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Embedding Social Sustainability in Port Concession Agreements: A Structured Indicator Framework

Constantinos Chlomoudis [1], Petros Pallis [2], Charalampos Platias [3,*] and Theodore Styliadis [4]

[1] Department of Maritime Studies, University of Piraeus, Grigoriou Lampraki 21 & Distomou, 18534 Piraeus, Greece; chlom@unipi.gr
[2] Department of Shipping, Trade & Transport, University of the Aegean, 82132 Chios, Greece; ppallis@aegean.gr
[3] Department of International & European Studies, Panteion University of Social & Political Sciences, 16761 Athens, Greece
[4] Department of Port Management and Shipping, National and Kapodistrian University of Athens, 34400 Psachna, Greece; theostyl@pms.uoa.gr
* Correspondence: ch.platias@panteion.gr

Abstract

The integration of social sustainability clauses into port terminal concession agreements is essential for fostering a more inclusive, balanced, and resilient framework for port operation and development. Such integration addresses the needs of both external and internal stakeholders, namely local communities and society at large, as well as port employees who seek to safeguard their interests. This paper examines how negative externalities can be mitigated or minimized, and how positive externalities can be reinforced, through the inclusion of social sustainability measures and monitoring mechanisms within concession frameworks. Building upon an analytical review of existing literature, available concession agreements and guidelines for port concessions, as well as relevant best practices, the paper identifies and classifies a comprehensive set of social sustainability indicators applicable to the port sector. The results of the analysis are presented through two categories of indicators: external indicators, encompassing stakeholder engagement, community development, and participation of society in economic benefits; and internal indicators, covering employment conditions, training, diversity, occupational health and safety, and the working environment. These indicators, aggregated and structured for the first time within the context of port literature, form a scientific foundation for embedding social sustainability considerations into concession agreements.

Keywords: sustainability; social dimension; ports; concession agreements; social indicators

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1. Introduction

The Ports are multifaceted economic enterprises that generate economic, social, and environmental value at multiple levels—micro (individual firms), meso (sectoral), and macro (national and regional economies)—and act as key contributors to prosperity and competitiveness [1]. They constitute vital nodes in global supply chains and play an important role in fostering regional development through the facilitation of trade and the stimulation of industrial and entrepreneurial clusters in their vicinity [2]. As Chiu et al. [3] observe, the expansion of port economies can enhance the quality of life and well-being of local populations by creating employment, raising income levels, and generating opportunities for education and skills development.

However, ports also generate a broad spectrum of externalities that extend beyond their operational boundaries. These include increased traffic congestion and pressure on urban mobility networks, noise and air pollution, degradation of the natural and urban environment, and, in certain cases, spatial and social displacement due to land-use changes. Such impacts interact with complex socio-economic dynamics, influencing perceptions of fairness, inclusion, and quality of life among local communities. Ports thus represent not only engines of growth [4], but also focal points of social and environmental tension [5–10]. Understanding and addressing these tensions has become essential for ensuring the legitimacy, resilience, and long-term viability of the port sector.

In this context, social sustainability has emerged as a crucial dimension of port governance. It concerns the capacity of ports to foster inclusive, equitable, and cohesive relationships with their workforce, stakeholders, and surrounding communities while maintaining operational and economic performance. The integration of social considerations into port development aligns with broader international policy directions such as the United Nations Sustainable Development Goals, particularly SDG 8 (decent work and economic growth), SDG 10 (reduced inequalities), and SDG 11 (sustainable cities and communities). Recent studies have underscored the role of ports in contributing to these objectives through governance innovation, stakeholder collaboration, and the adoption of sustainability assessment frameworks [11–13]. In parallel, strengthening disclosure and monitoring of social and societal impacts is consistent with the objectives of the Corporate Sustainability Reporting Directive (CSRD) [14] and the European Sustainability Reporting Standards (ESRS) [15]. As relevant entities within the broader port community ecosystem (port authorities, terminal operators, shipping companies, etc.) progressively fall within the CSRD scope (subject to eligibility criteria), they must build internal capacities for structured sustainability reporting. This regulatory transition creates an opportunity not only for compliance, but also for more systematic assessment and integration of social sustainability principles across ports' organizational and territorial ecosystems.

Despite these advances, port governance frameworks have traditionally prioritized economic efficiency and competitiveness. The gradual transformation of ports into landlord systems has redistributed responsibilities and introduced new governance instruments, notably concession agreements. These contractual arrangements regulate the operation, development, and management of port terminals, defining the rights and obligations of port authorities and terminal operators. In practice, concession agreements have predominantly prioritized economic efficiency, competitiveness, and revenue generation, reflecting their initial function as instruments for securing investment and ensuring financial performance. Only in recent years have some agreements incorporated environmental clauses, generally limited to ensuring compliance with existing regulations rather than promoting proactive environmental stewardship. The social dimension, where addressed, remains even more underdeveloped, often confined to general references to labor protection or occupational safety without measurable targets or binding obligations [5]. This imbalance highlights the need for a more systematic and integrated approach to embedding social sustainability objectives within concession frameworks.

The present paper addresses this gap by advancing a structured and systematic approach to integrating social sustainability into port concession agreements. Building upon an analytical review of the existing literature, concession models, as well as the applicable regulatory framework (Concession Directive, CSRD/ESRS) and relevant best practices, it identifies areas of social disclosure expectations and synthesizes a com-prehensive index of social sustainability indicators applicable to the port sector. These indicators are organized into two interconnected categories: external and internal. The external dimension encompasses the relationship of ports with society, including stakeholder engagement, community

development, and the participation of local communities in the economic and social benefits derived from port activities. The internal dimension focuses on organizational aspects, such as employment conditions, diversity and inclusion, training and capacity building, occupational health and safety, and the quality of the working environment. Together, these categories provide a balanced and holistic framework for assessing, implementing, and monitoring social sustainability in ports.

Beyond their practical relevance, the thematic areas subject to social reporting and the indicators proposed in this study offer a significant scientific contribution. They bridge the conceptual gap between social sustainability theory and port governance by translating normative principles into measurable and operational elements, which also match the regulatory disclosure requirements. The resulting typology provides a methodological foundation for empirical analysis, comparative assessment, and future research on how contractual frameworks can function as instruments for social value creation. Moreover, it expands the theoretical understanding of port governance by demonstrating that concession agreements, traditionally designed for economic regulation, can evolve into mechanisms for embedding social responsibility and strengthening the port–city relationship.

The remainder of the paper is structured as follows. Section 2 reviews the relevant literature and develops the paper's analytical framework, clarifying the external and internal dimensions of social sustainability and their relevance for port concession governance. Section 3 presents the methodological approach adopted to identify, classify, and organize the proposed indicators, outlining the main research steps and sources at a general level. Section 4 presents the results, setting out the proposed indicator framework across the external and internal dimensions. Section 5 discusses the main findings in relation to literature and the practical use of concession agreements as governance instruments. Finally, Section 6 concludes by summarizing the contribution of the paper and outlining avenues for future research and broader policy relevance.

2. Literature Review and Framework

2.1. The Social Dimension of Sustainability

Sustainability has become an indispensable foundation for the long-term viability and resilience of organizations. Among its three interrelated pillars, economic, environmental, and social, often conceptualized as the triple bottom line [16], the social dimension has progressively gained prominence in both scholarly discourse and policymaking as a central determinant of sustainable development [17]. Since the Brundtland Commission's definition of sustainable development as the pursuit of present needs without compromising those of future generations [18], the social component has been recognized as essential for maintaining equity, well-being, and cohesion within and among societies.

Social sustainability refers to a society's ability to preserve and improve social quality through policies and actions that promote inclusion, participation, well-being, cultural vitality, and quality of life [19]. Organizations are increasingly expected to address the social implications of their operations, not only to comply with regulation but also to enhance legitimacy and strengthen competitiveness in markets where ethical and responsible conduct are strategic assets.

According to the United Nations [18], companies directly and indirectly shape social outcomes through their effects on employees, supply-chain workers, consumers, and local communities. Social sustainability therefore involves managing these interdependencies to reduce negative externalities and enhance positive ones, embedding stakeholder engagement as a central process. The absence of social development—manifested in inequality, poor governance, or weak community participation—can undermine economic performance and social stability alike.

From this standpoint, social capital—the networks, relationships, and shared norms that enable cooperation [20]—constitutes an enabling factor of social sustainability. When organizations align their growth strategies with societal progress, they contribute to resilience and shared prosperity [21]. Firms committed to social sustainability tend to strengthen their reputation, reduce operational risks, and improve long-term performance [22]. Within corporate social responsibility (CSR) frameworks, socially sustainable organizations promote equitable employment practices, community engagement, and transparent governance. Porter and Kramer [21] argue that creating shared value not only reinforces corporate legitimacy but also leads to tangible competitive advantages. In this sense, sustainability extends beyond regulatory compliance towards a proactive, value-generating model [23].

Equally, governance plays a decisive role in ensuring social sustainability through mechanisms that encourage accountability, participation, and inclusiveness. As Rydin [24] stresses, participatory governance allows diverse community perspectives to inform policy and corporate decision-making, thereby strengthening legitimacy and ensuring that policies address the interests of all, including marginalized groups. As such, recent research increasingly approaches social sustainability through governance and monitoring mechanisms that translate normative principles into operational, measurable, and reviewable systems [11,12,17]. This governance-oriented perspective emphasizes the design of accountability and monitoring arrangements that can also reduce information asymmetries among stakeholders. It is broadly consistent with emerging regulatory developments, notably the Corporate Sustainability Reporting Directive (CSRD) and the subsequent European Sustainability Reporting Standards (ESRS), which require organizations to measure, report, and disclose their social performance in a more systematic manner [14,15].

Overall, the social dimension of sustainability encompasses multiple levels of influence, both internal (within the organization) and external (within the wider community). Internal social sustainability concerns organizational culture, equity, and employee well-being, while external social sustainability relates to the organization's relationships with its broader social and territorial environment. Understanding how these dimensions interact is essential for achieving inclusive, balanced, and durable development outcomes. In this paper, this distinction is treated not only as a descriptive categorization, but as a conceptual basis for operationalization: it allows social sustainability to be translated into discrete areas of responsibility, performance mechanisms, and measurable expectations that can be embedded within governance instruments.

2.2. External (To the Organization) Social Sustainability

The concept of external social sustainability has evolved significantly from early economic doctrines that minimized corporate obligations to society. Friedman's (1970) assertion that a firm's only responsibility is to maximize shareholder profit confined business ethics to market performance. Freeman's [25] stakeholder theory challenged this premise by emphasizing that long-term business success depends on meeting the expectations of all affected parties, not only investors. As social awareness and institutional accountability intensified [26], organizations were compelled to expand their responsibility horizons, recognizing that sustainable success requires engagement and mutual trust with external stakeholders [27].

External social sustainability therefore refers to the policies, strategies, and actions through which organizations engage with communities, institutions, and other stakeholders to ensure that their operations contribute positively to collective welfare. Transparency, accountability, and participatory dialogue are critical mechanisms [28,29]. Constructive stakeholder interaction can foster innovation, mitigate conflict, and enhance

legitimacy [30,31], while CSR initiatives that align with stakeholder expectations can consolidate social trust [32,33].

