	Soil loss	Wearing down of the ground
	Change in land use	Modifying current land use
	Vibration	Spreading of elastic waves producing deformations and tension to a continuous medium, in this instance, the soil
	Foul odors	Complex mixture of gases, vapors, and dust, the composition of which directly causes an unpleasant odor to whomever perceives it.
LANDSCAPE	Decreased esthetic and recreational value of beaches	Beaches are perceived as less beautiful and as having less recreational potential
	Disturbance of the landscape and visual appeal	The structural or functional disturbance of one, several, or all natural components and visual elements of the landscape as a consequence of human interventions, causing decreased environmental and visual quality.
	Changes in coastal morphology. River banks and/or sea shores	Shifts in the surface line of land defining the boundary between the sea and/or river channel and firm ground, due to expansion of the channel or dredging of the seaport floor
	Change in topography	Shifting relief of the surface of the land
	Increased fragmentation	Transformation of a continuous forest into many smaller units that are isolated from each other, whose aggregated expanse becomes much smaller than the original forest
	Increased risk of edge of habitat effect	Increased exposure of organisms that remain in a fragment to conditions that are different from their normal habitat
	Disturbance of aquatic productivity	Decreased fishing and aquacultural production, as a result of the construction and operation of port infrastructure.

COMPONENT	IMPACT	DESCRIPTION
	Habitat loss or deterioration	Decreased availability or quality of the environments occupied by biological populations
FLORA	Dust build-up on fauna and vegetation	Particulate material accumulates on the surface or inside of vegetation and wildlife
	Loss of vegetation cover	Total or partial elimination of the LAI (Leaf Area Index)
FAUNA	Increased pressure from pest or invasive species	New aquatic environments, that can potentially be occupied by non-native biological populations, are created
	Disruption in the migration routes of species of marine and land wildlife	Increased fluvial, maritime, and land traffic affecting the dynamics of the location and, therefore, the species associated with the environment
	Changes in substrata structure	Resulting from dredging, discharge of water, greases, and other substances that can impact the substratum used by the organisms to sequester such substances
	Decreased benthos and periphyton and plankton as a result of the deterioration in water quality	Harming the environments occupied by biological populations or the populations themselves
	Reduced population of fish species as a result of the deterioration of water quality	Disturbances to the wealth, abundance, dynamics of sexes, ages, among other variables, of different biological communities

TABLE No. 3: LISTING OF ENVIRONMENTAL IMPACTS LINKED TO PORT OPERATIONS.

2.2 Port management best practices using environmental management systems.

Latin American ports have begun to implement a plethora of successful initiatives in keeping with their Environmental Management System to reach their environmental goals and benchmarks.

Table No. 4 provides a list of best practices identified at Latin American port terminals, excelling in the area of environmental management, a description of the initiative and the expected outcomes. Needless to say, each action and expected outcome must be continual and periodically monitored.

PRACTICE	ACTION	DESCRIPTION	EXPECTED OUTCOMES
Atmospheric Emissions Control	- Environmental surveillance system of air quality and particulate material - Measuring Carbon Footprint - Airtight seals freight trucks	- Modernization of equipment - Control and oversight of operation - Preventive maintenance of equipment - Moistening and use of biodegradable additives - Installation and maintenance of windbreaker barriers - Moistening Systems	- Compliance with applicable Law - Decreased concentration of particulate material - Plan of action in the event of surpassing permitted limits - Decreased greenhouse gas effect (GGE)

PRACTICE	ACTION	DESCRIPTION	EXPECTED OUTCOMES
Noise Control	- Perimeter noise level studies	- Conducting regular measuring of perimeter noise levels caused by the port facilities	- Compliance with applicable law - Plan of action in event of surpassing permitted limits
Water	- Efficient use and savings - Oil separator system - Waste water treatment plant	- Minimize consumption and efficiently use the resource, protect water sources and control discharge into water sources - Training and sensitization courses for all personnel - Leak control programs	- The use of biodegradable chemical products for emission control contributes to the reduction of water usage for moistening tracks and pathways - Reuse of water from the process of vehicle and container washing, for watering green areas and gardens - Zero discharge into the sea
Energy	- Decreasing consumption - Implementing ISO 50001 - energy efficiency management system - Measuring - Carbon Footprint	- Minimizing consumption and generate savings - Regeneration of energy - Use of more efficient systems or low consumption (lighting) - Use of solar panels - Training and sensitization courses for all personnel	- Compliance with regulations, as required - Decreased levels of consumption and generating savings - Improved quality of lighting from use of efficient systems - Decreased greenhouse gases effect (GGE)
Solid waste management	- Managing waste - Training personnel and contractors - Recycling - Sorting waste - Adequate final disposal - Control of hazardous waste	- Minimizing waste generation - Promoting waste sorting to facilitate recycling - Paper waste and consumption reduction campaigns - Verifying agreements for removal and final disposal - Beach cleaning	- Compliance with laws - Achieve maximum waste sorting to reduce amount of waste that goes into garbage dumps - Outreach and awareness raising - Less garbage and especially plastics - Improvements to conditions of marine flora and fauna
Landscape Management	- Permanent vegetation maintenance plan - Reforestation of lands - Beach cleaning campaigns	- Mitigating and improving the port's interior and exterior vegetation - Growing native species inside and outside of the port's grounds - Waste disposal - Erosion control	- Minimized visual impact caused by cargo and equipment used in the seaport terminal operation - Land reclamation - Improved port image and awareness - Decreased trash, especially plastics - Improvements in marine - wildlife and aquatic vegetation
Sea (seawater)	- Measuring benthos and marine silt	- Taking silt samples - Water column profiling for component analysis	- Analysis of biodiversity - Observing changes in the physical-chemical quality of the seawater

PRACTICE	ACTION	DESCRIPTION	EXPECTED OUTCOMES
	- Quality monitoring of water column profiling	- Sampling should be done at a reference point outside the port and where operations take place (mooring docks)	
Soil	- Environmental monitoring of soils - (Re)forestation	- - Soil samples for component analysis	- Compliance with law, as required - Pollution monitoring - Erosion control - Air quality

TABLE No. 4: BEST PRACTICES IDENTIFIED AT LATIN AMERICAN PORT TERMINALS.

CHAPTER 3. INTERNATIONALLY RECOGNIZED ENVIRONMENTAL STANDARDS AND CERTIFICATIONS. GENERAL BACKGROUND, PROCEDURES, AND REQUIREMENTS.

Port terminals must deal with countless environmental problems from the time they are designed to the time they are constructed and are functioning. Thus, oversight and management are important so that their activities are conducted in harmony with the environment and cause fewer and fewer impacts.

One solution to address this challenge is the implementation of international environmental standards and certifications, which enable ports to improve credibility, manage risk, and drive sustainable performance by facilitating continuous improvement in the planning, monitoring, and control of their environmental management.

This chapter will describe the most relevant and widely used Environmental Management Systems internationally, in terms of general background, procedures, and requirements for their implementation and certification.

In particular, the following will be explained: i) current ISO standards on environmental sustainability applicable to port terminals (ISO 14001 and ISO 50001); ii) the methodology for measuring the carbon footprint of the World Ports Sustainability Program (WPSP); and iii) the EMAS III and ECOPORTS PERS environmental management systems.

3.1 Management Systems Standards of International Organization for Standardization (ISO).

In general terms, a management system can be interpreted as the means by which an organization manages the various actions that form part of its business or interrelated parts, enabling it to achieve higher objectives subject to continuous improvement processes. This is why the International Organization for Standardization (ISO) has published various management system standards in different areas. In particular, with regard to environmental management, the ISO 14.000 family of standards enables organizations to improve their environmental performance and sustainability, while ISO 50.001 covers energy management and ISO 14.060 covers greenhouse gases (GHG) and carbon footprint quantification.

"*International Standards on environmental sustainability offer a clear and practical way to achieve operational excellence, comply with legal requirements, and meet stakeholder expectations. By embracing these ISO standards, organizations can position themselves as leaders, save money and resources, and gain trust and recognition*"[4].

Ports with effective environmental management systems, energy management, measure carbon footprint in place will be more competitive, less likely to cause adverse effects on the surrounding environment where they are located and, particularly, more accepted by the stakeholders in their area or sphere of influence.

[4] https://www.iso.org/sectors/environment

We can highlight the following advantages offered by an Environmental Management System:

1. Competition factors: it boosts the port's institutional image, improves company leadership, productivity, better positions organization for business and adds value to clients.
2. Cost reduction: it lowers the cost of waste control and treatment, management and control of physical and human resources, and of compliance with regulations.
3. A committed organization: it provides for structured and effective environmental management, integration of environmental management with business management, development of environmental awareness among personnel and integration with the community and related parties.
4. Risk identification and control: it establishes a commitment to complying with environmental regulations, adequate communications plan, reduces emergency situations and potential impacts of them, and provides a plan of action to deal with such situations.

Thus, the motivating factors to implement and obtain certification in an Environmental Management System are:

a. Gaining competitive advantages;
b. Market and client requirements; and
c. Environmental awareness, surrounding community and society (stakeholders).

¿What processes do you apply for the different ISO 14.000 standards?

- ISO standards 14.001 to 14.015 refer to environmental management systems (EMS), discussed in the preceding chapters.
- ISO 14.050 is used as a glossary for the ISO 14000 family of standards.
- The ISO 14.020 group or subfamily of standards covers environmental labels and declarations.[5]
- For its part, the ISO 14.040 to 14.049 series of standards describes and establishes guidelines or frameworks for the environmental assessment of the life cycle (Life Cycle Assessment, LCA) of products and services, analyzing and quantifying the environmental aspects and potential impacts of such products or services.
- The ISO 14.060 subfamily of standards provides guidance for the quantification, monitoring, reporting, and validation or verification of greenhouse gas (GHG) emissions and emission reductions, as well as related processes. They provide a framework ranging from the creation of a corporate GHG inventory (ISO 14.064-1) to the development of the carbon footprint of a product or service (ISO 14.067), and the validation and verification of GHG statements (ISO 14.064-3). ISO 14.063 broadens the spectrum and provides guidelines and examples for environmental communication, both internal and external. ISO 14.065 establishes the requirements for validation and

[5] Standard ISO 14.020:2020 – Terms and definitions: "An environmental label or declaration may take the form of a statement, symbol or graphic on a product or package label, in product literature, in technical bulletins, in advertising or in publicity, amongst other things.".

verification bodies, while ISO 14.066 defines the competence requirements for GHG validation and verification teams.

- For its part, the ISO 50.001 standard on Energy Management Systems (EnMS) allows an organization to continuously improve its energy performance, increase its energy efficiency, and reduce its environmental impact.

3.2 ISO 14.001:2015 Environmental Management System.

3.2.1 General Description of the Standard.

ISO 14001:2015 standard is an instrument with a systematic approach to environmental management. The purpose of this Standard is to produce voluntary administrative instruments to help and provide organizations with a framework to protect the environment and respond to changing environmental conditions, while always maintaining a balance between socio-economic needs and regulatory requirements.

As one of its foundational principles, the Standard itself establishes that "society's expectations with regard to sustainable development, transparency, responsibility, and accountability have evolved in the context of increasingly more stringent legislation, growing pressure with relation to environmental pollution, inefficient use of resources, inappropriate waste management, climate change, degradation of ecosystems, and loss of biodiversity"[6].

ISO 14001:2015 Standard defines an Environmental Management System "as the part of the management system that includes the organizational structure, planning, practices, procedures, processes, and the resources to develop, implement, review, and maintain environmental policy"[7].

Establishing a systematic approach to implementing environmental management can pave the way for an organization to accomplish great things within particular timeframes and make it possible to contribute to sustainable development through actions aimed at:

- Protecting the environment through prevention or mitigation of adverse environmental impacts;
- Complying with statutory requirements;
- Controlling how the organization designs, manufactures, distributes, consumes and carries out final provision of products and services;
- Making it easier to gain financial and operational benefits that can result from implementing environmentally respectful alternatives that strengthen the organization's market position;
- Successfully communicating environmental information to stakeholderss.

The major reasons to implement ISO 14001 include:

- Globalization makes environmental management mandatory for companies.

[6] Standard ISO 14.001:2015 – Introduction: Background.

[7] Standard ISO 14.001:2015 – Introducción: Aim of an environmental management system.

- It is a new parameter for competitiveness.
- Eco-strategy is key to winning over markets.
- It is a fact that society is increasingly more environmentally aware.
- It is a paradigm of growth and sustainable development.

It is very important for the success of implementation of ISO 14001 that a faithful commitment exist at all levels and functions of an organization, in particular, its upper management. By implementing the standard, it is possible to prevent or mitigate adverse environmental impacts and, in this way, enable the upper management to adequately monitor risks and opportunities.

The environmental management system of Standard ISO 14.001 is based on the model or cycle of continual improvement, known as "PDVA," which is a management tool created in the 1950s by Edward Deming and whose acronym is made up of the words Plan, Do, Verify and Act, with each concept representing one phase of the improvement cycle, as follows:

- Plan: identifying the environmental objectives and processes that are necessary for the achievement of particular outcomes in keeping with the environmental policy of the organization.
- Do: implementing the processes or actions that are necessary to achieve the proposed improvements.
- Verify: following up to measure the processes in terms of environmental policy and assess the effectiveness of the changes; it is a phase of calibration and adjustment.
- Act: undertaking actions to continually improve (the necessary corrections and changes are carried out).

DIAGRAM No. 2: Stage of the SGA continuous improvement process.

Diagram No. 2 shows each step of the process of continual improvement of the Environmental Management System and is part of the frame of reference of ISO 14.001:2015[8].

ISO standards allow the organization (or port terminal) to use a common risk-based approach to integrate its Management System with the requirements of other Management Systems from the International Organization for Standardization (ISO) itself.

The Table below describes the stages and methodology that must be followed by the organization in order to implement ISO 14.001:2015 (Table No. 5).

P (Plan)	D (Do)	V (Verify)	A (Act)
PLANNING	IMPLEMENTATION AND OPERATION	CONTROL AND CORRECTIVE ACTION	REVISION UPPER MANAGEMENT
Environmental Aspects	Structure and Responsibilities	Monitoring and Measuring	Continual Improvement
Legal and other requirements.	Training, Awareness Raising and Professional Competencies.	Non-conformity, corrective action and preventive action.	
Objectives and goals.	Communication.	Records.	
Environmental Management Program.	Documentation of Environmental Management System.		
	Control of Documentation.		
	Control of Operations.		
	Emergency Plans.		

COMMITMENT

TABLE No 5: STAGES AND METHODOLOGY TO IMPLEMENT ISO 14.001:2015

3.2.2 Commitment – Environmental Policy.

The first stage is for the upper management of the organization to draft an Environmental Policy as the basis for its environmental objectives and targets.

ISO 14.001:2015 defines Environmental Policy as a set of principles established as commitments, in which Upper Management lays out the organization's intentions to support and improve its environmental performance. Environmental policy enables the organization "to establish its environmental objectives, carry out actions to achieve the expected outcomes of the environmental management system, and provide for continual improvement."

8 Standard ISO 14.001:2015 – Introduction - 0.4 Plan-Do-Check-Act model.

ISO 14.001:2015 prescribes three basic commitments to be considered in the Environmental Policy. These commitments must actually be reflected in the organization's processes to ensure a robust, credible, and reliable environmental management system[9].

The first commitment is to "protect the environment" in order to safeguard the natural surroundings against damage and degradation, whose origin could be the activities, products and/or services of the organization, along with preventing adverse environmental impacts by preventing pollution. This commitment must be relevant to the context of the organization and include the local and regional environmental conditions of its surroundings and be able, for example, "to address water quality, recycling or air quality, and also can include commitments relating to mitigation and adaptation to climate change, protection of biodiversity and ecosystems, and restoration"[10].

The second commitment is "to comply with applicable legal and other requirements of the organization,"[9] that enable it to conduct its operations, make its products and/or provide its services lawfully, by determining applicable statutory requirements, ensuring that operations are carried out in accordance with those statutory requirements, evaluating obligation compliance and correcting any non- conformities that could exist. This commitment entails identifying and evaluating the applicable legal requirements of an organization, based on periodic and exhaustive analysis of activities, processes, procedures and the corresponding environmental aspects and impacts, identifying applicable laws and regulations and verifying the level of compliance, to shed light on actions that the organization needs to take in order to comply with applicable legal requirements.

The third commitment is "to continually improve the environmental management system in order to improve environmental performance,"[9] in such a way as to generate over time a positive evolution of activities, products and/or services of the organization, "determining opportunities for improvement and implementing the actions necessary to achieve the expected outcomes of the environmental management system. In order to fulfill this commitment, the organization must "consider the results of the analysis and of the environmental performance evaluation, the compliance evaluation, the internal audits and the review by management when improvement actions are taken".[9]

The Environmental Policy must meet several requirements, which we can summarize as follows:

a) *It must be appropriate for the purpose and context of the organization, including the nature, scope, and environmental impacts of its activities, products, and services;*
b) *It must provide a frame of reference for establishing the environmental objectives;*

9 Standard ISO 14.001:2015 – Annex A.5 – A.5.2 Environmental policy.
10 Standard ISO 14.001:2015 – Annex A.5 – A.5.2 Environmental policy.

c) *It must include a commitment to the protection of the environment, including preventing pollution, and other specific commitments that are relevant to the context of the organization;*
d) *It must include a commitment to comply with the legal and other requirements; and,*
e) *It must include a commitment to continual improvement of the environmental management system in order to improve environmental performance.*

Likewise, Upper Management must make sure the Environmental Policy meets certain standing requirements, which we can summarize as follows: a) *a) It must be maintained as documented information; b) It must be communicated within the organization; c) It must be available to stakeholders.*

3.2.3 Planning.

The planning processes set forth in ISO 14001 help the organization to ensure "the capacity to achieve the anticipated or expected outcomes of the environmental management system, prevent or reduce unwanted effects and achieve continual improvement."

An overall risk and opportunity approach must be used to identify environmental aspects and assess their corresponding impacts, as well as to identify legal and other types of requirements. Environmental aspects are associated with adverse and beneficial environmental impacts or other effects on the organization, while the legal requirements are associated with dereliction of duty that could damage the organization's reputation, that is to say, which go well beyond simple breaches of legal obligation. In the end, the aim is to improve the organization's reputation.

The organization could have other types of risk and opportunities, such as those linked to emergency situations. These are unplanned or unforeseen events, for which specific processes or plans should be in place to prevent and mitigate their actual or potential consequences.

ISO 14.001:2015 does not establish any formal requirement for the management or documentation of risks and opportunities. Nonetheless, it establishes that a simple or comprehensive qualitative process, depending on the context of the organization, should be considered to determine and address planning actions and to establish environmental objectives.

Environmental Aspects.

On the basis of one or more criteria, the organization must determine the environmental aspects of its activities, products and/or services, that is to say, aspects that it is able to control as well as influence and associated environmental impacts, from a life cycle perspective. For this purpose, we must define life cycle as consecutive and interlinked stages of a product (or service) system, from the raw material acquisition, or generation from natural resources to final disposal. Thus, the stages of the life cycle include the acquisition of raw materials, design, production, transportation/delivery, use, end-of-life treatment, and final disposal.

The Standard describes an environmental aspect as an element of an organization's activities, products or services that interacts or can interact with the environment. It further notes that an environmental aspect may cause one or more environmental impacts, distinguishing it from a significant environmental aspect that is precisely one that has or can have one or more significant impact on the environmental[11].

For its part, an environmental impact is defined as a change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects[12].

As has been noted, the organization needs to determine or identify the environmental aspects that fall within the reach of its environmental management system, so that it is able to act on the environmental impacts to evaluate them and prioritize those it will act on.

In determining or identifying environmental aspects, the organization must bear in mind the different conditions as well as the different processes and operations in which it conducts its activity, consider a periodic review or, when a change in activities, products or services occurs giving rise to new environmental impacts or significant changes in the aspects identified.

For this process of identification of environmental aspects, it is recommended to consider the following stages:

- Firstly, determine the general conditions of operation, bearing in mind the circumstances of normal and abnormal functioning, and situations of accidents and emergencies.
- Subsequently, identify and specifically break down all operations and processes associated with its activity, product, or service that is liable to cause an impact, both in normal and abnormal situations of functioning.
- Then, an analysis must be conducted of each stage associated with the operations and processes, identifying for each stage the elements required for its functioning (such as, water, energy, fuel, materials consumption) and its discharges (such as emissions, dumping, waste, among other ones).
- After the preceding stage, aspects must be identified at each stage, based on the prior analysis, classifying them as[13]: a) e*missions into the air; b) discharges into the water; c) discharges into the ground; d) use of raw materials and natural resources; e) use of energy; f) energy emitted (such as heat, radiation, vibration (noise) and light); g) generation of waste and/or by-products; and; h) use of space*.
- Lastly, forms and records of these aspects should be drawn up, to enable the organization to view all data it has collected: stage/process when it is generated, scale, physical-chemical characteristics, cause of generation, and the environment affected by it.

11 Standard ISO 14.001:2015 – 3. Terms and definitions – 3.2.2 environmental aspect.
12 Standard ISO 14.001:2015 – 3. Terms and definitions – 3.2.4 environmental impact.
13 Standard ISO 14.001:2015 – Annex A.6 – A.6.1.2 environmental aspect.

After identifying the environmental aspects, the criterion or criteria to evaluate the importance of each one should be established and defined.

It is recommended that evaluation criteria be general (applicable to different environments), reproducible (applicable to the same environmental aspects in different locations) and suitable for validation through an internal or external review.

Each environmental aspect should be evaluated in both normal functioning situations and abnormal situations, such as accident or emergency situations.

Once the environmental aspects are identified and evaluated, they must be prioritized, determining what aspects have or can have a significant impact on the environment.

The organization itself will establish the (qualitative or quantitative) methodology for the prioritization of the aspects, and must bear in mind that the result has to be consistent with its reality and the concept of continual improvement.

Lastly, the information on the environmental aspects and impacts, as well as the criteria used to determine the significant environmental impacts, must all be recorded and documented, in a document defined by the organization itself, making it possible to see all information collected for each aspect in one place.

Compliance Obligations.

Compliance obligations applicable to the organization must be linked to environmental aspects. In order to facilitate stringent compliance with the obligations and improve environmental performance, operational control guidelines must be defined.

For this purpose, Standard ISO 14.001:2015 establishes that the organization must:

a) *Determine and have access to legal and other requirements related to their environmental aspects.*

   As part of the environmental management system of the organization, a methodology to access any legal and other requirements that are applicable to the organization should be provided, identifying each particular national, regional or local provision of law or regulation applying to it.

   The legal and other requirements may originate in any of the following:

   - Provisions set forth in national, international, and local laws and regulations;
   - Requirements prescribed in permits, licenses, or other forms of authorization;
   - Requirements issued by decree from government entities or other pertinent authorities;
   - Orders, rules, or guidance issued by regulatory agencies;
   - Obligations stemming from judgements of Courts of Review or Trial Courts.

Additional legal and other requirements that must be considered include those originating with interested parties and stakeholders of the organization, which relate to its environmental management system. These obligations can include agreements with community groups or nongovernmental organizations, agreements with public authorities or clients, relevant norms or rules of the industry or the organization itself.

Statutory environmental requirements may be accessed in the following ways:

i) Using the legal resources of the organization;
ii) Periodically visiting specialized web sites to identify newly published legal texts;
iii) Hiring an external legal service;
iv) Subscribing to the legal information listservs of professional entities, such as chambers of commerce, foundations, associations, etc.

b) Determine how these legal and other requirements apply to the organization.

The organization must define and establish what it needs to do to obtain information on the legal texts and define the practical application of the requirements, identifying legislation that is applicable to waste management, emissions, discharging, industrial safety, or transportation of hazardous substances, among other aspects.

c) Take into account these legal and other requirements as it establishes, implements, maintains and continually improves its Environmental Management System.

After identifying the applicable legal and other environmental requirements, periodic evaluations must be conducted, as defined by the organization, of the degree of compliance, ascertaining whether the organization is in compliance and, in the event of potential non-compliance, carry out corrective actions to proceed to resolve the non-conformity.

In order to comply with the above-stated actions, it is recommended to maintain documented information with respect to applicable legal and other requirements (compliance obligations).

Likewise, a legal compliance matrix to identify the provisions that are applicable to the organization in its processes should be created and it should be periodically updated and evaluated while keeping records of the results.

Planning of Actions.

In order to achieve the expected outcomes of the Environmental Management System of the organization, actions must be established as part of the processes to address significant environmental aspects, applicable legal and other requirements, risks and opportunities detected, bearing in mind the subsequent evaluation of the effectiveness of these actions.

The actions planned can include establishing environmental objectives or can incorporate other processes of the Environmental Management System, either individually or in

combination. Some actions can be addressed through other management systems, such as those relating to health, occupational safety, continuity of business, or through other business processes relating to risk, financial, or human resource management[14].

Objectives Environmental Objectives.

Some environmental aspects identified by the organization are more important than others and this is determined by an evaluation process. Thus, environmental aspects that have been deemed as significant will be taken into consideration for the company to establish environmental objectives and the targets relating to them.

In this regard, the company can establish the points of action and the improvement measures, making sure that the Environmental Management System is effective in moving forward in a process of continual improvement.

The progress or process of continual improvement of the organization's Environmental Management System becomes apparent in measuring and evaluating the objectives and targets, through the outcomes and environmental performance. "The objectives and targets help to turn intention into action and, therefore, they should be included in the strategic plans of the company and can facilitate integration of environmental management with other business management processes."

The Standard establishes that "The organization must establish environmental objectives for the pertinent functions and levels, taking into account the significant environmental aspects of the organization and its associated legal and other requirements, and considering its risks and opportunities."[15]

This means that the environmental objectives can be established by upper management at the strategic level (applicable across the organization) or at the tactical or operational level (for specific units or functions within the organization) in which case they should be compatible with their strategic direction.

Examples of Environmental Objectives include decreasing solid waste, reducing water consumption, reducing emissions into the atmosphere, increasing recycling levels.

The Standard states that environmental objectives must meet the following requirements [16]*: i) be consistent with environmental policy, ii) be measurable (if feasible); iii) be subject to follow-up; iv) be communicated; v) be updated*; vi) *concurrently, preserve documented information on environmental objectives*.

Table No. 6 identifies considerations to bear in mind in determining environmental objectives.

[14] Standard ISO 14.001:2015 – Annex A.6 – A.6.1.4 Planning.
[15] Standard ISO 14.001:2015 – Annex A.6 – A.6.2.1 Environmental objectives.
[16] Standard ISO 14.001:2015 – Annex A.6 – A.6.2.1 Environmental objectives.

"Take into account significant environmental aspects"	"Consistent with environmental policy"	"Measurable"	"If is feasible"	"Be Communicated"
Means that an environmental objective should not be established for each significant environmental aspect. However, these significant environmental aspects must have a high priority when the environmental objectives are established.	Means that the environmental objectives are in line and in accordance with the commitments made by upper management in the Environmental Policy, including the commitment to continual improvement and to not forget the views of stakeholders.	Means that it is possible to use quantitative or qualitative methods in relation to a defined scale to determine whether the environmental objective has been achieved.	It is recognized that there may be situations when it is not feasible to measure an environmental objective. However, it is important that the organization has the capacity to determine whether an Environmental objective has been achieved or not.	It should be communicated to the individuals working under the control of the organization and that have the ability to influence achievement of the objectives.

TABLE N°6: CONSIDERATIONS TO DETERMINING ENVIRONMENTAL OBJECTIVES.

There are also other considerations that the organization should bear in mind:

- In planning environmental objectives, the cost-benefit relationship must be taken into consideration to determine whether the benefit derived from improving the environmental quality and the image of the company justifies the investment involved in adopting the measure, as assessed by expenditures or cost savings.
- The cost-benefit analysis helps to identify the type of objective, its quantification, and how it develops over time.
- In order to determine the value or the efficacy of the model, environmental efficiency indicators should be established to measure the degree of compliance.
- For measuring the evolution of environmental management of the company itself, along with conducting a comparative analysis with other companies of the same economic sector (if possible), it is recommended that the environmental indicators are defined so that they allow for detection of shifts and trends, evaluate the outcomes of the Environmental Management Policy, as well as the degree of compliance with the commitments acquired by the company. "The environmental efficiency of a company is evaluated as a function of the environmental objectives achieved."

Planning of Actions to Achieve the Environmental Objectives.

In accordance with the Standard, when planning how to achieve its environmental objectives, the organization should determine*: a) what is going to be done; b) what resources will be required; c) who will be responsible; d) when will it be completed; and,*

e) how with the results be evaluated, including the progress follow-up indicators for achievement of its measurable environmental objectives[17].

After defining the environmental objectives, planning is required to achieve compliance with them, in other words, planning the actions to be carried out to achieve the environmental objectives, establishing for that purpose the material and human resources, the responsibilities for the execution of the different actions, and the timeframe.

Plans and programs for follow-up on the objectives (quantitative indicators) and actions to undertake in the event of failure to comply must be established.

Evaluation of the results obtained, including quantitative indicators, will allow for modification of particular trends which, if left uncorrected, would prevent achievement of the environmental objective.

The planning process must be established in the form of an Environmental Management Program of the organization, inasmuch as it is a key element for implementation of the system since it makes it possible to view how the environmental objectives will be achieved, how they are planned, the resources committed, among other things, for improved environmental management.

For that reason, we have noted that the Environmental Management Program is a documented description of the means that the company uses to achieve the environmental objectives and targets it defined.

It is important for the organization to understand the Environmental Planning and Program to be dynamic and periodically reviewed, so that in the event of a change in the processes, services, or products within the scope of the Environmental Management System, the associated objectives and programs should be updated, as required.

3.2.4 Support.

Resources.

As for the concept of resource, the Standard establishes that they can include human resources, natural resources, infrastructure, technology, and financial resources.[18] The organization's decision to implement an Environmental Management System assumes availability of resources for proper functioning and, therefore, upper management must ensure that these resources are made available to the person responsible for them.

Competence.

With respect to competence, the Standard establishes that persons doing work under the control of the organization that impact its environmental performance and its ability to fulfil its compliance obligations must have the appropriate training, education, and job

[17] Standard ISO 14.001:2015 – Annex A.6 – A.6.2.2.
[18] Standard ISO 14.001:2015 – Annex A.7 – A.7.1.

experience. It also provides that actions to ensure the competence of the persons must be taken and that, when personnel is not sufficiently trained, they should undergo proper training and induction processes (job-specific training, mentoring, reassignment of currently employed persons, etc.), and the effectiveness of the actions taken should be evaluated.

