Inter-American Committee on Ports

GUIDE TO ENVIRONMENTAL CERTIFICATION

AND

SUSTAINABILITY REPORTING

FOR PORTS OF THE AMERICAS

SUMMARY

2025

CHAPTER 1.
CRITICAL ELEMENTS FOR PORT ENVIRONMENTAL MANAGEMENT.

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.

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.

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.

1.4 Implementing an Environmental Management System (EMS).

An Environmental Management System is a structured system whose strategic approach is 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.

CHAPTER 2.
GREEN PORT MANAGEMENT BEST PRACTICES CATALOGUE.

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

Table No. 1 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. 1: SIGNIFICANT ENVIRONMENTAL ASPECTS OF PORT OPERATIONS.

A more specific listing of environmental impacts linked to port operations appears below in Table No. 2[1].

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.
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

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

COMPONENT	IMPACT	DESCRIPTION
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.
	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

COMPONENT	IMPACT	DESCRIPTION
	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. 2: LISTING OF ENVIRONMENTAL IMPACTS LINKED TO PORT OPERATIONS.

2.2 Port management best practices using environmental management systems.

Table No. 3 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.

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)
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

PRACTICE	ACTION	DESCRIPTION	EXPECTED OUTCOMES
			- 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 - Quality monitoring of water column profiling	- Taking silt samples - Water column profiling for component analysis - Sampling should be done at a reference point outside the port and where operations take place (mooring docks)	- Analysis of biodiversity - Observing changes in the physical-chemical quality of the seawater
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. 3: BEST PRACTICES IDENTIFIED AT LATIN AMERICAN PORT TERMINALS.

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

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

We can highlight the following advantages offered by an Environmental Management System: competition factors, cost reduction, a committed organization, and risk identification and control.

3.2 ISO 14.001:2015 Environmental Management System.

3.2.1 General Description of the Standard.

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.

Table No. 4 describes the stages and methodology that must be followed by the organization in order to implement ISO 14.001:2015.

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 4: STAGES AND METHODOLOGY TO IMPLEMENT ISO 14.001:2015

3.2.2 Commitment – Environmental Policy.

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[2]: "protect the environment", "to comply with applicable legal and other requirements of the organization,"[2] and "to continually improve the environmental management system in order to improve environmental performance"[2].

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."

Environmental Aspects.

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. After identifying the environmental aspects, the criterion or criteria to evaluate the importance of each one should be established and defined. Then they must be prioritized, determining what aspects have or can have a significant impact on the environment. 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.

Compliance Obligations.

The organization must determine and have access to legal and other requirements related to their environmental aspects.

Planning of Actions.

Actions must be established as part of the processes to address significant environmental aspects, applicable legal and other requirements, risks and opportunities detected.

Objectives Environmental Objectives.

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."[3]

Table No. 5 identifies considerations to bear in mind in determining environmental objectives.

[2] Standard ISO 14.001:2015 – Annex A.5 – A.5.2 Environmental policy.
[3] 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°5: CONSIDERATIONS TO DETERMINING ENVIRONMENTAL OBJECTIVES.

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*[4].

3.2.4 Support.

As for the concept of resource, the Standard establishes that they can include resources (human, natural, infraestructure, financial), competence (appropriate trainning, education), awareness, communication and documented information.

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.

[4] Standard ISO 14.001:2015 – Annex A.6 – A.6.2.2.

Emergency Preparedness and Response.

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

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. For this, the following are used: a) evaluation of compliance, b) internal audit, c) review by the organization's management (upper management).

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.

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[5].

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. 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."[6]

- Plan: understand the context of the organization, establish an energy policy and an energy management team.
- Do: implement the action plans, operational and maintenance controls, and communication.

5 Standard ISO 14.001:2015 – Introduction - 0.5 Contents of this International Standard.
6 Standard ISO 50.001:2018 – Introduction - 0.4 Compatibility with other management system standards.

- Check: monitor, measure, analyze, evaluate, audit and conduct management review(s).
- Act: take actions to address continually improve energy performance.

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.