In the port industry, these dynamics are particularly complex [34–36]. Historically, ports functioned as monolithic entities characterized by centralized control and limited societal interaction. Liberalization and structural reforms transformed them into multi-stakeholder ecosystems [37]. Port authorities, once autonomous regulators, became facilitators coordinating diverse interests [38,39], and gradually assumed the role of cluster managers driving regional cooperation and innovation [40–42].

Nevertheless, the social dimension of port sustainability remains underdeveloped. Styliadis et al. [15] and Lim et al. [43] highlight the absence of standardized indicators to assess ports' social externalities. Ports can enhance community welfare by creating employment, supporting education and skills development, and stimulating regional economies [3]. However, port activities and expansion projects may also generate substantial social costs, like noise, pollution, traffic congestion, and land-use conflict, which can erode social acceptance [44,45]. These mixed outcomes illustrate why social sustainability must be addressed holistically, alongside economic and environmental dimensions.

The International Institute for Sustainable Seaports [46], defines sustainable ports as those that combine economic efficiency with social responsibility, integrating community aspirations into strategic planning. Ports serve as custodians of local well-being, balancing employment generation and community investment with the mitigation of negative externalities [11–13]. Empirical evidence reinforces this dual role: Verbeke and Dooms [47] estimate that the long-term strategic expansion of Antwerp and Zeebrugge could yield up to 66,000 indirect jobs through network effects; Acciaro [48] found that Sardinian ports support 8% of local employment; and Musso et al. [49] identified Genoa's port as generating nearly one-fifth of its local jobs. Similarly, Bottasso et al. [50,51] and Ding et al. [52] reveal that port throughput strongly correlates with regional employment and GDP, while Munim and Schramm [53] show that infrastructure quality and logistics performance are decisive for economic growth, especially in developing contexts.

These economic benefits, however, coexist with persistent spatial and social challenges at the port–city interface. Studies on Kaohsiung [54], Shanghai [55], and Lisbon [56] demonstrate the interdependence between port operations and urban competitiveness. Other works highlight that sustainability depends on integrated planning linking ports, cities, and transport networks [57,58]. Hence, sustainable port development must incorporate community interests, equitable access to benefits, and participatory governance as core strategic principles. From a governance perspective, the external dimension can therefore be understood through three interrelated lenses: the identification of affected stakeholder groups, the measurement of impacts and benefit-sharing, and the institutionalization of dialogue and accountability mechanisms. This framing is important for concession contexts, where external social sustainability must move beyond broad commitments toward clear expectations and monitoring provisions.

2.3. Internal (To the Organization) Social Sustainability

Internal social sustainability focuses on the organizational conditions that promote the well-being, engagement, and long-term development of employees. It reflects the internal capacity of organizations to maintain equitable relationships, ethical governance, and a culture conducive to human flourishing [27]. As Galuppo et al. [59] observe, safeguarding internal human and social capital through transparent communication, fairness in human resource management, and continuous development opportunities is indispensable to sustainable organizational performance.

A robust internal environment not only improves employee satisfaction but also strengthens productivity, adaptability, and resilience [60,61]. Engagement, defined by Kahn [62] as the psychological investment of personal energy in work, is fostered through empowerment, inclusivity, and recognition [63,64]. Empirical studies demonstrate that organizations with strong engagement cultures report higher innovation and retention [65].

Employee well-being is a cornerstone of social sustainability, encompassing physical, mental, and social dimensions [66,67]. Policies supporting work–life balance, health promotion, and personal growth have measurable returns in productivity and reduced absenteeism [68,69]. Similarly, occupational safety and job security remain central components of a socially sustainable organization [70–72]. Secure and safe work environments foster loyalty and morale, while job insecurity correlates with stress and reduced performance [73]. Transparent communication and employee participation in decisions affecting their work [74] enhance trust and shared accountability.

Ethical leadership and inclusivity further underpin internal sustainability. Leaders who demonstrate integrity and transparency inspire employees and nurture cohesive organizational cultures [75,76]. Diversity and gender equity—once peripheral considerations—are now recognized as catalysts of innovation and legitimacy [77,78].

In the port sector, the internal dimension of social sustainability remains relatively underexplored [79]. Stanković et al. [80] underline that social sustainability in ports must aim to improve quality of life within port regions by ensuring decent employment, equal opportunities, and sound working conditions. However, Batahla et al. [81] observe that ports tend to focus on external social initiatives, giving less attention to internal social governance and workforce well-being. Empirical studies [82–84] confirm the interconnectedness of internal and external sustainability, showing that strong internal management practices enhance external collaboration and stakeholder trust. De Luca and Valentinuz [79] further demonstrate that cooperative governance models, such as stakeholder network contracts, can generate innovative internal social projects, like employee health facilities. Barreiro-Gen et al. [85] highlight gender equality as a critical but often neglected element of port sustainability, while Beškovnik and Bajec [86] show how the Port of Koper integrates internal welfare, community engagement, and environmental stewardship into a coherent sustainability framework.

Ultimately, internal and external social sustainability must be understood as complementary and mutually reinforcing dimensions. Ports—and organizations more broadly—cannot sustain social legitimacy externally without cultivating fairness, inclusivity, and well-being internally. A balanced approach to both dimensions therefore constitutes a prerequisite for credible and enduring sustainability strategies. In concession settings, this internal dimension is particularly relevant because employment arrangements, safety practices, and skill-development pathways can be shaped through contractual obligations and performance requirements. Accordingly, clarifying the internal dimension in the literature provides the conceptual basis for specifying what types of workforce-related commitments are suitable for contractual embedding and subsequent monitoring.

To synthesize the theoretical discussion and clarify the analytical structure of this study, Figure 1 presents the conceptual framework underpinning the proposed indicator system. The framework conceptualizes social sustainability in port concession agreements as a dual-dimension structure composed of external and internal social sustainability indicators. External indicators capture the relationship between the port and its surrounding socio-economic environment, including stakeholder engagement, community development, and local economic participation. Internal indicators address the organizational dimension of sustainability, focusing on employment conditions, workforce development, diversity, and occupational health and safety.

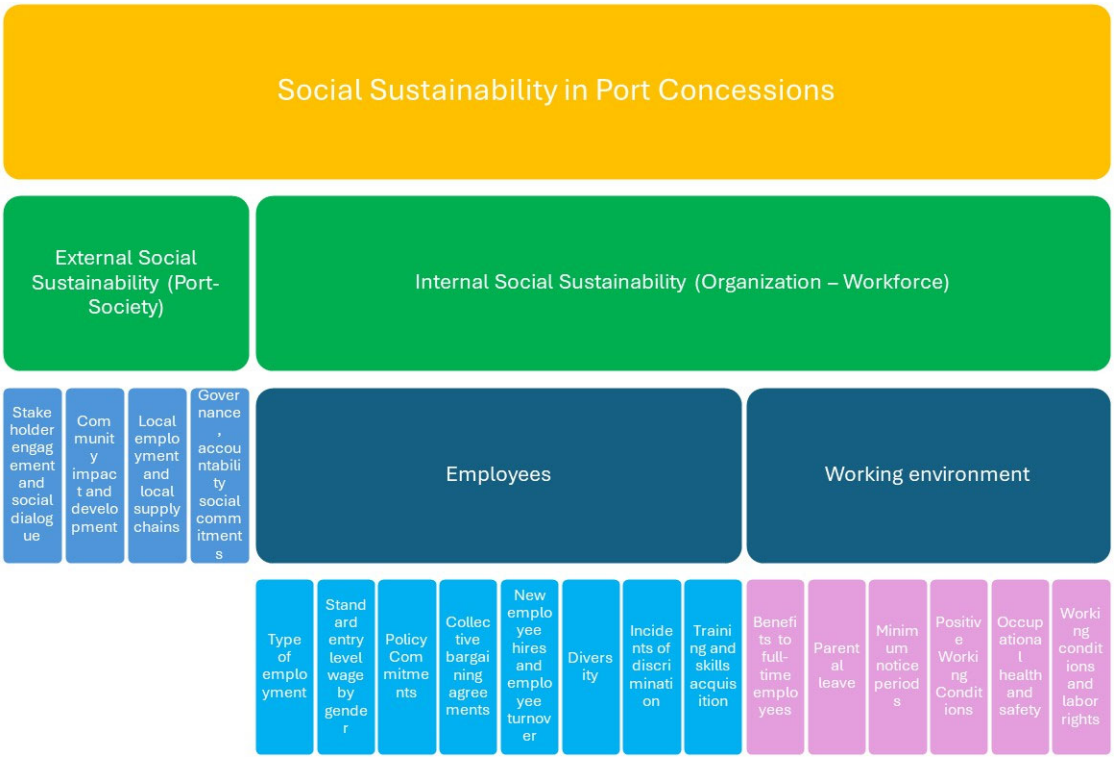


Figure 1. Conceptual framework for Integrating Social Sustainability Indicators into Port Concession Agreements. Source: Authors, 2026.

These two dimensions interact within the governance structure of port concession agreements, which act as contractual instruments translating social sustainability objectives into measurable indicators, monitoring mechanisms, and accountability processes. Together, these components form an integrated framework through which social sustainability can be embedded into port governance and concession design.

3. Methodology

This paper adopts a qualitative research design aimed at developing a systematic and comprehensive framework for the integration of social sustainability into port concession agreements. The research approach combines conceptual, documentary, and analytical methods to identify and classify social sustainability indicators relevant to the port sector. The originality of the study lies in transforming the predominantly conceptual debate on social sustainability into a structured typology of operational indicators applicable within concession governance frameworks.

The research process evolved through three interrelated stages.

The first stage entailed an extensive critical review of academic literature on social sustainability, corporate social responsibility, and port governance. This review examined how social considerations are framed, interpreted, and assessed in organizational and territorial contexts, with particular emphasis on the port and transport sectors. It provided the theoretical foundations for the article and helped identify significant methodological gaps, particularly the limited extent to which social sustainability has been integrated into concession-based governance models. In addition to this process, the comprehensive EU regulatory framework for mandatory sustainability disclosure, comprising the overarching law, i.e., CSRD [14] as well as the technical standards, i.e., ESRS (European sustainability reporting standards (ESRS): General Requirements (ESRS 1) General Disclosures, (ESRS 2), Environment: (ESRS E1-E5), Social: (ESRS S1-S4), Governance: Business Conduct (ESRS G1)) [15] of its implementation, was reviewed, to clarify its relevance for the port ecosystem

and to identify areas of social disclosure within the standards, that fit the case of the port industry. On this basis, the study delineated the conceptual contours of the social dimension and distinguished between its internal and external components, establishing the groundwork for indicator formulation.

The second stage focused on a systematic examination of primary and secondary documentary sources. Available concession agreements were analyzed in conjunction with reference texts, policy documents, and model contractual templates issued by major international institutions or states. This comparative investigation was designed to explore how social provisions, obligations, and performance mechanisms are articulated in concession arrangements and to assess the extent to which these frameworks integrate measurable social sustainability requirements. The analysis sought to identify recurring themes and regulatory patterns, as well as potential inconsistencies or gaps in the treatment of social dimensions across different governance contexts. The documentary sample comprised a selection of port concession agreements from different geographical regions and institutional contexts (Table 1). The selection was determined primarily by document availability, as concession agreements are frequently not publicly disclosed and are often treated as confidential between the contracting parties. These documents, while limited in number due to such availability constraints, provide valuable insight into how social provisions are addressed across a variety of concession models. Given the restricted sample size and the nature of access, the material is not used to support systematic comparison across legal systems or port typologies; rather, it serves to identify recurring patterns in the contractual treatment of the social dimension. Complementing this, a set of international templates and guidelines was examined (Table 2). Together, these sources allowed for a cross-comparative understanding of the extent to which social sustainability considerations are being incorporated into concession frameworks worldwide and supported the identification of converging governance gaps and practices across the available material.