Documented information must be retained as evidence of competence and professional development.

Awareness.

Persons doing work under the organization's control must be aware of [19]:

a) *The Environmental Policy.*
b) *The significant environmental aspects and related actual or potential environment impacts associated with their work.*
c) *Their contribution to the effectiveness of the environmental management system, including the benefits of enhanced environmental performance; and,*
d) *The implications of not conforming with the environmental management system requirements including not fulfilling the organizations compliance obligations*.

Upper management's ability to act and show leadership is very important in this regard in order to foster and bring about the full awareness prescribed in the Standard among all persons working under the control of the organization.

Communication.

Communication is an essential part of implementing an Environmental Management System and the term should be understood as both intra-organizational as well as external communication.

The organization must determine what it will communicate, when to communicate, with whom to communicate and how to communicate, as strategically defined in the process.

The organization must internally communicate on an ongoing basis information relevant to the environmental management system among the various levels and functions of the organization, progress of the system, its achievements and challenges, as well as changes to the system, as appropriate.

The organization must externally communicate information relevant to the environmental management system, with a focus on continual improvement, in such a way that the information is linked to any queries. Stakeholders play an important role in this process, whether they voice negative or positive views, though the organization must be very effective in responding, particularly to the negative ones.

[19] Standard ISO 14.001:2015 – 7. Support – 7.3.

In the communication process, it is also important to provide for a means of "listening" to organizations and to the surrounding community.

Documented information.

In order to ensure that an Environmental Management System is appropriate, adequate and effective, always promoting continual improvement, the organization must have a documented information system in place to meet this objective. In this regard, there will be mandatory documented information that is required by the Standard itself, as well as other information, as determined by the organization for the effectiveness of its Environmental Management System.

The context of this requirement depends on each organization and, particularly, on its size and type of activity, processes and /or services, as well as the competencies and knowledge of the persons responsible for the Environmental Management System.

As for creating and updating documented information, the organization must ensure:

- Its identification and description (such as title, date, author, or reference number);
- Its format (such as language, software version, graphics) and media (e.g., paper, electronic);
- Review and approval for suitability and adequacy.

Another important aspect of documented information is control. In fact, the Standard requires it must[20]: "a) *be available and suitable for use, where and when it is needed; and, b) be adequately protected (such as from loss of confidentiality, improper use, or loss of integrity)".*

3.2.5 Operation.

Operational Planning and Control.

Operational Planning and Control means that the organization must establish operating principles for the processes; and put into action controls of the processes in accordance with the operating principles, in order to meet the requirements of the Environmental Management System and to implement actions as determined under "Actions to address risks and opportunities" and the "Planning of Actions to Achieve Environmental Objectives" (6.1 and 6.2 of the standard ISO 14.001)[21].

The Standard establishes that the type and extent of operational controls depends on the nature of the operations, the risks and opportunities, the significant environmental aspects and on the compliance obligations[22].

The established requirement of Operational Planning and Control must be put into the context of the organization's areas of action or processes, which are directly linked to

[20] Standard ISO 14.001:2015 – 7. Support – 7.5.3.
[21] Standard ISO 14.001:2015 – Section 6 Planning.
[22] Standard ISO 14.001:2015 – A.8 Operation – A.8.1.

what the organization does, such as providing a service or manufacturing products, while also taking into consideration outsourcing or subcontracting.

Emergency Preparedness and Response.

Every organization has the responsibility to comply with emergency preparedness requirements.

In planning the emergency preparedness and response process, aspects to consider include the appropriate method to respond to any emergency situation, internal and external communications, actions to prevent and mitigate environmental impacts, formation of teams, evacuation routes and meeting points, emergency services.

3.2.6 Performance evaluation.

The organization must follow up, measure, analyze, and evaluate its environmental performance, taking into account significant environmental aspects, compliance obligations and operational controls.

The methodology used by the organization for this purpose must ensure that results are reliable, and make it possible to measure evolution over time (traceability), and analyze and evaluate results.

Evaluation of Compliance.

The Standard provides that frequency and timeliness of compliance evaluation must be determined and, in the event of failure to comply, the necessary corrective actions must be promoted. Any variation in operating conditions and changes in compliance obligations must be reviewed on a regular basis.

Failure to comply will not necessarily mean non-conformity of the Environmental Management System.

Internal Audit.

The Environmental Management System must be reviewed by independent, unbiased specialists of the organization, who have no conflicts of interest.

Internal audits must be conducted at planned intervals to provide information to determine whether or not the Environmental Management System conforms with the requirements of the organization and the Standard, and whether or not the system is being properly implemented.

An internal audit program must lay out the frequency of review, methodology, responsibilities, planning and results reporting requirements. It is important for this program to focus on the environmental aspect of the processes under audit, changes

that could impact the organization and results of prior internal or external audits (continual improvement).

Review by the Organization's Management (Upper Management).

Review by the General Management and the Board of Directors (Upper Management) must be a planned activity taking place every so often. It is important for non-conformances to be analyzed, to determine the reasons for their occurrence and for plans of action to be implemented to resolve them, as well as for the organization to receive information from its interest parties or stakeholders to determine actions for improvement. Records or documented evidence of these reviews should be maintained.

3.2.7 Improvement.

Management System is the organization's commitment to continual improvement, the outcome of which is expressed in enhanced environmental performance.

Opportunities for improvement are determined by considering the environmental performance evaluation, compliance evaluation, internal audits and management's review.

Non-conformance and corrective action.

Non-conformance or non-compliance with an obligation compels the organization to correct it and to take action on its potential consequences, taking particular care to prevent it from happening again by validating the effectiveness of the action.

Records or documentation must be made of instances of non-conformance and the actions taken to resolve it.

Continual Improvement.

The organization must define the scope and timeframe of any actions undertaken by it to continually improve the EMS as a whole or one or more of its elements.

3.2.8 Certification of the Environmental Management System.

When an organization wants to prove conformance of its Environmental Management System with ISO 14.001:2015, it must be certified/registered by an external party to the organization[23].

The Standard does not establish that certification is an implicit or tacit requirement for compliance. Certification is about the Environmental Management System, not about the environmental performance of the company.

ISO 14.001: 2015 certification does not guarantee that the company will be a careful steward of the environment nor does it ensure that it will continually improve its Environmental Management System. A company that values its Environmental

[23] Standard ISO 14.001:2015 – Introduction - 0.5 Contents of this International Standard.

Management System will determine its environmental risks and will bring them under control, will potentially be able to lower its costs by controlling and eliminating waste, and fulfill compliance obligations.

The process of certifying a company's Environmental Management System is usually carried out by an independent agency. This agency is accredited to conduct the process, verify and validate the system, and defines and submits its own protocols to conduct the certification process.

Generally speaking, it involves the following steps:

1. Preliminary evaluation: some certifying agencies conduct a simple review of compliance with the essential aspects of the system.
2. Evaluation of documentation: concurrently to the preliminary evaluation, a review is conducted of the documents that are mandatory records under the Standard.

Both of the aforementioned evaluations may also be carried out in the following stages:

1. Initial Evaluation or Audit: in this stage, the scope, requirements, processes, and associated documentation are reviewed. The results of this stage will be recorded in an Initial Audit Report; along with it, the Principal Audit Plan will be drawn up. The initial Audit must be conducted in the offices or facilities of the organization or company.
2. Principal Evaluation or Audit: the Principal Audit is the general survey of the Integrated Management System, to verify compliance with the requirements established in ISO 14001:2015. This verification will be conducted through the review of the documentation of the Management System (manuals, procedures, instruction books, records, etc.), on-the-ground inspections and interviews with the persons working under the control of the organization. Once the Principal Audit is completed, the auditing team must present to the company (at the closing meeting) the result of the Audit. It is the responsibility of the certifying agency to issue an Audit Report laying out the scope of the Certification, the findings, its classification, the timeframe and the form of review of the corrective actions that are required to be implemented.
3. Certification: if the evaluation of the Environmental Management System is favorable, the certifying agency issues the certificate to the company, and must notify the national agency responsible for overseeing implementation of the standard.
4. Control or oversight Audits: as a guarantee of maintenance and continual improvement, the certifying agency must conduct further maintenance audits of the Environmental Management System every so often.

3.3 Energy Management System (EnMS) ISO 50.001:2018.

3.3.1 General description of the standard.

The ISO 50.001:2018 standard, Energy Management System (EnMS), establishes the requirements that an energy management system in an organization must have in order to continuously improve its energy performance, increase its energy efficiency, and reduce its environmental impact.

Between the benefits of implementing an EnMS are:

- Actively manage energy use and costs and reduce energy costs.
- Reduce emissions without affecting the organization's own operations.
- Continuous improvement of energy use factors.
- Smart use of the organization's resources.

Specifically, ISO 50.001:2018 enables organizations to develop the implementation of key aspects for managing energy and improving their performance by incorporating efficiency and sustainability aspects or criteria.

The standard follows the structure of ISO standards: plan, do, check, and act (continuous improvement process) and is compatible with other management system standards, meaning that "an organization can choose to combine its EMS with other management systems, or integrate its EMS into the achievement of other business, environmental, or social objectives."[24]

ISO 50.001:2018 specifies the requirements for establishing, implementing, maintaining, and improving an EnMS. With regard to its scope of application: a) it extends to any type or size of organization, public or private, industrial or service-based; b) it is applicable to the activities of the organization, which it manages and controls, that influence energy performance; c) it is applicable regardless of the amount, use, and types of energy consumed; d) it requires the organization to demonstrate continuous improvement in energy performance.

- Plan: understand the context of the organization, establish an energy policy and an energy management team, consider actions to address risks and opportunities, conduct an energy review, identify significant energy uses (SEUs) and establish energy performance indicators (EnPIs), energy baseline(s) (EnBs), objectives and energy targets, and action plans necessary to deliver results that will improve energy performance in accordance with the organization's energy policy.
- Do: implement the action plans, operational and maintenance controls, and communication, ensure competence and consider energy performance in design and procurement.
- Check: monitor, measure, analyze, evaluate, audit and conduct management review(s) of energy performance and the EnMS.
- Act: ake actions to address nonconformities and continually improve energy performance and the EnMS.

The EnMS described is based on the Plan-Do-Check-Act (PDCA) continual improvement framework and incorporates energy management into existing organizational practices, as illustrated in Diagram No. 1.

[24] Standard ISO 50.001:2018 – Introduction - 0.4 Compatibility with other management system standards.

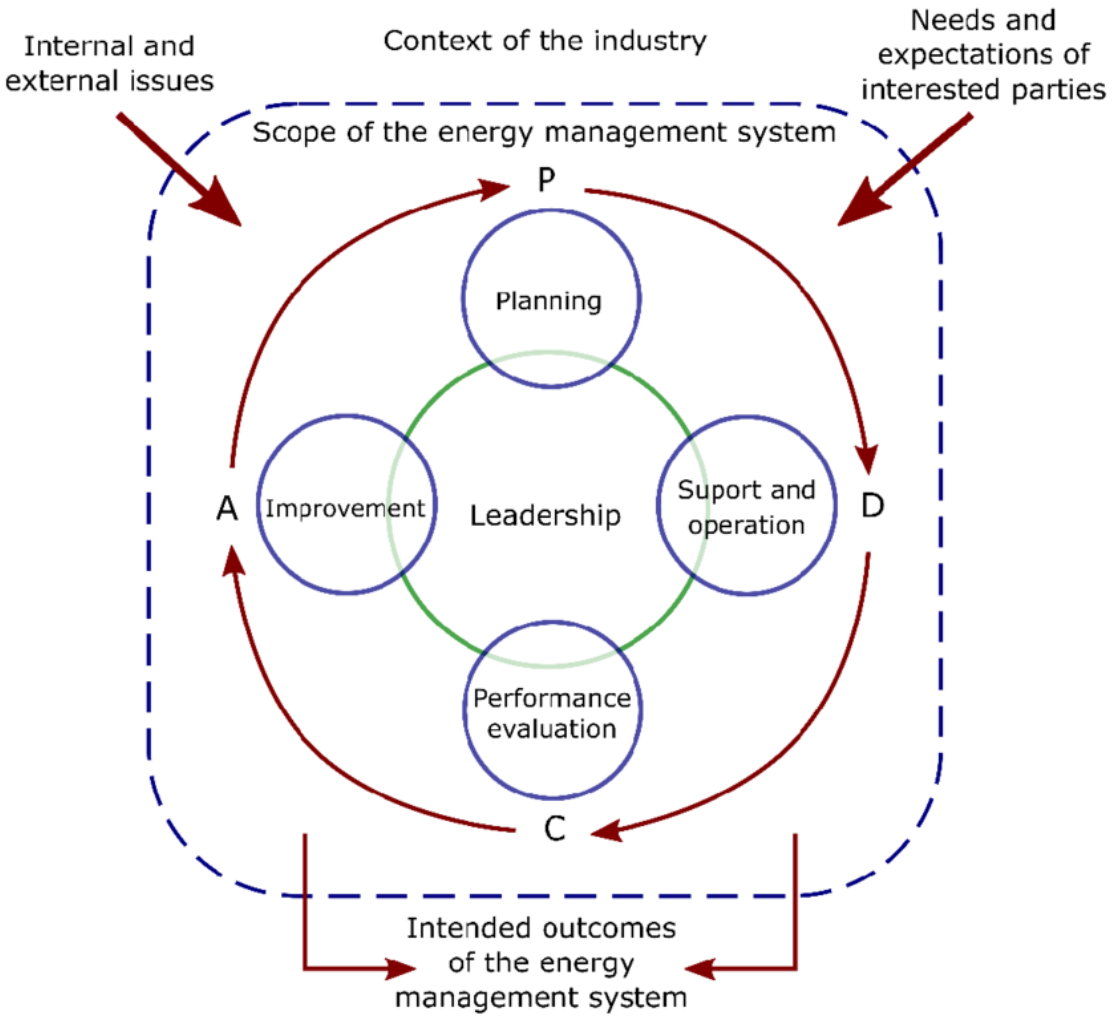

DIAGRAM No. 3: PLAN-DO-CHECK-ACT CYCLE ISO 50.001.

3.3.2 Context of the organization.

Establishing or defining the context of an organization is a key strategic activity that will define or establish the sense of purpose behind the implementation of the EnMS in the organization. "The organization must determine the external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcomes of its EnMS and to improve its energy performance."[25]

Examples of internal topics: business strategy and objectives; financial resources, asset management; organizational culture around energy management; sustainability strategy; operational risks, among others.

Examples of external issues: changes in legal requirements; restrictions on energy supply, security, and availability; energy prices; weather effects and climate change; greenhouse gas (GHG) emissions.

[25] Standard ISO 50.001:2018 – 4.1 Understanding th organization and its context.

Using SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) is a tool that can provide information on internal issues (the organization's situation) and external issues (the organization's environment).

Understanding the needs and expectations of stakeholders is relevant to an organization's energy performance and must be identified in order to determine their needs and expectations. "The organization shall determine: a) the stakeholders that are relevant to energy performance and to the EnMS; b) the relevant requirements of these stakeholders; and c) which of the needs and expectations identified for the organization through its EnMS"[26].

Before beginning implementation of the EnMS, the organization must establish its scope and boundaries. The scope corresponds to the set of activities and processes that an organization covers based on the EnMS. It may include various boundaries and borders, as well as transport operations (the scope of the main activity carried out by the organization). The boundaries, on the other hand, are the physical, local, or organizational boundaries defined by the organization, usually associated with a facility, plant, or port terminal belonging to the organization. "The organization must ensure that it has the authority to control its energy efficiency, energy use, and energy consumption within the scope and boundaries. The organization shall not exclude any type of energy within the scope and boundaries."[27].

The standard establishes that the organization "must establish, implement, maintain, and continually improve its EnMS," that is, conduct a study of the necessary processes and their interactions in which the EnMS must be established, implemented, and continually improved. In this way, the application of each requirement can be determined in order to achieve results and improve energy performance.

In this process of defining the Context, the participation of the organization's upper management is relevant and essential.

3.3.3 Leadership and Commitment.

As indicated, it is essential to have the commitment of upper management, where the main strategic and operational decisions of the organization are made, to ensure the success of the EnMS. It also implies that upper management must ensure the availability of resources, demonstrate its commitment by forming an energy management team, and establishing the organization's energy policy. A relevant and essential aspect is the commitment that upper management must have in motivating people, as this helps to reduce reluctance to face changes related to the EnMS and improve energy performance.

The main functions of upper management are[28]:

a) Establish the scope and boundary of the EnMS.

[26] Standard ISO 50.001:2018 – 4.2.
[27] Standard ISO 50.001:2018 – 4.3.
[28] Standard ISO 50.001:2018 – 5.1.

b) Ensure that the organization's energy policy is established and approved.
c) Ensure the establishment of energy objectives and targets that are appropriate for the organization and compatible with its strategic direction.
d) Review that the EnMS is integrated into other business processes (e.g., operational excellence).
e) Ensure that action plans are approved and implemented.
f) Provide the necessary human, technological, and/or financial resources to maintain and improve the EnMS and its energy performance.
g) Communicate the importance of energy management and compliance with EnMS requirements.
h) Monitor the achievement of the expected results of the EnMS..
i) Promote continuous improvement in energy performance and the EnMS.
j) Designate an energy management team.
k) Support demonstrating leadership to other positions related to the EnMS.
l) Assess whether the (EPI) are appropriate for the organization in representing energy performance.
m) Conduct periodic management reviews to identify and address changes that affect the EnMS and energy performance.

Energy policy is the main instrument through which upper management expresses its commitment and support for energy management, which must take into account that [29]:

a) Be appropriate for the purpose of the organization;
b) Provide a framework for setting and reviewing energy objectives and targets;
c) Include a commitment to ensure the availability of information and resources necessary to achieve energy objectives and targets;
d) Include a commitment to comply with legal and other applicable requirements relating to energy efficiency, energy use, and energy consumption;
e) Include a commitment to continuous improvement of energy performance and the EnMS;
f) Support the procurement of energy-efficient products and services that have an impact on energy performance;
g) Support design activities that consider improving energy performance.

3.3.4 Planning.

Energy planning consists of gathering information on the organization's energy consumption and analyzing it in order to identify significant energy uses (SEUs[30]) and the variables that influence or affect them. Based on the results of this energy planning, operational controls and monitoring, measurement, and analysis activities will be defined for the organization, which will enable the measurement of the resulting improvement in an organization's energy performance.

[29] Standard ISO 50.001:2018 – 5.2.
[30] Standard ISO 50.001:2018 – 3.5.6 significant energy use, energy use (3.5.4) accounting for substantial energy consumption (3.5.2) and/or offering considerable potential for energy performance improvement (3.4.6).

Action to address risk and opportunities.

Within the planning of the EnMS, matters related to understanding the organization, its context, and the requirements related to understanding the needs and expectations of interested parties must be examined and considered. In addition, it must include the activities and processes that may affect energy performance and determine the risks and opportunities to be addressed in order to achieve the following results:

- Provide security so that the EnMS can achieve the expected results, including improved energy performance.
- Prevent or minimize unwanted effects.
- Achieve continuous improvement in energy performance and the EnMS itself.

Identifying risks and opportunities allows the organization to anticipate potential scenarios and consequences and address possible undesirable effects before they occur. At the same time, it allows the identification of favorable aspects that may offer potential advantages.

Objetivers, energy targets and planning to achive them.

Energy objectives and targets are derived from the analysis and prioritization of opportunities for improving energy performance identified in the energy review. Energy objectives and targets should be established with the aim of improving the organization's energy performance and should be consistent with the energy policy and a range of associated targets, which are translated into values that can be measured and monitored (or verified) over time.

It is important that the objectives set by the organization are coherent and consistent with those set out in the policy, as they will transform the energy policy into measurable and quantifiable actions. They must also be communicated and known by all levels of the organization.

When setting objectives, the organization should take into account several aspects, such as:

- Legal requirements and other applicable requirements identified.
- Significant uses of energy.
- Opportunities to improve energy performance.
- The financial, operational, and commercial conditions of the organization and its environment.
- The opinions of stakeholders (shareholders, management, departments, government agencies, energy suppliers, customers).

Any other considerations that the organization itself may consider appropriate.

“Objectives may include both general improvements to the EnMS and specific, measurable targets for improving energy performance. Although some objectives will be quantifiable and will have targets for improving energy performance |…|, other

objectives may be qualitative |…|. It is often possible to provide some quantitative values for qualitative objectives, through surveys or other similar mechanisms."

To achieve energy objectives and targets, it is necessary to establish action plans that indicate the activities, resources, responsible parties, and deadlines required. Action plans should include the methodology for evaluating results and verifying energy performance improvements.

Energy review.

The process of identifying energy types and evaluating energy use and consumption leads the organization to determine areas of significant energy use and identify opportunities for improving energy performance. In determining its UIEs, the organization determines the criteria for what constitutes significant energy consumption and/or what constitutes considerable potential for improving energy performance. UIEs can be defined depending on the needs of the organization, such as by facility (e.g., warehouses, factories, offices), by process or system (e.g., lighting, steam, transportation, electrolysis, motor-driven), or by equipment (e.g., a motor, a boiler)."[31]

Significant Energy Uses (SEUs) are those that represent substantial energy consumption and/or have high potential for performance improvement, and are therefore the areas where the organization should prioritize its management efforts. Each energy review must determine whether energy uses are significant or not, so an organization may have a greater number of SIUs as its level of maturity in energy management increases and it implements opportunities for improvement in areas with higher energy consumption.

An energy review is a process of identifying energy uses and consumption and their associated efficiency levels, and is considered one of the most important stages in the implementation and subsequent maintenance of an EnMS. It can be carried out by in-house staff (or with the support of an external company) and must be updated at defined intervals, generally annually, or in cases where the organization undergoes changes that significantly affect energy use and consumption.

Energy performance indicators.

An energy performance indicator or "EPI" is a "rule" used to compare energy performance before (reference EPI value) and after (resulting or current EPI value) the implementation of action plans and other actions. The difference between the reference values and the resulting value is a measure of the change in energy performance." [32]

- Reference values: these are values taken and obtained prior to the implementation of action plans and other defined measures.
- Resulting, final, or current values: these will be the values achieved and measured after the implementation of the action plans and measures defined above and already carried out.

[31] Standard ISO 50.001:2018 – A.6.3.
[32] Standard ISO 50.001:2018 – 3.4.4.

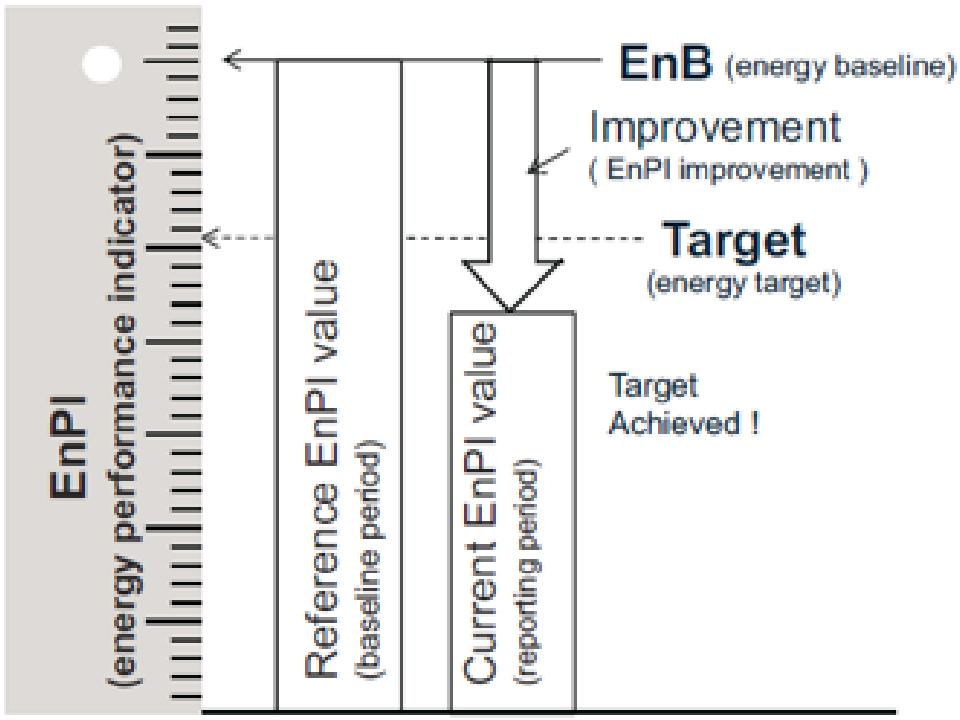

DIAGRAM No. 4: EPI values according to ISO 50.006:2015[33].

Energy performance indicators (EPI or EnPI) are used to verify the organization's energy performance (Diagram No. 4). Comparing the behavior of a given IDE during the baseline period and after the EnMS began operating can determine, for example, whether the actions implemented are producing the expected results in terms of improved energy performance or draw attention to the fact that the expected energy performance improvements are not being achieved, thereby reducing the risk of not meeting the expected performance.

Energy baseline.

The Energy Baseline (EnB) is the reference against which the organization's energy performance will be evaluated and can be simply defined as the behavior of the EPI over a defined period of time. Like EPI's, determining the Energy Baseline (EnB) can present different levels of complexity and there are different methods of determination.

"An appropriate period of time means that the organization takes into account operational cycles, regulatory requirements, or variables that affect energy consumption and energy efficiency, so that the data period adequately demonstrates a full range of performance."[34].

Planning for collection of energy data.

Collecting energy data is very important when planning how to establish an EnMS, as this activity will enable you to measure and understand the organization's current situation,

[33] Standard ISO 50.006.
[34] Standard ISO 50.001:2018 – A.6.5.

allowing you to compare the results obtained in successive measurements of this type of information in order to establish performance levels and see whether objectives are being met.

The organization must:

- Ensure that key operations affecting the organization's energy performance are identified, measured, monitored, and analyzed at planned intervals.
- Define and implement an energy data collection plan.
- Have adequate measuring equipment that provides accurate and repeatable data.
- Maintain documented information on measurement, control, and other means of establishing accuracy and repeatability.

3.3.5 Support.

Resources.

Resources include human resources, specialized skills, technology, data collection infrastructure, and financial resources"[35]. Resources must be identified to ensure the implementation and proper functioning of the EnMS. The organization must provide these resources to ensure that energy performance and the EnMS are maintained and continuously improved.

Competence.

Another important support is to develop the skills that could affect energy performance and the EnMS. This aspect is based on adequate levels of education, training, ability, and experience of individuals.

Service providers and external professionals whose activities may potentially interfere with the organization's energy use and consumption must also have minimum competencies in terms of energy performance and efficiency.

Awareness.

The organization's collaborators must be aware[36]:

a. *Energy policy;*
b. *Its contribution to the effectiveness of the EnMS, including the achievement of energy objectives and targets and the benefits of improved energy performance.*
c. *The impact of their activities or behavior on energy performance; and,*
d. *The implications of non-compliance with the requirements of the EnMS.*

Awareness goes hand in hand with communication and leadership exercised by upper management toward all members of the organization, modifying behavior and reducing resistance to change.

35 Standard ISO 50.001:2018 – A.7.1.
36 Standard ISO 50.001:2018 – 7.3.

Communication.

The organization must define both internal and external communications that are relevant to the EnMS. These communications must specify: what to communicate, when to communicate, to whom to communicate, and how to communicate.

For internal communication, there must be continuous communication between the various levels and functions of the organization to ensure a means of feedback so that anyone working under the control of the organization can comment on the functioning of the system or on possible measures or projects to improve the EnMS or energy performance.

External communication is aimed at agents who are not directly linked to the organization but who may in some way be related to the continuous improvement of energy performance, such as operation or maintenance service providers, emergency services, authorities, customers, etc.

Documented Information.

There are different types of documents required for the preparation of the necessary documentation, each of which will have its specific function within the system. To ensure that it is appropriate, adequate, and effective, the organization must have a documented information system in place to ensure these objectives are met.

Some examples that may support the implementation of this requirement:

- EnMS Manual: basic management system document, which provides an overview of how the organization complies with each of the requirements. It is a tool that any member of the organization can consult to learn about the operation of the EnMS.
- Procedures: Procedures are documents that supplement the EnMS manual and identify the activities, responsibilities, and roles related to one or more requirements of ISO 50.001.
- Work instructions: these are documents that describe the methodology to be followed for a specific task related to the EnMS.
- Records: these are documents used to file and document information derived from the execution of activities established in the system manual, in a procedure, or in work instructions. The records will serve as evidence of energy management and compliance with the various points of the standard in the event of an audit.
- Forms and tables: these are completed as activities are carried out, in accordance with established procedures and instructions.

Other documented information from the EnMS may belong to management systems.

An important aspect of documented information is its control. In fact, the Standard requires that it must: "a) be available and suitable for use, where and when necessary;

and b) be adequately protected (for example, against loss of confidentiality, misuse, loss of integrity)"[37].

3.3.6 Operation.

Operational Planning and Control.

Operational Planning and Control refers to the fact that the organization must define and identify the operating criteria related to the UIEs aimed at improving energy performance.

The greatest potential for energy savings in an organization is linked to the operation of the equipment, facilities, systems, and processes that make up Significant Energy Uses (UIEn)(SEUs). Based on these (UIEn)SEUs, determining appropriate operational parameters that have an impact on energy performance and business objectives is essential to achieving EnMS objectives.

"*The organization must plan, implement, and control processes related to its SEUs…*"[38]. It is recommended that for each of these SEUs, the organization develop manuals, procedures, or work instructions specifying: a) operation and maintenance criteria, b) relevant process variables, c) control parameters, d) execution responsibilities, e) control methods and action in case of emergencies, f) records and information management systems, g) monitoring systems.

Design.

Projects involving the modification (or replacement) of facilities, equipment, systems, and processes are opportunities to improve an organization's energy performance. Similarly, the development of new projects, facilities, or expansions that have an impact on the organization's energy consumption should consider aspects that promote energy efficiency in their planning. "For new facilities and improved technologies and techniques, alternative energy options such as renewable energies or less polluting types of energy should be considered."[39].

Procurement.

Establishing energy performance criteria for the procurement of products, equipment, and services allows the organization to avoid introducing inefficient elements that become the subject of new investments for energy performance improvements or that have low investment costs but high operating costs, and end up with higher life cycle costs than efficient ones with slightly higher investment costs.

The organization should establish and implement criteria to evaluate the use and consumption of energy, as well as the energy efficiency of such goods during their planned or expected operational life in the organization, which are expected to have a

37 Standard ISO 50.001:2018 – 7.5.3.
38 Standard ISO 50.001:2018 – 8.1.
39 Standard ISO 50.001:2018 – A.8.2.

significant impact on energy performance. “Procurement is an opportunity to improve energy performance through the use of more energy-efficient products and services. It provides an opportunity to work with the supply chain and influence its energy behavior.”[40].