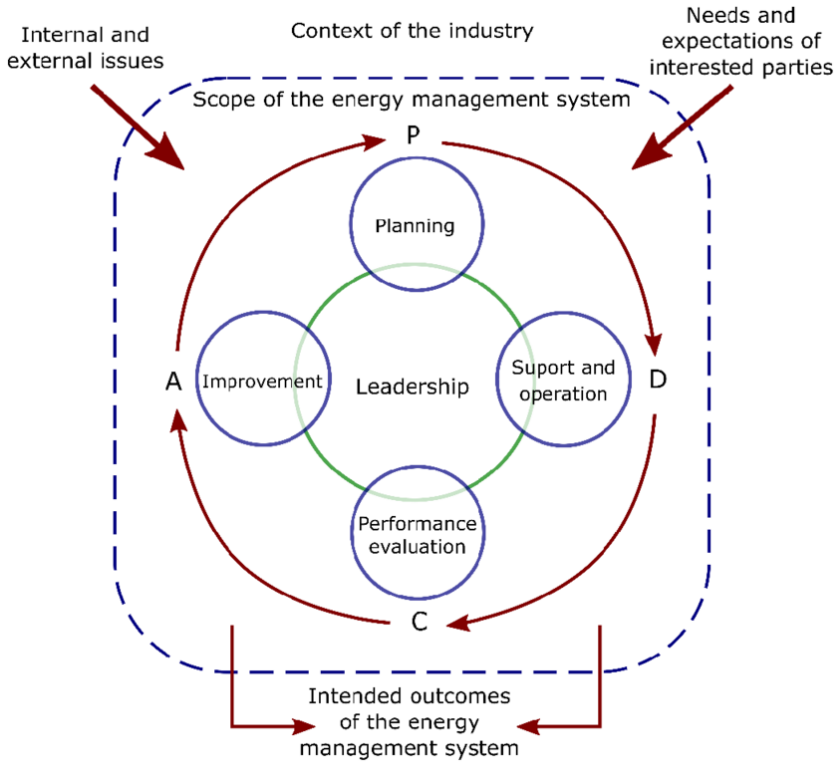

DIAGRAM No. 1: PLAN-DO-CHECK-ACT CYCLE ISO 50.001.

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"[7]. 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.

3.3.3 Leadership and Commitment.

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.

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

Energy policy is the main instrument through which upper management expresses its commitment and support for energy management, which must take into account that [8].

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[9]) and the variables that influence or affect them.

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.

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 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."[10]

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.

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 (See Diagram No. 2). The difference between the reference values and the resulting value is a measure of the change in energy performance." [11]

8 Standard ISO 50.001:2018 – 5.2.

9 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).

10 Standard ISO 50.001:2018 – A.6.3.

11 Standard ISO 50.001:2018 – 3.4.4.

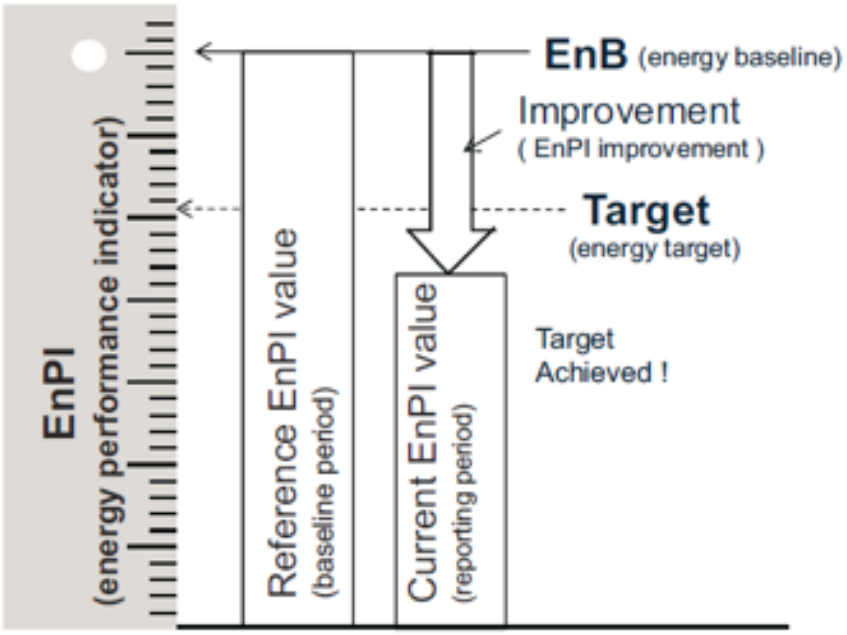

DIAGRAM No. 2: EPI values according to ISO 50.006:2015[12].