Table 1. Port concession agreements considered.

Port	Country	Date	Duration
Ehoala Port	Madagascar	2006	30 years
Port of Bolivar	Ecuador	2016	50 years
Port of Cartagena	Colombia	2021	20 years
Port of Goia Tauro	Italy	2019	30 years
Port of Heraklion	Greece	2023	39 years
Port of Igoumenitsa	Greece	2023	39 years
Port of Kavala	Greece	2023	40 years
Port of Kerala	India	2015	40 years
Port of Mumbai	India	2021	50 years
Port of Piraeus I	Greece	2008	35 years
Port of Piraeus II	Greece	2016	35 years
Port of Puerto Plata	Dominican Republic	2018	30 years
Port of Santander	Spain	2019	30 years
Port of Thessaloniki	Greece	2018	33 years
Port of Timor	Indonesia	2016	30 years
Port of Wilmington	USA	2018	50 years

Source: Authors 2025.

Table 2. Templates and guidelines for port concession agreements considered.

Publisher	Reference Texts	Publication Year
European Bank for Reconstruction and Development (EBRD)	Model Heads of Terms for Seaport Concession PPP Agreement	2024
European Union	Directive 2014/23/EU	2014
Government of India—Indian Ministry of Shipping, R.T. & H.	Model Concession Agreement for Private Sector Projects in Major Ports	2021
Government of India—PPP Cell, Infrastructure Division, Department of Economic Affairs, Ministry of Finance	Post- Award Contract Management Manual for PPP Concessions Volume—II: Port Sector	2015
International Bank for Reconstruction and Development/The World Bank	Port Reform Toolkit	2025
SSATP Africa Transport Policy Program	Container Terminal Concession Guidelines	2017
United Nations Conference on Trade and Development (UNCTAD)	Guidelines for Port Authorities and Governments on the privatization of port facilities	1998
United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)	Model Agreement for the Development of a Dry Port under PPP Mode	2016
United Nations Economic and Social Commission for Western Asia and Islamic Development Bank	Public–Private Partnership (PPP) for Ports Development and Operation	2020
United States Agency for International Development (USAID)	Port Agreement Templates	2018
World Bank Group/World Bank—Private Infrastructure Advisory Facility (PPIAF)	Sample Port Concession Agreement	2009

Source: Authors 2025.

A third, interpretative stage was informed by discussions with experts in port governance from both academia and professional practice. While these exchanges did not constitute a formal empirical dataset, they provided valuable contextual insights into the feasibility and implementation challenges of embedding social objectives within concession frameworks. These perspectives helped refine the categorization of indicators and validated their relevance from a governance standpoint. To preserve the qualitative and exploratory orientation of the study, these inputs are used to support interpretation and framing rather than to generate independent empirical claims.

Integrating these three research components—conceptual, documentary, and interpretative—enabled the development of a dual-structured typology of social sustainability indicators.

- The external indicators reflect the relationship between ports and their surrounding socio-economic environments, focusing on stakeholder engagement, community development, and equitable access to the benefits generated by port activities.
- The internal indicators address organizational aspects such as employment conditions, occupational health and safety, diversity, and professional development.

Each indicator was linked to insights derived from both literature and contractual analysis, ensuring coherence between theoretical understanding and governance application. Where relevant, indicators were also aligned with the structure of social disclosure areas reflected in CSRD/ESRS, in order to strengthen their interpretability for organizations operating under evolving reporting expectations.

At this point, it should be noted that the indicators identified through the processes discussed above are not intended to constitute a hierarchical or weighted set of metrics. Rather, the objective is to aggregate and categorize the broad range of social indicators identified in the academic literature and in emerging reporting standards (CSRD/ESRS), thereby establishing, for the first time, a comprehensive pool of relevant indicators that may be considered when drafting port concession agreements. Given the diversity of organizational and governance contexts, as well as differing stakeholder priorities across ports, no indicator screening, ranking, or weighting is undertaken at this stage. Instead, the indicators are presented in a structured manner that can support future research and practical applications, where prioritization, weighting, or hierarchical structuring may be developed on the basis of case-specific port characteristics, supported by stakeholder engagement, expert consultation, and/or multi-criteria decision approaches. This methodological approach moves beyond descriptive objectives to establish a scientific foundation for integrating social sustainability within the contractual and regulatory architecture of port governance. By synthesizing multidisciplinary evidence and systematically classifying indicators, the study contributes original knowledge to port studies and sustainability research. The resulting framework not only bridges a critical conceptual gap but also provides a structured basis for empirical investigation and policy adaptation in future work.

4. Results

This section reports the main patterns identified through the examination of concession agreements, contractual templates, and relevant guidelines, and then presents the resulting set of proposed social sustainability indicators for port concession frameworks. The evolution of social sustainability in organizations has gained increasing prominence over recent years, reflecting a broader shift in how organizations perceive their role in society. Traditionally, businesses prioritized economic performance, adhering to the motto "the business of business is business" [87], while sustainability was primarily associated with environmental concerns [88]. Over time, however, novel perspectives have highlighted the integral relationship between social viability and organizational success. Porter and Kramer [21] advanced the concept of shared value, advocating that organizations can generate economic value by addressing social problems and positioning social engagement as a strategic imperative. Earlier, Elkington [23] introduced the Triple Bottom Line framework, integrating social, environmental, and economic factors into business strategy. Consequently, social sustainability has evolved to encompass multiple dimensions of social impact, including stakeholder engagement, community development, labor practices, ethical behavior, social justice, inclusion, and equity [84].

In the port industry, this shift is reflected in the transition from the traditional comprehensive public port model to the landlord model and the emergence of multi-stakeholder port clusters [89]. Combined with growing community awareness of port-related externalities, this transformation has led port authorities to adopt a new management philosophy in which societal integration and stakeholder engagement are central elements of port governance [90]. The literature on port governance [39,41,42,91] extensively discusses stakeholder identification, management, and engagement as key mechanisms for addressing collective challenges within the port cluster. Despite this progress, recent studies [92] and our own analysis indicate that ports remain at an early stage of integrating the social dimension into their operational and development strategies.

The examination of concession agreements, contractual templates, and relevant guidelines revealed that, so far, the social dimension has been largely neglected in formal contractual frameworks. Where social considerations do appear, they are limited mainly to the protection of port employees—covering aspects such as occupational safety, protection

against dismissal, or basic training measures—without addressing the broader social externalities of port operations. Although certain aspects of the port–city relationship have occasionally been mentioned, they were typically addressed only peripherally. Until now, corporate social responsibility (CSR) has been the primary instrument through which ports approached social engagement. While CSR initiatives are valuable, they remain insufficient. Port concession agreements, in contrast, demand binding, concrete provisions with clearly defined parameters and measurable indicators in order to embed social sustainability in precise, verifiable terms and to ensure accountability and policy coherence.

Compared to environmental sustainability—which, despite its limited and uneven incorporation into concession frameworks, focusing mainly on compliance with existing legislation rather than on binding, measurable performance requirements, has at least begun to appear in regulatory discussions and monitoring initiatives [5,91]—the social dimension remains even less developed. Both contractual practice and reference templates continue to prioritize environmental compliance while offering little guidance on how to operationalize social objectives. This imbalance underscores the need to elevate the social pillar to at least a comparable level of attention and formalization. Establishing standardized definitions, quantifiable indicators, and consistent contractual obligations is therefore an essential step toward achieving a genuinely integrated approach to sustainability in port concession agreements [15].

In response to this gap, the present paper identifies and proposes a structured set of social sustainability indicators applicable to port concession frameworks, further developing and expanding upon the analysis presented by [6]. In reporting the results, the indicators are organized into two complementary domains: external indicators (capturing the port–society interface) and internal indicators (capturing organizational and workforce-related commitments).

An integrated overview of the structure and coverage of the formulated framework is depicted in Table 3. above, summarizing the distribution of the identified (external & internal) social sustainability indicators and their measurement approach (quantitative, qualitative/descriptive). The distribution reveals a clear emphasis on the internal dimension of social sustainability, which accounts for 63% of the indicators identified. This reflects both the plethora of tools at hand to frame and monitor social parameters of internal sustainability and the central role of workforce related issues in shaping socially responsible port governance within the context of concession agreements. Conversely, external indicators (34%) focus on the broader port society interface, capturing how port (terminal) operations interact with the surrounding socio-economic environment. In this context, emphasis is given on the monitoring of social externalities, the strengthening of transparency and dialogue as well as the establishment of mechanisms which contribute to broader development of the community. Finally, from a measurement perspective, the framework presents a relatively balanced composition of quantitative (57%) and qualitative (42%) measures, with a slight orientation towards quantitative metrics. This overview complements the detailed presentation of indicators following in Tables 4 and 5.

Table 4 (Social Indicators External to the Organization) aggregates the synthesized social indicators that address the relationship between port operators and their external environment, encompassing stakeholder engagement, community development, local employment, and social impact assessment.

Table 3. Distribution of Social Indicators by thematic category.

Indicator Dimension	Thematic Category	Number of Indicators	Percentage %	Quantitative Indicators	Qualitative Indicators
External Indicators	Stakeholder engagement and social dialogue	6	12%	3	3
	Community impact and development	6	12%	2	4
	Local employment and local supply chains	4	8%	4	0
	Governance, accountability and long-term commitments	1	2%	0	1
Sub-total		17	34%	9	8
Internal Indicators	Employees	9	18%	7	2
	Training and skills acquisition	7	14%	5	2
	Working environment and employee welfare	4	8%	2	2
	Occupational Health & Safety	10	20%	3	7
	Working Conditions and Labor rights	3	6%	0	3
Sub-total		33	63%	17	16
Total Indicators		46	100%	26	24

Source: Authors, 2025.

Table 4. Social Indicators External to the Organization.