3.3.7 Performance evaluation.

Performance evaluation represents the verification stage of an energy management system, monitoring improvements in energy performance and the effectiveness of the EnMS.

Monitoring, measurement, analysis and evaluation of energy performance.

Achieving an adequate performance evaluation requires applying the associated concepts of monitoring, measurement, and analysis, which, in turn, are directly and closely linked to planning and operational control. Based on the energy review and operational control, the measurement and monitoring method will be defined.

- Measurement: the process of determining a value, which involves reliably collecting the information required to determine the behavior of the indicator that demonstrates energy performance status.
- Monitoring: this involves recording information and indicators at a frequency determined by the organization, but which must be adequate to enable corrections to be made, if necessary, to bring about improvement.
- Analysis: this is the evaluation of the measurement and monitoring results.

It is important for the organization to develop the necessary means and tools to monitor, measure, and analyze its energy performance through those operations and variables related to significant energy uses. The aim is to facilitate the analysis of energy consumption and certain associated energy factors, considering the following activities:

- Define the key characteristics that require measurement or monitoring.
- Define an appropriate measurement frequency.
- Establish criteria for determining significant deviations in energy performance and procedures for investigating and responding to deviations.
- Analysis and communication of performance evaluation results.

Internal Audit.

Audits are a systematic, planned, independent, and documented process for obtaining evidence of compliance with requirements, policies, or procedures established by the organization. They allow for the evaluation, measurement, and monitoring of whether the EnMS is adequately responding to the purposes for which it was planned and implemented.

[40] Standard ISO 50.001:2018 – A.8.3.

The objectives of internal audits of the EnMS are to provide information on compliance with energy policy, energy objectives and targets, the energy management program, evaluation of the capacity of the internal management review process in pursuit of the adequacy and effectiveness of EnMS programs and processes, and the pursuit of improvements in energy performance.

Las auditorías internas se deben realizar periódicamente para verificar que el sistema es establecido, implementado y mantenido eficazmente; debe ser sistemático, independientes y documentado.

Management Review.

In order to ensure that the EnMS is appropriate for the organization and effective in its implementation, upper management must conduct a periodic review. This stage therefore occupies a privileged and inherent place, as it allows us to determine whether the policies, objectives, energy targets, and, in general, the entire established EnMS are effective and appropriate. In addition, it will enable actions to be taken to improve the system, for example, the allocation of additional resources. "Upper management must review the organization's EnMS at planned intervals to ensure its continued suitability, adequacy, effectiveness, and alignment with the organization's strategic direction."[41].

It is performed periodically to:

- Identify and analyze how the EnMS is being implemented.
- Verify improvements in energy performance.
- Identify barriers, drawbacks, and problems encountered during implementation.
- Learn about achievements and progress.
- Establish the resources and responsibilities that will ensure compliance with the plan.

3.3.8 Improvement.

The continuous improvement stage closes the cycle of a management system. The associated activities cut across the entire system and become more important as the system becomes older and more mature.

Nonconformity and corrective action.

As a cross-cutting aspect of the entire EnMS, the organization must respond to non-conformities through corrective actions. In addition, it must ensure the development of activities to continuously improve its EnMS and energy performance, as well as have all the evidence necessary to evaluate its effectiveness, compare it with past performance, and implement improvement actions.

It is important to understand that non-conformities generate opportunities for improvement, and in that sense, they can be raised not only in formal audit processes. It is important for the organization to encourage workers to raise them in order to generate a faster improvement process.

[41] Standard ISO 50.001:2018 – 9.3.

During audits, the following non-conformities are most frequently found: lack of training and/or competence of team members; failure in communication processes; absence of operational criteria; lack of monitoring, measurement, and analysis; difficulty in securing upper management commitment; failures in the control of documented information; absence of identified investments and/or necessary resources.

When a nonconformity occurs, actions must be taken to control and correct it, and prevent it from happening again.

Continual Improvement.

"The organization must continually improve the suitability, adequacy, and effectiveness of the EnMS."[42].

In general, these improvements will occur over time and will depend on the organization's priorities, i.e., the frequency, magnitude, and timing of actions that support continuous improvement are determined by the organization based on its context, economic factors, and other possible circumstances.

Continuous improvement is the main means or tool that the EnMS energy management system has to integrate with existing or future operational excellence methodologies in the organization. As far as possible, it is ideal that systems based on continuous improvement are identified from the implementation design phase, thereby generating an integrated implementation.

Continuous improvement can be demonstrated, for example, through:
- "Reduction of normalized energy consumption for the scope of application and limits of the EnMS."
- *"Progress toward energy goals and management of significant energy uses SEUs"*[43].

3.3.9 Energy Management System Certification.

Once the EnMS is operational, the organization can opt for certification by a third party, also known as certification bodies. Basically, EnMS certification allows the organization to validate that it complies with the requirements of ISO 50.001:2018.

[42] Standard ISO 50.001:2018 – 10.2.
[43] Standard ISO 50.001:2018 – A.10.

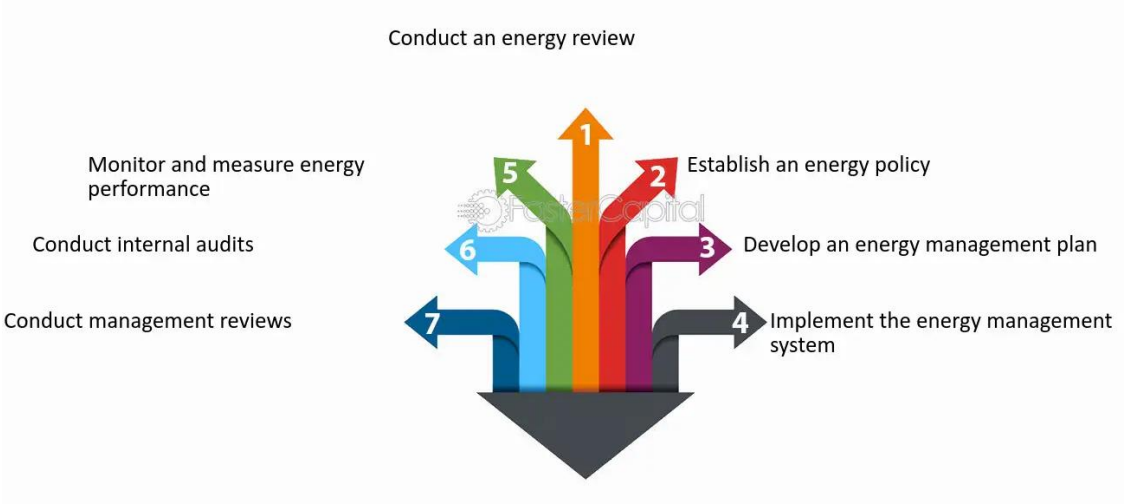

DIAGRAM No. 5: STEP-BY-STEP GUIDE TO ACHIEVING ISO 50.001.

When organizations have more than one management system, they generally choose a body that certifies them simultaneously in order to optimize the certification audit process, saving time and costs.

Depending on the certifying body (see Diagram No. 5), there are audits of:

- Phase 1: This is an initial assessment in which auditors verify whether the EnMS is appropriate for the organization and its operations, and complies with the requirements of the standard.

- Phase 2: During the certification audit, non-conformities may be identified, which must be resolved within a limited period of time in order to obtain certification. If the non-conformities are minor, the certification body recommends the organization for certification.

If the audit result is successful, the organization can count on certification for a period of three years.

3.4 World Port Sustainability Program - WPSP.

3.4.1 General Description.

In 2008, the International Association of Ports and Harbors (IAPH) launched the World Port Climate Initiative (WPCI) to take action against climate change, starting with the publication of a comprehensive guidance tool for identifying and quantifying the carbon footprint of ports.

As a testament to the leadership role that ports play in relation to the international goals set out in the United Nations 2030 Agenda for Sustainable Development and the Paris Agreement, the IAPH has expanded the scope of the WPCI in recent years to include overall sustainable development and redefine the original climate change goals.

This led to the creation of the World Port Sustainability Program (WPSP) as a follow-up to the World Port Climate Initiative (WPCI).

The World Port Sustainability Program (WPSP) seeks to demonstrate the global leadership of ports in their contribution to the United Nations Sustainable Development Goals. The program seeks to empower port community stakeholders around the world to engage with business, government, and social stakeholders in creating sustainable added value for the local communities and regions in which their ports are located"[44].

The Global Port Sustainability Program considers the 17 UN Sustainable Development Goals as a single, indivisible framework for the sustainable development of ports. The Program will implement the UN SDGs across six themes, each of which encompasses a non-exhaustive list of potential topics:

- ***Digitization***. These projects apply innovative digital technologies in port management and operations to accelerate digitization in ports and the maritime transport chain. Some examples: innovative digital applications; data collaboration with stakeholders; improvements in process flow and documentation; optimization of port calls and just-in-time (JIT) arrival of ships; Port Community Systems (PCS); Maritime Single Window (MSW); Port Management Systems (PMS); smart port initiatives.
- ***Infrastructure****. These projects focus on the development of infrastructure and services in ports, with the aim of optimizing physical port infrastructure. Noteworthy projects include sustainable port development; new state-of-the-art facilities; optimization of existing port capacity; management of larger vessels; sustainable dredging projects and beneficial use of dredged material; and a focus on climate resilience in infrastructure development and climate adaptation projects.*
- ***Health, safety, and security.*** *These are projects that integrate health, safety, and security into port activities, combining efficient port operations and accessible port areas with high standards in each of these three disciplines. Potential topics include: promoting a culture of health and safety; improving the health and safety of port staff and visitors; innovation in security controls and cargo and passenger inspections; using innovation to establish safe and accessible port areas; working in automated environments; cybersecurity measures.*
- ***Environmental care.*** *These are projects that address the environmental impact of port operations on air, water, soil, sediments, and natural habitats. Potential topics include: air, dust, noise, and water pollution; protecting freshwater resources; addressing water consumption; waste collection; reuse and recycling initiatives; specific initiatives for marine litter; addressing soil and sediment pollution; protecting habitats and enhancing biodiversity.*
- ***Community building.*** *These are projects that promote social integration in ports. They involve organizations taking the lead in adhering to the principles of good corporate governance and promoting them in the port community at large. Potential topics include port information and training centers; open port initiatives; community and*

[44] https://sustainableworldports.org/

social participation programs; education and employment initiatives; transparency and reporting; equal rights and opportunities; gender equality; business ethics; fair trade/responsible supply chains; anti-corruption; sustainable cruise tourism.

- ***Climate and energy**. These are part of the sector's efforts to achieve CO_2 neutral ports and thus contribute to the achievement of global climate goals. Potential topics include energy efficiency; circular economy; bio-based economy; renewable energy; CO_2 reduction initiatives; incentives for clean ships; implementation of alternative fuels for transport; low- and zero-carbon fuel supply infrastructure."*[45].

3.4.2 Carbon footprint: other measurement standards.

Proper and accurate measurement of carbon footprint involves knowing which greenhouse gases (GHG) to consider, how to determine their scope, and the main standards for inventory and emissions calculation. Obviously, these aspects will determine the methodology to be used, and the selection will depend on the characteristics of the organization, activity, or product.

In addition to the WPCI standard, commonly used methodologies include:

GHG Protocol (GreenHouse Gas Protocol).

The most widely used tool for calculating and reporting an organization's emissions inventory is the GHG Protocol. Coordinated by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), this standard was created to avoid the multiplicity of existing initiatives, providing a degree of uniformity among the various mechanisms.

The GHG Protocol allows for the identification and calculation of scopes 1, 2, and 3, and has an implementation methodology based on the following points:

- Determination of organizational boundaries.
- Determination of operational boundaries.
- Monitoring emissions over time (allows comparison of historical results).
- Identification and calculation of GHG emissions.
- Inventory quality management.

ISO 14064:2018

International standard that focuses on the design and development of the organization's GHG inventory; its requirements can be simplified into three dimensions:

- Establish GHG emission limits.
- Quantify the organization's GHG emissions.
- Identify specific activities or actions undertaken by the company with the aim of improving GHG management.

[45] https://sustainableworldports.org/areas-of-interest/#climate-and-energy

The standard is divided into three parts:

- ISO 14064-1, which is based on the design and development of the organization's GHG inventory.
- ISO 14064-2, which establishes specifications for quantifying, monitoring, and reporting reductions and improvements in GHG emissions.
- ISO 14064-3, which focuses on the validation and verification of greenhouse gas statements.

ISO 14067:2018

ISO 14.067:2018 establishes a robust framework for measuring and evaluating the carbon footprint of products and services[46], this makes it an essential tool for organizations seeking to differentiate themselves from their competitors, stay ahead of new regulations, or gain access to markets, customers, or users aligned with higher environmental standards.

ISO 14.067:2018 states: "*Climate change resulting from anthropogenic activity has been identified as one of the greatest challenges facing the world and will continue to affect businesses and citizens in the coming decades |...| and could have a significant impact on resource availability, economic activity, and human well-being*"[47].

This carbon footprint corresponds to the total amount of greenhouse gas (GHG) emissions released into the atmosphere throughout the life cycle of a product or service, from its initial raw material extraction phase to its final disposal. To calculate the carbon footprint of a product, the different stages of its life cycle must be taken into account, including raw material extraction, manufacturing, transportation, use, and eventual disposal or recycling.

One of the main objectives of ISO 14.067:2018 is to provide organizations with a consistent and standardized methodology for calculating and communicating the carbon emissions associated with their products and services, which is essential for understanding and assessing the environmental impact they generate throughout their production process and, in turn, facilitating decision-making aimed at reducing their carbon footprint by identifying areas for improvement and developing strategies to optimize their processes and reduce their negative environmental impact.

Compared to other ISO standards, such as ISO 50.001, ISO 9.001, and ISO 14.001, ISO 14.067:2018 does not correspond to a management system per se, but is a valuable resource for measuring and evaluating the carbon footprint of products and services, providing organizations with an essential tool for responsible environmental management and the promotion of sustainable practices.

[46] Standard ISO 14.067:2018 - 3.1 Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification.

[47] Standard ISO 14.067:2018 – Introduction.

PAS 2050

PAS 2050 (Publicy Available Specification - "Specification for the assessment of the life cycle greenhouse gas emissions of goods and services") It is a methodology published by the British Standards Institution (BSI) in 2008 that allows the carbon footprint of products and services to be assessed throughout their life cycle, and is one of the main methods used to calculate the carbon footprint of organizations.

The methodology described by PAS 2050 has some basic principles to follow: i) relevance, ii) completeness, iii) consistency, iv) accuracy, v) transparency; some of these principles are also contained in ISO standards related to GHG.

3.4.3 Air quality and carbon footprint in ports.

It is well known that the main means of international trade transport is maritime cargo transport, which, given its constant growth, has turned port terminals into significant centers of economic and operational activity.

In line with the need to reduce emissions from their operations, port terminals are required to develop strategies that minimize the impact of such emissions on the atmosphere. Thus, measuring and managing the carbon footprint in ports is strategic for mitigating their environmental impact, contributing to global goals of reducing atmospheric emissions. Measuring the carbon footprint in ports is the first step toward understanding the impact of port activities on greenhouse gas (GHG) emissions.

The carbon footprint in ports refers to the total amount of greenhouse gases (GHG) emitted both directly and indirectly. The types of port activities that typically generate GHG emissions must be analyzed, and physical and operational boundaries, the time period to be covered, and considerations regarding the possibility of double counting, among other factors, must be verified.

The concept of CO_2 equivalent weight (CO_2eq) is used to calculate greenhouse gas (GHG) emissions. In the port context, many sources of emissions are directly and indirectly related to port activities and operations themselves, which include vehicles and trucks of all kinds, cargo handling equipment, ships, port vessels, locomotives, etc. GHG emissions can be linked to energy consumption from various sources, notably electricity and petroleum products.

These sources produce greenhouse gases, which need to be monitored, in particular:

- Carbon dioxide (CO_2): mainly emitted by the combustion of fossil fuels in ships, vehicles, and cargo handling equipment.
- Methane (CH4): although emitted in smaller quantities, it has a significant impact on the atmosphere as it has a global warming potential 28 times greater than CO2.
- Nitrous oxide (N2O): associated with combustion processes, mainly in industrial activities, its global warming potential is 265 times that of carbon dioxide.
- Nitrogen oxides (NO_2), particulate matter (PM), and sulfur oxides (SO_2).

- Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (NF3) must also be taken into account when calculating carbon footprints.

3.4.4 Calculation of the carbon footprint of a port terminal.

The World Port Sustainability Program (WPSP), through the World Port Climate Initiative (WPCI), developed a guidance document that serves as a reference for different ports or port terminals to develop initiatives that reduce or control their greenhouse gas (GHG) emissions. Calculating a port's carbon footprint is an essential starting point for identifying and promoting strategies and actions aimed at reducing GHG emissions from port activities and optimizing energy consumption.

Identification of operational limits

Port activity involves the interaction of different actors, both public and private. In this regard, the area in which the operational activities included in the calculation and their location will be identified must be defined; it is advisable to take into consideration:

- Port or ports included within the carbon footprint limits.
- Land and water areas necessary for the development of port uses that are included in the port service area.
- Port infrastructure, specifying that which is considered to be included within the carbon footprint limits.
- Land access.
- Land areas and services leased or concessioned by the Port Authority that are considered included in the limits for calculating the carbon footprint.
- Commercial services and port services provided by the Port Authority, Maritime Authority, or under license or authorization from them (e.g., mooring/unmooring, pilotage, towing, ship supply, waste management, among others) that are considered included in the limits for calculating the carbon footprint.

Eventually, it may be complex to consider the entire geographical area of a port as a single unit, which is why it is advisable to divide it into Functional Units (FU), taking these as elements or sets of elements that perform a specific function within the port. In turn, within the same Functional Unit, there may be one or more Service Units (SU), which correspond to those pieces of equipment or services that can be considered direct or indirect sources of greenhouse gas (GHG) emissions.

The subdivision of the port into Functional Units and Service Units allows for clearer management and control of emissions from each of the elements, facilitating the identification of specific emission reduction targets.

Determination of the Scope of Emissions and Emission Factors.

In the context of carbon footprints, greenhouse gas emissions are divided into three categories, depending on their origin and control:

Scope 1: Direct emissions from sources owned or directly controlled by the entity, including stationary combustion, mobile combustion, fugitive processes, and industrial processes.

Scope 2: Indirect emissions associated with the generation of electricity, heat, or steam purchased and consumed by the entity for its activities, attributable to the facilities where the energy is generated.

Scope 3: Refers to other emissions from direct and indirect sources that occur in the entity's value chain, which may include activities at freight and passenger terminals, mooring services, or tourist cruise ship services.

The scope is illustrated graphically in Diagram No. 6.

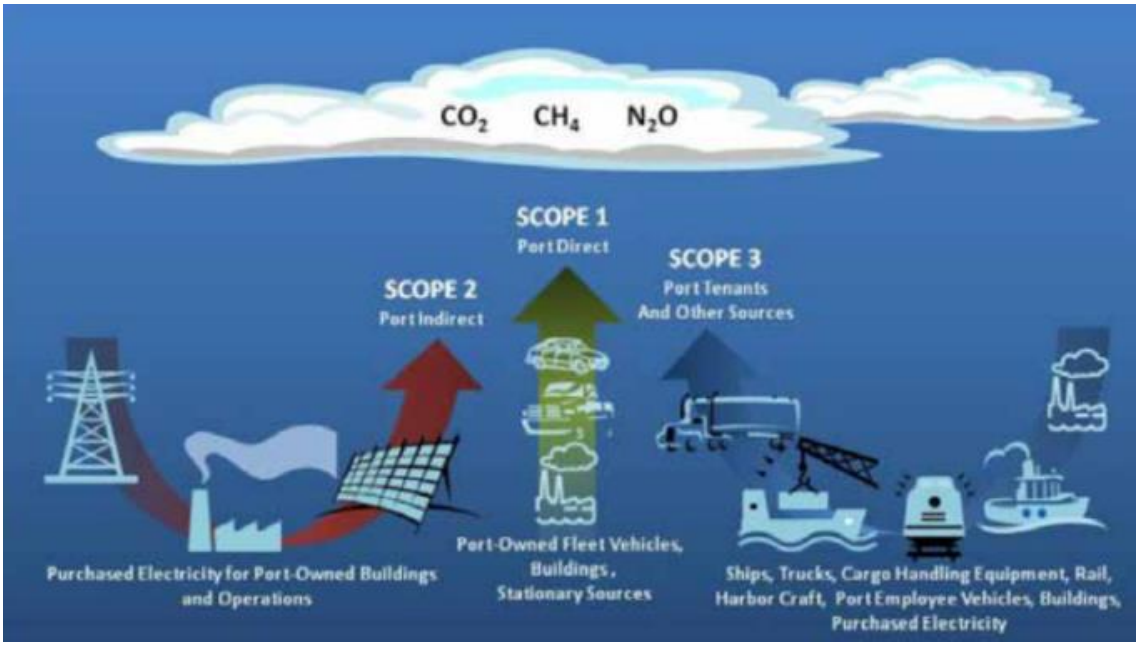

DIAGRAM No. 6: EMISSIONS SOURCES PORT ACTIVITY.

To calculate the carbon footprint and determine the CO2 equivalent weight or CO2eq, in addition to the data on the GHG-generating activity (e.g., fuel consumption of mobile cranes in a calendar year), it is necessary to use "emission factors," which correspond to a value that relates the amount of a pollutant emitted into the atmosphere to a specific activity. Emission factors or emission rates allow data on activities/consumption (e.g., fuel consumption, electricity use, etc.) to be converted into GHG emissions; these CO2 emission factors can be obtained from various sources (e.g., Intergovernmental Panel on Climate Change IPCC)[48], Department for Environment, Food & Rural Affairs DEFRA[49]).

48 The Intergovernmental Panel on Climate Change (IPCC) https://www.ipccnggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion

49 Department for Environment, Food & Rural Affairs https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs

Procedure for calculating the carbon footprint in ports.

The general formula for calculating carbon footprint is:

$$HC = \text{Activity Data} \times \text{Emission Factor}$$

Next, it is necessary to identify the sources of emissions, grouping them into different scopes. This is followed by collecting "activity data" related to fuel, electricity, or transportation, and applying the emission factors corresponding to each activity.

Finally, emissions from all scopes are added together to obtain the port's total carbon footprint:

$$\text{Total HC} = \text{HC scope 1} + \text{HC Scope 2} + \text{HC Scope 3}$$

3.5 EMAS Environmental Management System.

3.5.1 General Description of the Standard.

The EMAS N°1836/93 Regulation was first introduced in July 1993 as an environmental policy tool designed by the European Union (EU) with a view towards complying with the sustainable development goal. Consequently, industrial sector companies were allowed to adhere on a voluntary basis to an EU environmental management and audit system. This system, which has undergone changes and updates over time, is also known by the acronym EMAS for Eco-Management and Audit Scheme.

In 2001, revised (EU) Regulation No. 761/2001 ("EMAS II") was adopted. The major change was an expansion of the scope of EMAS to all sectors of economic activity and integration with Environmental Management Standard ISO 14001.

In 2009, the EMAS Regulation was revised and amended for a second time. EU Regulation No. 1221/2009 ("EMAS III") came into force on January 11, 2010.

EMAS III includes the following new elements:

- Makes it easier for all organizations, whether based inside or outside of the European Community, the activities of which have an environmental impact, to join EMAS.
- Revised audit cycles to further improve applicability to small and medium size companies.
- Corporate registrations to alleviate the administrative and financial burdens of organizations with several sites registered in EMAS.
- Basic environmental indicators to adequately document environmental performance.
- Introduction of EMAS Global to make EMAS accessible to organizations and sites throughout the world.

In 2017, Annexes I, II, and III of the EMAS Regulation were amended to include changes associated with the revision of ISO 14001:2015. EU Regulation 2017/1505 of the Commission, amending these annexes, came into effect on September 18, 2017.

Since January 9, 2019, amended Annex IV to the EMAS regulation (EU Commission Regulation 2018/2026) has also been in force. This amendment includes an update of the basic EMAS indicators and of the wording of the environmental statement. It also offers EMAS organizations new opportunities to report on their environmental performance and use the EMAS Environmental Statement of the organization as well for other reporting obligations.

Implementation of this EMAS system at a company is very similar to the system required under ISO 14.001:2015.

The EMAS is a European environmental regulation that companies can adopt once they have put into place an Environmental Management System under ISO 14001, accepting the commitment to continual improvement and having been verified through independent audits.
Like the standard ISO 14.001, EMAS provides a flexible and adaptable system for the organization to guide and manage enhancement to its environmental management on an ongoing basis, with the following specific objectives[50]:

- *The establishment and implementation of an environmental management system.*
- *The systematic, objective, and periodic evaluation of the performance of such a system.*
- *The provision of information on the environmental performance of the organization.*
- *Open dialogue with the public and other interested parties.*
- *Active involvement of employees in organizations and appropriate training.*

The advantages and benefits of implementing EMAS are:

- *Environmental benefits: improved environmental management, fewer environmental impacts and stimulation of ecological innovation in production processes.*
- *Benefits of leadership and corporate image: reinforcement and improvement of corporate image of the company, credibility and confidence in the eyes of public authorities, citizens, shareholders, employees, and other clients.*
- *Economic and social benefits: when you're certified, you may see increased business and, by optimizing management of environmental aspects, economic benefits will be obtained in the medium and long term.*

The sequence of actions to implement and join EMAS is as follows[51]:

- *Conducting the initial environmental review, identifying the significant environmental aspects of the organization, as well as the applicable compliance obligations, evaluating the degree of compliance in the management practices and procedures that are carried out.*

50 Eco-Management and Audit Scheme Regulation – Chapter I General Provisions – Article 1 Objective.
51 Practical Guide for the application of the EMAS Regulation – Community of Madrid - 4.2. Steps to adhere to EMAS – (octubre 2013).

- *Developing and implementing an Environmental Management System that fulfills the requirements of Standard ISO 14001:2015 and incorporate several other aspects beyond this Standard, as established by the EMAS Regulation.*
- *Preparing an Environmental Statement, incorporating the information that needs to be made available to the public and other interested parties.*
- *Verifying the environmental analysis, Environmental Management System and the audit program, by an accredited audit agency to evaluate whether management practices and procedures fulfill the requirements of the EMAS Regulation, as well as that agency validating the Environmental Statement.*
- *Applying for entry into the EMAS Registry, submitting the documentation and supplementary information, for setting into motion the administrative procedure that finalizes the resolution of entry into the Registry or, as appropriate, denial of application.*

3.5.2 Initial Environmental Review.

The initial environmental review is the first step an organization must take to implement an Environmental Management System pursuant to the EMAS Regulation, which is defined as a "comprehensive analysis of environmental aspects, environmental impacts and environmental performance related to an organization's activities, products and services."

The objective of the environmental review is to obtain an overview of the organization with respect to the environment, in order to identify environment- related legal requirements and environmental aspects of the company, inasmuch as that this will be the basis and starting point for creating the Environmental Management System.

The environmental review must meet certain requirements, such as::

- Identifying environmental compliance obligations that have been entered into by the company;
- Identifying all environmental aspects that have a significant environmental impact along with the criteria used for the determination thereof; and,
- Reviewing potential environmental management actions.

3.5.3 Development and Implementation of an EMAS Environmental Management System.

The next step (requirement) set forth by the EMAS is developing and implementing an Environmental Management System, which means implementing ISO 14.001:2015, as was discussed and reviewed in the previous chapter.

3.5.4 Environmental Statement.

The EMAS regulation establishes that the company or organization must make an Environmental Statement, publicizing its context, environmental work and results, along with identifying the steps it is taking to benefit the environment and reduce its own environmental impacts.

This statement is one thing that sets this certification apart from other environmental management systems.

The statement must always be available to all interested parties, and it must be verified by an external and independent agency to ensure credibility.
This environmental statement should not be confused with the requirement of ISO 14.001:2015 of an Environmental Policy.

In general, the Environmental Statement shall contain at least the elements listed below:

a. *A description of the organization registering under EMAS and a summary of its activities, products, and services and its relationship to any parent or affiliate organizations, as appropriate.*
b. *The Environmental Policy and a brief description of the Environmental Management System of the organization.*
c. *A description of all significant direct and indirect environmental aspects which result in significant environmental impacts and an explanation of the nature of the impacts as related to these aspects.*
d. *A description of the environmental objectives and targets in relation to the significant environmental aspects and impacts.*
e. *A summary of the data available on the performance of the organization against its environmental objectives and targets with respect to its significant environmental impacts. Reporting shall be on the core indicators and on other relevant existing environmental performance indicators.*
f. *Other factors regarding environmental performance including performance against legal provisions with respect to their significant environmental impacts.*
g. *A reference to the applicable legal requirements relating to the environment.*
h. *The name and accreditation or license number of the environmental verifier and date of validation..*

3.5.5 Verification of the System and Validation of the Environmental Statement.

Once the Environmental Management System has been implemented at the organization based on ISO 14.001:2105 and once the Environmental Statement has been prepared, in order to obtain registration under the EMAS Regulation, these elements must be examined by an accredited, independent, and recognized external auditor or entity.

Environmental auditors will carry out the following tasks to validate the foregoing elements:

- *Verify whether the organization meets all requirements of the EMAS Regulation in relation to the initial environmental review, the Environmental Management System, the environmental audit and its results and the environmental statement.*
- *Check whether the organization meets the relevant legal requirements with respect to the environment.*
- *Ascertain continual improvement in the organization's environmental performance.*

- *Ascertain reliability, credibility, and accuracy of the data included and used in the EMAS environmental statement, as well as any environmental information they are supposed to validate.*
- *Conduct the inspection of the organization's facilities..*

3.5.6 Registration (Accreditation).

Once implementation has been completed and the EMAS Environmental Management System and Environmental Statement has been validated, the organization must apply for registration from the competent agency.

Once it is registered, it is entitled to use the EMAS logo.

3.6 ECOPORT PERS (Port Environmental Review System) Environmental Management System.

3.6.1 General Description of the Environmental Review System.

EcoPorts is the principal environmental initiative of the European port sector. Its origin dates back to 1997, at the initiative of a leading group of European Port Authorities, who became integrated with the European Sea Ports Organization (ESPO) in 2011. The guiding principle of EcoPorts is to raise awareness about environmental protection through cooperation and knowledge exchange between ports and improve environmental management"[52].