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.

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, 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.

3.3.5 Support.

As for the concept of resource, the Standard establishes that they can include resources (human, natural, infraestructure, financial), competence (appropriate trainning, education), awareness, communication and documented information.

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.

[12] Standard ISO 50.006.

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.”[13].

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.

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.

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.

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. "Upper management must review the organization's EnMS at

[13] Standard ISO 50.001:2018 – A.8.2.

planned intervals to ensure its continued suitability, adequacy, effectiveness, and alignment with the organization's strategic direction."[14].

3.3.8 Improvement.

The continuous improvement stage closes the cycle of a management system.

Nonconformity and corrective action.

As a cross-cutting aspect of the entire EnMS, the organization must respond to non-conformities through corrective actions.

Continual Improvement.

"The organization must continually improve the suitability, adequacy, and effectiveness of the EnMS."[15]. 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.

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.

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). 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 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, infrastructure, health, safety, and security, environmental care, community building, climate and energy.

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

[14] Standard ISO 50.001:2018 – 9.3.
[15] Standard ISO 50.001:2018 – 10.2.

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), ISO 14064:2018, ISO 14067:2018, PAS 2050.

3.4.3 Air quality and carbon footprint in ports.

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.

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:

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. 3.

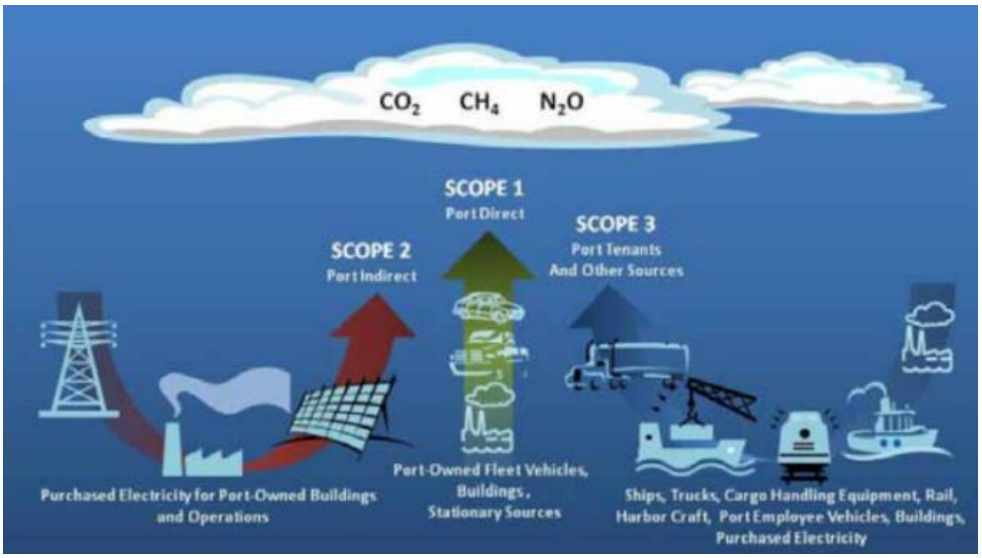

DIAGRAM No. 3: EMISSIONS SOURCES PORT ACTIVITY.

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)[16], Department for Environment, Food & Rural Affairs DEFRA[17]).

Procedure for calculating the carbon footprint in ports.

The general formula for calculating carbon footprint is: **HC = Activity Data x 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: **Total HC = HC scope 1+HC Scope 2+HC Scope 3**

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

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

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.

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[18]: *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; and Active involvement of employees in organizations and appropriate training.*

The sequence of actions to implement and join EMAS is as follows[19]:

- *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.*
- *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.*

[18] Eco-Management and Audit Scheme Regulation – Chapter I General Provisions – Article 1 Objective..