Social Indicators External to the Organization		
SI_EX_1	Stakeholder engagement and social dialogue	
SI_EX_1.1	Stakeholder mapping, including identification and monitoring of at-risk or vulnerable groups.	[25,30,42,59,85,89,90], ESRS S3 [15]
SI_EX_1.2	Number and categories of stakeholders with whom the organization engages, including the number of signed MoUs.	[42,90,91], ESRS S3 [15]
SI_EX_1.3	Processes for collecting and considering stakeholder views and concerns, including external stakeholders; means of disseminating changes or adjustments to sustainability strategy and societal goals resulting from stakeholder input.	[24,28,29,42,89–91], ESRS S3 [15]
SI_EX_1.4	Percentage of construction and development projects implemented through structured community-engagement mechanisms, including: (i.) social impact assessments (including gender impact assessments) based on participatory processes; (ii.) environmental impact assessments and ongoing monitoring; (iii.) public disclosure of environmental and social assessment results; (iv.) local community development programs based on community needs; (v.) stakeholder engagement plans based on stakeholder mapping; (vi.) broad-based local community consultation committees, including (vulnerable groups; (vii.) worker representation bodies (e.g., works councils, OHS committees) addressing impacts; (viii.) formal local community grievance processes.	[60–65], ESRS S3, ESRS E1-E5 [15]

Table 4. *Cont.*

Social Indicators External to the Organization		
SI_EX_1.5	Existence of a permanent dialogue system among interested parties, including consideration of future generations, providing annual communication of the organization's strategic vision and action plan based on positive accountability and stakeholder involvement.	[13,23,25,29,42,90], ESRS S3 [15]
SI_EX_1.6	Annual stakeholder satisfaction survey.	[90,91], ESRS S3 [15]
SI_EX_2	Community impact and development	
SI_EX_2.1	Direct economic value generated and distributed to the community, including community investments.	[2,4,21,50,56], ESRS S3 [15]
SI_EX_2.2	Identification of current or expected sustainability-related impacts and risks on communities and local economies, including positive and negative impacts.	[8,26,41,44,90], ESRS S3, ESRS E1-E5 [15]
SI_EX_2.3	Identification of indirect economic impacts (positive and negative) on a cluster or community level.	[39,50–53,56], ESRS S3, ESRS E1-E5 [15]
SI_EX_2.4	Assessment of the significance of indirect economic impacts in relation to external benchmarks and stakeholder priorities (e.g., national and international standards, protocols, policy agendas).	[4,11,13,18,24,90], ESRS S3 [15]
SI_EX_2.5	Identification and quantification of operations with significant actual and potential negative impacts on local communities: (i.) at the site of operations; (ii.) at aggregate port/cluster level; (iii.) on local communities.	[8,41,44,45,58], ESRS S3, ESRS E1-E5 [15]
SI_EX_2.6	Initiatives (indicative), including efforts: (i.) to respect access to port areas; (ii.) to improve accessibility of city-port interface sites; (iii.) to treat the port area as an urban space; (iv.) to enhance port visibility; (v.) to utilize waterfront potential; (vi.) to promote blending of urban and port functions; (vii.) to maintain flexibility in space use; (viii.) to reduce reciprocal impacts; (ix.) to communicate and build acceptance of certain nuisances; (x.) to prepare for future employment needs; (xi.) to integrate port activity with city life; (xii.) to open the port to the public.	[1,8,45,48,54,90], ESRS S3, ESRS E1-E5 [15]
SI_EX_3	Local employment and local supply chains	
SI_EX_3.1	Percentage of senior management at significant operational locations hired from the local community.	[49–51,56], ESRS S1, ESRS S3 [15]
SI_EX_3.2	Percentage of employees hired from the local community.	[49–51,56], ESRS S1, ESRS S3 [15]
SI_EX_3.3	Percentage of the procurement budget at significant operational locations spent on local suppliers (e.g., locally purchased products and services).	[39,50,53,56], ESRS S3 [15]
SI_EX_3.4	Screening of new suppliers using social and environmental criteria: (i.) number of suppliers assessed for social impacts; (ii.) number of suppliers identified with significant positive social/environmental impacts; (iii.) identification of significant negative social/environmental impacts in the supply chain; (iv.) number of suppliers with significant negative impacts for whom improvements were agreed following consultation; (v.) number of suppliers with whom relationships were terminated due to negative impacts, including reasons.	[6,28,82,84,93,94], ESRS S2, ESRS G1, ESRS E1-E5 [15]

Table 4. *Cont.*

Social Indicators External to the Organization		
SI_EX_4	Governance, accountability and long-term social commitments	[11,13,21,23,25,61,91], ESRS 2, ESRS S1-S4, ESRS E1-E5, ESRS G1 [15]
SI_EX_4.1	Integration of long-term social and environmental concerns into the company's mission, raison d'être, or sustainability policy.	

Source: Authors, 2025.

The proposed external indicators represent a comprehensive approach to capturing the port's social footprint. Reflecting the insights of relevant literature, as well as the scope of ESRS regulatory societal disclosure requirements, they provide measurable and qualitative parameters that can be incorporated directly into concession contracts. Indicators such as the percentage of local employment, community investment, supplier assessment based on social/environmental criteria, and the establishment of structured stakeholder engagement mechanisms offer concrete pathways for integrating social performance into concession evaluation and monitoring. By embedding such indicators in contractual obligations, ports and their operators can move beyond CSR initiatives, toward a model of shared accountability and enhanced transparency with tangible outcomes for local communities. The "initiatives" item may be less readily quantifiable than other indicators; however, it captures essential (and unique depending on the port setting) pathways for strengthening the ties between ports and their surrounding communities. By undertaking and reporting on social initiatives, ports can foster greater inclusiveness and agility, aligning their strategy and operations with broader sustainability goals, thus contributing to the enhancement of wellbeing, cohesion and resilience of local communities [42]. Hence, reporting on such initiatives forms an integral component of sustainable port governance, aiding in reinforcing a port's license to operate as well as the legitimacy of port activities in the vicinity of urban spaces [94].

On the internal dimension, relevant port literature remains relatively limited, with only a few studies examining how technological and operational innovations affect employment and labor structures [95–97]. Yet, employees are widely acknowledged as the most valuable resource within contemporary organizations [98]. Consequently, apart from addressing external community impacts, concession agreements should also reflect internal social sustainability obligations concerning workforce well-being, safety, diversity, and equitable working conditions.

Building on this premise, Table 5 (Social Indicators Internal to the Organization) presents a consolidated set of internal social sustainability indicators drawn from relevant literature, available concession agreements, existing port concession models and the reporting directions embedded in ESRS standards. These indicators, organized into five thematic categories—Employees, Training & Skills Acquisition, Working Environment, Occupational Health & Safety, and Working Conditions—provide a structured foundation for incorporating social requirements into concession agreements.

The internal indicators emphasize the necessity of embedding labor-related commitments within concession frameworks. These include measurable standards for fair wages, gender equality, diversity, training opportunities, and occupational health and safety management systems. Importantly, the inclusion of such indicators would allow port authorities to establish concrete evaluation criteria for concessionaires, ensuring that social objectives are treated as enforceable contractual obligations rather than aspirational goals.

Table 5. Social Indicators Internal to the Organization.

Social Indicators Internal to the Organization		
	Employees	
SI_IN_A_1	Type of employment	
SI_IN_A_1.1	Total number of employees, and a breakdown of this total by gender and by region	[27,92,95,98,99], ESRS S1 [15]
SI_IN_A_1.2	Report the total number of: (i.) permanent employees, and a breakdown by gender and by region; (ii.) precarious employees: temporary employees, and a breakdown by gender and by region; non-guaranteed hours employees, and a breakdown by gender and by region; (iii.) full-time employees, and a breakdown by gender and by region; (iv.) part-time employees, and a breakdown by gender and by region	[65,77,78,85], ESRS S1 [15]
SI_IN_A_2	Ratios of standard entry level wage by gender compared to local minimum wage (i.) Report the relevant ratio of the entry level wage by gender at significant locations of operation to the minimum wage. (ii.) When a significant proportion of other workers (excluding employees) performing the organization's activities are compensated based on wages subject to minimum wage rules, describe the actions taken to determine whether these workers are paid above the minimum wage. (iii.) Whether a local minimum wage is absent or variable at significant locations of operation, by gender. In circumstances in which different minimums can be used as a reference, report which minimum wage is being used.	[65,77,78,85], ESRS S1 [15]
SI_IN_A_3	Policy Commitments	[75–78,85], ESRS S1, ESRS G1 [15]
SI_IN_A_3.1	(i.) Describe how the policy commitments are communicated to workers, business partners, and other relevant parties (ii.) Policies on harassment, discrimination, racism, LGBTQ etc.	
SI_IN_A_4	Collective bargaining agreements	[18,68,73,74,92,95,99], ESRS S1 [15]
SI_IN_A_4.1	Report the percentage of total employees covered by collective bargaining agreements	
SI_IN_A_5	New employee hires and employee turnover	[68,73,74,99], ESRS S1 [15]
SI_IN_A_5.1	(i.) Total number and rate of new employee hires during the reporting period, by age group, gender and region. (ii.) Total number and rate of employee turnover during the reporting period, by age group, gender and region.	
SI_IN_A_6	Diversity	[27,65,77,78,85], ESRS S1 [15]
SI_IN_A_6.1	(i.) Gender equality and proportionally fair salary policy at all levels of the company (ii.) Part of the company's employees are disabled (iii.) Part of the employees in the business must be old (over 50 years old) and employed for the financial year (iv.) Part of the employees in the business to be young (under 30 years old) and hired for the financial	

Table 5. *Cont.*

Social Indicators Internal to the Organization		
SI_IN_A_6.2	(i.) Percentage of employees per employee category in each of the following diversity categories: i) Gender; ii) Age group: under 30 years old, 30–50 years old, over 50 years old; iii) Other indicators of diversity where relevant (such as minority or vulnerable groups) (ii.) Ratio of the basic salary and remuneration of women to men for each employee category, by significant locations of operation.	
SI_IN_A_7	Incidents of discrimination and corrective actions taken	[75–78], ESRS S1 [15]
SI_IN_A_7.1	(i.) Total number of incidents of discrimination during the reporting period. (ii.) Status of the incidents and actions taken (i–iv)	
SI_IN_A_8	Training and skills acquisition	
SI_IN_A_8.1	Training	[62,63,95–98], ESRS S1 [15]
SI_IN_A_8.1.1	(i.) Part of employees who have access to at least one vocational training during the year (ii.) Proportion of employees under the age of 30 who have access to at least one vocational training during the year (iii.) Proportion of employees over 50 who have access to at least one vocational training during the year (iv.) Range of expenditure on vocational training per employed trainee (v.) Part of turnover devoted to R&D (R&D expenditure on research and development (vi.) Existence and range of awareness programs in the responsible use of products and services marketed by the company (vii.) Percent of employment positions in danger due to technological change and actions taken to mitigate (retraining, reskilling, etc.)	
SI_IN_A_8.2	Communication and training about anti-corruption policies and procedures	[28,64,75,76], ESRS G1 [15]
SI_IN_A_8.2.1	(i.) Total number and percentage of employees that the organization's anti-corruption policies and procedures have been communicated to, broken down by employee category and region. (ii.) Total number and percentage of business partners that the organization's anticorruption policies and procedures have been communicated to, broken down by type of business partner and region. (iii.) Total number and percentage of employees that have received training on anticorruption, broken down by employee category and region.	
SI_IN_A_8.3	Confirmed incidents of corruption and actions taken.	[28,64,75,76], ESRS G1 [15]
SI_IN_A_8.3.1	(i.) Total number of confirmed incidents in which employees were dismissed or disciplined for corruption. (ii.) Total number of confirmed incidents when contracts with business partners were terminated or not renewed due to violations related to corruption. (iii.) Public legal cases regarding corruption brought against the organization or its employees during the reporting period and the outcomes of such cases	
SI_IN_A_8.4	Average hours of training per year	[62,63,65,99], ESRS S1 [15]
SI_IN_A_8.4.1	Average hours of training that the organization's employees have undertaken during the reporting period per: i) employee, ii) gender; iii) employee category	