In the past, ports managed their environmental impacts as independent units, through their own activities and operations. As problems increased, so did demands and concern for environmental care in these activities, and European port terminals began to think about the need to develop a credible and common environmental policy to comply with applicable legislation and provide protection to the environment as best as possible.

The year 1993 saw the creation of the European Sea Ports Organization – ESPO, the representative agency of the port authorities and administrations of the sea ports of the member states of the European Union and Norway.

In 1994, the ESPO published the Code of Environmental Policy Practices for Ports in order to deal with the growing environmental demands that were emerging at that time, in reference to the early developments of Environmental Management Systems, such as ISO 14.001 and EMAS.

That same year, a group of seven European ports made the decision to pursue a collaborative research project pertaining to information exchange on environmental subjects associated with their own operations and interactions with the environment.

Given the uncertainty and lack of clarity regarding the environmental responsibilities of each port, a diagnostic methodology, known as SDM (Self Diagnosis Method), was

[52] https://www.ecoports.com/

proposed so that each port terminal could assess its environmental situation and plan its management approach in the most suitable way, focusing on its own relevant environmental issues. At that time, the 'ECO-information in European Port' project was born, and was approved by the European Commission Transportation Program in 1997 and, in the end, would launch and develop the EcoPorts initiative.

The EcoPorts Foundation – EPF was chartered in 1999 by a group of European ports, as a not-for-profit organization, to provide a platform for a network of products and services developed through the ECO-information in the European Port project.

In 2002, port authorities, port associations, and port administrations decided to launch the EcoPorts Foundation project, which involved exchange of environmental impact information and evaluation of port operations in line with best environmental practices in European ports and terminals, adopting the methodology known as PERS (Port Environmental Review System). Three years later, more than 100 new European ports joined the project, thus successfully developing the PERS methodology.

By 2011, the EcoPorts Foundation ceased to exist and EcoPorts became part of the structure of the European Sea Port Organization - ESPO, thus ushering in a new era of environmental management and sustainability of ports, after 15 years of significant progress in these areas.

That year, the web portal of EcoPorts (www.ecoports.com) was officially launched and is used by ESPO to manage the network of EcoPorts member ports and the SDM (Self Diagnosis Method) management tools and PERS (Port Environmental Review System).

Ports and terminals outside of Europe can access the EcoPorts tools through the ECO Sustainable Logistic Chain Foundation or ECOSLC, www.ecoslc.eu.

In 2013, EcoPorts and EcoSLC were recognized by the American Association of Port Authorities, the organization that represents the public port authorities of the United States, Canada, the Caribbean, and Latin America.

3.6.2 Implementation methodology (SDM – Self Diagnostic Methodology Phase).

The methodology for the EcoPorts implementation and certification is shown in Diagram No. N°7[53].

[53] ECO SLC Sustainable Logistic Chain - https://www.ecoslc.eu/about

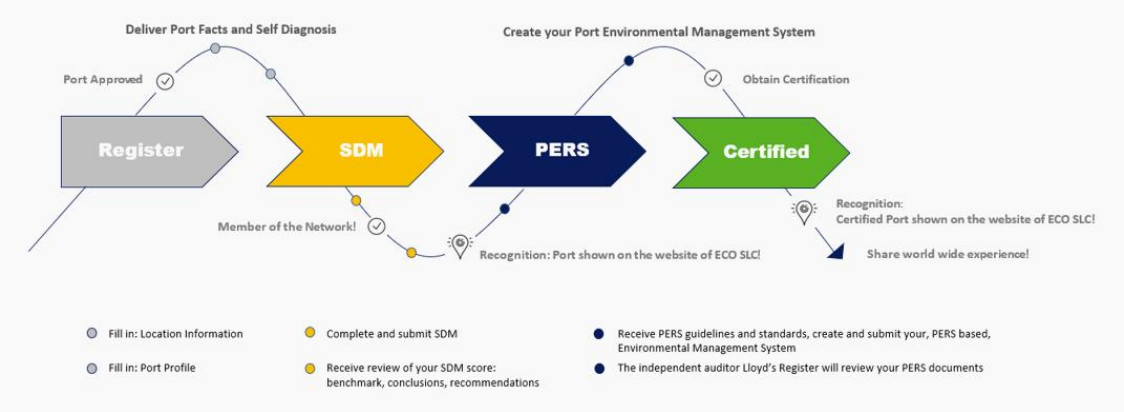

DIAGRAM No. 7: IMPLEMENTATION METHODOLOGY ECOPORTS.

The first step is Registration of the port organization, providing information about its location and port profile data. EcoSLC will then proceed to record the background information submitted and confirm the registration.

The second step involves completing the SDM (Self Diagnosis Method) statement).

The SDM checklist contains the following sections: Environmental Policy, Organization and personnel, Training, Communication, Operational Management, Emergency Planning, Monitoring, Review and Auditing.

After the port terminal completes the diagnostic assessment and Report, it is formally recognized as “EcoPorts” but not yet certified until implementation of its PERS.

The SDM analysis and results provide information from:

- An evaluation of background information submitted pursuant to the European standard on environmental management of ports.
- A gap analysis between international environmental management standards (ISO 14.001 and PERS) and actual performance of the applicant port.
- A SWOT (Strengths-Weaknesses-Opportunities-Threats) analysis of environmental performance of the applicant port.
- Background and recommendations on the status or level of environmental management of the applicant port.

The SDM is the first step to identify the characteristics of the terminal port, and consists of a check list of environmental aspects and risks of the organization, as shown by way of example in Table No. 7[55].

A: Environmental Policy

ENVIRONMENTAL POLICY DOCUMENT

A.1	Does the Port have an Environmental Policy?	Y N *
	IF YES,	
A.2	Is the Policy signed by Chief Executive / Senior Management?	Y N
A.3	Is the Policy communicated to all relevant stakeholders? [A.3]	Y N
A.4	Is the policy communicated to all employees? [A.4]	Y N
A.5	Is the policy publicly available on the Port's Website?	Y N
	Does the Policy include reference to:	
A.6	Major objectives?	Y N
A.7	Publication of an Environmental Report?	Y N
A.8	The identification and control of the port's Significant Environmental Aspects?	Y N
A.9	Continual improvement?	Y N
A.10	Prevention of pollution?	Y N
A.11	Training employees in environmental issues?	Y N
A.12	Introduction/maintenance of an Environmental Management System?	Y N
A.13	Reduction of resource consumption?	Y N
A.14	Improvement of environmental standards beyond those required under legislation? [A.14]	Y N
A.15	Environmental management of main aspects within the port area (including Tenants and Operators)?	Y N

TABLE No. 7: SELF DIAGNOSIS METHOD (SDM).

Table No. 8 shows, by way of example, the result of the preceding check list [55].

	Gap Analysis:	PERS 60.71%	ISO 48.68%	Answers	SWOT	ANS(%)	YES(%)	NO(%)
A.1	Does the Port have an Environmental Policy?				S1	100,0%	87,8%	12,2%
A.2	IF YES,Is the Policy signed by Chief Executive / Senior Management?				S2	89,8%	90,9%	9,1%
A.3	IF YES,Is the Policy communicated to all relevant stakeholders?				S3	89,8%	88,6%	11,4%
A.4	IF YES,Is the policy communicated to all employees?				O1	89,8%	84,1%	15,9%
A.5	IF YES,Is the policy publicly available on the Port's Website?				O2			
A.6	Does the Policy include reference to:Major objectives?				S4	89,8%	90,9%	9,1%
A.7	Does the Policy include reference to:Publication of an Environmental Report?				O3	87,8%	65,1%	34,9%
A.8	Does the Policy include reference to:The identification and control of the port's Significant Environmental Aspects?				S5			
A.9	Does the Policy include reference to:Continual improvement?				S6	89,8%	93,2%	6,8%
A.10	Does the Policy include reference to:Prevention of pollution?				S7	73,5%	86,1%	13,9%
A.11	Does the Policy include reference to:Training employees in environmental issues?				O4	89,8%	75,0%	25,0%

TABLE No. 8: SELF DIAGNOSIS METHOD (SDM).

The third step involves implementation of the PERS (Port Environmental Review System) in accordance with the system documentation and guidelines.

For this purpose, all information and documentation requested in the guidelines for each section must be gathered, along with the statement forms, appropriately signed by the most upper officer of the organization.

Subsequently, an audit inspection will be conducted by an external agency -hired by EcoSLC.

The process concludes with submission of the report with the most important findings with respect to conformance with the PERS standard.

Aspects examined during PERS implementation include: Environmental Policy Statement, records of environmental aspects and compliance with legal requirements, environmental reports, best practices.

One aspect of the PERS to highlight is that it is an environmental review system conducted exclusively for ports and it includes recognition by the European Sea Port Organization ESPO.

If PERS certification is successfully achieved, the port is formally recognized as a “Certified PERS EcoPorts Port,” which is valid for two years.

CHAPTER 4. COMMERCIAL, SOCIAL AND ENVIRONMENTAL BENEFITS AND ADVANTAGES OF BEING A GREEN PORT.

The economic development of a port terminal and environmental protection are by no means mutually exclusive of each other. On the contrary, being "green" has its benefits. A green port is one that carries out or conducts its activities while taking into account not only the economic aspect of its business, but also the environmental aspect, ranging from identifying impacts cause by it, to mitigating and controlling those impacts. A Green Port is expected to have a higher level of commitment to the environmental aspect and that, in short, it's activity causes minimal impact. Accordingly, these ports are expected to effectively promote (internal and external) actions that go beyond mere compliance with domestic environmental legislation.

The commercial, social, and environmental benefits and advantages of being a Green Port are only noticeable to the extent that such initiatives endure over time and are not just a single isolated action or for merely commercial reasons. Being recognized as an environmentally and surroundings-friendly Port is an undertaking that takes many years and entails a high risk of losing that status, if it is not properly administered.

Reduction of waste, costs, and increased efficiency.

In the process of continual improvement of processes and activities, ports can define initiatives which, in the medium and long term, result in environmental enhancement with adequate financial return on investment.

The stated environmental policies of green ports are usually aimed at improving environmental indicators, as well as providing for actions to support the use of technology, energy efficiency and innovation, all of which can bring savings while minimizing environmental impact. The purpose of these initiatives is environmental improvement of operations while generating a financial return, which does not necessarily have to be consistent with the profit-making motive of the port business as such. It is motivated by something else.

Some of the initiatives listed hereunder depend on the particular operations carried out at each port:

- Energy efficiency, encompassing the efficient use of energy by taking actions to reduce energy consumption levels and CO2 emissions, without impacting productivity. It goes hand-in-hand with the use of renewable energy sources.
- Water resource management, inasmuch as it is a vital and irreplaceable, non- renewable and limited resource, which requires efficient use and/or consumption.
- Waste management, encompassing activities related to the life cycle of waste, taking into consideration the traceability of waste, including everything from collection and transfer to treatment.
- Circular Economy (innovation), in some ways linked to waste management, involving utilization of waste to transform it into resources and reusing them. This management model can very effectively link the port to its surroundings by indirectly promoting and generating jobs, outside of its own line of business.

Additionally, being a Green Port means implementing and following up on an Environmental Management System, ongoing review of the entire value chain and port activities, which can cause (positive or negative) environmental impacts, thus transforming the system into a beneficial "management and monitoring tool" to the organization and its surroundings.

Timely compliance with legal requirements and other regulations.

It is essential for ports to comply with environmental regulations, rules and statutory requirements in their places of business. As we have noted, applicable statutory requirements and other regulations must be linked to environmental aspects and operational control guidelines must be established to improve environmental performance. To comply with this suggestion, there must be available access to these legal requirements through some means in order to be able to determine how they apply to the port, in each instance, and periodically assess compliance with each one.

Thus, an Environmental Management System implemented at ports requires regular analysis and review of compliance with statutory requirements and other rules. Although there is potential for non-compliance, such potential is minimized by periodic review efforts. It is recommended to create a matrix of compliance obligations to identify rules, regulations, and laws that must be complied with, any updates thereof, and evaluation of performance.
Notwithstanding, more broadly, ports must comply with all legal requirements and rules regulating their business activities so that identifying, following up on, and enforcing these compliance obligations serves to prevent (not be the cause of) repercussions on its functionality and operational continuity.

Strengthening Reputation.

Complying with and ensuring environmental practices and standards in port activities and operations, following the adoption and certification of an environmental management system or of a higher recognition, such as EcoPorts PERS - or other internationally recognized standards and certifications-, promotes transparency and improves reputation. This valuable asset is not only well regarded by peers, but also by a port's economic and social milieu (shareholders, personnel, suppliers, among others), because it must continue to develop its environmental management to improve and sustain the valuable positive perception of its stakeholders over time. This means that the organization must consistently and adequately oversee and ensure compliance.

This outward display of managing environmental impacts (both positive or negative ones) caused by a port, boosts confidence in its stakeholders, paving the way for the organization's continued operations and leadership. A port's reputation is based precisely on satisfying a wide range of stakeholders' expectations, on the quality of its services and on strict compliance with legal requirements and other regulations.

Another important advantage to being a Green Port is that, when crisis situations arise due to environmental non-compliance, the port will be better equipped to confront such a circumstance, which obviously will impact its reputation and could be subject to the scrutiny of the community and authorities. A Green Port will have the mechanisms and protocols in place

to enable it to act rapidly and in a coordinated fashion, to lessen the impact of an environmental crisis.

There are examples of ports facing complex environmental situations and then resorting to implementing management systems and other certifications to improve their response capacity, thereby improving their environmental management and reputation.

Esta acción de demostrar la gestión de los impactos ambientales (positivos o negativos) que genera un puerto fomenta la confianza en sus partes interesadas, facilitando el continuo de la operación y el liderazgo de la organización. La reputación de un puerto se basa precisamente en el cumplimiento y avances de una amplia variedad de expectativas de las partes interesadas, de la calidad de sus servicios y con el cumplimiento estricto de los requisitos legales y otras regulaciones.

Information and Stakeholders Engagement.

Several ports issue environmental reports on the different efforts undertaken by the organization to demonstrate their compliance with the law and commitment to the environment, reporting concrete actions they have taken, outcomes they have achieved, and comparing performance over time to show improvement.

Dissemination of these or other reports, which may have a positive or negative impact, must be in person and directly with the interested parties, though they may also be made available on web pages or other media for greater engagement.

The aim of this engagement is to link environmental actions and projects to the demands and needs of stakeholders or interested parties. This engagement should go hand-in-hand with the port getting into the habit of actively listening on an ongoing basis to the groups that have fundamental issues with, and are impacted by, its operation. Other actions that can be taken by ports include setting up complaint or environmental comment mechanisms to provide access to information and respond to any comments that citizens may have about the ports activities, environmental studies or compliance. This initiative shows the port's respect and concern for the interests of citizens.

All of these actions bring a social benefit (to communities, oversight agencies and authorities) and enable the port, as was noted, to improve its reputation and relationship with its stakeholders.

CHAPTER 5. SUCCESSFUL EXPERIENCES OF LATIN AMERICAN PORTS WITH NTERNATIONALLY RECOGNIZED ENVIRONMENTAL CERTIFICATIONS.

Latin American ports have designed and taken different actions to mitigate and control their environmental impacts in order to make themselves competitive. Although European ports are the leaders in this area, because of the direct and indirect benefits brought by this practice, Latin American ports have invested in improvements to infrastructure, procedures and actions aimed at respect for the surroundings where they operate, implementing processes that are in line with top tier environmental management, attaining socially and commercially recognized certifications, such as ISO 14001, ISO 50.001, Carbon Footprint and EcoPort..

Fostering environmental management and adopting superior and more effective practices at Latin American ports, which in turn enables certification of their management, is viewed today, both internally and externally, as key to their development, operation, and productivity. This is because, objectively speaking, there are many benefits to operating with awareness and respect for the environment they do business in and share, in line with the domestic legislation in effect, and in harmony with the society of which they are a part.

In this chapter, we will identify port terminals that, after implementing key aspects of environmental management, have established and developed successful environmental management strategies. Additionally, we will highlight achievements in implementing environmental management systems, such as ISO 14.001, ISO 50.001 EcoPorts, determining the scope and the particular characteristics of their operation and environment. Lastly, we will mention the benefits of these environmental certification practices.

Today, it is common for most Latin American ports to have developed and implemented, an ISO 14.001, ISO 50.001, ECOPORTS based Environmental Management System, including having certification.

The major difference between these ports lies in the extent to which the system has been implemented, initiatives have been taken, and the degree of improvement in their environmental performance, with the most outstanding ones adopting the higher standards of validation of their environmental management, such as EcoPorts – PERS certification. In addition, with regard to other higher standards, some ports in Chile have developed initiatives such as Clean Production Agreements CPA (“Acuerdo de Producción Limpia APL” in spanish), Quantification, Reduction, and Excellence of GHG (Greenhouse Gases).

Generally speaking, the port terminals have implemented several notable environmental initiatives, such as:

- Allocating financial resources and assigning persons to environmental management.
- Implementing Environmental Management Systems. In some instances, the ports have even moved towards other more stringent systems.
- Incorporating an environmental philosophy into the strategic planning of the ports.
- Environmental infrastructure, such as clean points, water recirculation systems, energy and water saving programs, strengthening contingency plans (spills), environmental risk analysis,

training, enclosing conveyor systems, outfitting the grounds with hedges or natural barriers and using forestation, replacing internal combustion for electric equipment, monitoring air, water, and soil quality, and solid waste management

Hereunder, we examine port facilities with outstanding environmental management. The information has been obtained from the respective web pages, reports, and available public information about each port terminal, citing the respective source.

Empresa Portuaria Antofagasta (Chile)[54].

Empresa Portuaria Antofagasta is a Chilean State-owned port company located in the Antofagasta region, Region II of Chile. Its strategic function is the administration, operation, development, and conservation of the Port of Antofagasta and its terminals.

Empresa Portuaria Antofagasta states: "*At Empresa Portuaria Antofagasta, we seek to generate Shared Value by developing our business strategy based on ESG criteria, which reflect our social, environmental, and good governance commitments in decision-making, ensuring positive financial results for the State while benefiting the company itself and its stakeholders. To this end, we will promote business management that implements actions based on the following pillars:*"[55].

Environment and adaptation to climate change: *We are aware of the current situation of water scarcity and the climate and ecological crisis. Similarly, we recognize the dynamic social, cultural, economic, and environmental conditions of the territory in which we operate. We are committed to ensuring that our processes in Puerto, Portezuelo Outer Port, and La Negra Logistics Development Zone are carried out within a framework of environmental and biodiversity protection, through the maintenance and improvement of operational standards in the logistics system, always considering: a fair energy and ecological transition, safe and responsible operation under a circular economy approach, management of our risks and environmental impacts, and efficient and sustainable use of resources. We are also committed to reducing CO2 equivalent emissions from port and land operations. The challenge is to achieve carbon neutrality in Chile by 2050.*

Community outreach & communications: *At EPA, we recognize the mutual dependence between the success of our company and the development of the environment in which we operate. Therefore, we are committed to contributing to local development and fostering relationships with our stakeholders, addressing the externalities of port operations and contributing to improving the quality of life and progress in Antofagasta. To this end, we address the needs of the community, creating shared value by generating quality employment, promoting recreational, educational, and awareness-raising activities, culture, and sports, maintaining green areas, and contributing to the local and national economy. In addition, our communications are conducted with respect, transparency, and a gender perspective, using non-sexist and inclusive language.*

54 Puerto Antofagasta - https://www.anfport.cl/
55 Puerto de Antofagasta - https://www.anfport.cl/sostenibilidad/#politicasustentabilidad

Innovation and digital transformation: We are committed to adapting to the physical and digital demands of port logistics, such as digital transformation, information technologies, and challenges posed by the Bioceanic Corridor in the integration of the Southern Cone, among others. Innovation will be one of the pillars that will allow us to optimize our company's value chain, encouraging the incorporation of new knowledge, technologies, processes, products, and services.

Fair work and gender equality: We continuously seek to improve the quality of life of those who form part of our company and recognize the importance of our employees to the success of our management. Therefore, we are committed to maintaining fair working practices, fostering a good working environment and a safe and healthy workplace free from any form of sexual or workplace harassment or violence, promoting equal rights in diversity, equity, with a focus on gender, personal and professional development. Likewise, fair working practices, a good working environment, and a safe and healthy workplace with gender equality are replicated for workers belonging to subcontracted companies such as dealers or suppliers.

The Empresa Portuaria Antofagasta has the following environmental initiatives in place:

- ISO 14.001:2015 Environmental Management System certified, recertified in 2019.
- Environmental surveillance and monitoring plans. On a semi-annual basis it conducts environmental surveillance on the marine environment and maintains control of the monitoring carried out by its concessionaire Antofagasta Terminal Internacional23 in the area of air quality and the marine environment, and of its users in the multi-operations terminal and Antepuerto Portezuelo through weekly inspections.
- Clean Production Agreement (Logistics, Mining, and Ports). The Port of Antofagasta takes part in this initiative that brings the State's oversight bodies together in enforcing the laws and regulations governing port activities and other companies of the sector.
- EcoPorts PERS certification. In October 2019, Empresa Portuaria Antofagasta attained EcoPorts certification, becoming the second port in Chile to obtain this certification and the first State-owned port to obtain it
- APL Blue Seal. The APL Blue Seal (Clean Production Agreement) made it possible to promote, contribute to, and strengthen the comprehensive and sustainable management of water resources and water security in the territory, promoting efficiency in the use of water in production and service processes.
- HuellaChile Certification. For the fourth consecutive year, Empresa Portuaria Antofagasta has received recognition from HuellaChile in Quantification, and for the first time we have received the Reduction seal in 2022. This seal, awarded by the Chilean Ministry of the Environment, distinguishes companies that measure, verify, and reduce their greenhouse gas emissions. EPA has committed to reducing its emissions by 30% by 2026.
- HuellaChile Excellence Certification. Empresa Portuaria Antofagasta has an integrated management system policy and a sustainability and climate change policy that guides its management toward reducing GHG emissions.

Empresa Portuaria Antofagasta has been issuing Sustainability Reports (since 2012). The last one for 2024 in the integrated reporting format, that is, a sustainability report that combines financial and non-financial information. Additionally, in 2019, it wrote its first environmental

report, in compliance with the EcoPorts PERS methodology, which covers a two-year period. In 2024, it prepared and published a new ECOPORT PERS report and is awaiting validation and recognition as an ECOPORT port

The best practices of this port administration include acquisition of 507 units of tipping containers for the transfer of concentrated mineral ore (2024), which helps to minimize emissions leaking out from these minerals, as it was a situation that had generated growing concern of the community with respect to these operations.

Port Group of Cartagena (Grupo Puerto de Cartagena)[56]: Regional Port Corporation of Cartagena (Sociedad Portuaria Regional de Cartagena) – Terminal de Contendores de Cartagena (Colombia).

Currently connected to 840 ports in 150 countries worldwide, it serves 25 shipping lines. It has been operating since 1993 under private administration, with a 40-year concession.

Currently, it has the capacity to move up to 3.5 million TEUs annually and is preparing to increase that capacity to 5.2 million (Grupo Puerto de Cartagena ranks among the Top 100 Container Ports in the world). It owns two sea terminals, SPRC and Contecar, in addition to other companies linked to port activity.

Sociedad Portuaria Regional de Cartagena (SPRC) is the administrator of the sea terminal of Manga. SPRC received the concession to operate the terminal in 1993 for a 40-year period (Colombia's main export port). The company serves 6,000 TEU vessels and has the capacity to move up to 1.5 million TEUs per year, with expansion plans to 2 million TEUs.

Port operator Terminal de Contenedores de Cartagena S.A. (Contecar) is responsible for the second sea terminal of the port of Cartagena and began its operations in 2008. It has a capacity to move 3.2 million TEUs per year. The company operates as a hub for shippers and as an international distribution center for multinational corporations. The terminal has a capacity to move automotive cargo and project cargo and is specialized in automobile cargo. It has a Logistics and Port Training Center, unique in Latin America, which promotes the training of its work teams, resulting in a differentiating factor in the provision of port and logistics services.

"The Port of Cartagena Group understands sustainability as a corporate value that harmonizes the organization's goals with environmental and social commitments based on the articulation between economic growth, the preservation of natural resources, and the creation of better living conditions for the community. With a clear intention to align its actions with the Sustainable Development Goals in order to contribute to their fulfillment, it has concentrated and prioritized its efforts on aspects such as education, climate change, energy transformation, the protection of marine and terrestrial ecosystems, and the promotion of sustainable communities."[57].

[56] Grupo Puerto de Cartagena https://www.puertocartagena.com/es

[57] https://www.puertocartagena.com/es/inicio/responsabilidad-social-empresarial/gestion-ambiental

Its sustainability strategy is based on its commitment to climate change, contributing to the development and fulfillment of sustainable development goals and targets. [58], programs linked to reducing the carbon footprint and energy transition initiated in 2015), human capital management, and consolidation of a profitable, high-quality, and operationally efficient service model.

Grupo Puerto de Cartagena has the following environmental initiatives in place:

- ISO 14.001:2015 Environmental Management System certified, for both port terminals.
- Clean fuel. Some port equipment is powered by clean combustion systems with lower fuel consumption and low emission of particles, heat or noise. This equipment includes: the RTG mobile gantry electrification program, and the automatic time-saving truck idling system, which enables energy to be produced and stored to the benefit of the environment.
- Water quality. Regular potable water quality analysis (for internal and third party consumption), the same monitoring for sea water column profiling.
- Protected species. To preserve native species, it has a nursery and 15 hectares of mangroves were planted in the Canal del Dique (Bahía Barbacoas, Caño Matunilla) and 5 additional hectares in la Ciénaga de la Virgen. Planting campaigns in several neighborhoods of the city in 'generation areas' and green spaces, which produce oxygen and filter radiation, in addition to absorbing pollutants and buffering noise. Within its facilities, it protects pelicans, flamingos, iguanas, macaws and deer, in a veritable oasis, that also serves as a tourism attraction for cruise line passengers.
- Green buildings. In order to control water consumption, it has an efficient water use and savings program, part of which was the installation of water saving sensors in bathrooms, irrigation control has been implemented in green areas and leak detection and control has also been carried out. Additionally, an alarm system is in place that reports when consumption surpasses normal rates. It also has a system to collect rain water, which is then used for watering greenery and a fire sprinkler system.Agua de calidad. Análisis regulares de la calidad del agua potable (de consumo interno y para terceros), mismo seguimiento para la columna de agua marina.
- Energy. Both terminals take part in an energy efficiency program, which includes activities such as: exchanging incandescent for LED light bulbs, designing new constructions which utilize natural light and ventilation, installation of high efficiency equipment, replacing older air conditioners with high efficiency cooling units and assessment of potential use of solar energy. In this regard, it highlights publication of the "Environmental Responsibility Report,"[59], which it published for the fourth consecutive year in 2018.
- Awareness of proper use of resources. Awareness raising campaigns about the importance of water and energy saving, of sorting at the source of solid waste and the adequate disposal thereof, as well as compliance with the activities provided for in the environmental management plan of the terminals.
- EcoPorts PERS certification. In October 2019, its two terminals received EcoPorts certification.

58 https://www.un.org/sustainabledevelopment/

59 https://www.puertocartagena.com/sites/default/files/2025-03/RA%202024_17%20marzo.pdf

Autoridad Portuaria de Montevideo (Uruguay)[60].

The Port of Montevideo is administered by the National Administration of Ports (ANP), whose remit is the management, conservation, and development of the public ports of Uruguay (Nueva Palmira, Colonia, Juan Lacaze, Fray Bentos, Paysandú, Salto). The Port of Montevideo is the most important one commercially, being a multipurpose port, with terminals specialized in container cargo, bulk cargo, fishing vessels, ship repair, among other things, and is located on the La Plata River.

The Free Port regime (customs areas in the port where merchants are exempt from paying import tax, fees, duties), has turned Montevideo into the first and only port of the Atlantic coastal seaboard of South America, with a logistical and competitive regime for the traffic of goods.

The business model of the Port of Montevideo considers the ANP to be the Port Authority that owns the port where the services are provided mostly by private companies through a concession regime (fee-based).

The Port Authority of Montevideo (through the ANP) established in its strategic guidelines, that "National port development must be environmentally sustainable, in harmony with the growth of the city and its surroundings." Thus, the ANP reaffirms its commitments to protecting the environment. The Environmental Management System of the Port of Montevideo is supported by four pillars: Operations and Services, Infrastructure Works, Dredging, and Investigations.

The Port Authority of Montevideo has the following environmental initiatives in place:

- Environmental Policy. Measures adopted to minimize the environmental impacts of operations on the port of Montevideo. Objectives were established along with their respective Management, Operational, and Environmental Indicators.
- Legal requirements relating to Environmental Aspects. Applicable laws and regulations are reviewed periodically, as well as updated.
- Environmental studies. Its Policy provides for specific financial resources to conduct studies.
- Training. Resources are made available for training at organization of the Port of Montevideo.
- Air quality. Green House Gases Effect (GHG) Studies on ships operating in the Port of Montevideo and a sensitivity map by dock and ship type. Monitoring of solid bulk operations (PM10). Switch-over to electric driven vehicles. Replacement of Headquarters Building's central heating boilers with inverter technology Air Conditioning. Dredger motor replacement for more energy efficient units.
- Water quality. Physical - chemical parameter monitoring by ANP. Installation of micro bubble aerators at Mántaras Wharf.
- Land use. Master Plan of the Port of Montevideo for planning expansion works and improvements to port facilities.

[60] Administración Nacional de Puertos - https://www.anp.com.uy/

- Relationship with Port Community. Participation in cultural activities, fostering environmental and port education. Enhanced accessibility to the port and planning of uses of port areas for the city.
- Electric energy consumption. Replacement of independent air conditioner systems with inverter technology and improvements in building insulation. Switching to low energy light bulbs (LED).
- In 2019, the ANP formalized its institutional Environmental Policy and obtained ECOPORTS environmental certification, which it renewed in 2022 and is currently in the process of recertification for the second time.

Administración Portuaria Integral de Lázaro Cárdenas (México)[61].

The Port of Lázaro Cárdenas is geographically located on the Pacific coast of Mexico, where it borders the States of Michoacán and Guerrero, a micro production zone also known as Delta del Balsas, where heavy port, commercial, and industrial activity is carried out.

Lázaro Cárdenas is the only Mexico port with 18 meters depth in its access channel and 16.50 meters depth along its principal dock. It has 3,689 meters of docks built at depths of 6, 8, 11, 12, 14, and 16.50 meters and has a structural capacity to host vessels of 20,000 to 150,000 tons displacement.