[19] Practical Guide for the application of the EMAS Regulation – Community of Madrid - 4.2. Steps to adhere to EMAS – (octubre 2013).

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"[20].

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 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.

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

The methodology for the EcoPorts implementation and certification is shown in Diagram No. N°4[21].

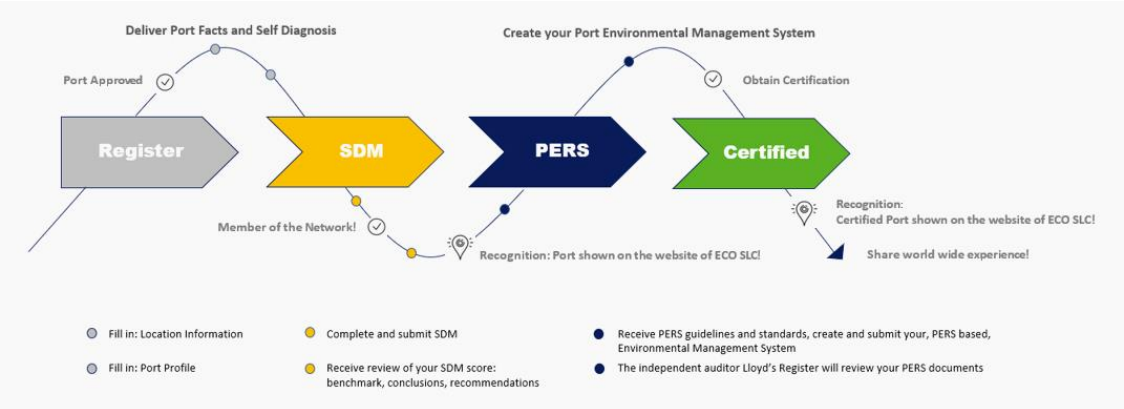

DIAGRAM No. 4: IMPLEMENTATION METHODOLOGY ECOPORTS.

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.

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

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

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

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, and background and recommendations on the status or level of environmental management of the applicant port.

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.

Reduction of waste, costs, and increased efficiency.

Some of the initiatives listed hereunder depend on the particular operations carried out at each port: energy efficiency, water resource management, waste management, circular economy (innovation).

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.

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.

Information and Stakeholders 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.

CHAPTER 5.
SUCCESSFUL EXPERIENCES OF LATIN AMERICAN PORTS WITH INTERNATIONALLY 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.

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

Los Terminales Portuarios Latinoamericanos destacados por sus certificaciones de Sistemas de Gestión Ambiental, según esta revisión, son:

- Empresa Portuaria Antofagasta (Chile)[22].
- Port Group of Cartagena (Grupo Puerto de Cartagena)[23]: Regional Port Corporation of Cartagena (Sociedad Portuaria Regional de Cartagena) – Terminal de Contendores de Cartagena (Colombia).
- Autoridad Portuaria de Montevideo (Uruguay)[24].
- Administración Portuaria Integral de Lázaro Cárdenas (México)[25].
- Administración Portuaria Integral de Ensenada (México)[26].
- Administración Portuaria Integral de Dos Bocas (México)[27].
- Porto do Açu[28].
- Port of Bahía Blanca.[29]
- Sociedad Portuaria Riverport S.A.[30]
- Andipuerto Guayaquil S.A. Terminal Portuario. [31]

[22] Puerto Antofagasta - https://www.anfport.cl/
[23] Grupo Puerto de Cartagena https://www.puertocartagena.com/es
[24] Administración Nacional de Puertos - https://www.anp.com.uy/
[25] API de Lázaro Cárdenas - https://www.puertolazarocardenas.com.mx/plc25/
[26] API de Ensenada - https://www.puertoensenada.com.mx/
[27] API Dos Bocas - https://www.puertodosbocas.com.mx/
[28] Porto do Açu - https://portodoacu.com.br/
[29] Puerto de Bahía Blanca - https://puertobahiablanca.com/index.html
[30] Riverport - https://riverport.co/
[31] Andipuerto - https://www.andinave.com/es/andipuerto-2/

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.[32], among other matters. 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.

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).

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.

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 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.