Table 5. *Cont.*

	Social Indicators Internal to the Organization	
SI_IN_A_8.5	Programs for upgrading employee skills and transition assistance programs	[95–99], ESRS S1 [15]
SI_IN_A_8.5.1	(i.) Type and scope of programs implemented and assistance provided to upgrade employee skills. (ii.) Transition assistance programs provided to facilitate continued employability and the management of career endings resulting from retirement or termination of employment.	
SI_IN_A_8.6	Percentage of employees receiving regular performance and career development reviews	[62–65], ESRS S1 [15]
SI_IN_A_8.6.1	Percentage of total employees, (i) in total, (ii) by gender and (iii) by employee category who received a regular performance and career development review during the reporting period	
SI_IN_A_8.7	Security personnel trained in human rights policies or procedures	[27,75,76], ESRS S1, ESRS S2 [15]
SI_IN_A_8.7.1	(i.) Percentage of security personnel who have received formal training in the organization's human rights policies or specific procedures and their application to security. (ii.) Whether training requirements also apply to third-party organizations providing security personnel.	
	Working environment	
SI_IN_B_1	Benefits provided to full-time employees that are not provided to temporary or part-time employees	[27,67,69,73,99], ESRS S1 [15]
SI_IN_B_1.1	i. Life insurance; ii. Health care; iii. Disability and invalidity coverage; iv. Parental leave; v. Retirement provision; vi. Stock ownership; vii. Others.	
SI_IN_B_2	Parental leave	[27,64,65,67,69], ESRS S1 [15]
SI_IN_B_2.1	(i.) Total number of employees that were entitled to parental leave, by gender. (ii.) Total number of employees that took parental leave, by gender. (iii.) Total number of employees that returned to work in the reporting period after parental leave ended, by gender. (iv.) Total number of employees that returned to work after parental leave ended that were still employed 12 months after their return to work, by gender. (v.) Return to work and retention rates of employees that took parental leave, by gender	
SI_IN_B_3	Minimum notice periods regarding operational changes	[18,73,74,92,95], ESRS S1 [15]

Table 5. *Cont.*

Social Indicators Internal to the Organization		
SI_IN_B_3.1	(i.) Minimum number of weeks' notice typically provided to employees and their representatives prior to the implementation of significant operational changes that could substantially affect them. (ii.) For organizations with collective bargaining agreements, report whether the notice period and provisions for consultation and negotiation are specified in collective agreements	
SI_IN_B_4	Positive Working Conditions & Employee Engagement	[62–65,67,68], ESRS S1 [15]
SI_IN_B_4.1	(i.) Existence of a positive work climate assessment study and an operational action plan based on the results, the response rate and the employee cooperation performance rate (ii.) Rate of average absence from work (iii.) Certification linked to the positive climate and good cooperation of the employees (iv.) Rate of occupational accidents along with absence from work within the enterprise (v.) Existence of a parenting policy and measures aimed at respecting the balance of personal and professional life (vi.) Existence of a network of operational measures to deal with harassment	
SI_IN_B_5	Occupational health and safety	
SI_IN_B_5.1	Occupational health and safety management system	[70–72,79], ESRS S1 [15]
SI_IN_B_5.1.1	(i) A statement of whether an occupational health and safety management system has been implemented. (ii) A description of the scope of workers, activities, and workplaces covered by the occupational health and safety management system, and an explanation of whether and, if so, why any workers, activities, or workplaces are not covered.	
SI_IN_B_5.2	Hazard identification, risk assessment, and incident investigation	[70–72,76], ESRS S1 [15]
SI_IN_B_5.2.1	(i.) A description of the processes used to identify work-related hazards and assess risks on a routine and non-routine basis, and to apply the hierarchy of controls to eliminate hazards and minimize risks. (ii.) A description of the processes for workers to report work-related hazards and hazardous situations, and an explanation of how workers are protected against reprisals. (iii.) A description of the policies and processes for workers to remove themselves from work situations that they believe could cause injury or ill health, and an explanation of how workers are protected against reprisals. (iv.) A description of the processes used to investigate work-related incidents, including the processes to identify hazards and assess risks relating to the incidents, to determine corrective actions using the hierarchy of controls, and to determine improvements needed in the occupational health and safety management system	
SI_IN_B_5.3	Occupational health services	[66,67,69,79]. ESRS 1 [15]

Table 5. *Cont.*

Social Indicators Internal to the Organization		
SI_IN_B_5.3.1	A description of the occupational health services' functions that contribute to the identification and elimination of hazards and minimization of risks, and an explanation of how the organization ensures the quality of these services and facilitates workers' access to them.	
SI_IN_B_5.4	Worker participation, consultation, and communication on occupational health and safety	[18,70,71,92], ESRS 1 [15]
SI_IN_B_5.4.1	(i.) A description of the processes for worker participation and consultation in the development, implementation, and evaluation of the occupational health and safety management system, and for providing access to and communicating relevant information on occupational health and safety to workers. (ii.) Where formal joint management-worker health and safety committees exist, a description of their responsibilities, meeting frequency, decision-making authority, and whether and, if so, why any workers are not represented by these committees.	
SI_IN_B_5.5	Worker training on occupational health and safety	[70–72,99], ESRS 1 [15]
SI_IN_B_5.5.1	A description of any occupational health and safety training provided to workers, including generic training as well as training on specific work-related hazards, hazardous activities, or hazardous situations.	
SI_IN_B_5.6	Promotion of workers health	[66,67,69,79], ESRS 1 [15]
SI_IN_B_5.6.1	(i.) An explanation of how the organization facilitates workers' access to non-occupational medical and healthcare services, and the scope of access provided. (ii.) A description of any voluntary health promotion services and programs offered to workers to address major non-work-related health risks, including the specific health risks addressed, and how the organization facilitates workers' access to these services and programs.	
SI_IN_B_5.7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	[27,72,81,82], ESRS 2 [15]
SI_IN_B_5.7.1	A description of the organization's approach to preventing or mitigating significant negative occupational health and safety impacts that are directly linked to its operations, products, or services by its business relationships, and the related hazards and risks.	
SI_IN_B_5.8	Workers covered by an occupational health and safety management system	[71,72,96], ESRS 1 [15]
SI_IN_B_5.8.1	(i.) If the organization has implemented an occupational health and safety management system based on legal requirements and/or recognized standards/guidelines: (a) the number and percentage of all employees and workers who are not employees but whose work and/or workplace is controlled by the organization, who are covered by such a system; (b) that has been internally audited; (c) been audited or certified by an external party. (ii.) Whether and, if so, why any workers have been excluded from this disclosure, including the types of worker excluded.	

Table 5. *Cont.*

Social Indicators Internal to the Organization		
SI_IN_B_5.9	Work-related injuries	[66,70–72], ESRS 1 [15]
SI_IN_B_5.9.1	(a) For all employees & (b) For all workers who are not employees but whose work and/or workplace is controlled by the organization: i. The number and rate of fatalities as a result of work-related injury; ii. The number and rate of high-consequence work-related injuries (excluding fatalities); iii. The number and rate of recordable work-related injuries; iv. The main types of work-related injury; v. The number of hours worked. vi. Whether and, if so, why any workers have been excluded from this disclosure, including the types of worker excluded.	
SI_IN_B_5.10	Work-related ill health	[66–69,71], ESRS 1 [15]
SI_IN_B_5.10.1	(a) For all employees and (b) For all workers who are not employees but whose work and/or workplace is controlled by the organization: i. The number of fatalities as a result of work-related ill health; ii. The number of cases of recordable work-related ill health; iii. The main types of work-related ill health. iv. Whether and, if so, why any workers have been excluded from this disclosure, including the types of worker excluded.	
SI_IN_B_6	Working conditions and labor rights	
SI_IN_B_6.1	Freedom of association and collective bargaining	[18,27,92,95], ESRS 1, ESRS 2 [15]
SI_IN_B_6.1.1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk (i.) Operations and suppliers in which workers' rights to exercise freedom of association or collective bargaining may be violated or at significant risk either in terms of: (a) type of operation (such as manufacturing plant) and supplier; (b) countries or geographic areas with operations and suppliers considered at risk (ii.) Measures taken by the organization in the reporting period intended to support rights to exercise freedom of association and collective bargaining.	
SI_IN_B_6.2	Child labor	[22,27,35], ESRS 2 [15]
SI_IN_B_6.2.1	Operations and suppliers at significant risk for incidents of child labor (i.) Operations and suppliers considered to have significant risk for incidents of: (a) child labor; (b) young workers exposed to hazardous work. (ii.) Operations and suppliers considered to have significant risk for incidents of child labor either in terms of: (a) type of operation (such as manufacturing plant) and supplier; (b) countries or geographic areas with operations and suppliers considered at risk. (iii.) Measures taken by the organization in the reporting period intended to contribute to the effective abolition of child labor	

Table 5. *Cont.*

Social Indicators Internal to the Organization		
SI_IN_B_6.3	Forced or compulsory labor	[22,27,35], ESRS 2 [15]
SI_IN_B_6.3.1	Operations and suppliers at significant risk for incidents of forced or compulsory labor (i.) Operations and suppliers considered to have significant risk for incidents of forced or compulsory labor either in terms of: (a.) type of operation (such as manufacturing plant) and supplier; (b.) countries or geographic areas with operations and suppliers considered at risk. (ii.) Measures taken by the organization in the reporting period intended to contribute to the elimination of all forms of forced or compulsory labor.	

Source: Authors, 2025.

Overall, the findings reaffirm the central argument of this paper: that a socially sustainable port governance model must balance external community interests with internal organizational well-being. Together, the two sets of indicators proposed herein constitute the core empirical and conceptual contribution of this paper. They provide a coherent structure for incorporating social sustainability into the design, monitoring, and evaluation of port concession agreements. External indicators ensure ports remain socially embedded and responsive to community expectations, while internal indicators safeguard fair, inclusive, and safe working conditions within concessionaire organizations. By linking theoretical discussion to contractual practice, the framework addresses the research gaps identified earlier and establishes a bridge between normative sustainability goals and enforceable governance frameworks and mechanisms. In a more practical sense, these indicators provide port authorities, policymakers, and concessionaires with a shared reference for assessing performance and promoting accountability.

5. Discussion

The findings of this research underscore a normative and governance-oriented imperative in contemporary port debates: moving beyond a predominantly technocratic and economic focus towards a more holistic, socially responsible framework [39,41,42]. The evidence presented in this paper suggests that modern port concession agreements could evolve into a tool for public policy, specifically by enabling the integration of social sustainability as an operational governance requirement—rather than treating it as a purely voluntary add-on—through clearer expectations, monitoring pathways, and accountability mechanisms [15,90]. By embedding specific social indicators into the legal fabric of the concession, Port Authorities may be better positioned to align terminal operators' objectives with the broader public interest, while also clarifying expectations, defining monitoring pathways, and supporting accountability over the concession cycle [15,90].

Of course, social provisions in concession agreements are not cost-neutral and may also generate implementation frictions. For concessionaires, such clauses can introduce additional compliance and organisational demands—both in terms of resources and internal procedures—and may also require costly actions and measures to meet specified commitments. For port authorities, more ambitious social clauses may likewise increase the demands placed on monitoring, follow-up, and enforcement, and may require clearer institutional arrangements and sufficient administrative capacity to ensure that contractual commitments remain credible throughout the concession cycle. Implementation tensions can also emerge where social requirements intersect with operational constraints or strategic change. Finally, social clauses can create market-facing risks: if requirements are perceived

as overly rigid, insufficiently adapted to local conditions, or misaligned with prevailing competitive pressures, they may affect bidder participation and pricing, and may be framed as a disadvantage under both intra-port and inter-port competition. These considerations should therefore be addressed explicitly in concession design and negotiations. Nevertheless, where clauses are kept within a reasonable framework, appropriately calibrated, and supported by feasible monitoring and review mechanisms, the additional demands may be offset by longer-term governance gains, including clearer expectations, reduced conflict intensity, and more predictable management of social issues over the concession period.