API de Lázaro Cárdenas S.A., states that it is "responsible for administering and conserving the port infrastructure for the provision of port services of the Port of Lázaro Cárdenas Michoacán, undertakes to care for and protect the environment, mitigate any adverse and significant environmental impacts stemming from our activities and operations, complying at all times with applicable legislation and other requirements, through continual improvement of environmental performance"[62].

The Administración Portuaria Integral de Lázaro Cárdenas has taken the following environmental initiatives:

- Environmental Policy. Established in 2015 to contribute to the sustainable development of the port. The policy includes management, training, implementation, review and publication of the results of actions taken by the port.
- ISO 14.001:2015 Environmental Management System certified.
- Stewardship of wildlife and vegetation habitat. Contribution to the preservation of mangroves.
- Development areas for the conservation of natural resources. On the Port Premises, an area of 138 hectares set aside for environmental improvement and conservation and ecological balance of neighboring ecosystems, including the facilities and their natural elements.
- Water quality. In order to preserve water quality, water treatment plants are constructed to treat discharge into rivers and bodies of water. As of 2018, there are 11 treatment

61 API de Lázaro Cárdenas - https://www.puertolazarocardenas.com.mx/plc25/
62 https://www.puertolazarocardenas.com.mx/api/getFile/2342

plants and monthly monitoring is conducted in compliance with the official Mexican regulations.
- Use of Clean Energy. Implementation of solar energy plants or modules (ecological sustainable alternative) generating energy consumption savings (Emergency Plant Isla del Cayacal and Puente Albatros and Roadways).
- Air quality. Pursuant to Mexican regulations, air quality is monitored on port premises.
- Urban solid waste management. Comprehensive management of solid waste generated and sorting (paper, organics, aluminum, non-sortable, and plastics).
- Soil pollution control. Initiative to reclaim used piles in administrative activities.
- Social environmental responsibility. Free movie shows, healthy habits outreach campaign, family living and physical activity through its program linking the port to the city.
- Port emergency response office. Unit that provides support to the community with introductory instruction on the prevention and combating of fires, medical services, vaccination campaigns, among other things.
- Noise. Implementation of projects to improve circulation within the port facilities in order to mitigate the impact of noise on the nearby communities.
- Air quality. Sampling of air quality determining sources of pollution and their impacts. Semiannual monitoring campaigns are carried out pursuant to the official Mexican regulations.
- Conservation of the ecosystem. Enhancement of green areas, wetlands, and protected areas of the port premises, which includes installation of nurseries with sprinkler systems, to foster the reproduction of native plants of the region to be used in reforestation campaigns inside the port and neighboring areas.
- Clean industry. Voluntary participation in environmental audits and certification by the Office of the Federal Prosecutor for the Protection of the Environment (PROFEPA).
- EcoPorts PERS certification. In 2016, the Administración Portuaria Integral of Lázaro Cárdenas received EcoPorts PERS certification, and was recertified in February 2019.

Administración Portuaria Integral de Ensenada (México)[63].

Administración Portuaria Integral de Ensenada (API) (Comprehensive Port Administration of Ensenada) was created in 1994, by enactment of the Ports Act of 1993. The API's principal objective is to *"promote the economic development of the region through trade and maritime transport, through efficient and safe administration and operation, building infrastructure and generating world-class services, thereby contributing to social development."*[64].

The Port of Ensenada is located in the northwest corner of Mexico, in the State of Northern Baja California, 110 kilometers from the Mexican-US border in the state capital, the municipality of Ensenada, bordering to the north the States of California and Arizona, to the south, Southern Baja California, to the east, Sonora and, to the west, the Pacific Ocean.

63 API de Ensenada - https://www.puertoensenada.com.mx/
64 API de Ensenada - https://www.puertoensenada.com.mx/quienes-somos

API Ensenada is a multipurpose port that has port infrastructure and equipment to handle containerized cargo goods and activities, bulk mineral ore and agro-industrial goods, general cargo and project cargo, cruise ships, among other types.

The Administración Portuaria Integral de Ensenada has taken the following environmental initiatives:

- Sistema de Gestión Ambiental certificado en ISO 14.001:2015.
- ISO 14.001:2015 Environmental Management System certified.
- Manual of best environmental practices. Manuals for the chains of production of the port, containing specific information about best practices.
- Cleanliness Campaigns. Ensenada stream bed and beach clean-up program.
- Environmental monitors. Under the terms and legal provisions currently in force, atmospheric (total suspended particles), noise, port water facilities, and treatment plant monitoring is performed.
- Paper and cardboard recycling campaigns.
- Final disposal of urban solid waste.
- Plastic recycling campaigns.
- Clean industry. Voluntary participation in environmental audits and certification of the Federal Office of the Prosecutor for the Protection of the Environment (PROFEPA).
- EcoPorts PERS certification. In 2018, the Administración Portuaria Integral Ensenada received EcoPorts PERS certification

Administración Portuaria Integral de Dos Bocas (México)[65].

The Port of Dos Bocas is located in the municipality of Paraíso, State of Tabasco, 85 kilometers away from the city of Villa Hermosa, and hosts a wide range of commercial, industrial, and specialized service activities.

Development of the port infrastructure of the Port of Dos Bocas has led to consistent growth in oil, commercial, and industrial cargo movement.

It has an edge in being able to carry out specialized activities relating to the oil industry, because of its proximity to the main hydrocarbon exploration and production areas in the Gulf of Mexico. Annually, Dos Bocas receives an average of 6,000 vessels of different types, moving more than 8 million tons of cargo.

The Port's specialization in industrial activities and logistics gave rise to the development of a 70 hectare Industrial Park, designed to support the operations of companies of different sectors. The Industrial Park is located on the Port Premises of Dos Bocas, on 70 hectares, which are ideal for carrying out oil processing activities in the Gulf of Mexico, offering proximity to the major hubs of consumption and production, in an area with the greatest logistical and commercial industrial activity of the region.

[65] API Dos Bocas - https://www.puertodosbocas.com.mx/

The Comprehensive Port Administration of Dos Bocas has taken the following environmental initiatives:

- ISO 14.001:2015 Environmental Management Systems certified.
- Periodic visual inspections for leak detection.
- Participation in clean-up campaigns of the Rio Seco and public beaches. Ensure and guarantee the preservation of the beaches and, therefore, marine wildlife, reducing at the same time pollution of bodies of water by waste generation.
- Installation of solar panels in some areas of the port, replacement of light bulbs with LED technology, reduction of fuel consumption and installation of solar panels on hazardous waste units and surveillanceIndustria Limpia. Participación voluntaria de auditorías ambientales y certificación de la Procuraduría Federal de Protección al Ambiente (PROFEPA).
- Informational campaigns about responsible consumption of water, water leak detection check program, annual monitoring of water quality of the docks and navigation channel.
- Sewage treatment. It has two treatment plants.
- Education campaigns to reduce waste and paper consumption, giving preference to the use of electronic media.
- Naval installation unit with recycled containers.
- Expansion of Dos Bocas Port. As a product of the different stages of construction of the port infrastructure, prevention and mitigation measures were implemented during execution.
- Clean industry. Voluntary participation in environmental audits and certification of the Federal Office of the Prosecutor for Protection of the Environment (PROFEPA).
- EcoPorts PERS certification. In 2018, the Administración Portuaria Integral Ensenada received EcoPorts PERS certification

Porto do Açu[66].

It is the only private port in Brazil, within the largest port-industrial complex in Latin America. It is strategically located with a total surface area of 130 square kilometers, located in São João da Barra in northern Rio de Janeiro State. It has become a hub for the oil and gas industry because it's near the Campos basin (a 352,260 Km² oil field located in the Atlantic Ocean). It has nine terminals, divided into offshore and on-land areas. Porto do Açu handles solid and liquid bulk cargo, general cargo, iron ore, and oil.

The port and industrial complex has 14 companies installed in its sectors, doing business as Porto do Açu Operações, Açu Petróleo, BP Prumo, Brasil Port (empresa do Grupo Edison Chouest), InterMoor, NOV, TechnipFMC, Wartsila, Ferroport, Anglo American, Dome, GNA (Gás Natural Açu), Estação Açu and Saybolt.

Porto do Açu declares that the management of environmental, social, and governance (ESG) aspects is fundamental to its development and operation (it is part of its institutional values), so that its operations are carried out safely, always seeking a balance between regional economic development and environmental conservation. It has a Sustainability Policy that

66 Porto do Açu - https://portodoacu.com.br/

formalizes its commitment to the UN Sustainable Development Goals (SDGs) and the adoption and dissemination of ESG best practices[67].

The development and operations strategy for Porto do Açu is based on five strategic pillars: environment and climate (high-performance environmental management, focused on reconciling development and environmental preservation), people and community, safety, governance and compliance, and sustainable business.

Porto do Açu has taken the following environmental actions and initiatives:

- In 2023, its environmental management system obtained ECOPORTS certification for the second time. It also has ISO 14001 certification.
- To accelerate the reduction of emissions from the maritime supply chain and improve air quality in the region, it has been participating in the Environmental Ship Index (ESI) since 2021.
- To reconcile biodiversity conservation with sustainable development, it manages: (i) conservation of the sandbar ecosystem, through the actions of the Caruara RPPN, since 2012; (ii) conservation of sea turtles, a key species in the region (PMTM); and (iii) sustainable environmental management, including monitoring programs and environmental education initiatives.
- In terms of community relations, it develops: Community Dialogue spaces, Local Development Council (CDL), Guided Port Tour Program, Safe Traffic (road safety program), relations with fishing communities, AbrAÇU volunteer program (created by its employees, providing solidarity support to the community and local institutions in social, environmental, cultural, and sports initiatives).
- Opportunity generation: social entrepreneurship (2021), professional certification, strengthening family farming, local innovation ecosystem.
- Programs for the inclusion of local labor and suppliers: employability network, Açu connection (students with professionals from the port, industrial, and energy sectors), local supplier development program.
- Construction of electric energy lines for nearby towns.
- Installation of potable water distribution systems in communities.
- Donation of computers to fishermen's organizations.
- Advisory services for the legalization of vessels.
- Use of fishing boats for port operations.
- Permanent support for artisanal fishermen (donations, training).
- Support for family farming (donation of machinery, workshops).
- Support for public institutions: Infrastructure renovation, donation of equipment.
- Promotion of cultural activities.
- Social programs: Environmental, agricultural, social communication training.
- Guided visits.

Porto do Açu has been recognized on several occasions, most recently for:

[67] Porto do Açu - https://esg.portodoacu.com.br/pt/

- 2024 – International Association of Ports and Harbors (IAPH) World Ports Sustainability Award, infrastructure category, for the "Low-Carbon Hydrogen and Derivatives Center" project.
- 2024 – Brazilian Association of Private Port Terminals Award, Social Impact category: third place with the case study "Caruara Reserve: Biodiversity for All."
- 2023 – International Association of Ports and Terminals (IAPH) World Ports Sustainability Award, IAPH Sustainability Award, environmental care category: award finalists with the case study "Caruara Reserve: biodiversity for all."
- 2022 – Firjan Sustainability Award, Solid Waste category: first place with the circular economy project "Soil enrichment for forest restoration: adding value to solid waste."
- 2022 – Antaq Award, socio-environmental initiatives category: first place with the project "The transition to a low-carbon economy and the development of offshore wind energy production in Brazil: contributions from the Port of Açu to Marine Spatial Planning," a partnership with Argonáutica Engenharia e Pesquisas.
- 2020 was recognized with the International Association of Ports and Harbors' World Ports Sustainability Award.
  Port do Açu was the only Latin American port selected as the winner in the category of Security and Surveillance, with its Emergency Preparedness Project.

Port of Bahía Blanca.[68]

The Port of Bahía Blanca is located in the southwest of the province of Buenos Aires (Argentina), on the Atlantic coast. Its facilities enable the export of grain and oilseed production from a vast area of influence. With the creation of the Bahía Blanca Port Management Consortium in 1993, it became Argentina's first autonomous port (a non-state public entity). The Bahía Blanca port complex comprises the port areas of Ing. White, Puerto Galván, Cangrejales, Puerto Rosales, and the Puerto Belgrano Naval Base, which together form one of the most important port-industrial complexes in the country.

Through its fourteen operational docks and two single buoys in Puerto Rosales, approximately 27 million tons of goods pass through each year, positioning the Bahía Blanca port complex as Argentina's leading public port in terms of tonnage moved and proximity to Argentina's main production centers. In turn, the port complex is integrated into a dynamic industrial environment, which benefits from its location at one of the strategic nodes of Argentina's oil and gas pipeline network and from the abundant availability of electricity.
In recent years, the Consortium has promoted a policy of mutual development together with the Municipality of Bahía Blanca with the aim of improving the integration of the port into its social and environmental surroundings.

The Port of Bahía Blanca has implemented the following environmental actions and initiatives:

- It has ISO 14001 Environmental Management System certification.
- In 2023, its environmental management system obtained ECOPORTS certification.

[68] Puerto de Bahía Blanca - https://puertobahiablanca.com/index.html

- Carbon Footprint Management, based on the years 2017 and 2020, the results obtained in 2020 made it possible to identify sectors and actions to advance GHG mitigation strategies.
- Through its relationship with the community, training programs were implemented and infrastructure works were carried out to improve quality of life.
- Voluntary policy on permanent environmental protection and improvement, as well as strict periodic monitoring of water quality, sediments, air, etc.

Sociedad Portuaria Riverport S.A.[69]

Riverport S.A. is a privately owned terminal located in Barranquilla (Colombia), with a 30-year concession from the Colombian government since May 2006. The port terminal specializes in servicing international bulk carriers, with an average of 30,000 DWT.

It has two berths and a storage capacity of 77,000 tons of agro-industrial bulk and 110,000 tons of coal or coke, facilitating Colombian foreign trade. Riverport S.A. is committed to excellence in its operations, safety, security, environmental care, and the health of its employees, collectively referred to as Operational Integrity.

In this context, the company's sustainable management seeks to ensure the living conditions of future generations, which translates into concrete actions that seek to improve the quality of life of its community and the protection of its environment, as well as economic growth, environmental care, and social development.

Riverport has implemented the following environmental actions and initiatives:

- It has ECOPORTS Environmental Management System certification.
- Management and protection of water resources (surface water, water discharge, management of dredging works, consumption).
- Control and mitigation of air quality due to particulate matter emissions resulting from the handling of solid bulk materials (particulate matter, maintenance of environmental barriers, noise).
- Comprehensive solid and hazardous waste management plan (ordinary waste, recyclable waste, hazardous waste, special waste).
- Revegetation program. Planting and caring for different plants in green areas of the port.
- Relocation of fauna.
- Hygiene and cleaning days.
- Training.

Andipuerto Guayaquil S.A. Terminal Portuario. [70]

Andipuerto Guayaquil S.A. is a privately owned terminal located in Guayaquil (Ecuador), concessionaire of the bulk and multipurpose terminal of the Guayaquil Port Authority, and the largest solid bulk port facility in Ecuador. The terminal covers an area of 13 hectares and has a dock that can accommodate ships up to 220 meters in length.

Known for its efficient port operations and proper product handling, it moves an average of 2.5 million metric tons of bulk and multipurpose cargo per year, which corresponds to 60%

[69] Riverport - https://riverport.co/

[70] Andipuerto - https://www.andinave.com/es/andipuerto-2/

agricultural bulk, 20% agro-industrial bulk, and 20% general cargo. It also has a storage capacity of 2,789,000 tons of solid bulk, consisting of 62,000 square meters of warehouses, 30,000 cubic meters of silos, and 20,000 cubic meters of tanks.

In its environmental policy, it states: "*the implementation of an environmental management system to prevent and control sources of pollution resulting from its cargo activities, unloading, storage, and dispatch of agricultural, industrial, and general bulk cargo, contributing to sustainable development and the commitment of upper management to responsibly comply with applicable environmental legislation and promote a culture of pollution prevention and rational use of resources among its staff, customers, and stakeholders, implementing strategies for environmental care, operation, and continuous improvement of this management system*"[71].

Andipuerto Guayaquil has implemented the following environmental actions and initiatives:

- In 2022, it obtained ECOPORTS Environmental Management System certification.
- Reduction of PM10 and PM2.5 particulate matter emissions
- Reduction of effluents into water and control of parameters through sampling carried out by a laboratory duly accredited by the Environmental Authority.
- Strengthening relationships with the local community through ongoing support for educational institutions serving children from low-income families located near the port facility, opening doors to academia through agreements with technological institutes via the dual education system (study and training work).
- Minimize environmental noise emissions, monitoring compliance throughout the year in accordance with our environmental management plan.
- Waste reduction: managing port waste effectively by implementing recycling of wood and strapping bands that arrive on general cargo ships, as well as controlling hazardous waste generated at the port facility.
- Annual monitoring of our carbon footprint and offsetting those emissions to remain CARBON NEUTRAL, thereby contributing to the fulfillment of sustainable development goals and targets.
- Influence and cooperate with customers, suppliers, authorities, and other stakeholders to comply with our environmental policy and adequately consult with the local community and relevant organizations regarding their environmental programs.
- Demand products and services that minimize negative environmental impacts in their production, use, and disposal/recycling.
- Train all employees on environmental issues and encourage them to actively consider the environment in their daily work.
- Allocate all necessary resources for the implementation of the environmental management system and faithful compliance with this policy.

Lastly, we must point out that there are other ports that are also outstanding in the area of environmental management, such as Sociedad Portuaria Santa Marta (Colombia), Puerto Ventanas, Terminal Internacional del Sur DP World con sus filiales DPW Callao, DPW Posorja,

[71] Andipuerto - https://www.andinave.com/wp-content/uploads/2022/04/Politica-Ambiental-de-Andipuerto-Guayaquil-2022.pdf

DPW Caucedo, Puerto Cortes filial de ICTSI (International Container Terminal Services Inc), Puerto Moín (terminal operado por APM Terminals Central América S.A.), Terminal Pacífico Sur y Terminal Puerto Arica (Chile). Nonetheless, because these terminals have implemented a sustainability strategy in their organizations, which in addition to their environmental performance, incorporates social engagement with the communities located in their sphere of influence, as well as economic engagement, boosting the performance of their corporate governance and creation of shared value, they will be mentioned in Chapter 8 of this guide.

CAPITULO 6. SUSTAINABILITY INTERNATIONALLY STANDARDS, REPORTING GUIDELINES.

Recent research has shown the growing interest of the world's leading companies in producing documents that reflect their income statements and performance in financial and non-financial results, sustainability issues, and ESG standards.[72], among other matters. In general, most companies worldwide are implementing measures for the preparation of sustainability reports, even before they are required to do so. Therefore, this is not a matter that is foreign to the reality of ports and related organizations in Latin America.

In Latin America, a large number of sustainability reports are produced. Although fewer than in Europe and North America, countries such as Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Panama, Peru, and Uruguay promote the publication of sustainability reports, which are mandatory in most countries.

Various stakeholders (investors, companies, political leaders and decision-makers, regulatory bodies, non-governmental organizations (NGOs), and civil society in general) use corporate sustainability reports to inform a variety of decisions. Various institutions have developed mechanisms to meet this need, with different disclosure standards in place, facilitating balanced, comparable, consistent, and reliable analysis of the sustainability of each organization or industry.

The region is increasingly aligning itself with global standards, such as the GRI (Global Reporting Initiative) standard, the SASB (Sustainability Accounting Standards Board) standard, as well as the aforementioned ESG standard.

SASB standards focus on sustainability issues that are expected to have a material impact on an organization's financial performance, which can inform investment decisions. GRI standards, on the other hand, focus on a company's economic, environmental, and social impacts in relation to sustainable development, which is of interest to a wider range of stakeholders, including investors.

Although each organization or port must determine which reporting methodology best suits its context and development, it is advisable to observe and bear in mind the reports or research that are regularly published on which standards are most widely used by different organizations. It is key to opt for those methodologies that are used by similar types of industry to which an organization belongs (obtaining comparative metrics, noteworthy actions, outreach programs, among others).

According to a new comprehensive survey, sustainability reporting by leading companies around the world has become commonplace, with nine out of ten reporting companies choosing to use GRI Standards. *The 2024 edition of KPMG's Sustainability Reporting Survey analyzes the reporting practices of 5,800 companies, including the 100 largest in each of 58 countries (N100). It revealed that the use of GRI has increased to 71% (three percentage points*

[72] The acronym ESG refers to the criteria used to evaluate a company's performance and impact in the areas of "E" for environmental, 'S' for social, and "G" for governance.

more than in 2022), while among a subset of the 250 largest multinationals (G250), GRI adoption remains stable at 77%"[73].

6.1 Global Reporting Initiative -GRI-

GRI (Global Reporting Initiative) is a non-profit, independent, international organization, founded in the United States in 1997 by the Coalition for Environmentally Responsible Economies (CERES), the United Nations Environment Programme (UNEP) and the Tellus Institute.

The GRI Standards or Guidelines for preparing sustainability reports are intended to be a tool that allows organizations to communicate transparently how they contribute or intend to contribute to sustainable development, as they provide the form and means to publicly declare an organization's most significant impacts on the economy, the environment, and people, and how it manages these impacts in its environment or area of influence.

Among the aspects that ports consider relevant to report, the following stand out: promoting transparency in their management and actions in sustainability, strengthening their performance, enabling communication with their stakeholders and responding to their expectations and competitiveness (customers and competition), as well as developing a solid corporate image and a valuable reputation over time.

GRI supports different types of organizations (businesses and governments) throughout the world in promoting sustainability reporting, based on standards or a framework of principles and indicators that represent the best practices worldwide that organizations can use to measure and communicate their economic, environmental, and social performance. The Sustainability Reporting Guidelines (GRI) are the first and most widely adopted of their type over the past 20 years.

In 2000, GRI officially released the first version of the guidelines providing the first global framework for sustainability reporting. In 2002, the first update to the Guidelines (G2) was presented and, given the growing demand from organizations for methodologies to publish their sustainability reports, the G3 and G4 Guidelines were published in 2006 and 2013, respectively.

In 2016, the GRI Universal Standards were published, and their application began in June 2018. In 2019, a new review process of the Universal Standards (GRI 101: Fundamentals 2016, GRI 102: General Content 2016, and GRI 103: Management Approach 2016) began with the aim of continuing the process of improving the quality and consistency of sustainability reports. This latest update came into effect for reporting purposes in January 2023.

[73] https://www.globalreporting.org/news/news-center/gri-global-adoption-by-top-companies-continues-to-grow/

The GRI Standards are structured as a system of interrelated standards that are organized into three series: GRI Universal Standards, GRI Sector Standards, and GRI Topic Standards (see Figure No. 1).

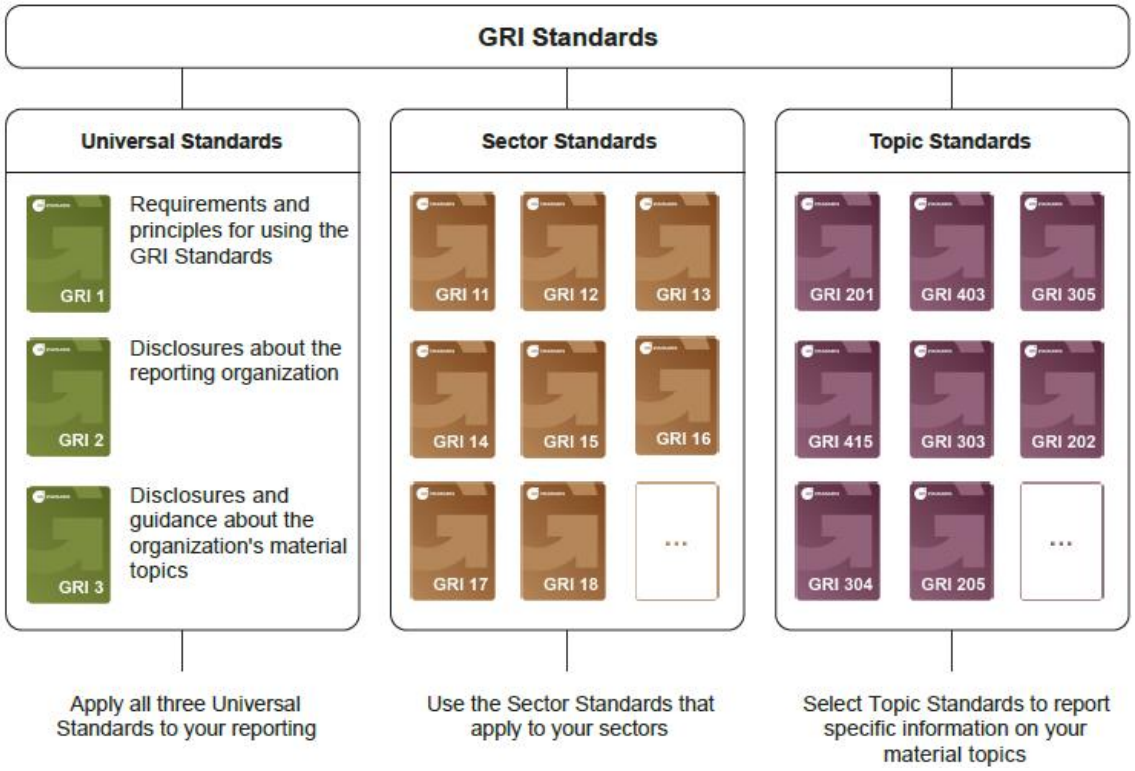

FIGURE N°1: GRI STANDARDS: UNIVERSAL, SECTOR AND TOPIC STANDARDS.

Universal Standards: GRI 1, GRI 2 y GRI 3:

- GRI 1: Foundation 2021*, introduces the purpose and system of GRI Standards and explains key concepts for sustainability reporting. It also specifies the requirements and reporting principles that the organization must comply with to report in accordance with the GRI Standards*.
- GRI 2: General Disclosures 2021, *contains disclosures that the organization uses to provide information about its reporting practices and other organizational details, such as its activities, governance, and policies. This information gives insight into the profile and scale of the organization and provides a context for understanding the organization's impacts*.
- GRI 3: Material Topics 2021, *provides step-by-step guidance on how to determine material topics. GRI 3 also contains disclosures that the organization uses to report information about its process of determining material topics, its list of material topics, and how it manages each topic*.

Sector Standards

The Sector Standards provide information for organizations about their likely material topics. The organization uses the Sector Standards that apply to its sectors when determining its material topics, and when determining what information to report for the

material topics. If an applicable Industry Standard exists, the organization is required to use it when reporting with the GRI Standards.

Topic Standards

The Topic Standards contain disclosures for the organization to report information about its impacts in relation to particular topics. The Topic Standards cover a wide range of topics. The organization uses the Topic Standards according to the list of material topics it has determined using GRI 3.

6.1.1 Key Concepts.

A sustainability report is a document prepared by ports, based on "structured guidelines," that is aimed at the interested parties or stakeholders of the ports' area or sphere of influence, and contains relevant information about their economic, environmental, social, and corporate governance performance.

Ports' strategic interest in sustainability is reflected in their voluntary reporting on the topic, in an attempt to excel in performance and become more competitive. The modern day vision of a port that strives to continue growing and doing business is about more than just economic profit, though there is no denying that the bottom line is important.

There are some key concepts that form the basis for the preparation of sustainability reports: impact, material topics, due diligence, and stakeholders.

Impact

Impact refers to the "*to the effect an organization has or could have on the economy, environment, and people, including effects on their human rights, as a result of the organization's activities or business relationships. The impacts can be actual or potential, negative or positive, short-term or long-term, intended or unintended, and reversible or irreversible. These impacts indicate the organization's contribution, negative or positive, to sustainable development.*"[74].

In the context of an organization, impacts on the economy can be local, national, or global, due to, for example, its competitive and sourcing practices, and taxes and payments to the state. In the case of an organization's impacts on the environment, these refer to impacts on living organisms and inert elements, such as air, land, water, and ecosystems. In the case of people, they refer to impacts on individuals and groups, such as communities, vulnerable groups, or society.

Material topics.

Ports can face a wide range of topics or matters on which to report. Relevant subjects or topics to be included in the report, "are those that can reasonably be considered important for reflecting the organization's economic, environmental, and social impacts,

[74] https://www.globalreporting.org/standards/standards-development/universal-standards/.

or influencing the decisions of stakeholders," on the economy, the environment and/or society (positive or negative). A topic can be relevant —and so potentially material — based on only one of these dimensions.

The port must identify in a participatory way the relevant topics or matters, selecting those that reflect the economic, social, urban, and environmental impacts of the company and that also have a direct bearing on the views and decisions of stakeholders.

This analysis and identification process will serve to determine whether a topic or issue can be turned into an opportunity or strength (when its impact is positive) and/or weakness or risks (when its impact is negative).

In short, relevant topics are matters that directly or indirectly impact the company's ability to create, maintain, or distribute economic, environmental, and social value for itself, its stakeholders, and the community at large.

A materiality matrix is an important tool for assessing whether a relevant topic is material. It is based on a process of prioritization, by both internal and external stakeholders, of the level of importance of each relevant topic.

The relevance level of each topic can be assessed using a system of three scores: low (1), medium (2) and high (3), and the values are entered into a matrix with two axis: Assessment by Stakeholders (vertical axis) and Assessment by Company (horizontal axis).

Due Diligence.

"Due diligence refers to the process through which an organization identifies, prevents, mitigates, and accounts for how it addresses its actual and potential negative impacts on the economy, environment, and people, including impacts on their human rights. The organization should address potential negative impacts through prevention or mitigation. It should address actual negative impacts through remediation in cases where the organization identifies it has caused or contributed to those impacts".

"*The organization should:*

- *avoid causing or contributing to negative impacts through its own activities, and address such impacts when they occur by providing for or cooperating in their remediation through legitimate processes;;*
- *in the case of negative impacts that are directly linked to the organization's operations, products, or services by its business relationships, seek to prevent or mitigate these impacts even if it has not contributed to them. The organization is not responsible for providing for or cooperating in the remediation of these impacts, but it can play a role in doing so."*[75].

[75] https://www.globalreporting.org/standards/standards-development/universal-standards/

Stakeholders.

The port "shall identify its stakeholders, and explain how it has responded to their reasonable expectations and interest.". Stakeholders are defined as individuals or entities that can be affected by the port's activities or services or, otherwise, whose actions can affect the ability of the port to implement its strategies and objectives. Stakeholders can include employees and other workers, contractors, suppliers, local communities, public services, other civil society organizations, among others.