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).

[32] 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.

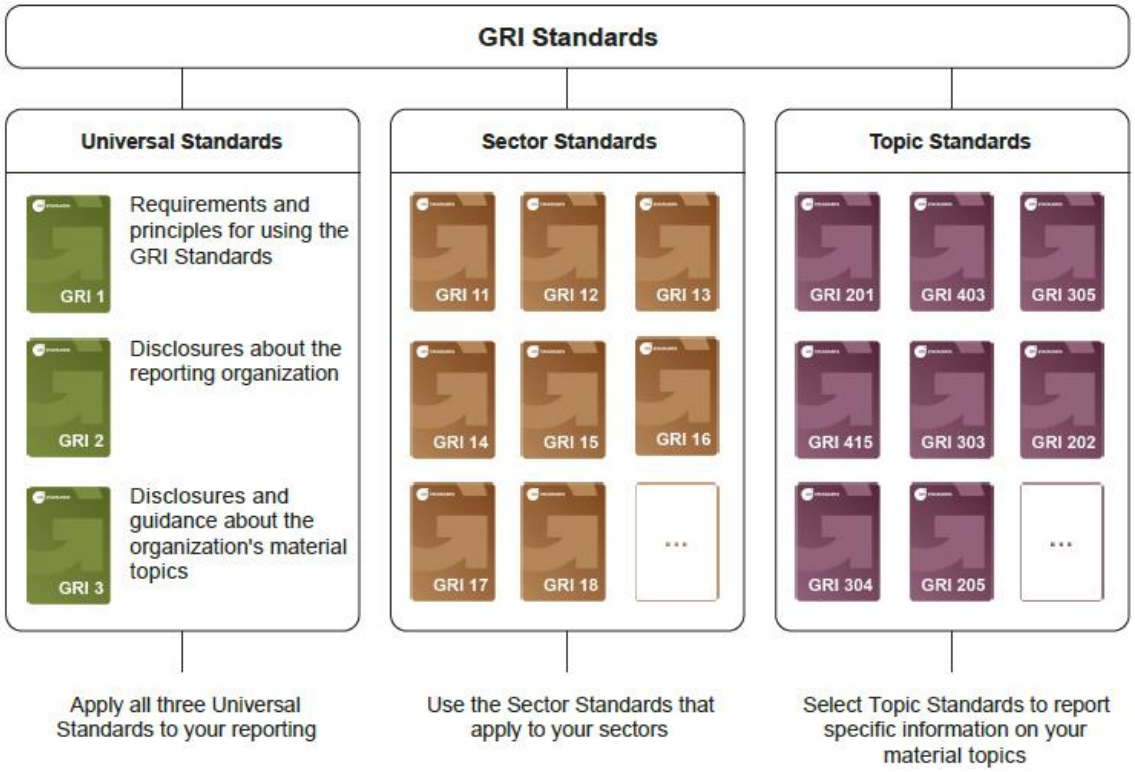

FIGURE N°1: GRI STANDARDS: UNIVERSAL, SECTOR AND TOPIC STANDARDS.

6.1.1 Key Concepts.

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.*"[33].

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, 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.

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*

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

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".

Stakeholders: 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.

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; these are described in section 6.1.3.

Requirement 2: Report the disclosures in GRI 2, 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 *its material topics, and review the GRI Sector Standard(s) that apply to its sector(s).*

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.

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

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

Requirement 7: Publish a GRI content index; must be available to publish or make the report information available to stakeholders, in different formats and on one or more sites.

Requirement 8: Once the organization has complied with all of the requirements indicated herein, it must declare that it has indeed complied.

Requirement 9: GRI must be notified and informed of the use of the Standards.

6.1.3 Reporting principles.

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

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

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.

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.

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.

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.

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.

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. Since August 2022, the International Sustainability Standards Board (ISSB) of the IFRS Foundation"[34] assumed responsibility for SASB Standards.

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 detail, each standard includes the following:

[34] https://www.ifrs.org/about-us/who-we-are/

- **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 leadership and governance (see Figure No. 2).

FIGURE No. 2: SASB STANDARDS GROUP SUSTAINABILITY TOPICS[35].