Overall, port concession agreements can be approached as governance instruments that translate public objectives into contractual obligations, convert broad sustainability principles into performance expectations, and provide a monitoring interface between port authorities, operators, and affected stakeholders [15,39,90]. Within this perspective, the proposed framework aims to make the social pillar more "contractible" by offering structured categories of indicators that can support comparability across cases while allowing calibrated adaptation to local context and port-specific risk profiles [15,42,57–59].

At the same time, the proposed indicator sets should be understood not as an exhaustive checklist, but as a structured basis for translating social objectives into measurable (or demonstrable) performance dimensions [15]. Their value lies in enabling concession frameworks to specify what counts as social performance, how it can be evidenced, and how it can be reviewed over time, acknowledging at the same time that important elements of social sustainability remain qualitative and context-dependent [15,90].

Ports are heterogeneous in terms of their general characteristics and specialization, terminal function, operational intensity, labour regimes, and the nature of port–city interaction; accordingly, the needs addressed by particular indicators, as well as their feasibility, may vary across port/terminal types and regional contexts [15,42,57,58]. In practice, container and Ro-Ro terminals, bulk terminals, and passenger/cruise terminals often differ in the dominant externalities, stakeholder configurations, and workforce profiles, which affects both indicator prioritisation and the ways in which evidence can be generated and implementation monitored [44,45,57–59]. Regional and institutional contexts likewise shape the implementability of social clauses, particularly where legal requirements, data infrastructures, and administrative capacity differ; this reinforces the value of a layered approach that combines a stable core set of indicators with port-specific calibration and, where appropriate, phased implementation [15,90]. Accordingly, while this paper advances a structured indicator framework intended to be transferable across settings, the systematic testing and fine-tuning of indicator selection and implementation across port types and regions remains a natural next step for subsequent empirical research.

5.1. External Stakeholder Dimension and Community Relations

The research indicates that traditional regulatory frameworks often fail to address issues such as port negative externalities at a granular, local level [42,44,45]. Through the inclusion of social sustainability clauses, port concession agreements may provide a more dynamic and enforceable mechanism for mitigation [5,15]. Moreover, where terminal operators are contractually required to monitor and report on social impacts, transparency may improve, and the information asymmetry that often contributes to community mistrust may be reduced [15,90]. This is consistent with the wider port governance literature that emphasizes stakeholder identification, management, and engagement as mechanisms for addressing collective challenges within the port cluster [40–42,90].

A concise way to interpret the external indicators is through four analytical lenses: relevance, significance/impact, feasibility/practicability, and governance value [15,90]. These lenses are complementary: relevance anchors an indicator to the specific social themes

a concession seeks to address; significance/impact foregrounds materiality for affected groups and for the port–city relationship; feasibility/practicability focuses on implementation capacity and evidence availability; governance value highlights how indicators support accountability, periodic review, and corrective action within contractual arrangements [15,90]. Relevance is reflected, for example, in indicators on stakeholder mapping, structured dialogue, and grievance channels, which correspond to recurrent challenges associated with concentrated local impacts and the need for procedural legitimacy [42,90]. Significance/impact is strengthened where process obligations (consultation, assessment, disclosure) are connected to outcome-oriented expectations (mitigation measures, accessibility improvements, or locally distributed benefits) [15,42]. Feasibility/practicability is comparatively higher where indicators build on established practices—such as consultation routines, project-level assessments, and periodic reporting—while still requiring clear definitions of scope, affected groups, and evidence thresholds [15,90]. Governance value is enhanced when indicators reduce ambiguity by specifying who is consulted, how concerns are recorded, how responses are tracked, and how performance is reviewed over time [15,90].

A further implication is that external indicators can be designed to balance standardization with context sensitivity [15]. A core set can remain stable across concessions (e.g., stakeholder mapping, engagement processes, disclosure, grievance mechanisms), while port-specific indicators can be adapted to spatial constraints, land-use conflicts, mobility pressures, and community priorities [42,57,58]. Such a layered structure can support comparability without disregarding heterogeneous port–city settings [57,58,90].

5.2. Internal Stakeholder Dimension and Labour Relations

A further issue concerns the conditions under which the port workforce is supported through concession-based governance, particularly given ongoing organizational and technological change [95–97]. The inclusion of labour-related indicators in concession clauses may provide a governance mechanism that supports anticipatory responses to organizational and technological change, especially where obligations for training, reskilling, and continuous professional development are specified [95–97]. Where such provisions are operationalized, Port Authorities may be better able to ensure that the workforce is actively supported, so that labour stability can contribute to operational resilience [60,61,95–97]. In addition, the formalisation of labour-related requirements within concession agreements can serve to reduce exposure to competitive pressures that may incentivize deterioration in working conditions [70–72]. In an era of global competition, there is a risk that terminal operators might seek to reduce costs by weakening labour protections; contractual clauses can set a minimum baseline that may help limit such risks and support a more stable industrial relations climate [70–74].

The same four lenses provide a structured way to discuss internal indicators without treating them as equally important or equally implementable [15,90]. Relevance is evident where indicators align with operational dependence on skilled, safety-conscious, and adaptable labour, including under technological change and shifting expectations around decent work and inclusion [62–65,77,78,95–97]. Significance/impact is typically higher for indicators linked to wage adequacy, employment security, occupational health and safety systems, and access to training, given their direct bearing on worker well-being and organizational resilience [66–72]. Feasibility/practicability is often supported by the availability of HR and OHS documentation, but it depends on careful indicator specification to avoid purely formal compliance (for example, defining training coverage, the scope of safety systems, and audit expectations) [70–72,99]. Governance value is strengthened when internal indicators are linked to verifiable documentation, periodic reporting, and

corrective-action pathways that sustain commitments across concession cycles and limit vulnerability to short-term cost pressures [15,90].

Finally, internal indicators need not be framed solely as protective constraints. When designed appropriately, they can also function as enabling mechanisms for productivity and resilience, insofar as skills development, safety culture, and inclusive working conditions may reduce operational disruption, strengthen retention, and improve coordination across the port cluster [60–65]. This perspective remains compatible with approaches that treat social and economic objectives as potentially complementary under suitable governance arrangements [21,23].

6. Conclusions

The integration of social sustainability clauses into port concession agreements constitutes a crucial step toward building a more inclusive, resilient, and responsible port sector. Beyond normative aspirations, such provisions address concrete challenges that influence both port performance and social acceptability, ensuring that operational efficiency, competitiveness, and development are matched by social responsibility, accountability, and long-term viability. In academic terms, the paper's central contribution is to translate a largely fragmented discussion on the social pillar in ports into a structured, governance-relevant indicator framework that can be considered within concession design and monitoring [21,23].

The findings of this paper confirm that social sustainability operates along two complementary dimensions. The external dimension concerns the interaction between the port and its wider environment, highlighting the need to strengthen community relations, mitigate adverse impacts, and ensure that local populations participate in the benefits of port activities. Properly designed clauses may help ensure that port operations contribute positively to local development, cohesion, and quality of life. At the same time, the internal dimension focuses on improving working conditions, protecting labour rights, and enhancing organisational resilience. Provisions addressing occupational health and safety, equality and diversity, skills development, and employee participation reinforce the human foundations of port operations and development. These measures should go beyond compliance, with the potential to contribute to productivity, workforce stability, and innovative capacity. Addressing both dimensions through contractual mechanisms allows port authorities and concessionaires to align port objectives with broader social expectations, while reinforcing mutual trust among stakeholders.

The incorporation of social elements within concession agreements should be understood as part of an evolving governance model that responds to societal and market pressures, as well as to growing regulatory sustainability reporting requirements, in a proactive and inclusive manner. For public authorities and regulators, it provides a structured means to ensure that port development supports local and regional well-being. For operators, it offers a pathway to more stable labour relations, improved reputation, and sustained competitiveness. For workers and communities, it represents a tangible recognition of their role and value within the port ecosystem. At the same time, it is important to distinguish between analytically grounded observations and normative implications: the analysis shows that the social dimension remains weakly operationalized in the available contractual material, while the normative recommendation is that concession design should make social performance more explicit, reviewable, and monitorable over the concession cycle.

There is a clear need for a standardized set of social sustainability metrics that can be adapted to different regional and operational contexts. This study proposes that such metrics should be transparent, measurable, and integrated into the performance-linked components of the port concession agreement. Failure to meet social benchmarks should

carry consequences similar to those for failing to meet volume or investment targets. This would signal to the global investment community that social sustainability is a core component of the port's value proposition.

Nevertheless, negotiating advanced social clauses also raises a cost–benefit question for both port authorities and concessionaires. While such clauses may imply short-term compliance, monitoring, and investment costs, they can also reduce longer-term risks associated with labour disputes, operational disruption, reputational damage, and prolonged conflict with local communities, thereby supporting smoother implementation of port development over the concession cycle. At the same time, overly stringent or inflexible requirements may be perceived as increasing regulatory and financial burden, potentially discouraging bidder participation or affecting offer terms, and—depending on market structure—may be viewed as a competitive disadvantage under both intra-port and inter-port competition. Accordingly, a key implication is not more clauses per se, but the careful calibration of obligations to what can be credibly implemented and assessed, combined with feasible review mechanisms and context-sensitive adaptation.

While this paper has provided a comprehensive framework for the integration of social sustainability in port concession agreements, certain limitations must be acknowledged. These limitations primarily arise from the inherent heterogeneity of the port sector and the diverse institutional environments in which concession agreements operate. The diversity of legal systems and port governance models globally means that a fully 'one-size-fits-all' approach may be difficult to implement. The framework should therefore be viewed not as a rigid checklist, but as a modular "comprehensive pool" of indicators that requires local calibration to align with specific jurisdictional requirements and port-specific profiles.

Future research could build on these findings by examining how social sustainability clauses are formulated, implemented, and monitored in diverse governance and market contexts. Comparative studies across ports and concession models can reveal how contractual design influences social outcomes, while sector-specific analyses—covering, for instance, container, multipurpose, bulk, and cruise terminals—can clarify the relevance and feasibility of particular indicators. Case studies can further assess the impacts of social clauses on community welfare and labour relations, and identify the legal or institutional factors that facilitate or hinder their effective standardisation. Developing a shared methodological and indicator framework, grounded in theory and empirical evidence, would help transform social sustainability from an aspirational concept into an operational norm within port concession policy and governance. Advancing this research agenda is essential for moving from fragmented practices toward a coherent, evidence-based integration of social sustainability across the port sector. In this sense, the indicator typology advanced here is intended as a structured reference point for subsequent empirical testing, clause design work, and refinement across different port settings and contexts.