The expectations and interests of stakeholders should be taken into account in order to determine whether a topic raised by them is material, that is to say, a matter important to the company that entails addressing its major economic, environmental and social impacts (whether positive or negative), that can affect normal development and sustainability over time.

For this purpose, stakeholder engagement should be promoted to identify and understand expectations, interests, and information needs.

Systematic stakeholder engagement is likely to result in ongoing learning for the port and for the stakeholders, strengthening trust and credibility between the port and the stakeholders over time.

6.1.2 Reporting in accordance with the GRI Standard.

Basically, it consists of the organization must comply with all nine requirements in this section to report in accordance with the GRI Standards:

Requirement 1: Apply the reporting principles.

All principles for reporting must be applied; these are described in section 6.1.3.

Requirement 2: Report the disclosures in GRI 2.

This refers to incorporating all the information regarding the organization's details, context, entities included in the preparation of sustainability reports, the period covered by the report, frequency, and point of contact.

Requirement 3: Determine material topics.

The organization shall: a) determine its material topics, and b) review the GRI Sector Standard(s) that apply to its sector(s) and:"i) determine whether each topic in the applicable Sector Standard(s) is a material topic for the organization; ii)list in the GRI content index any topics from the applicable Sector Standard(s) that the organization has determined as not material and explain why they are not material"[76].

[76] https://www.globalreporting.org/standards/standards-development/universal-standards/.

Requirement 4: Report the disclosures in GRI 3.

In this requirement, information must be presented that supports the process of determining the organization's material topics, using GRI Standard 3. This includes presenting a list of the organization's material topics, as well as how to address each of the material topics indicated.

Requirement 5: Report disclosures from the GRI Topic Standards for each material topic.

The organization shall report disclosures from the GRI Topic Standards for each material topic and for each material topic covered in the applicable GRI Sector Standard(s).

Requirement 6: Provide reasons for omission for disclosures and requirements that the organization cannot comply with.

If the organization cannot comply with a disclosure or with a requirement in a disclosure for which reasons for omission are permitted, the organization shall in the GRI content index:: a) Not applicable, b) Legal prohibitions, c) Confidentiality constraints, d) Information unavailable/incomplete.

Requirement 7: Publish a GRI content index.

The means must be available to publish or make the report information available to stakeholders, in different formats and on one or more sites. In particular, beyond the typical link that allows a sustainability report to be downloaded or viewed, its table of contents must be published.

Requirement 8: Provide a statement of use.

Once the organization has complied with all of the requirements indicated herein, it must declare that it has indeed complied, including its name and the start and end dates of the reporting period in the declaration.

Requirement 9: Notify GRI.

As indicated, GRI must be notified and informed of the use of the Standards, indicating the legal name of the organization, a link to the contents of the index, to the report itself, a statement of use, and the person responsible or contact person within the organization.

6.1.3 Reporting principles.

Accuracy.

"*The reported information shall be sufficiently accurate and detailed for stakeholders to assess the reporting organizations performance.*"

The information contained in the reports can be expressed in many different ways, which can vary depending on the source of the information. Even so, it is advisable to heed the tests suggested by GRI such as ascertaining that: the report indicates the data that have been measured, the measurements for data, and bases for calculations, are adequately

described, and can be replicated with similar results, the report indicates which data have been estimated, and the underlying assumptions, among other things.

Balance.

The reported information shall reflect positive and negative aspects of the reporting organization's performance to enable a reasoned assessment of overall performance.

This principle goes to the content and presentation of the report reflecting a truthful image of the port and its performance, avoiding omissions, comments that are reasonably likely to unduly or inappropriately influence a decision or judgment by the report reader.

Clarity.

The reporting organization shall make information available in a manner that is understandable and accessible to stakeholders using that information. This means that the information presented in the report is expected to be fully comprehensible, accessible, and usable for any stakeholder, whether in print form or through other channels. The information must be continuously available and easy to access.

Completeness.

The report shall include coverage of material topics and their boundaries, sufficient to reflect significant economic, environmental, and social impacts, and to enable stakeholders to assess the reporting organization's performance over the reporting period.

Completeness encompasses three concepts or dimensions that must be considered in reports: list of material topics covered in the report, topic boundaries, and time (period covered by the report).

List of material topics: the topics covered in the report are expected to be sufficient to reasonably and adequately reflect or explain the port's significant economic, environmental and/or social impacts, and to enable stakeholders to assess such impacts.

Topic boundaries: topic boundary is a description of where the impacts occur for a material topic, and the organization's involvement, not only through their own activities but also as a result of their business relationships with other entities.

Time: the report needs to specify the period of analysis of the economic, environmental, and social impacts and the information must be complete for the time period specified by the report.

Comparability.

The reporting organization shall select, compile, and report information consistently. The reported information shall be presented in a manner that enables stakeholders to analyze

changes in the organization's performance over time, and that could support analysis relative to other organizations.

This principle is important for comparing and evaluating a port's performance, inasmuch as it enables stakeholders to compare information on current environmental, social, and economic performance with past performance, and against the performance of other organizations.

Sustainability context.

The organization shall report information about its impacts in the wider context of sustainable development, this means that the sustainability report must include those aspects and actions of the port that contribute, or aim to contribute in the future, to the improvement or deterioration of the economic, environmental, and social conditions of its surroundings.

Timeliness.

The reporting organization shall report on a regular schedule so that information is available in time for stakeholders to make informed decisions.

In addition to the usefulness of information, reports must be made available on time. This entails regularity of delivery of information, particularly when relevant material topics need to be disclosed and explained.

Verifiability.

The reporting organization shall gather, record, compile, analyze, and report information and processes used in the preparation of the report in a way that they can be subject to examination, and that establishes the quality and materiality of the information.

The veracity of the contents of the report, as well as the ability of stakeholders to validate the information contained in these documents, is very important, in keeping with reporting principles.

6.2 Sustainability Accounting Standards Board-SASB-

SASB is a nonprofit organization founded in 2011 whose purpose is to create, develop, and maintain industry-specific standards for the disclosure of financial or accounting information on sustainability. SASB stands for "Sustainability Accounting Standards Board."

SASB standards enable organizations to provide information on sustainability-related risks and opportunities that could reasonably affect their financial/economic growth stability (cash flow) and access to credit or financing in the short, medium, or long term. In this way, SASB standards have established a supporting framework for evaluating companies and organizations to produce consistent and comparable sustainability reports.

Since August 2022, the International Sustainability Standards Board (ISSB) of the IFRS Foundation"[77] assumed responsibility for SASB Standards. Many companies may be familiar with the IFRS Foundation, as it is also the organization that brings together the International Accounting Standards Board, whose financial reporting standards are used around the world.

The IFRS Foundation is a non-profit public interest organization created to develop high-quality, understandable, enforceable, and globally accepted accounting and sustainability disclosure standards. In this way, the SASB reporting standard plays an important role in the first two IFRS Standards on Sustainability-Related Disclosures, IFRS S1 (IFRS S1)[78] General Requirements for Disclosure of Sustainability-Related Information and IFRS S2 (IFRS S2)[79] Disclosure of Climate-Related Information.

SASB identifies the most relevant sustainability aspects in 77 industry sectors, which are grouped into 11 types, such as i) consumer goods, ii) extractives and minerals, iii) finance, iv) food and beverages, v) healthcare, vi) infrastructure, vii) renewable resources and alternative energies, viii) resource transformation, ix) services, x) technology and communications, and xi) transportation.

In turn, within each of these 11 industry types, there are further subclassifications of these sectors (making up the 77 listed), each tailored to different industries, ensuring that sustainability reports are specific to the unique challenges and opportunities of each sector. For example, the Transportation sector is subclassified or organized into: logistics, airlines, engine parts, automobiles, vehicle leasing, cruise ships, maritime transport, rail transport, and road transport.

In detail, each standard includes the following:

- Disclosure topics: these are the areas in which the risks and opportunities that may most affect the organization's value creation have been identified.
- Accounting metrics: These are the quantitative and qualitative metrics through which the company will evaluate its performance for each of the material disclosure topics.
- Technical protocols: Using an ESG framework such as the SASB Standards means following verified, science-based methodologies that can be verified by third parties. Technical protocols provide guidance on the definitions, scope, application, compilation, and presentation of each accounting metric.
- Activity metrics: These metrics refer to the scale of the company's business, which provides important context for evaluating the data provided in the accounting metrics.

In the SASB regulatory standard, sustainability topics are grouped into five dimensions: environment, human capital, social capital, business model and innovation, and

77 *https://www.ifrs.org/about-us/who-we-are/*

78 https://www.ifrs.org/issued-standards/ifrs-sustainability-standards-navigator/ifrs-s1-general-requirements.html/content/dam/ifrs/publications/html-standards-issb/english/2023/issued/issbs1/

79 https://www.ifrs.org/issued-standards/ifrs-sustainability-standards-navigator/ifrs-s2-climate-related-disclosures.html/content/dam/ifrs/publications/html-standards-issb/english/2023/issued/issbs2/

leadership and governance (see Figure No. 2). Obviously, the specific activities that create value over time in an organization will necessarily vary depending on the type of industry. Therefore, identifying what an organization should disclose requires a thorough analysis of key aspects of that organization's context.

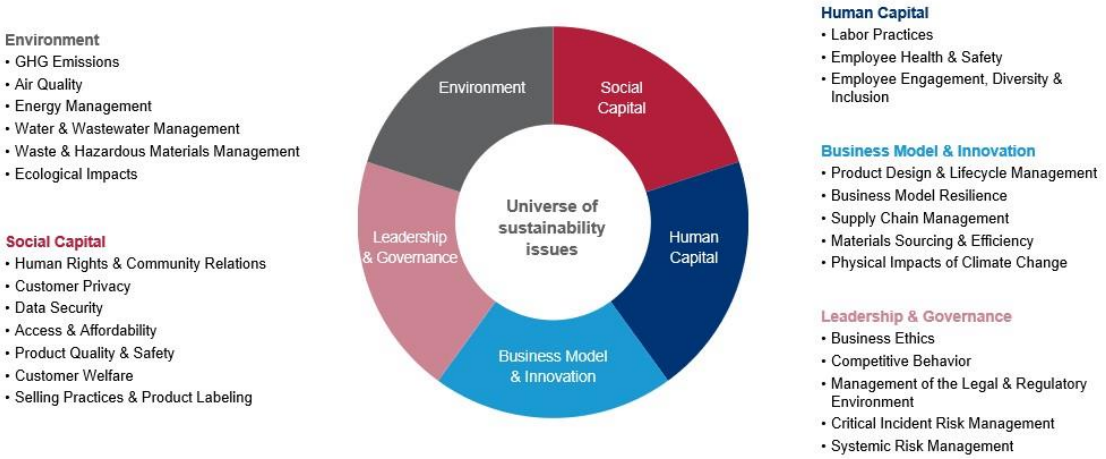

FIGURE No. 2: SASB STANDARDS GROUP SUSTAINABILITY TOPICS[80].

In the case of ports and/or port terminals, the topics and disclosure metrics for the "maritime transport TR-MT" and "air cargo and logistics (TR-AF)" sectors should be used. See Figure No. 3.

80 https://sasb.ifrs.org/implementation-primer/

FIGURE No. 3: SASB STANDARDS COVERS.

For "Maritime Transport," the standard establishes that there are three relevant issues, which are:

Environmental Dimension:	GHG emissions, air quality, and ecological impacts.
Human Capital Dimension:	Employee Health and Safety.
Leadership and governance dimension:	Business ethics and critical incident risk management.

Similarly, for "Air cargo and logistics" the standard establishes that there are four relevant issues, which are:

Environmental dimension:	GHG emissions, air quality.
Human capital dimension:	Labor practices, employee health and safety.
Business model dimension:	Supply chain management.
Leadership and governance dimension:	Business ethics and critical incident risk management.

Although there are some similarities in the search, the ideal approach is to supplement the information presented with all the information required by SASB regulations. In this way, a report or annual report will be prepared in accordance with the regulations for a port.

The following tables (No. 9 and No. 10) detail the content that must be covered in the respective reports, in the case of the Ports example, including the accounting parameter, the unit of measurement, and publication recommendations[81].

Topic	Reliability parameters	Measurement unit	code	Supervisory guidance
Greenhouse gas emissions	Global gross scope 1 emissions	Metric tons (t) of CO_2-e	TR-MT-110a.1	The entity must disclose Scope 1 emissions of the seven gases required by the standard (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, and NF_3), clearly indicating the total emissions for the period expressed in metric tons of carbon dioxide equivalent (2-e). If the entity measures phases other than those indicated in the parameter, it is expected to disclose the measurements for those gases in a similar manner. In addition, the entity must disclose why it measures different gases and those established in the parameter.
	Analysis of the long- and short-term strategy or plan for managing Scope 1 emissions, emission reduction targets, and analysis of results in relation to those targets	N/A	TR-MT-110a.2	The entity must disclose the information required in the corresponding parameter in such a way that it is identifiable in the memory and provides valuable information to users.
	(1)Total energy consumed, (2)percentage of heavy fuel oil, (3)percentage of renewables	Gigajoules (GJ), Percentage(%)	TR-MT-110a.3	an aggregate figure measured in gigajoules (GJ). (2) The entity must disclose the percentage of the energy it consumed that was supplied from heavy fuel oil.
	Average Energy Efficiency Index (EEDI) for new ships	Grams of CO_2 per ton-nautical mile	TR-MT-110a.4	The entity must disclose the average energy efficiency design index (EEDI) for new ships in grams of carbon dioxide per ton-nautical mile.
Air quality	atmospheric emissions of the following pollutants: (1) NOx (excluding N2O), (2) SOx, and (3) particulate matter (PM10)	Metric tons (t)	TR-MT-120a.1	The entity must disclose the metric tons emitted of: (i) NOX; (ii) NO; (iii) NO2; (iv) SOx; (v) SO2; (vi) SO3; (vii) PM10. If the entity measures gases other than those indicated in the parameter, it must similarly disclose the measurements relating to those gases. Additionally, the entity must disclose why it measures gases other than those established in the
Environmental impacts	Duration of the journey in marine protected areas or protected conservation areas	Number of travel days	TR-MT-160a.1	The entity must disclose the requirements in the parameter expressed in the corresponding unit of measurement so that it is identifiable in the memory and provides valuable information to users.

TABLE No. 9: ASPECTS OF SASB REGULATIONS (example, free translation).

Topic	Reliability parameters	Measurement unit	code	Supervisory guidance
	Percentage of the fleet to which apply exchange (1) and water treatment (2) ballast	%	TR-MT-160a.2	The entity must disclose the percentage of its fleet that has implemented ballast water exchange.
	(1) Number and (2) total volume of discharges and spills into the environment	Number, cubic meters (m^3)	TR-MT-160a.3	(1) The entity must disclose the total number of spills and releases to the environment. (2) The entity must disclose the aggregate volume of spills and releases to the environment in cubic meters.
Employee health and safety	Lost time incident rate (LTIR)	Speed	TR-MT-320a.1	The entity must disclose the lost time injury rate (LTIR) for work-related injuries and illnesses.
Business ethics	Number of port calls in countries ranked in the bottom 20 positions of Transparency International's Corruption Perceptions Index	#	TR-MT-510a.1	The entity must disclose the requirements of the parameter expressed in the corresponding unit of measurement in such a way that it is unidentifiable in the memory and provides valuable information to users.
	Total amount of monetary losses resulting from legal proceedings related to bribery or corruption	CLP	TR-MT-510a.2	The entity must disclose the requirements of the parameter expressed in the corresponding unit of measurement in such a way that it is unidentifiable in the memory and provides valuable information to users.
Accident management and safety	Number of maritime accidents, percentage classified as very serious	#	TR-MT-540a.1	The entity must disclose the requirements of the parameter expressed in the corresponding unit of measurement in such a way that it is unidentifiable in the memory and provides valuable information to users.
	Number of recommendations or stipulations related to the class	#	TR-MT-540a.2	The entity must disclose the requirements of the parameter expressed in the corresponding unit of measurement in such a way that it is unidentifiable in the memory and provides valuable information to users.
	Number of (1) deficiencies and (2) detentions in port state control	#	TR-MT-540a.3	(1) The entity must disclose the number of deficiencies it received from regional port state control (PSC) organizations. (2) The entity must disclose the number of detentions it received from regional PSC organizations.

TABLE No. 10: ASPECTS OF SASB REGULATIONS (example, free translation).

It should be noted that the disclosure of background information related to each organization, as established by SASB regulations, is primarily intended for an

[81] https://www.cmfchile.cl/portal/estadisticas/617/w3-article-53716.html

organization's upper management, as the body responsible for disclosure, to be used as a tool in the generation, review, and reporting of the information to be disclosed, from those who prepare sustainability reports to those who approve them.

6.3 Environmental, Social & Governance -ESG-

Over the last five years, there has been a significant increase in the attention paid to issues related to the environment, society, and corporate governance by the administrations and boards of directors of port companies. As a result, the concept or term "ESG" (Environmental, Social and Governance) or "ASG" (Environmental, Social and Governance) has become widely accepted in the field of business administration and management. In recent years, the ESG/ASG approach has become very popular as a framework for assessing the impact of companies on the environment, society, and governance, and it takes center stage when addressing concepts such as sustainable finance, European regulation, and profitability.

The origin of ESG/SGA standards dates back to the early 2000s and is the result of the evolution of what was known as Socially Responsible Investment (SRI). However, ESG/ASG goes further, as it takes a holistic approach to all of an organization's processes, allowing us to see the scope of its impact beyond the business itself.

The origin of ESG/ASG standards stems from the need to define an information system (standards) and frameworks that serve as a reference for companies to achieve and report on the fulfillment of sustainable development goals (SDGs)—a set of global goals adopted by the United Nations in 2015[82].

ESG criteria have blurred boundaries. The best approach is to define the company's scope of action in these areas so that intangible results are easy for investors to identify.

However, a clear and well-organized ESG index will, first, enable managers and executives to make better decisions within the company and, second, allow investors to recognize and reward the efforts of companies with capital that is maintained over time.

To determine which components are part of ESG criteria, they must be analyzed separately.

ESG/ASG standards refer to:

- **Environmental criteria:** Activities carried out by the organization that have a positive impact on the environment are considered environmental criteria within an ESG/ASG strategy. Examples of this include actions to reduce pollution and waste generation or greenhouse gas emissions, the use of natural resources, waste management, and climate risk prevention, assurance, and mitigation. Activities should not be limited to mitigating the negative effects of the business and may take a proactive approach, such as the conversion of the energy matrix or the protection of biodiversity.

82 https://www.un.org/sustainabledevelopment/

- Social criteria, which mainly examine actions related to working conditions and respect for human rights. This also includes managing relationships with communities where the company operates, such as indigenous populations, for example. In addition, this set of criteria emphasizes the protection and promotion of a diverse and inclusive company, as well as a healthy environment for employees and the community at large.

- Corporate governance, which refers to issues related to the corporate governance of organizations, their corporate quality, culture, and management processes, including the direction and management of the organization, transparency plans and the fight against unethical practices, audits, internal controls, and how leadership focuses on responding to the expectations of the organization's stakeholders. It covers the structure of the board of directors, employee compensation, customer satisfaction, supply chain resilience, business ethics, and transparency. Special attention is given to the development of robust internal policies with clear indicators that include factors such as outsourcing, regulatory compliance, and employee aptitude, among others.

The growing importance of ESG/ASG standards is driven by greater awareness among an organization's investors and consumers, who require or demand greater accountability for social and environmental impacts. Strong long-term performance in ESG/ASG standards within an organization is a clear indicator for investors' investment decisions.

The growing importance of ESG/ASG aspects or standards is being accelerated by various key players, regulatory bodies, shareholders, employees, and society in general, who are demanding improved performance in these areas. In fact, in some countries, regulators have incorporated ESG/ASG elements into the mandatory annual reporting requirements for organizations (annual reports, sustainability reports, integrated reports).

Although ESG/ASG information has been incorporated by organizations in a short period of time, there is still a certain lack of knowledge about the concepts behind these acronyms, especially in the strategic roles of organizations or upper management in overseeing ESG strategy in the company. For many, the term ESG refers to environmental issues, such as climate change and resource scarcity. These are undoubtedly elements of ESG and, in fact, important ones, but the term ESG encompasses much more. It also covers social issues, such as a company's labor practices, employee health and safety, product safety, and information security. It also covers corporate governance issues such as board or upper management diversity, executive compensation, business ethics, and fiscal transparency. All of these issues can significantly affect the long-term value creation of the company.

In a deeper analysis of the key aspects of ESG/ASG standards:

Environmental responsibility.

The environmental aspect of ESG/ASG focuses on a company's impact on the planet, where key environmental factors include:

- Climate change: Companies are expected to measure and reduce greenhouse gas emissions, invest in renewable energy, and adapt to climate risks.
- Resource depletion: Using resources efficiently, reducing waste, and utilizing circular economy models are vital to mitigating resource depletion.
- Pollution: Minimizing air, water, and soil pollution with cleaner technologies is key.

Companies can improve their environmental impact by:

- Set emission reduction targets in line with the Paris Agreement [83].
- Invest in renewable energy sources such as solar and wind power.
- Improve energy efficiency to reduce consumption.
- Promote sustainable supply chains by working with environmentally responsible suppliers.
- Reduce waste and promote circularity.

Social responsability.

Social engagement policies describe how a company interacts with and contributes to its community and society at large. These policies often include community development initiatives, employee volunteering, and strategic partnerships with non-profit organizations. Effective social engagement goes beyond philanthropy, integrating social impact into core business strategies and fostering a culture of responsibility and community involvement among employees.

The social component of ESG/ASG focuses on a company's relationships with its stakeholders. Key social aspects include:

- Labor standards: advocating for fair labor practices, including safe working conditions, fair pay, and opportunities for advancement.
- Human rights: Respect human rights in all operations and supply chains, avoiding child labor, forced labor, and discrimination.
- Diversity and inclusion: Promote a diverse and inclusive workforce where all staff are valued.
- Community engagement: supporting local projects and contributing to the well-being of the community.

Companies can increase their social responsibility by:

- Implement fair labor practices by providing training and development opportunities.
- Conduct human rights due diligence to identify and address potential risks.
- Implement policies that promote diversity and inclusion.
- Engage in philanthropy, volunteering, and partnerships to support local communities.

[83] https://www.un.org/en/climatechange/paris-agreement

Gobernance.

The ESG/ASG governance component assesses a company's leadership and decision-making. Key governance factors include:

- Board structure: Have a diverse and independent board.
- Executive compensation: align executive compensation with the long-term interests of the company.
- Transparency: transparent reporting and disclosures to provide stakeholders with accurate data on ESG/ASG performance.
- Ethics: Have a strong code of ethics and encourage ethical behavior.
- Accountability: Companies must be accountable to stakeholders for their ESG/ASG performance.

When identifying ESG/ASG standards, they should not be confused with:

- Activities framed solely in general terms. Investors and executives shy away from general statements. Actions must be supported by specific indicators that demonstrate the creation of differential value and provide useful information.
- Nomenclatures that accompany existing processes. It is not a question of renaming what we already did; ESG parameters must combine novelty and business model.
- Appendices within the income statements. The approach must be integrated and have a cross-cutting impact on the business.

A good governance ensures sound decision-making, promotes ethical behavior, and builds trust, which is vital to the long-term sustainability of the organization.

In today's business landscape, having a well-defined ESG/ASG policy is no longer optional, but a necessity. Some reasons for this are:

- **Risk management.** ESG/ASG policies help companies identify and mitigate environmental, social, and governance risks that could affect their operations or reputation.
- **Competitive advantage.** Companies with strong ESG/ASG practices tend to outperform their competitors, attracting more customers, investors, and top talent.
- **Regulatory compliance.** As governments around the world implement stricter ESG/ASG regulations, having a robust policy allows organizations to stay ahead of compliance requirements.
- **Stakeholder expectations.** Investors, customers, and employees increasingly expect companies to demonstrate their commitment to sustainability and social responsibility.
- **Long-term value creation.** ESG/ASG initiatives can drive innovation, improve operational efficiency, and create new market opportunities, thereby contributing to long-term success.
- **Access to capital.** Many investors now consider ESG/ASG factors in their decision-making process. A robust ESG/ASG policy can improve access to capital and potentially reduce the cost of accessing credit.

- **Brand reputation.** A well-implemented ESG/ASG policy can improve a company's reputation, building trust with customers and partners.

Specifically, by developing and implementing a comprehensive ESG/ASG policy, organizations can proactively address these factors and position themselves for sustainable growth in an increasingly conscious market.

Creating an effective ESG/ASG policy requires careful planning and a deep understanding of the organization's unique context; a guide to its implementation would be as follows:

- Conduct a materiality assessment. Identify the ESG/ASG aspects most relevant to the organization and stakeholders (focus on areas with the greatest impact).
- Define clear objectives. These should be specific, measurable, achievable, relevant, and time-bound for each ESG/ASG pillar.
- Align with Sustainable Development Goals. Policy can align with recognized frameworks such as the UN Sustainable Development Goals (SDGs), the Global Reporting Initiative (GRI), or the Sustainability Accounting Standards Board (SASB) standards.
- Develop achievable strategies. Define specific initiatives to achieve previously established ESG/ASG objectives, which could include, for example, emissions reduction targets, diversity and inclusion programs, or governance reforms.
- Assign responsibilities. Clearly define roles and responsibilities for the implementation and oversight of ESG/ASG policy.
- Establish compliance indicators (KPIs). Establish how progress toward ESG/ASG objectives will be measured, relevant to each objective.
- Define how and when ESG/ASG performance will be reported to stakeholders, which could include annual sustainability reports or integrated reports.
- Convene and plan stakeholder engagement. Describe how you will interact with different stakeholders (employees, investors, customers, communities) on ESG/ASG issues.
- Include a review and update mechanism. ESG/ASG aspects change or evolve rapidly, so it is necessary to review and update them periodically to ensure they remain relevant and effective.
- Consider external audits or validation. Reviews by experts outside the organization will enable you to obtain certifications to reinforce your credibility.

Special consideration should be given to the fact that an effective ESG/ASG policy must be tailored to the specific context, challenges, and opportunities of an organization. Implementing ESG/ASG policies effectively requires a systematic approach and commitment from all levels of the organization.

The following notes provide some guidelines for integrating ESG practices into the organization's activities:

- Secure leadership buy-in, which means ensuring or guaranteeing the support of the organization's upper management for ESG/ASG initiatives. Their commitment is crucial to driving change throughout the organization.
- Establish an interdisciplinary ESG/ASG team. Create a dedicated team with representatives from various areas (e.g., operations, finance, human resources, etc.) to oversee the implementation of ESG/ASG.
- Conduct a baseline assessment to identify areas for improvement and establish a starting point for measuring progress.
- Based on the materiality assessment, prioritize and establish measurable ESG/ASG general and specific objectives (e.g., by area of the organization) for each area.
- Integrate ESG/ASG criteria into the organization's strategies. This involves aligning ESG/ASG objectives with your overall business strategy to ensure that sustainability becomes a fundamental component of your operations, rather than a separate initiative.
- Develop action plans. This involves creating detailed plans for each ESG/ASG objective, specifying specific actions, deadlines, and responsible parties.
- Allocate and assign resources. Ensure that adequate budget and human capital are allocated to support ESG/ASG initiatives.
- Training for managers and other members of the organization. Provide comprehensive training to all employees on ESG/ASG principles, company policies, and their role in implementation.
- Engage your suppliers. Extend ESG/ASG practices to the organization's supply chain by establishing standards for suppliers and collaborating to improve their ESG/ASG performance.
- Implement data collection and monitoring systems. Establish robust systems to collect, track, and analyze ESG/ASG data for accurate reporting and decision-making.
- Communicate progress. Share regular updates on ESG/ASG initiatives and progress with internal and external stakeholders to maintain engagement and accountability.
- Continuous improvement. Regularly review and update your ESG/ASG strategies based on performance data, stakeholder feedback, and evolving best practices.
- Look for external verification or validation. Consider obtaining external verification (audits) of your ESG/ASG data and practices to enhance credibility and identify areas for improvement.
- Integrate ESG/ASG factors into risk management. Incorporate ESG/ASG factors into your overall risk assessment and management processes.
- Promote a culture of sustainability. Encourage people within the organization to contribute ideas for improving ESG/ASG principles and recognize those who demonstrate a strong commitment to them.
- Collaborate with the port industry (sector). Participate in industry initiatives and share best practices to jointly address ESG/ASG challenges.

From environmental management and social responsibility to governance structures, every aspect of ESG/ASG plays a role in building a sustainable and resilient business. The potential benefits are clear: better risk management, greater stakeholder confidence, and improved financial performance.

Implementing these policies requires commitment, strategic thinking, and often a cultural shift within the organization. It involves aligning business practices with global sustainability goals, fostering an inclusive work environment, and ensuring transparent and ethical operations.

CHAPTER 7. COMMERCIAL, SOCIAL, AND ENVIRONMENTAL BENEFITS AND ADVANTAGES TO PORTS FROM IN SUSTAINABILITY REPORTS.

A Sustainability Report is an informational document that is publicly released by a (public or private) organization about its economic, social, and environmental impacts as a consequence of its activities, over a specific period of time, to the different stakeholders. The Report includes other aspects of the organization such as corporate governance model, strategic objectives, values, among other ones.

The benefits of reporting are many and sufficiently compelling to incentivize organizations to issue Sustainability Reports.

A Sustainability Report enables the organization to evaluate, in advance, processes or activities that can potentially cause harm to its stakeholders. In turn, disclosing environmental, social, and economic aspects of the organization helps to increase transparency and credibility, and is an effective means of engagement with its value chain and stakeholders, adding value to its corporate reputation and thus turns into a competitive advantage.

In this chapter, based on the aspects of sustainability as defined by the GRI and others Standards, we explain the benefits and advantages of a Sustainability Report, drawing a distinction between internal and external benefits and, in this way, facilitate analysis and comparison between these benefits..

7.1. Analysis of internal and external benefits to the organization.

Over the past years, Latin American port entities have increasingly been issuing Sustainability Reports, in order to disclose and convey to their stakeholders their economic, environmental, and social impacts and performance.

With the development and growth that ports have experienced, the new awareness of the need to adequately preserve our natural resources, the advent of the shared value and social role that ports play and must develop, the need to implement strategic actions linking ports to their surroundings or area of influence, has become evident and essential. On this score, there is no question that ports are long-term ventures because of the significant investment involved in building and maintaining them and because the economic, social, and environmental impacts of ports are intimately tied to surrounding local communities, current and future relationships with relevant stakeholders must be nurtured.