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.

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

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

Governance) has become widely accepted in the field of business administration and management.

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[36].

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.

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.
- 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.

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).

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

[36] https://www.un.org/sustainabledevelopment/

- **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.

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.
- Define clear objectives.
- Align with Sustainable Development Goals.
- Develop achievable strategies.
- Assign responsibilities.
- Establish compliance indicators (KPIs).
- 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.
- Include a review and update mechanism.
- Consider external audits or validation.

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.
- Establish an interdisciplinary ESG/ASG team.
- 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.
- Develop action plans.
- Allocate and assign resources.
- Training for managers and other members of the organization.
- Engage your suppliers.
- Implement data collection and monitoring systems.
- Communicate progress.
- Continuous improvement.
- Look for external verification or validation.
- Integrate ESG/ASG factors into risk management.
- Promote a culture of sustainability.
- Collaborate with the port industry (sector).

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.

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

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

7.2. Internal Benefits.

Strategic Vision: 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.

Financial Outcomes: 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: 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.

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.

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

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.

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. 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.

Competitive Advantage: 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.

Access to Capital or sources of financin: There is evidence from global studies[37] suggesting that entities that publish their Sustainability Reports more readily gain access to new and less costly sources of capital.

Stakeholder Engagement: It is essential for stakeholders to be involved in Sustainability Reporting. Stakeholders' expectations and interests are key benchmarks to Sustainability Reporting.

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

This chapter aims to identify publications of Sustainability Reports from Latin American port terminals. Even when we talk about "successful experiences," we are referring to experiences

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

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:

- **DP World Callao** (Perú)[38] and others terminals in the DP World group: **DP World Posorja** (Ecuador) and **DP World Caucedo** (Dominican Republic).
- **Puerto Cortes** (Honduras)[39].
- **Sociedad Portuaria Santa Marta** - SPSM (Colombia)[40].
- **Terminal Pacífico Sur S.A.** – TPS (Chile)[41].
- **Puerto Ventanas S.A.** – PVSA (Chile)[42].
- **Terminal Internacional del Sur** - Tisur (Perú)[43].
- **Terminal Puerto Arica** - TPA (Chile)[44].
- **Port Group of Cartagena**: Regional Port Corporation of Cartagena (Sociedad Portuaria Regional de Cartagena) – Container Terminal of Cartagena (Colombia)[45].
- **Empresa Portuaria Antofagasta** (Chile)[46].
- **Puerto de Moín** - Limón (Costa Rica)[47].

8.2 Analysis of common and/or outstanding elements of each report.

Report style and structure.

- 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.

38 https://www.dpworld.com/es/peru/ports-and-terminals/callao
39 https://www.ictsi.com/our-offering/our-terminals/operadora-portuaria-centroamericana-sa-de-cv
40 https://www.puertodesantamarta.com/Puerto/Historia
41 https://www.tps.cl/tps/site/artic/20130814/pags/20130814172205.html
42 https://puertoventanas.cl/
43 https://www.tisur.com.pe/es/nosotros
44 http://portal.tpa.cl/tpaweb/reporte-sostenibilidad/
45 https://www.puertocartagena.com/es/compromiso-social-empresarial-puerto-cartagena
46 https://www.anfport.cl/
47 https://www.apmterminals.com/es/moin/about/our-terminal

- 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.
- 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[48], 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.

Evolution of reporting.

La Sociedad Portuaria Santa Marta: 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). 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: 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[49]. 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. 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 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). 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.

48 International Integrated Reporting Council (IIRC).

49 https://puertoventanas.cl/content/uploads/2025/04/PVSA-Reporte-Integrado-2024-250403-1.pdf

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. 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[50].

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 (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. 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).

8.3 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.

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 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. In some reports, the port company's commitment to the occupational health and safety of its workers is explained

[50] https://www.tps.cl/tps/site/docs/20160629/20160629155111/reporte_integrado_tps_2024.pdf

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.

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[51].

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.

Environmental Management.

In all reports evaluated, the environmental aspect and its importance to every port terminal is examined.

[51] https://www.un.org/sustainabledevelopment/es/objetivos-de-desarrollo-sostenible/