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References

1. Notteboom, T.; Pallis, A.; Rodrigue, J.P. *Port Economics, Management and Policy*; Routledge: Abingdon, UK, 2022.
2. Jaffee, D. 'A deeper channel floats all boats': The port economy as urban growth engine. *Environ. Plan. A Econ. Space* **2015**, *47*, 783–800. [CrossRef]
3. Chiu, R.H.; Lin, L.-H.; Ting, S.-C. Evaluation of green port factors and performance: A fuzzy AHP analysis. *Math. Probl. Eng.* **2014**, *2014*, 802976. [CrossRef]
4. European Commission. Ports: An engine for growth. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2013) 295 Final, Brussels, 23 May. 2013. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0295 (accessed on 26 October 2025).
5. Platias, C.; Chlomoudis, C.; Pallis, P.; Tozidis, M.; Zarakeli, V. Redefining Port Concession Agreements: A Framework for Environmental Sustainability. *Sustainability* **2025**, *17*, 2550. [CrossRef]
6. Chlomoudis, C.; Kostagiolas, P.; Pallis, P.; Platias, C. Advancing port sustainability: Essentials for a model concession agreement framework. *J. Infrastruct. Policy Dev.* **2024**, *8*, 3535. [CrossRef]
7. Chlomoudis, C.; Pallis, P.; Platias, C. Environmental Mainstreaming in Greek TEN-T Ports. *Sustainability* **2022**, *14*, 1634. [CrossRef]
8. Roberts, T.; Williams, I.; Preston, J.; Clarke, N.; Odum, M.; O'Gorman, S. Ports in a Storm: Port-City Environmental Challenges and Solutions. *Sustainability* **2023**, *15*, 9722. [CrossRef]
9. Deloitte; ESPO. *Europe's Ports at the Crossroads of Transitions. A Deloitte and ESPO Study*; Deloitte: Hong Kong, China, 2021. Available online: https://www.espo.be/media/Deloitte-ESPO%20study%20-%20Europe%E2%80%99s%20ports%20at%20the%20crossroads%20of%20transitions_1.pdf (accessed on 26 October 2025).
10. World Ports Sustainability Program. World Ports Sustainability Report. 2020. Available online: https://sustainableworldports.org/wp-content/uploads/WORLD-PORTS-SUSTAINABILITY-REPORT-2020-FIN.pdf (accessed on 26 October 2025).
11. Alamoush, A.S.; Ballini, F.; Ölçer, A.I. Revisiting port sustainability as a foundation for the implementation of the United Nations Sustainable Development Goals (UN SDGs). *J. Shipp. Trade* **2021**, *6*(19). [CrossRef]
12. Cunha, D.R.; Costa, M.D.C.; Oliveira, C.B.M.; Pereira, N.N. SDG attributes: A sustainability assessment framework for Brazilian ports. *Mar. Policy* **2025**, *181*, 106841. [CrossRef]
13. Jansen, M. Ports and the Sustainable Development Goals: An Ecosystems Approach. In *International Business and Sustainable Development Goals, EIBA, Vol. 17, Progress in International Business Research*; Van Tulder, R., Giuliani, E., Álvarez, I., Eds.; Emerald Publishing Limited: Bingley, UK, 2023; pp. 263–283.
14. European Parliament; the Council of the European Union. Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 Amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as Regards Corporate Sustainability Reporting; Official Journal of the European Union: 2022; pp. 15–80. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022L2464 (accessed on 26 October 2025).
15. European Commission. *Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 Supplementing Directive 2013/34/EU of the European Parliament and of the Council as Regards Sustainability Reporting Standards*; Official Journal of the European Union: Luxembourg, 2023. Available online: https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32023R2772 (accessed on 26 October 2025).
16. Sislian, L.; Jaegler, A.; Cariou, P. A literature review on port sustainability and ocean's carrier network problem. *Res. Transp. Bus. Manag.* **2016**, *19*, 19–26. [CrossRef]
17. Styliadis, T.; Angelopoulos, J.; Leonardou, P.; Pallis, P. Promoting Sustainability through Assessment and Measurement of Port Externalities: A Systematic Literature Review and Future Research Paths. *Sustainability* **2022**, *14*, 8403. [CrossRef]
18. Eizenberg, E.; Jabareen, Y. Social Sustainability: A New Conceptual Framework. *Sustainability* **2017**, *9*, 68. [CrossRef]
19. United Nations. Achieving Decent Work and Inclusive Growth: The Business Case for Social Dialogue. 2018. Available online: https://unglobalcompact.org/library/5707 (accessed on 26 October 2025).
20. Woolcock, M. The place of social capital in understanding social and economic outcomes. *Can. J. Policy Res.* **2001**, *2*, 11–17.
21. Porter, M.E.; Kramer, M. The Big Idea: Creating Shared Value. How to Reinvent Capitalism—And Unleash a Wave of Innovation and Growth. *Harv. Bus. Rev.* **2011**, *89*, 62–77. [CrossRef]
22. Harrison, J.S.; Wicks, A.C. Stakeholder theory, value, and firm performance. *Bus. Ethics Q.* **2013**, *23*, 97–124. [CrossRef]
23. Elkington, J. *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*; Capstone Publishing Limited: Oxford, UK, 1997.
24. Rydin, Y. Indicators as a governmental technology? The lessons of community-based sustainability indicator projects. *Environ. Plan. D Soc. Space* **2007**, *25*, 610–624. [CrossRef]
25. Freeman, R.E. *Strategic Management: A Stakeholder Approach*; Pitman: Boston, MA, USA, 1984.

26. Smith, D.C.; Richards, J.M. Social license to operate: Hydraulic fracturing-related challenges facing the oil & gas industry. *Oil Gas Nat. Resour. Energy J.* **2015**, *1*, 81. [CrossRef]
27. Ehnert, I.; Harry, W. Recent developments and future prospects on sustainable human resource management: Introduction to the special issue. *Manag. Rev.* **2012**, *23*, 221–238. [CrossRef]
28. Fernandez-Feijoo, B.; Romero, S.; Ruiz, S. Effect of stakeholders' pressure on transparency of sustainability reports within the GRI framework. *J. Bus. Ethics* **2014**, *122*, 53–63. [CrossRef]
29. Kaptein, M.; Van Tulder, R. Toward effective stakeholder dialogue. In *Corporate Business Responsibility*; O'Brien, J., Ed.; Routledge: London, UK, 2017; pp. 367–388.
30. Rowley, T.J. Moving beyond dyadic ties: A network theory of stakeholder influences. *Acad. Manag. Rev.* **1997**, *22*, 887–910. [CrossRef]
31. Orlitzky, M.; Schmidt, F.L.; Rynes, S.L. Corporate social and financial performance: A meta-analysis. *Organ. Stud.* **2003**, *24*, 403–441. [CrossRef]
32. Aguinis, H.; Glavas, A. What we know and don't know about corporate social responsibility: A review and research agenda. *J. Manag.* **2012**, *38*, 932–968. [CrossRef]
33. Portway, S. Corporate social responsibility: The case for active stakeholder relationship management. In *Strategic Public Relations*; Hart, N.A., Ed.; Palgrave Macmillan: London, UK, 1995; pp. 213–231.
34. Yu, H.; Zhang, M.; Cui, C.; Xu, L.; Lin, S.; Xu, J. Evaluating Competitiveness of Container Shipping Operators in the Sustainability and Digitalization Era. *Sustainability* **2024**, *16*, 4228. [CrossRef]
35. Yu, H.; Guo, Z.; Xu, L. Research on Port Competitiveness Dynamics in China Under the Background of Free Trade Zone and Port Integration. *Sustainability* **2025**, *17*, 5502. [CrossRef]
36. Yu, H.; Bai, X.; Liu, J. Ship Behavior Pattern Analysis Based on Graph Theory: A Case Study in Tianjin Port. *J. Mar. Sci. Eng.* **2023**, *11*, 2227. [CrossRef]
37. Chlomoudis, C.I.; Pallis, A.A. The need for a new philosophy of port management and organisation: Effective responses to contemporary challenges. *Eur. Res. Stud. J.* **1999**, *2*, 91–103.
38. Brooks, M.R. Issues in measuring port devolution program performance: A managerial perspective. *Res. Transp. Econ.* **2006**, *17*, 599–629. [CrossRef]
39. De Langen, P. Governance in seaport clusters. *Marit. Econ. Logist.* **2004**, *6*, 141–156. [CrossRef]
40. Verhoeven, P. A review of port authority functions: Towards a renaissance? *Marit. Policy Manag.* **2010**, *37*, 247–270. [CrossRef]
41. Dooms, M.; Verbeke, A.; Haezendonck, E. Stakeholder management and path dependence in large-scale transport infrastructure development: The port of Antwerp case (1960–2010). *J. Transp. Geogr.* **2013**, *27*, 14–25. [CrossRef]
42. Dooms, M. Stakeholder management for port sustainability: Moving from ad-hoc to structural approaches. In *Green Ports. Inland and Seaside Sustainable Transportation Strategies*; Bergqvist, R., Monios, J., Eds.; Elsevier: Oxford, UK, 2019; pp. 63–84.
43. Lim, S.; Pettit, S.; Abouarghoub, W.; Beresford, A. Port sustainability and performance: A systematic literature review. *Transp. Res. Part D Transp. Environ.* **2019**, *72*, 47–64. [CrossRef]
44. Del Saz-Salazar, S.; García-Menéndez, L. Port expansion and negative externalities: A willingness to accept approach. *Marit. Policy Manag.* **2015**, *43*, 59–83. [CrossRef]
45. Wiegmans, B.W.; Louw, E. Changing port–city relations at Amsterdam: A new phase at the interface? *J. Transp. Geogr.* **2011**, *19*, 575–583. [CrossRef]
46. I2S2. *Environmental Initiatives at Seaports Worldwide: A Snapshot of Best Practices White Paper*; International Institute for Sustainable Seaports & Port of Portland: Portland, OR, USA, 2014. Available online: https://aapa.files.cms-plus.com/AwardsCompetitionMaterials/Portland%202014%20Stakeholder%20Awareness%20Education%20&%20Involvement.pdf (accessed on 26 October 2025).
47. Verbeke, A.; Dooms, M. *An Integrative Framework for Long-Term Strategic Seaport Planning: An Application to the Port of Antwerp*; Ports Are More Piers Lloyd Antwerp: Antwerp, Belgium, 2006; pp. 173–192.
48. Acciaro, M. The role of ports in the development of Mediterranean islands: The case of Sardinia. *Int. J. Transp. Econ. Riv. Internazionale Di Econ. Dei Trasp.* **2008**, *35*, 295–324.
49. Musso, E.; Benacchio, M.; Ferrari, C. Ports and employment in port cities. *Int. J. Marit. Econ.* **2000**, *2*, 283–311. [CrossRef]
50. Bottasso, A.; Conti, M.; Ferrari, C.; Tei, A. Ports and regional development: A spatial analysis on a panel of European regions. *Transp. Res. Part A Policy Pract.* **2014**, *65*, 44–55. [CrossRef]
51. Bottasso, A.; Conti, M.; Ferrari, C.; Merk, O.; Tei, A. The impact of port throughput on local employment: Evidence from a panel of European regions. *Transp. Policy* **2013**, *27*, 32–38. [CrossRef]
52. Ding, H.C.; Lian, M.R.; Chen, X.Y.; Liu, J.M.; Zhong, Z.C.; Zhang, Y.F.; Zhou, M.Y. Research on the correlation of port logistics and regional economic growth base on gray relational analysis method. *Concurr. Comput. Pract. Exp.* **2019**, *31*, e4744. [CrossRef]
53. Munim, Z.H.; Schramm, H.J. The impacts of port infrastructure and logistics performance on economic growth: The mediating role of seaborne trade. *J. Shipp. Trade* **2018**, *3*, 1. [CrossRef]