Ports can have a variety of impacts on their surroundings. Some of the most important ones we can mention are: i) Environmental impacts: hazardous waste, impacts on soil quality and marine habitat, wildlife, emissions, impacts from handling hazardous goods; ii) Economic impacts: impacts on recreational or gastronomic activities in their area of influence, changes in land assessments, vehicular and river traffic congestion; iii) Social impacts: lengthy travel time for citizens due to larger transportation vehicles entering or leaving the port premises, unappealing effects on the landscape, among other impacts.

Consequently, a port is currently unable, on its own, to keep up the pace of its own development over time, unless it implements proactive policies and practices to eliminate, prevent, and reduce any negative impacts they may have on their surroundings, communities, and environment.

Stakeholders' expectations and compliance obligations have gradually led ports to develop, implement, and communicate sustainability strategies to prove (either successfully or unsuccessfully) adequate port management, with high ethical and corporate, social, and environmental standards, that allow them to identify their risks and continue in business.

In the context of ports, a sustainable development strategy has become increasingly more relevant, inasmuch as not only is such a strategy implemented by private port companies, but also by national port authorities. This means that, more and more out of necessity, ports are prioritizing the three dimensions of sustainable development (the economic, environmental, and social dimensions), using for this purpose structured methodologies that make the concepts more applicable and enable them to be communicated (Diagram Nº8).

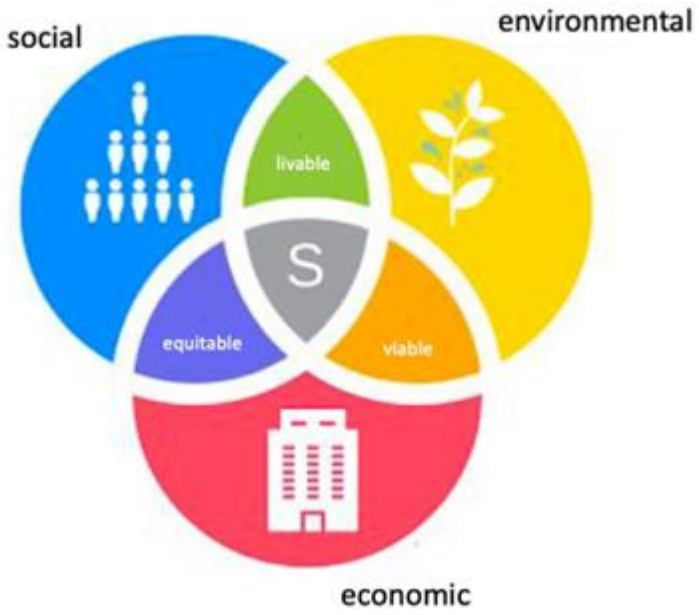

DIAGRAM No. 8: DIMENSIONS OF SUSTAINABLE DEVELOPMENT.

As for the economic dimension, a port needs to be economically viable in order to ensure its development and growth over time, providing its shareholders, employees and suppliers (internal context) with an adequate level of profitability. The way the port achieves this goal revolves around its primary line of business: increasing its transfer capacity and new cargo by proper business management, meeting the expectations of users and shipping agents by good performance in its operations management, maintaining its profitability margin by managing costs and by making profitable any investment projects and initiatives that may be necessary and suitable in order to continue operating or attracting new clients.

When this is viewed from the standpoint of the community where the port operates, the expectation is that the port indeed maximizes its revenue and economic outcomes, to give rise to further investments enabling expansion of port activity and, thereby, garner indirect social benefits.

While the environmental dimension requires proactive management to eliminate or reduce the impact that port operations can have on the surrounding environment, in order to preserve the availability of resources for the future development of port activities, as well as the impact on the ecosystems of its area of influence.

A variety of methodologies can be used to meet this objective, some of which have been examined above in this document, such as implementing an Environmental Management System to effectively help to establish a commitment and develop actual awareness at the port to not cause any environmental damage in any way, taking actions to prevent, mitigate or eliminate such effects. It is expected that the port will be able to carry out actions to promote complementary initiatives for the improvement of the environment around it, such as energy efficiency measures, minimizing its greenhouse gas effect, reducing levels of noise pollution, among other measures.

Finally, the social dimension requires examining the internal and external effects and impacts of a port.

From the internal point of view, the protection and care of persons working under the control of the port is essential and a priority, from any standpoint, in order to be successful at continuing port operations, avoid any hold ups of business due to unwanted conflicts and failure to be proactive in adequately monitoring such events. Often, these conflicts arise due to lack of a proactive approach and forward looking vision of labor relations.

From the external point of view, active engagement with stakeholders is essential within the port's area of influence in order to set expectations and the vision of what stakeholders expect the port to be. Common expectations include the need to contribute to the wellbeing of different neighboring social organizations, to promote and generate actions of shared value, improve and expand public areas or spaces, endeavoring to improve the quality of life of the inhabitants of the port environs.

Sustainability reports are the principal tool available today to a port to establish a close tie to its surroundings (stakeholders), in terms of disclosure, to communicate its performance and impacts, both positive and negative, with the guidelines promoted by the Global Reporting Initiative GRI, SASB, ESG being very helpful for such reporting (as was examined in the previous chapter).

The principal value of a Sustainability Report actually lies in writing it. That is because it helps the port to evaluate and recognize best practices for its business, align sustainability criteria, identify risks and opportunities, generate awareness among employees and upper management about issues linked to sustainable development and, especially,

engage with all its stakeholders (clients, suppliers, investors, and communities), by means of processes of participation and consultation setting goals for improvement in the aspects it deems key.

The GRI, SASB, ESG Standards are a structured methodology that is highly valued by the ports that have implemented them for sustainability reporting, setting forth a set of principles that guides us in how to present a report as well as provide us with a framework for its content.

The commercial, social, and environmental benefits and advantages to a port that implements the sustainability standards, as an integral and strategic part of the conduct of its activities, include enhanced risk management, operational continuity, increased profitability, improved reputation and social impact, greater transparency, asset appreciation.

Sustainability Reports provide greater clarity and transparency of the port's activity, by means of detailed, systematic information that can be compared to previous reporting periods.

Adopting sustainability reporting creates benefits that can be categorized as internal or external.

7.2. Internal Benefits.

Strategic Vision.

As we have described, sustainability reporting enables the port to expand its vision of its surroundings and area of influence in order to incorporate into its evaluation or medium- and long-term strategic vision, aspects of sustainable development.

Strategic analysis involves determining whether or not it is advisable to change the guidelines a port is following at the present time in order to improve its future. This entails conducting an analysis of trends and challenges to gain insight into the surroundings of the business.

Constant change or evolution of society, the regulatory environment, environmental requirements, among other things, forces a change in the pattern of conduct of ports in order to anticipate and prepare to change their strategic vision of resource use in order to achieve its fundamental objectives.

These changes in strategic vision will determine actions, targets, and objectives that, when implemented during the execution phase, will necessarily lead to processes of continual improvement and alignment with the new sustainability trends..

Financial Outcomes.

Implementing sustainability policies or strategies at ports requires a variety of actions of proactive change and continual improvement to be taken in order to achieve sustainable

development. All of these actions will be well watched by the market where a port operates, by its own shareholders, by third party investors and also by other relevant stakeholders that we will examine below, because when the market is informed through a Sustainability Report, reactions are positive and the port is valued higher. A Sustainability Report on its own will not lead to higher revenue for the port. It is the underlying actions that will add value to its performance.

Risk Management.

Sustainable management is intrinsically linked to risk management. Ports that write Sustainability Reports are necessarily more capable of predicting and managing the risks existing as a result of their activities and operations. Thus, these ports are able to predict, draw up plans of action and improve their processes.

Risk management helps to deal with exposure to risk by reducing losses from unforeseen but identifiable situations in terms of likelihood of occurrence. By identifying and evaluating risks throughout the port's value chain, an action/management plan can be drawn up with regard to these risks, which involves prevention and mitigation of their potential impacts, because of a greater understanding and analysis of the port's activity or operations

Innovation, waste reduction and efficiency.

Both in the continuing process of sustainability reporting and the process of continual improvement of their processes and activities, ports are able to define and plan initiatives that, in the medium and long term, have a significant social and/or environmental impact (sustainable initiatives) with a return on investment, which could pose an opportunity to transform the quality of life and economy of their surrounding area.

Several ports have environmental policies in place establishing their commitment and have been implementing different initiatives to improve their indicators and sustainable development over time, as well as taking actions that encourage the use of technology, efficiency and energy innovation, which may all lead to savings, and minimize social and environmental impact.

The purpose of these initiatives is to have an environmental and social impact while achieving a financial return, which does not necessarily have to be consistent with the profit-making motive of the port business as such. It is motivated by something else.

Implementation of some of these initiatives listed hereunder is dependent upon the particular operations performed at each particular port:

- Energy efficiency, encompassing the efficient use of energy by taking actions to reduce energy consumption levels and CO2 emissions, without impacting productivity. It goes hand-in-hand with the use of renewable energy sources.
- Water and water resource management, inasmuch as it is a vital and irreplaceable, non-renewable and limited resource, which requires efficient use and/or consumption.

- Waste management, encompassing activities related to the life cycle of waste, taking into consideration the traceability of waste, including everything from collection and transfer to treatment.
- Circular Economy (innovation), in some ways linked to waste management, which involves the utilization of waste by transforming it into resources and reusing them. This management model can very effectively link the port to its surroundings by indirectly promoting and generating jobs, outside of its own business activities.

All of these initiatives, when incorporated into Sustainability Reports, will help to create a positive environmental and social impact, with communication to stakeholders and follow-up on performance being key.

Motivation and loyalty to the persons working under the control of the organization.

In developing and implementing sustainability at ports, the commitment of employees must also be taken into consideration. By this we mean having an involved team where members must be incentivized and trained to follow this practice at all levels of the company. In order to reap the benefits, all means and strategies must be deployed to engage and motivate all persons working under the control of the company and foster a suitable atmosphere to improve habits.

It is paramount for personnel to be familiar with the tasks that they can perform on a daily basis in any action linked to sustainability. It is helpful to carry out awareness- raising campaigns, using different media to internally disseminate port policy, its objectives and commitments.

In order to develop awareness and a culture of sustainability, there must be training. Educating and knowledge disseminating are needed to put sustainability actions into practice.

The evolution of these activities (awareness-raising and training) over time will bring about significant development of awareness and pave the way for the generation of new ideas, loyalty of the work teams and advancement in all subjects linked to sustainability.

Disseminating sustainability reports will spark interest and lure professionals into participating in port activities (in both management and operation) as well as engaging people who wish to join an organization that manages its environmental and social impacts, while cultivating loyalty of those working under the control of the organization.

Timely compliance with legal requirements and other rules and regulations.

Compliance with regulations and legal requirements in the area of sustainable development is closely tied to sustainable environmental management. Full compliance with laws and regulations applicable to ports in the context and country where they do business is absolutely essential.

As established in previous chapters, statutory requirements and other regulations must be linked to environmental aspects and operational control guidelines must be

established to improve environmental performance. To comply with this suggestion, there must be available access to these legal requirements through some means in order to be able to determine how they apply to the port, in each instance, and periodically assess compliance with each one.

Notwithstanding, more broadly, ports must comply with all legal requirements and rules regulating their business activities so that identifying, following up on and enforcing these compliance obligations serves to prevent (not be the cause of) repercussions on its functionality and operational continuity.

Thus, through Sustainability Reports, ports can prove compliance with legal requirements, describing the actions taken for this purpose. It is recommended to create a matrix of compliance obligations to identify obligations that must be complied with, any updates of these obligations, and evaluation of compliance. Stakeholders will be able to review and examine port performance using this matrix.

7.3. External Benefits.

Corporate Reputation.

A port's reputation must be regarded as a valuable asset that merits protection and being part of the strategic plan.

Ports that have released Sustainability Reports over time or for several periods or fiscal years, for the most part, are the most transparent ports, because of the ongoing development of the methodologies involved in the reporting process and the benefits stemming from them. The reports greatly contribute to making a port's activities transparent in different areas such as the labor, environmental, social and other spheres, including its economic outcomes and governance. This all gives rise to a flow of information that is then disclosed and shared with their stakeholders, allowing for the review and analysis thereof.

This means that increasing transparency by showing how a port acts in response to, and manages, environmental and social impacts represents an important strategic initiative to build confidence among its stakeholders and helps to keep the port operation in business and reinforces the organization's leadership. The Sustainability Report becomes a powerful tool available to ports to build or win back that confidence in the face of crisis situations, reducing the risk of failing to gain social acceptance through transparent communication.

Transparency about the non-financial performance of a port is closely tied to the objective of reducing risks to reputation. When real and tangible commitments are demonstrated in terms of concern over environmental and social aspects and continually creating value, this also turns into a competitive advantage.

A port's reputation is based precisely on compliance and progress with a wide range of stakeholder expectations, the quality of its services and strict compliance with legal requirements and other regulations.

The port can be operating and functioning just fine, but it could face complications and challenges that tarnish its image and reputation if operations do not take into consideration respect for the dignity of the personnel or if rules or regulations are broken. All of this can have consequences and lead society, authorities and its stakeholders to call the port into question. Issues such as bribes and acts of corruption, environmental damage, ethical or social problems, can significantly harm a port's reputation.

Competitive Advantage.

Ports must strive to gain a competitive advantage since it is the determinant factor in providing services to users and clients, in addition to ensuring that these advantages endure over time.

The competitive advantage of Sustainability Reports lies in actually going through the reporting process, as well as their content (identifying, measuring, managing, and communicating their input and impacts). This gives rise to a plethora of differentiating factors, thus promoting competitive advantage. Maintaining those sustainability initiatives over time enables the port to reinforce them as differentiating elements, which enhances its image as a better company compared to others in the same line of business.

Access to Capital or sources of financing.

There is evidence from global studies[84] suggesting that entities that publish their Sustainability Reports more readily gain access to new and less costly sources of capital, in addition to having positive repercussions on the investment decisions of potential shareholders, who prefer to invest in transparent companies "because of their commitment to the stakeholders and more accurate projection analysis of the entity."

Moreover, there is growing availability of green funding reserved exclusively for companies that demonstrate their responsibility toward society and the environment, offering advantageous conditions, where Sustainability Reports are an essential requirement.

Stakeholder Engagement.

It is essential for stakeholders to be involved in Sustainability Reporting.

An adequate stakeholder mapping exercise should be completed to individually identify the major stakeholders along the value chain and those involved in the areas of influence of the port's operations, focusing on the community, regional and national levels, as appropriate.

In this identification process, an analysis must be conducted of why each stakeholder ought to be included, ranking them by importance and influence, and profiling how they are organized, the geographic boundaries of their area of action, mechanisms of participation, and other aspects. By correctly identifying stakeholders, it will make it

[84] «Value of Sustainability reporting» - A study by Ernst & Young LLP and The Boston College Center for Corporate Citizenship (2013).

possible, at subsequent stages, to define whether the port's impacts are consistent with their interests and expectations, so that the Sustainability Reporting is credible and transparent.

A positive and proactive internal and external stakeholder engagement strategy will be projected through each port's policy. The purpose of engagement is to link sustainability actions and projects to the demands and needs of stakeholders, generating shared value for both parties. This engagement should go hand-in-hand with the port getting into the habit of actively listening on an ongoing basis to the groups that have fundamental issues with, and are impacted by, its operation.

Through these engagement activities the port must identify, in a participatory way, important topics or issues, selecting those that reflect its economic, social, urban and environmental impacts. Accordingly, the "materiality" of the topic is analyzed to determine whether it warrants being raised. This analysis and identification process will serve to determine whether a topic or issue can be turned into an opportunity or strength (when its impact is positive) and/or weakness or risks (when its impact is negative).

In summary, relevant topics are matters of direct or indirect impact on the ability of the port to create, maintain, or distribute economic, environmental, and social value for itself, its stakeholders, and the community at large.

Through this strategy it is possible to monitor progressive compliance with actions and projects, by implementing a plan of action linked to the expectations of stakeholders.

Another engagement practice involves the use of tools such as materiality surveys, which can improve the rapport of organizations with their stakeholders.

Stakeholders' expectations and interests are key benchmarks to Sustainability Reporting.

CHAPTER 8. SUCCESSFUL EXPERIENCES OF SUSTAINABILITY REPORTING PORTS IN LATIN AMERICA.

Over the past thirty years, businesses have been playing an increasingly accepted and important role in society worldwide in terms of the impacts they have on the environment and the need to communicate and make that important social role more transparent (taking responsibility) and take concrete environmental protection/mitigation actions.

Today, there is a wide range of options and types of reports, also known as annual reports or integrated reports. However, the most widespread format is the Sustainability Report prepared under Global Reporting Initiative (GRI) standards, although other standards or internal regulations may apply depending on the Latin American country.

There are several Latin American cases of port terminals that, in pursuit of their goal of transparency, have led and carried out an extensive journey through different reporting initiatives, applying experiences from successful cases and, in others, internal disclosure regulations in each country. These processes, which have taken years, have promoted significant progress in the way these companies assume their social and environmental role and their own development, demonstrating that there is no single way to become a success story and, consequently, to constantly improve the value and reputation of their port and organization.

This chapter aims to identify publications of Sustainability Reports from Latin American port terminals and provide the reasons or circumstances why these reports have been noteworthy cases (process involved, age, frequency, communication, among others). Even when we talk about "successful experiences," we are referring to experiences that are interesting to learn about because of the work and results obtained in matters of sustainability, which can serve as a roadmap or guidance for other Latin American ports and terminals.

8.1 Successful Cases of Sustainability Reporting Port Terminals in Latin America.

Over the last five years, the development and implementation of sustainability strategies has been gaining ground in Latin American ports, becoming a key guideline in sustainability strategies and closing the gap that existed with trends in European countries and ports.

Some port operators –private and public companies – have spearheaded its development and introduced sustainability at the core of their operations and, for some years now, have been releasing Sustainability Reports covering a variety of different topics.

Successful cases of sustainability reporting in Latin America include Sociedad Portuaria Santa Marta and Grupo Puerto Cartagena for their SPRC and Contecar terminals (Colombia), Puerto Ventanas (Chile), Terminal Internacional del Sur Tisur (Peru), and DP World Callao, which have also implemented an Environmental Management System and PERS - EcoPorts certification. Also noteworthy are the reports from Terminal Pacífico Sur TPS (Chile) and Terminal Puerto Arica (Chile).

Currently, the vast majority of port terminals in Latin America are recognized for their sustainable practices and have established sustainability reporting as part of their communication strategy, in line with current port industry guidelines.

8.2 List and brief description of outstanding Latin American port facilities -successes- in Sustainability Reporting.

Hereunder, we succinctly describe each port facility that has stood out because of its Sustainability Reporting. The information has been obtained from the respective web pages, reports and public information available from each port terminal, citing the respective source.

DP World Callao (Perú)[85].

DP World Callao is part of the multinational company DP World, which specializes in integrated logistics at a global level (cargo logistics, port terminal operations, maritime services, among others).

FIGURE No.4: DP WORLD CALLAO

DP World Callao began operations in 2006 after signing a port concession contract with the Peruvian government. Following significant investments in recent years, exceeding one billion dollars, it is now the largest container terminal in Peru. Covering a total area of 40 hectares with a 1,050-meter-long pier, it has 10 gantry cranes for container transfer and another 37 terminal cranes for handling the storage yard.

Recently, in 2024, the Bicentennial Pier was inaugurated, a port project that involved the expansion of the southern pier of the Port of Callao, with an investment of $400 million,

85 https://www.dpworld.com/es/peru/ports-and-terminals/callao

thereby increasing its container transfer capacity to 2.7 million TEUs. It is considered one of the most productive terminals in South America.
DP World Callao bases its sustainability strategy on that developed by the DP World group. The focus of this strategy, called "Our World, Our Future," seeks to "work responsibly, prioritizing sustainability and the impact on people, communities, and the environment in which we operate"[86].

DP World Callao's strategy, "Our World, Our Future," is aligned with the United Nations Sustainable Development Goals (SDGs). [87], and is divided into two approaches: "Our World" focuses on responsible operations in seven priority areas (workplace safety, security or protection of its facilities and services, well-being of its work teams, ethics, community engagement, people development, and climate change), whose commitments and objectives are to be achieved by 2030, and the "Our Future" approach, based on the organization's legacy to industry and society, focuses on the areas of Education, Women, and Oceans, whose goals and objectives are also intended to be met by 2030.

To implement its strategy, DP World Callao establishes links with organizations, partners, individuals, and institutions. It joined the United Nations Global Compact, committed its support to the World Economic Forum, and developed initiatives with the Blue Marine Foundation[88], Logistics Emergency Team[89] and Impact2030[90].

There are other terminals in the DP World group that adhere to this strategy, to a greater or lesser extent, depending on the economic zone and level of development of the facilities, businesses, and growth and impact projections. Some notable terminals worth mentioning are:

DP World Posorja (Ecuador): The deep-water port of Posorja stands out for its modern infrastructure, advanced technology, high safety standards, and capacity to receive large vessels, positioning it as the country's leading port in cargo handling and a key facilitator of Ecuadorian trade.

86 https://www.dpworld.com/es/peru/sustainability/our-approach-to-sustainability
87 https://www.un.org/sustainabledevelopment/es/objetivos-de-desarrollo-sostenible/
88 https://www.bluemarinefoundation.com/
89 https://logcluster.org/en/logistics-emergency-team
90 https://www.conference-board.org/research/environmental-social-governance-briefs/IMPACT2030-BWL-Partnership

FIGURE No. 5: DP WORLD POSORJA

DP World Caucedo (Dominican Republic): Multipurpose port terminal used as a connection for ports in the Americas and the Caribbean, making it a logistics hub for the region and offering a wide variety of port services (containerized cargo, automotive, general cargo, and project/oversized cargo).

FIGURE No. 6: DP WORLD CAUCEDO

Neither terminal currently has sustainability reports or memos, but they adhere to a clear corporate policy that will promote various environmental and social objectives—wherever they operate—that favor the development of their port terminals and eventual publications to their stakeholders of their achievements and growth in sustainability.

Puerto Cortes (Honduras)[91].

Puerto Cortés is one of Honduras' main ports and the primary gateway on the Atlantic coast to most of Central America (Figure 7). Located next to industrial areas and Honduras' second largest city, San Pedro Sula, it is the most important logistics center in Central America, located about 140 kilometers south of the capital, Tegucigalpa.

It is operated by Operadora Portuaria Centroamericana OPC[92] - which in turn is part of the ICTSI (International Container Terminal Services Inc) group, the world's largest independent terminal operator, with a presence on six continents.

FIGURE No. 7: PUERTO CORTES (ICTSI)

Puerto Cortés provides logistical access to the central-northern and northern regions of Honduras, enabling the movement of products such as sugar, coffee, fruits, and vegetables. It is also a strategic port for the export of minerals such as iron, copper, and zinc, as well as manufactured products such as textiles and processed foods.

In terms of sustainability, the corporate initiatives of the ICTSI group, and therefore of the port terminal, are focused on six aspects or pillars: society, economy, environment, employees, customers, and governance. Additionally, it uses international standards to evaluate and challenge its sustainability goals. ICTSI uses GRI standards for the preparation of its sustainability reports.

Sociedad Portuaria Santa Marta - SPSM (Colombia)[93].

The SPSM came into being under Law 001 of 1991, an act that put an end to the State monopoly on port administration and led to the liquidation of Colpuertos. Under this new arrangement, the Office of the Superintendent General of Ports (Superintendencia General de Puertos), the Regional Port Corporations (Sociedades Portuarias Regionales)

91 https://www.ictsi.com/our-offering/our-terminals/operadora-portuaria-centroamericana-sa-de-cv
92 https://www.opc.hn/
93 https://www.puertodesantamarta.com/Puerto/Historia

and the port operators, entities with administrative autonomy and their own assets, were all created. Then, through a concession, the State handed over to the Regional Port Corporation of Santa Marta (Sociedad Portuaria Regional de Santa Marta), administration and operation of the infrastructure of the Sea Terminal.

The objective of the Colombian State was to create a new port corporation (Sociedad Portuaria) with a totally different and modern administrative mode, an entity that would reduce operation costs. As a response to this initiative, the Sociedad Portuaria Regional de Santa Marta was chartered and was geared towards providing quality and caring client service.

The Sociedad Portuaria de Santa Marta, which launched operations in 1993, is a partially state owned corporation (empresa de economía mixta), founded by 60 companies, including banana-producer organizations, shippers, the Department of Magdalena, the District of Santa Marta and other business persons. That institutional backing enabled it to obtain authorization from the Office of the Superintendent of Ports to do business as port operator.

Santa Marta has a highly important seaport to Colombia, because of its geographic location and because of the natural depth it boasts of up to 60 feet at some of at its docks. It is appealing and advantageous to shipbuilders and shippers alike, because of this physical configuration that enables it to accommodate post-Panamax type ships.

One of the comparative advantages of the port of Santa Marta is that it is characterized by favorable natural circumstances, including shelter and depth, variables that no other Colombian port can boast. The port has 7 docks and more than one kilometer of mooring shield, with depths of up to 60 feet, which requires no maintenance in terms of dredging (See Figure No. 8)[94].

FIGURE No. 8: SOCIEDAD PORTUARIA SANTA MARTA

94 SPSM - https://www.puertodesantamarta.com/

Terminal Pacífico Sur S.A. – TPS (Chile)[95].

Terminal Pacífico Sur Valparaíso S.A. (TPS), founded in 2000, is a company with a concession to develop, maintain, and operate the principal berthing front of the Port of Valparaíso in Chile. Headquartered in Valparaíso, TPS holds the concession of the container carrier and multipurpose ship terminal with a capacity for 1,300,000 TEU per year, up until 2029. It is located 110 kilometers northwest of Santiago, the capital city of the country. This proximity makes it a strategic point in commercial distribution, since the central zone of Chile hosts more than 50% of the population and national economic activity.

It has a total of 1,006 meters of mooring front, the principal front of which stretches 740 meters in length, with a maximum depth of 14.1 meters, thus enabling it to accommodate Post-Panamax ships simultaneously in berthing spots 1, 2, and 3. Its secondary front extends 266 meters in length, with a maximum depth of 9.4 meters, to accommodate smaller sized vessels as well.

It has a total of 9 ship-to-shore gantry cranes, including some of the largest of the west coast of South America, with a 62-meter reach and lifting capacity of 65 tons. Additionally, it has 15 RTG mobile gantry cranes.

The Figure No. 9 shows an overview of the port facilities of Pacífico Sur [96].

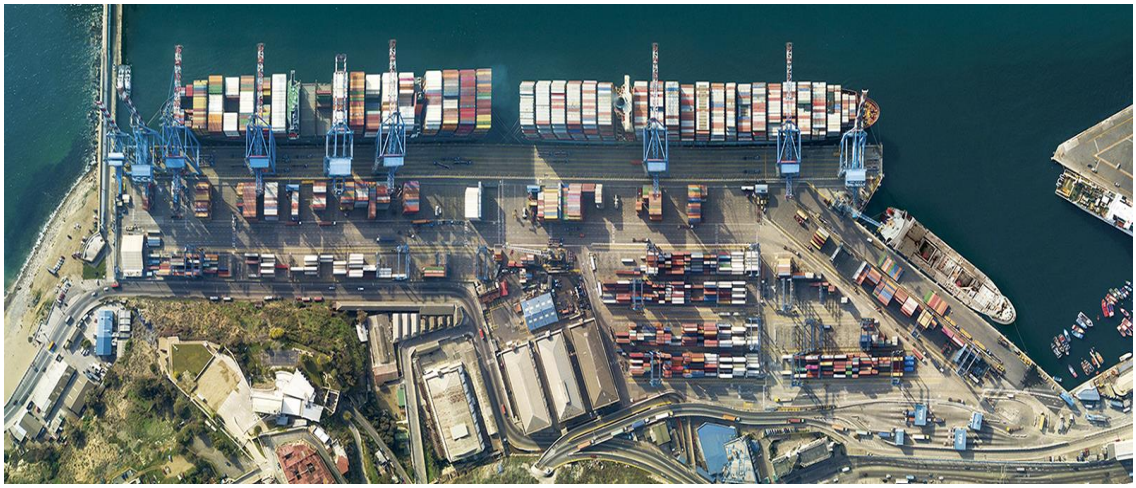

FIGURE No. 9: TERMINAL PACIFICO SUR.

Puerto Ventanas S.A. – PVSA (Chile)[97].

Puerto Ventanas S.A., is the principal bulk cargo port of the central zone and one of the most important in the country. Located on Quintero Bay, town of Puchuncaví, it conducts its business with a commitment to the economic, environmental, and social development of its stakeholders, and particularly to the communities where it operates.

95 https://www.tps.cl/tps/site/artic/20130814/pags/20130814172205.html
96 https://www.tps.cl/
97 https://puertoventanas.cl/

Its facilities have four deep- sea berthing slots and are outfitted with mechanized systems for loading and unloading up to 24,000 tons per day, accommodating liquid and solid bulk and general cargo ships of more than 70,000 tons and 14.3 meters draft. In terms of logistics, it is fully equipped with warehouses and transportation capacity for handling cargo in transit with efficient operation and high safety, quality and environmental standards. Figure No. 9 shows an overview of port facilities of Puerto Ventanas. (see Figure N°10)[98].

FIGURE No. 10: PUERTO VENTANAS.

Terminal Internacional del Sur - Tisur (Perú)[99].

Terminal Internacional del Sur (TISUR) company, has been doing business over the years at Matarani Port Terminal. On the cost of South America, specifically on the bay located at the north end of Puerto de Islay, 120 kilometers from Arequipa, Peru. It is interconnected through the national roadway network to the binational Peru-Brazil and Peru-Bolivia highways.

TISUR kicked off its operations on August 18, 1999 when, through its Ministry of Transportation, the Peruvian State awarded it the Matarani Port Terminal concession for 30 years. With more than 15 years of concession under its belt, the company has successfully run the Terminal Portuario de Matarani, greatly contributing in this way to the development of the region along the three lines of action (economic, social, and environmental). TISUR has become the principal support of port activity of the Southern Region of Peru, providing a high quality, cost, and time efficient service[100].

It has four docks, which enables it to accommodate large vessels 365 days a year, without interruption. It has an interior harbor formed by two 650 and 145 meter breakwaters. Docks A, B, and C have 10-meter drafts; dock F, 18 meters. Its loading service include facilities for solid bulk cargo storage, both mineral ore and grains, storage tanks for

98 Imagen obtenida del Reporte de Sostenibilidad 2019 de PVSA.
99 https://www.tisur.com.pe/es/nosotros
100 Tisur Sustainability Report 2014.

vegetal oil and alcohol. It has fully equipped storage areas, 75,000 ton capacity grain silos, covered tanks for mineral ore concentrate with a 120,000 ton capacity, 22,332 square meters of indoor warehouses for sacking and foodstuff, 157,754 square meters of outdoor storage space, 3,150 cubic meters of alcohol storage tanks, in addition to 1,630,525 square meters of reserve area available for expansion, as required by clients[101].

The Figure No. 11 shows an overview of the port facilities of Terminal Pacífico Sur[102].

FIGURE No. 11: TERMINAL INTERNACIONAL DEL SUR.

Terminal Puerto Arica - TPA (Chile)[103].

Terminal Puerto Arica won the concession in the public tender of the Port of Arica as part of the modernization process of Chilean sea terminals in 2005. Its operations were launched in October of that same year and the concession is for a period of 30 years.

The Port of Arica is located in northern Chile in Region XV of Arica and Parinacota, a strategic location on the borders of Peru and Bolivia, in addition to becoming the entryway and exit door to the Asian Pacific for several South American countries. Terminal Puerto Arica

has a mooring front of 1,234 meters, divided into 6 slots and a maximum depth of 12.4 meters (slot 2B).61 TPA is a multipurpose port suitable for moving containers, bulk cargo (mineral ore, agro-industrial and liquid) and general cargo (project, loose, and vehicular cargo).

The Figure No. 12 shows an overview of the port facilities of Terminal Puerto Arica [104].

[101] https://www.tisur.com.pe/sites/default/files/escritorio/informe-pers-es.pdf
[102] Imagen obtenida de la página web de Tisur - https://www.tisur.com.pe/es
[103] http://portal.tpa.cl/tpaweb/reporte-sostenibilidad/
[104] Reporte de Sostenibilidad TPA - http://portal.tpa.cl/tpaweb/reporte-sostenibilidad/

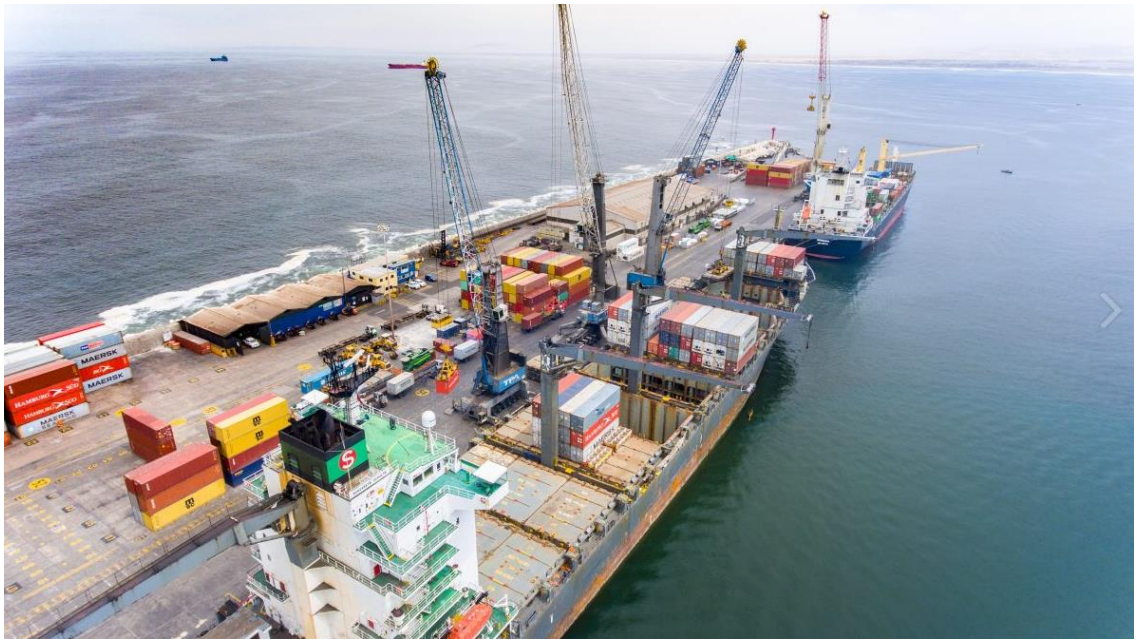

FIGURE No. 12: TERMINAL PUERTO ARICA.

Port Group of Cartagena: Regional Port Corporation of Cartagena (Sociedad Portuaria Regional de Cartagena) – Container Terminal of Cartagena (Colombia)[105].

Port Group of Cartagena and its terminals has stood out because of its environmental management and certifications, in addition to developing a strategy of Corporate Social Responsibility (CSR).

Empresa Portuaria Antofagasta (Chile)[106].

Empresa Portuaria Antofagasta is the Chilean state-owned company responsible for the administration, operation, development, and conservation of the port and its terminals. It has stood out for its constant efforts related to environmental actions. However, in a broader context, in recent years it has complemented its sustainability strategy by reporting on its impacts, progress, and achievements.

Puerto de Moín - Limón (Costa Rica)[107].

The Port of Moín is one of Costa Rica's main seaports, located on the Caribbean coast in the province of Limón. This port terminal has an annual capacity of 1.2 million TEU, covers an area of 40 hectares, and was built on an artificial island. It has a 650-meter-long berthing front and areas for container storage (dry and refrigerated cargo). The terminal is equipped with 29 electric cranes for container handling and six super post-Panamax gantry cranes, enabling it to handle container ships of up to 8,500 TEU.

105 https://www.puertocartagena.com/es/compromiso-social-empresarial-puerto-cartagena
106 https://www.anfport.cl/
107 https://www.apmterminals.com/es/moin/about/our-terminal

It is operated by APM Terminals Central America S.A.[108], concessionaire that in 2011 signed a concession contract with the Costa Rican government for the design, financing, construction, operation, and maintenance of the Moín Container Terminal (TCM) for 33 years (see Figure No. 13).

The location of the Port of Moín is strategic for Costa Rica's trade and economy. It is located approximately 110 kilometers west of the capital, San José, and provides access to most areas of the country, making it an important national logistics center and essential for imports and exports. The products most frequently moved through this port are grains, sugar, coffee, wood, and textiles, although imports of vehicles and heavy machinery have also increased. It has a direct impact on the export capacity of fruit, such as pineapple, of which Costa Rica is the world's largest exporter, and it is also the third largest exporter of bananas.

FIGURE No. 13: TERMINAL DE CONTENEDORES DE MOIN.

8.3 Analysis of common and/or outstanding elements of each report.

Report style and structure.

From reviewing the latest versions of the Sustainability Reports of the ports mentioned in the previous section, over time the reports have followed some very clear lines in their preparation. However, in other cases, they have only led to environmental reports. In some terminals, there are reports on their social management actions without linking this guideline to others such as the environment and economic development.

Integrated sustainability reports or memoirs, which include economic results or financial statements with aspects of the social and environmental management of a port terminal, are the reporting model with the most information and, therefore, the most comprehensive, as they provide a very complete picture of the progress, improvements, challenges, materiality, and sustainability strategies of the port companies that report in this way. This is the case for port terminals such as Puerto Ventanas, Terminal Pacífico Sur, Empresa Portuaria Arica, Terminal Puerto Arica, DP World Callao, Puerto Cortés, and Empresa Portuaria Antofagasta.

[108] https://www.apmterminals.com/

There are other port terminals that do not publish sustainability reports or memoirs directly because, as they are part of a corporate organization, it is the latter that is responsible for consolidating the sustainable management of the group of companies. In the case of the terminals analyzed, this is the case of the Moín APM Container Terminal (which is part of APMoller-Maersk and reports to Maersk[109]).

The 2024 integrated reports of Puerto Ventanas, Empresa Portuaria Antofagasta, and Empresa Portuaria Arica, Terminal Puerto Arica follow the guidelines of the IIRC (International Integrated Reporting Council) Integrated Reporting model[110]), in accordance with International Financial Reporting Standards (IFRS), issued by the International Accounting Standards Board (IASB).

The reports from DP World Callao (2024), Terminal Pacífico Sur (2024), and Puerto Cortés (through OPC Operadora Portuaria Centroamericana, a subsidiary of ICTSI International Container Terminal Services Inc.) have been prepared in accordance with the Global Reporting Initiative (GRI) Standards. Terminal Pacífico Sur also includes General Standard No. 461 of the Chilean Financial Market Commission (CMF).

The reports of Sociedad Portuaria Santa Marta (2018) and Terminal Internacional del Sur (2015-2016) have been prepared in accordance with the G4 guidelines or principles of the GRI (Global Reporting Initiative). However, neither terminal has published sustainability reports for recent years, particularly 2024, limiting their reports to environmental issues. Both terminals highlight reports on social issues and the actions they undertake in their annual management.

Evolution of reporting.

La Sociedad Portuaria Santa Marta.

In 2008, a program was launched as part of the strategy of Corporate Social Responsibility (CSR), which fostered dialogue with stakeholders, producing the first Sustainability Report, drafted under the G3 GRI principles.

A second report covers fiscal year 2009 and, between 2010 and 2011, after continually developing its CSR engagement policies, the port was nationally recognized as the Best Business of the Regional Economy and other distinctions for its outstanding performance in this regard.

By fiscal year 2012, it published the first Social Responsibility Report and another Environmental Sustainability Report, which it published again in 2013, as its second environmental report.

In 2014, it released a new Environmental Sustainability Report, highlighting its EcoPorts 2013 certification (the first Latin American port to have this accreditation), and also receives the first Maritime Award of the Americas for CSR (OAS and CIP).

[109] https://www.maersk.com/sustainability/reports-and-resources
[110] International Integrated Reporting Council (IIRC).

From 2015 to 2017, it issued no reports on its sustainability management, only financial statements, but in 2015 the port was recognized by the International Association of Ports and Harbors (IAPH) for its outstanding environmental management. The last report it released is for fiscal years 2018.

Puerto Ventanas - PVSA.

As of 2009, Puerto Ventanas began to develop some aspects linked to environmental practices, mostly geared toward monitoring air and marine environment quality.

From 2010 to 2011, it took some environmental measures to enhance its operations (protective netting around cargo storage yards, dust suppression spraying, among other ones) and, reported its first social responsibility actions.

In 2012, Puerto Ventanas announced its "Sustainability Policy." It reflected the change toward a strategy of stating its environmental and social commitments, with no supporting methodology, though it began to notably engage with local stakeholders, and in 2014 stated that its sustainability strategy "is one of the fundamental pillars in its vision and business management model."[111].

From 2015 its reports were called Memoria Anual/Reporte Integrado (IIRC) ('Integrated Annual Report'), linking the company's financial performance to its sustainable management, highlighting the systematic effort to strengthen ties with the local community[112].

It's fitting to note that Puerto Ventanas has been awarded twice by the Inter- American Committee on Ports (CIP) of the Organization of American States (OAS), the Maritime Award of the Americas in the category of Community Engagement and Port-City relations." Puerto Ventanas was also was awarded EcoPorts certification in 2016 and in 2024, it obtained its fifth renewal.

Terminal Puerto Arica – TPA.

TPA's first Sustainability Report was released in 2018, for the 2017 evaluation period, using the GRI G4 methodology.

In its third report, released in 2020, for the period of 2019, using on this occasion the GRI Standards, it noted "As a company we have the conviction that our corporate and operational development, must go hand-and-hand with the contribution that as persons and members of the community we make to the environment, to thus conduct a responsible, clean, and sustainable operation, capable of projecting out in time in keeping with the needs of our stakeholders and environment."[113].

[111] Memoria Anual 2012 - Puerto Ventanas S.A.
[112] https://puertoventanas.cl/content/uploads/2025/04/PVSA-Reporte-Integrado-2024-250403-1.pdf
[113] Terminal Pacífico Sur S.A. - Reporte de Sostenibilidad 2019.

Starting in 2022, TPA will publish its Integrated Report in accordance with International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB).

Terminal Internacional del Sur - Tisur.

In 2009, Tisur conducted a self-assessment of the degree of integration of social responsibility in its strategies, policies, and processes, which enabled it to identify its stakeholders in order to design strategies and future actions for improvement of its relations with each of them.

In 2010, it launched the process of Sustainability Reporting releasing its first report in 2011 and its second one in 2013, for the 2011 and 2012 fiscal years, using the GRI G3 methodology (Global Reporting Initiative).

A third Sustainability Report was written using the GRI G4 methodology, for fiscal years 2013 and 2014. A fourth report was written for the 2015-2016 period, also with the GRI G4 guidelines.

Currently, Terminal de Matarani has prepared environmental reports on its operations, and there is no information on new sustainability reports; its community engagement practices have been maintained and are reported separately.

Terminal Pacífico Sur – TPS.

TPS's first Sustainability Report was published in June 2016 covering the evaluation period of 2013-2014, using the basic version of the GRI G4 methodology. TPS states in this first publication: "With this exercise, we undertake to disseminate our responsible management on an annual basis and address in the same way the opportunities for improvement detected in this initial document, increasing quality in form and content, year by year."[114].

A second report was released in 2017 covering the 2015-2016 period, also under the same methodology as the previous report, emphasizing the processes of engagement with all of its stakeholders. A third report was published in 2019 for the 2017-2018 period, this time using the GRI Standards, setting it apart from the previous reports by including compliance with the United Nations Sustainable Development Goals (SDGs), to which Chile acceded in 2015. Terminal Pacífico Sur has consistently published its sustainability reports using GRI methodology, incorporating the standards required by the regulatory body in Chile for this type of report; its latest integrated report corresponds to 2024[115].

DP World Callao.

The port terminal has developed sustainability reports in recent years, following GRI methodology, in order to communicate its performance results and maintain transparency with its stakeholders. DP World Callao (DPWC) and DP World Logistics

[114] Terminal Pacífico Sur S.A. - Reporte de Sostenibilidad 2014.

[115] https://www.tps.cl/tps/site/docs/20160629/20160629155111/reporte_integrado_tps_2024.pdf

(DPWL) record, for the period 2022-2023, their management related to material issues based on economic, environmental, and social aspects.

Puerto Cortes ICTSI (International Container Terminal Services Inc).

ICTSI has been producing corporate sustainability reports since 2017. The terminal in particular, committed to the highest standards of sustainability, integrating environmental, social, and governance (ESG) principles into all our operations, aligned with the UN Sustainable Development Goals, has published its first Sustainability Report for the period from January 2022 to December 2024.

Empresa Portuaria Antofagasta.

Empresa Portuaria Antofagasta has been producing integrated reports since 2020, incorporating aspects of shared value and the UN Sustainable Development Goals. In 2021, the integrated report is prepared in accordance with the core option of the GRI Standards, on an annual cycle, and states that it has not been externally verified. It also incorporates the regulatory requirements that the Financial Market Commission (CMF) contemplates in the presentation of reports of this nature, in accordance with current Chilean legislation on the matter. It highlights the evolution of its reports on environmental issues and stakeholder engagement, with a focus on sustainability, maintaining the principles declared towards the SDGs (UN Sustainable Development Goals).

8.4 Generalities and Outstanding Aspects of Reports.

The evolution of knowledge, together with new updates to sustainability standards, has allowed many of today's reports to incorporate other topics that were not very well developed in the past or were simply not considered. This is the case with materiality analyses, which essentially allow for the addressing of aspects that reflect the significant economic, environmental, and social impacts or effects of a port or port terminal that influence the opinions or assessments of its stakeholders or related parties. The reports from Puerto Cortes ICTSI (International Container Terminal Services Inc), DP World Callao, APM Terminal Puerto Moín (reported by Maersk[116]) include in their latest reports an in-depth analysis of materiality, standing out from those who do not consider it.

In all of the reports analyzed, one common thread is a description of the services offered by ports, their history, port facilities, infrastructure, equipment, their setting, organizational structure, relevant cargo movement statistics (in some instances, broken down by types), certifications and recognitions, the different types of businesses they are involved in, review of their main clients, investments, and projects, and economic management performance.

Additionally, aspects are highlighted such as mission, vision, each corporation’s values and, in particular, corporate governance practices. All of them mention ethics and integrity of governance and explain the importance that these aspects represent to engagement with stakeholders.

[116] https://investor.maersk.com/static-files/31bf05a1-6f0c-4fbd-a3c7-3f58e044f668

The report of Sociedad Portuaria Santa Marta (2018) stands out because it includes a section "Effectiveness verification of review of principles and values compared to performance based on ethics and integrity" (original: "Verificación de efectividad a revisión de principios y valores al desempeño basado en la ética e integridad"). It also adds a section on "Business ethics management in the supplier chain," noting that all supply management linked to internal control, and internal and external audits, are subjected to processes of regulatory compliance, ethical aspects, among other things.

Even though all the reports refer to their clients, the information provided by Terminal Internacional del Sur – Tisur is noteworthy because it includes results of the client satisfaction surveys and draws a comparison of its evolution over time to its compliance target, broken down by client and by aspects (operations efficiency, safety, infrastructure, and other ones) to determine its weaknesses and strengths. Sociedad Portuaria Santa Marta also provides results of client satisfaction surveys, though it does not analyze and compare the evolution of the results over time.

DP World Callao has been publishing its sustainability report since 2018, directly addressing all the actions of its operations in the Port of Callao. Its report stands out for the clarity of the information it provides and because it has maintained a permanent sustainability policy over time (Our World, Our Future).

All reports have a section to communicate aspects about the persons working under the control of the organization, which includes a variety of information, such as staff size, diversity (by age range, seniority, gender, among other traits), equality of remuneration between men and women, labor practices and decent work; they explain performance evaluation methods, aspects of stability and shift rotation, remuneration and benefits policy, training, instruction, professional development, succession models, and other areas).

In some reports, the port company's commitment to the occupational health and safety of its workers is explained and, for that purpose, they report on indicators of accidents and their evolution over time, specific trainings on these subjects, management and involvement of internal groups made up of company representatives and of the workers themselves. On this score, in particular, we can cite the reports of Terminal Pacífico Sur, Terminal Internacional del Sur – Tisur, and Terminal Puerto Arica, for the analysis and development of the company's commitment, as well as for the detail in the information they cover and provide.
Terminal Internacional del Sur – Tisur, Terminal Puerto Arica and Terminal Pacífico Sur – TPS devote a section exclusively to information about their suppliers and their practices.

Also worthy of highlighting are energy management initiatives taken and reported by Puerto Ventanas. As for these initiatives, it wrote, "Over the past five years, Puerto Ventanas has been developing systematic and successful energy management … in 2015 the company implemented an Energy Management System based on ISO 50.001".[117]

[117] Puerto Ventanas S.A., Memoria Anual Reporte Integrado 2019, Energy performance.

With respect to innovation management, Puerto Ventanas has implemented programs with government agencies of Chile (Corfo) and local universities taking the first steps in developing a culture of innovation and building innovation capacity, crafting a specific policy for this purpose.

An interesting strategic aspect, to illustrate that effort, is the innovation development reported by Terminal Puerto Arica: "Over the past 7 years, Terminal Puerto Arica has been working hard together with all personnel to create a culture that promotes innovation within its facilities. The commitment and hard work has instilled in the company the capacity to run successful innovation processes. Currently Terminal Puerto Arica is nationally recognized as one of the most robust cultures of innovation of our country."[118].

In the most recent publication of its 2022-2023 sustainability report, DP World included DP World Logistics (both are subsidiaries of DP World) in its report, representing an important recognition of a group company that has a significant impact on port terminal operations beyond the physical boundaries of the terminal. This incorporation expands the boundaries or area of influence of the port terminal, thereby highlighting the assumption and reporting of the effects or impacts of its activities, even outside the port premises.

A notable aspect of some reports, which is also associated with the development of sustainability strategies and best practices linked to ESG (or ASG in Spanish), is the incorporation or alignment with guiding principles such as the SDGs - United Nations Sustainable Development Goals[119]. In fact, several publications refer to the alignment of their sustainability strategies with these goals. This is a significant change in sustainability reports which, in addition to reporting under a demanding standard of analysis and publication, such as GRI, incorporate in their analysis efforts to commit to achieving these goals. It should be noted that this prominent inclusion in reports is evident in the most recently published reports—despite the fact that the SDGs were published in 2015—which coincides with the reports of those port terminals that have taken significant advantage of the need to publish their management in all these sustainable development guidelines.

Community and Engagement.

All reports analyzed contain a special section on engagement and management vis-à- vis the communities living in their area of influence.

Hereunder, we provide a specific analysis of each port's initiative in this regard.

DP World Callao.

DP World states that its commitment to sustainability is demonstrated through its actions, as set out in its Annual Sustainability Plan and Sustainability Program. According to its latest report for 2022-2023, DP World Callao states that responsible management

[118] http://portal.tpa.cl/tpaweb/wp-content/uploads/2020/07/Reporte_sostenibilidad_2019_WEB.pdf
https://www.un.org/sustainabledevelopment/es/objetivos-de-desarrollo-sostenible/

of social and environmental impact is promoted by involving its employees in social programs through corporate volunteering, generating significant and far-reaching impacts in the communities within its area of influence.

DP World Callao states that it has community programs that contribute to improving the quality of life of the people involved. Some of the strategies are associated with i) identifying social actors and assessing needs or problems, ii) planning programs and managing resources to achieve them, iii) liaising with social leaders and public representatives, iv) monitoring activities from start to finish, and v) presenting results both internally and externally to the organization.

DP World Callao states that its organization "*fosters positive relationships with communities and stakeholders, focusing on respect, trust, and effective communication. The beneficiaries of these initiatives are the residents of the area of influence, including those involved in fishing and maritime tourism, as well as grassroots social organizations and civil society*"[120].

- Environmental Education Programs: commemoration of World Water Day and Oceans Day, where workshops are held in public educational institutions aimed at elementary school students.
- Program for intervention in public spaces and/or schools: an annual event raises funds for projects such as "Implementation of digital classrooms" or "Library improvement."
- Global Education Program: In 2023, workshops were held at four educational institutions in Callao to promote knowledge about global trade, logistics, and port management.
- Emprende Program: which seeks to promote the growth of entrepreneurship in Callao through training aimed at small business owners who, thanks to the program, have strengthened their activities with the Patronato por la cocina del Callao (Callao Cooking Board).
- Prevention and Safety Program: provides the population of Callao and La Punta with information on preventive actions before, during, and after a natural disaster, as well as providing the necessary knowledge to administer first aid.
- Volunteering: carried out in conjunction with employees, visits have been made to nursing homes to celebrate Mother's Day, Father's Day, Senior Citizens' Day, and Christmas.

DP World Callao does not have or manage any social foundation dedicated exclusively to social work in its area of influence.

Puerto Cortés (Central American Port Operator OPC).

The Central American Port Operator (OPC), which holds the concession contract for the operation of the container and general cargo terminal at Puerto Cortés, has developed and achieved a positive impact on its environment or area of influence. Sustainability

[120] https://www.dpworld.com/peru/-/media/project/dpwg/dpwg-tenant/americas/peru/peru/media-files/sustainability-reports/reporte-de-sostenibilidad-corporativo-2022---2023-v3.pdf?rev=-1&hash=0F4DB5849CEC5CF1001092ED8C067DD1

actions are mainly focused on Corporate Social Responsibility (CSR) initiatives, with an emphasis on the Sustainable Development Goals (SDGs) and Environmental, Social, and Governance (ESG) principles. The strategic programs it has implemented focus on Education, Health, the Environment, and Corporate Volunteering.

- Volunteering: program focused on promoting values such as solidarity, teamwork, and sustainable development.
- Education, commitment to the future: construction of the Emanuel School in Puerto Cortés, the first state school for children with disabilities and the only one in the region.
- Comprehensive Health Program: an initiative that seeks to promote quality of life among employees by helping them take control of their bodies and minds (financial health, mental health, physical health).
- Ruta Rosa: Empowerment for women in the logistics sector and the community.

Sociedad Portuaria Santa Marta.

This is probably the most developed port in terms of community engagement and that is highlighted by its continual reporting on that aspect. In its statement on CSR, SPSM notes that it draws its social conscience on the following values: respect, solidarity, cooperation, and ecoefficiency.

Since 2008, it has been developing and managing the SPSM Foundation, the community link of which has been its great asset and the engine of its engagement. The foundation boasts countless initiatives and programs:

- Awareness-raising and Outreach Program in Area of Influence, linked to engagement with social leaders of the communities of the area of influence, community leadership development, community infrastructure development, environmental improvement, social and participatory work.
- Educational Improvement Program -targeting children and adolescents, which manages, among other things, child nutritional wellbeing, culture and values building.
- Program for Health and Integral Wellbeing, which has included wellbeing activities for older adults, assisting people with disability, medical care days for children, healthy communities initiatives.
- Environmental Conservation Program, education campaigns on the environment “beyond our facilities.”
- Income improvement Program, intended to provide job training and skills development, and artisanal fishing production development.

These initiatives and programs are the reasons why SPSM’s CSR management has been internationally recognized.

Puerto Ventanas.

The port Terminal has followed community engagement management guidelines that are similar to those of Sociedad Portuaria Santa Marta. It states in its report that “the

relationship with its neighboring communities is fundamental to the sustainable development of the company."

It has a Strategic Community Engagement Plan, whose objectives are "to generate long term links of trust to the community, contribute to the quality of life of its residents, communicate transparency, be major players of the development of the town, and contribute to positioning of Puerto Ventanas as a company that is growing alongside of it."

To implement this Strategic Plan, in 2012 it created the Open Port Community Center (Centro Comunitario Puerto Abierto), as a non-profit corporation, the mission of which is to contribute to the social and cultural development of the town.

The Community Center has carried out over time a series of outreach programs and actions, such as Port Visit Programs, Dual Education Program (on-the-job training for students in technical careers at establishments of the community), Training and Entrepreneurship Program for Artisanal Fishermen, among other outstanding programs.

As for community engagement management, Puerto Ventana's report underscores the evaluation it conducts with respect to the perception of engagement and outreach with its surrounding community, which has been carried out by an external organization since 2011. This practice has not been seen in any other report.

Terminal Internacional del Sur – Tisur.

Unlike the port terminals examined thus far, Tisur does not have a foundation to implement community engagement. The port terminal boasts several social investment projects to benefit community development in its area of influence. In its report, it mentions initiatives linked to the community in areas such as health, education, infrastructure, environment, and social wellbeing. In the area of health, it highlights initiatives such as free comprehensive health care campaigns, economic support to the town's medical center, annual medical check-ups for children, and nutrition talks. As for education, it reports on several initiatives such as Tisur Scholarship (training in areas of maintenance, accounting, and computer science), delivery of school supplies, among others. In the area of infrastructure, initiatives include small public works improvements, such as green areas, potable water installations, different construction and repair works. As to the environment, it mentions initiatives of visits to environmental monitoring stations of its own facilities, arborization of areas nearby the terminal, beach clean-up campaigns, recycling activities. For social wellbeing, a variety of initiatives and programs were reported, the principal one also linked to artisanal fishermen, emergency services, support for older adults, soup kitchens, support for the municipal government, and other ones.

Terminal Pacífico Sur TPS.

This port terminal reports four pillars of community action and engagement: sports, culture, education, and quality of life and businesses. Under the pillar of sports, several initiatives are noted: partnership and sponsorship with the most accomplished soccer

team of the community, nautical sports workshops and sailing school, TPS half marathon—going on its thirteen consecutive year. As for the pillar of culture, there are several large events such as festivals and expositions of different types. With regard to education and quality of life and business, the port terminal collaborates with different community institutions.

Terminal Puerto Arica TPA.

The company has a Corporate Social Responsibility (CSR) program, that is called "Arica, my Port City (Arica, mi ciudad Puerto), the objective of which is to create close ties between the community and the port, and in this way take part jointly in activities that highlight the tasks of the port, doing its part to meet the needs of the community. This initiative has four pillars of community action and engagement: education, culture, environment, and sports. The "Safer Port Arica" initiative, which engages the different organizations operating at the Port of Arica in developing a culture of prevention, safety, and occupational health.

Port Group of Cartagena.

As was noted above, the group does not issue Sustainability Reports. However, it excels in its commitment and social action. The Group states: "The quest for balanced socioeconomic growth that gives rise to social wellbeing and ensures adequate utilization of natural resources is the engine that powers all actions of the Port Group of Cartagena. Both logistical and port operations, and its relationship with the city and the communities, are carried out in an active, responsible, and sustainable manner."[121]

In 2005, the organization created the Port of Cartagena Foundation, in order to promote the Group's social investment, actively engaging its stakeholders in four pillars of action: i) Education, culture and environment, aimed at improving education quality and promote awareness of artistic culture in vulnerable communities, especially with children, parents, and caretakers; ii) Community development, aimed at developing leadership skills, mainly among young people, to join the members of the community in implementing social projects; iii) Income generation, aimed at developing entrepreneurship, among young people and adults, to create their own businesses and employability, in order to improve their quality of life; and, iv) Community infrastructure, which includes social investment projects for the improvement of urban spaces of vulnerable communities to foster neighborly interaction between citizens.

Port of Moín.

APM Moín Container Terminal has developed several community outreach initiatives.

- The "Soy APM Voluntariado" (I am APM Volunteering) program aims to strengthen the bond between employees and the company and their communities by facilitating volunteer activities for their work teams in environmental, social, and cultural areas, among others.

[121] https://www.puertocartagena.com/es/compromiso-social-empresarial-puerto-cartagena

- Robotics Program: the company, together with the Quirós-Tanzi Foundation, has promoted the Robotics Program, which has been incorporated into the curriculum for children at the Local School in Moín.
- Ecological Blue Flag Program: recognition from the Costa Rican Tourism Institute to strengthen public health and tourism.
- Sea Turtle Conservation Project: a socio-environmental commitment undertaken since the beginning of the port terminal construction phase to protect sea turtles that come to lay their eggs on Moín Beach.

Environmental Management.

In all reports evaluated, the environmental aspect and its importance to every port terminal is examined.

- All port terminals have an Environmental Management System and ISO 14.001:2015 certificate.
- Terminal Internacional del Sur, Terminal Sociedad Portuaria Santa Marta, Puerto Ventanas, Sociedad Portuaria Regional de Cartagena and Terminal de Contenedores de Cartagena, also have EcoPorts certification.
- Puerto Ventanas is the only port terminal that has energy efficiency policies and has implemented an Energy Management System based on ISO 50.001 certification.
- Except for the report of Puerto Ventanas, all of the other ports report in detail environmental aspects linked to their activity, such as CO2 emissions and their scope, materials consumption used in the operation, fuel consumption, electrical energy consumption, water consumption solid and liquid waste treatment, and biodiversity (protection, conservation and/or restoration of elements of the natural environment).