54. Chia-Hong, L.L. The interaction between the port and Kaohsiung city: Economy, institution and power. *City Cult. Soc.* **2013**, *4*, 21–35. [CrossRef]
55. Chen, J.; Fei, Y.; Zhu, Y.; Zhang, F. Allometric relationship between port throughput growth and urban population: A case study of Shanghai port and Shanghai city. *Adv. Mech. Eng.* **2018**, *10*, 1–11. [CrossRef]
56. Santos, A.M.; Salvador, R.; Dias, J.C.Q.; Soares, C.G. Assessment of port economic impacts on regional economy with a case study on the Port of Lisbon. *Marit. Policy Manag.* **2018**, *45*, 684–698. [CrossRef]
57. Kong, Y.; Liu, J. Sustainable port cities with coupling coordination and environmental efficiency. *Ocean Coast. Manag.* **2021**, *205*, 105534. [CrossRef]
58. Schipper, C.A.; Vreugdenhil, H.; De Jong, M.P.C. A sustainability assessment of ports and port-city plans: Comparing ambitions with achievements. *Transp. Res. Part D Transp. Environ.* **2017**, *57*, 84–111. [CrossRef]
59. Galuppo, L.; Gorli, M.; Scaratti, G.; Kaneklin, C. Building social sustainability: Multi-stakeholder processes and conflict management. *Soc. Responsib. J.* **2014**, *10*, 685–701. [CrossRef]
60. Schein, E.H. *Organizational Culture and Leadership*, 4th ed.; John Wiley & Sons: San Francisco, CA, USA, 2010.
61. Dyllick, T.; Hockerts, K. Beyond the business case for corporate sustainability. *Bus. Strategy Environ.* **2002**, *11*, 130–141. [CrossRef]
62. Kahn, W.A. Psychological conditions of personal engagement and disengagement at work. *Acad. Manag. J.* **1990**, *33*, 692–724. [CrossRef]
63. Bakker, A.B.; Demerouti, E. Towards a model of work engagement. *Career Dev. Int.* **2008**, *13*, 209–223. [CrossRef]
64. Jiang, H.; Men, R.L. Creating an engaged workforce: The impact of authentic leadership, transparent organizational communication, and work-life enrichment. *Commun. Res.* **2017**, *44*, 225–243. [CrossRef]
65. Harter, J.K.; Schmidt, F.L.; Hayes, T.L. Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *J. Appl. Psychol.* **2002**, *87*, 268–279. [CrossRef]
66. World Health Organization (WHO). *Constitution of the World Health Organization*; WHO: Geneva, Switzerland, 1946. Available online: https://apps.who.int/gb/bd/pdf/bd47/en/constitution-en.pdf (accessed on 26 October 2025).
67. Kobayashi, K.; Eweje, G.; Tappin, D. Employee wellbeing and human sustainability: Perspectives of managers in large Japanese corporations. *Bus. Strategy Environ.* **2018**, *27*, 801–810. [CrossRef]
68. Ajayi, F.A.; Udeh, C.A. Combating burnout in the IT Industry: A review of employee well-being initiatives. *Int. J. Appl. Res. Soc. Sci.* **2024**, *6*, 567–588. [CrossRef]
69. Sears, L.E.; Shi, Y.; Coberley, C.R.; Pope, J.E. Overall well-being as a predictor of health care, productivity, and retention outcomes in a large employer. *Popul. Health Manag.* **2013**, *16*, 397–405. [CrossRef] [PubMed]
70. Ayim Gyekye, S. Workers' perceptions of workplace safety and job satisfaction. *Int. J. Occup. Saf. Ergon.* **2005**, *11*, 291–302. [CrossRef] [PubMed]
71. Zohar, D.; Luria, G. A multilevel model of safety climate: Cross-level relationships between organization and group-level climates. *J. Appl. Psychol.* **2005**, *90*, 616. [CrossRef]
72. Ullah, Z.; Sulaiman, M.A.B.A.; Ali, S.B.; Ahmad, N.; Scholz, M.; Han, H. The Effect of Work Safety on Organizational Social Sustainability Improvement in the Healthcare Sector: The Case of a Public Sector Hospital in Pakistan. *Int. J. Environ. Res. Public Health* **2021**, *18*, 6672. [CrossRef]
73. Sverke, M.; Hellgren, J.; Näswall, K. No security: A meta-analysis and review of job insecurity and its consequences. *J. Occup. Health Psychol.* **2002**, *7*, 242. [CrossRef]
74. Greenhalgh, L.; Rosenblatt, Z. Job insecurity: Toward conceptual clarity. *Acad. Manag. Rev.* **1984**, *9*, 438–448. [CrossRef]
75. Brown, M.E.; Treviño, L.K. Ethical leadership: A review and future directions. *Leadersh. Q.* **2006**, *17*, 595–616. [CrossRef]
76. Mayer, D.M.; Aquino, K.; Greenbaum, R.L.; Kuenzi, M. Who displays ethical leadership, and why does it matter? An examination of antecedents and consequences of ethical leadership. *Acad. Manag. J.* **2012**, *55*, 151–171. [CrossRef]
77. Cox, T.H.; Blake, S. Managing cultural diversity: Implications for organizational competitiveness. *Acad. Manag. Perspect.* **1991**, *5*, 45–56. [CrossRef]
78. Ng, E.S.; Burke, R.J. Person–organization fit and the war for talent: Does diversity management make a difference? *Int. J. Hum. Resour. Manag.* **2005**, *16*, 1195–1210. [CrossRef]
79. De Luca, P.; Valentinuz, G. Social sustainability for health and well-being in port areas: A general framework proposal with a social value approach. *Corp. Soc. Responsib. Environ. Manag.* **2024**, *31*, 6234–6245. [CrossRef]
80. Stanković, J.J.; Marjanović, I.; Papathanasiou, J.; Drezgić, S. Social, Economic and Environmental Sustainability of Port Regions: MCDM Approach in Composite Index Creation. *J. Mar. Sci. Eng.* **2021**, *9*, 74. [CrossRef]
81. Batalha, E.; Chen, S.L.; Pateman, H.; Zhang, W. Defining a social role for ports: Managers' perspectives on whats and whys. *Sustainability* **2023**, *15*, 2646. [CrossRef]
82. Lu, C.S.; Shang, K.C.; Lin, C.C. Examining sustainability performance at ports: Port managers' perspectives on developing sustainable supply chains. *Marit. Policy Manag.* **2016**, *43*, 909–927. [CrossRef]

83. Lozano, R.; Fobbe, L.; Carpenter, A.; Sammalisto, K. Analyzing sustainability changes in seaports: Experiences from the Gävle Port Authority. *Sustain. Dev.* **2019**, *27*, 409–418. [CrossRef]
84. Ashrafi, M.; Acciaro, M.; Walker, T.R.; Magnan, G.M.; Adams, M. Corporate sustainability in Canadian and US maritime ports. *J. Clean. Prod.* **2019**, *220*, 386–397. [CrossRef]
85. Barreiro-Gen, M.; Lozano, R.; Temel, M.; Carpenter, A. Gender equality for sustainability in ports: Developing a framework. *Mar. Policy* **2021**, *131*, 104593. [CrossRef]
86. Beškovnik, B.; Bajec, P. Application of environmental and social sustainable measures by port of koper: The basis for the regional approach. *Probl. Ekorozwoju—Probl. Sustain. Dev.* **2015**, *10*, 99–106.
87. Friedman, M. The social responsibility of business is to increase its profits. In *Corporate Ethics and Corporate Governance*; Zimmerli, W.C., Holzinger, M., Richter, K., Eds.; Springer: Berlin/Heidelberg, Germany, 2007; pp. 173–178.
88. Purvis, B.; Mao, Y.; Robinson, D. Three pillars of sustainability: In search of conceptual origins. *Sustain. Sci.* **2019**, *14*, 681–695. [CrossRef]
89. Dooms, M.; Macharis, C.; Verbeke, A. Proactive stakeholder management in the port planning process: Empirical evidence from the Port of Brussels. In *Proceedings of the 44th Congress of the European Regional Science Association: "Regions and Fiscal Federalism", 25–29 August 2004, Porto, Portugal*; European Regional Science Association (ERSA): Louvain-la-Neuve, Belgium, 2004. Available online: https://www.econstor.eu/bitstream/10419/117092/1/ERSA2004_271.pdf (accessed on 26 October 2025).
90. European Sea Ports Organization (ESPO). *Code of Practice on Societal Integration of Ports*; European Sea Ports Organization (ESPO): Brussels, Belgium, 2010. Available online: https://www.espo.be/media/espopublications/ESPOCodeofPracticeonSocietalIntegrationofPorts2010.pdf (accessed on 26 October 2025).
91. Notteboom, T.; Parola, F.; Satta, G.; Penco, L. Disclosure as a tool in stakeholder relations management: A longitudinal study on the Port of Rotterdam. *Int. J. Logist. Res. Appl.* **2015**, *18*, 228–250. [CrossRef]
92. Satta, G.; Maugeri, S.; Panetti, E.; Ferretti, M. Port labour, competitiveness and drivers of change in the Mediterranean Sea: A conceptual framework. *Prod. Plan. Control* **2019**, *30*, 1102–1117. [CrossRef]
93. Notteboom, T.; Lam, J.S.L. The Greening of Terminal Concessions in Seaports. *Sustainability* **2018**, *10*, 3318. [CrossRef]
94. Acciaro, M.; Vanelslander, T.; Sys, C.; Ferrari, C.; Roumboutsos, A.; Giuliano, G.; Lam, J.S.L.; Kapros, S. Environmental sustainability in seaports: A framework for successful innovation. *Marit. Policy Manag.* **2014**, *41*, 480–500. [CrossRef]
95. Oliveira, H.; Varela, R. Automation in Ports and Labour Relations in XXI Century. 2016. Available online: https://api.semanticscholar.org/CorpusID:189956576 (accessed on 12 November 2025).
96. Esser, A.; Sys, C.; Vanelslander, T.; Verhetsel, A. The labour market for the port of the future. A case study for the port of Antwerp. *Case Stud. Transp. Policy* **2020**, *8*, 349–360. [CrossRef]
97. Notteboom, T.; Vitellaro, F. *The Impact of Innovation on Dock Labour: Evidence from European Ports*; Impresa Progetto: La Spezia, Italy, 2019; pp. 1–22. Available online: https://www.impresaprogetto.it/essays/2019-3/notteboom-vitellaro (accessed on 25 October 2025).
98. Bottalico, A.; Vanelslander, T.; Verhoeven, P. Innovation and labor in the port industry: A comparison between Genoa and Antwerp. *J. Bus. Logist.* **2022**, *43*, 368–387. [CrossRef]
99. Gabčanová, I. The employees–the most important asset in the organizations. *Hum. Resour. Manag. Ergon.* **2011**, *5*, 30–33. Available online: https://frcatel.fri.uniza.sk/hrme/archi.html (accessed on 26 October 2025).

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