Good Practices in Strategic Port Performance

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The objective of this paper is to identify the approaches and the Code of Good Practices related to the four dimensions of sustainability (economic, social, environmental, and institutional) in the port sector and provide a framework for action based on transparency, monitoring of indicators, and accountability for the future development of sustainable initiatives. Concerns and demands for greater commitment have been increasing in recent years; however, there are still wide divergences regarding the use of indexes.

The key performance indicators are presented based on economic, institutional, social and environmental dimensions and an analysis is made of the different elements needed to efficiently address the decision-making process for a modern strategic approach to ports.

KEY WORDS

~ Port-city relationships,
~ Key performance indicator,
~ Good practices,
~ Port strategy

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1. INTRODUCTION

Radical technological changes in the shipping industry have forced port facilities to relocate. Following a logical trend, they are moving away from traditional urban settings to more suitable locations away from city centres. These changes show the extent to which post-industrialised cities have redeveloped their obsolete ports and industrial facilities depending on city-port restructuring processes, the so-called waterfront redevelopment. In this regard, the profound changes are related to the physical planning and the urban renewal policies carried out in the 1980s and 1990s (Ducruet et al., 2020).

The authorities and local forces have been obliged to change tactics and strategies in recent decades. Some have clashed with port stakeholders, the local economy itself, and the global markets. The effects, whether direct, indirect, or provoked have been varied: the expansion of port areas along the shoreline, relative stagnation of port functions, and redevelopment of their waterfronts within urban areas. Nevertheless, the effects of upheavals in the transport sector, new post-industrialization conditions, and globalization of the port industries show very clear progress in terms of the port-city interface, and this analysis is intellectually very stimulating (Hoyle, 1989; Fujita and Mori, 1996; Jacobs et al., 2010; Slack and Gouvernal, 2015).

The predominating port characteristics vary greatly depending on whether advanced countries or developing countries are selected. Ports in advanced countries were developed from fishing or naval ports, while colonial ports, located in already established cities, played a pivotal role between immediate markets and external interests. The required characteristics were accessible places with deep water, large

spaces, and good connections between the foreland (the overseas region), and hinterland (the interior region). Hence, in the early stages, primary colonial cities were also ports with a similar urban and port hierarchy as regards their positions on routes and commercial costs (Rodrígue and Notteboom, 2010).

The general model of these ports was based on the following principles: from the initial models, from isolated ports, they moved to the gateway ports, where there is a tendency to merge shipping lanes with the main transport corridors. Subsequently, some port cities, generally the largest, then increased their economic activity because of agglomeration trends, growing quickly as the result of greater and more intense competition between the cities. As a result, the development of the main routes and high-priority connections between the most important centres reinforced the main corridors and the connections between ports and cities, establishing the new maritime constellations (Ducruet and Zaidi, 2012).

Table 1.
Phases of the evolution of western and Asian port-city interfaces.

Western port-city model	Period	Asian hub port-city consolidation model
Primitive port-city (Close spatial and functional association between city and port).	Ancient/medieval to 19th century.	Fishing port-city (A small community of local residents practising self-sufficient local trade).
Expanding port-city (Rapid commercial/ industrial growth forces port to develop beyond city confines, with linear quays and breakbulk industries).	19th – early 20th century.	Colonial port-city (The dominant external interests develop both the port and the city for export and geopolitical control of raw materials).
Modern industrial port-city (Industrial growth and introduction of containers/ Ro-Ro require separation/space).	Mid-20th century.	Entrepôt port-city (Commercial expansion and role as warehouse, modern port development).
Retreat from the waterfront (Changes in maritime technology induce growth of separate maritime industrial development areas).	1960-1980	Free trade port-city (The export policies attract industries that use port facilities by means of tax-free procedures and with low labour costs).
Redevelopment of waterfront (Large-scale modern port consumes large areas of land/water space; urban renewal of original core).	1970-1990	Hub port-city (Increase of port productivity due to the functions of the hub and the territorial pressure near the urban centre).
General port-city (As the concern for international transport increases, the economy of the city develops differently from that of non-port cities).	1990-2000	Global hub port cities (Constant port activity and new port construction due to an increase in costs in the hub; possible expansion of the hinterland)

Note: adapted from Hoyle (1989); Ducruet (2004); Ducruet and Lee (2005); Lee (2005); Lee et al. (2008)

In advanced countries, much more specific development of port-city relations carried out through functional and spatial interfaces can be observed. Five stages are identified: a) primitive port-city; b) expanding port-city; c) modern industrial port-city; d) retreat from the waterfront; and e) redevelopment of the waterfront. Thus, the separation between the port and the city is explained by highlighting the different growth patterns in the Western port cities. For example, in Table 1, the different stages of the evolution of port-city interfaces are illustrated, identifying the characteristic inequalities of each geographical area (Western or Asian), in keeping with the successive historical periods. It highlights different direct associations between industrial and commercial growth on the one side and the trends of integration in international logistic chains on the other; thirdly, the processes of specialization in traffic and in the technical and organizational characteristics of the ports.

The city has become a global centre not only for industries but also for tertiary and tourist activities. The colonial port is redeveloped to adapt to the new challenges of the waterfront. Port efficiency is the goal; emphasis is placed on strengthening the logistics parks and container freight depots, while port backup areas are developed for cargo consolidation. Two basic points are thus raised: reaching the status of an efficient port and having an urban-planning policy in line with the development

of maritime-port activities. Both issues must be resolved by developing suitable port and urban policies.

Therefore, port policies should overcome space limitations and maximize port facilities and compact land use. These policies must be aligned with all public actions implemented and with the interests of economic stakeholders to avoid clashes or inconsistencies in timing.

The port becomes an articulating and influential node in the economic-spatial dynamics. It has to function as a strategic factor regarding the capacity to attract new investments and production increases. Its transformations and adaptations with regard to its infrastructures are manifested through the expansion of its functions and increase in the efficiency of its operations. Therefore, the maximization of its functions is proportional to the responses to its new need that, in turn, they are a direct reflection of the activity of the territories in which it is located. In short, the port is a critical element of the logistic network, playing a key role in terms of infrastructure, equipment, and territorial dynamics.

The objective of this paper is to develop and identify the approaches and good practices related to sustainability in the port activities and to provide a basis for action to meet the goals before the future development sector.

2. EFFICIENCY INDICATORS

Ports of the 21st century are forced to improve in both efficiency and comparative advantages. Within the new world context, a significant number of countries and port authorities have proceeded to restructuring their services in order to improve the factors that contribute to increasing the efficiency of their management and their international positioning.

The port literature on the efficiency and level of port and terminal series emphasizes a wide range of concepts and objectives, underlining the complexity of the subject (Feng et al., 2012). Farrel´s seminal work (1957) initiates a series of investigations into different approaches and the methodology of analysis. In this way, numerous authors focus on a port's performance through indicators such as traffic, capital, productivity, occupation (Langen et al., 2007), and others refer to ratios of forms of occupation and levels of services (Bichou and Gray, 2004). Regarding competitiveness, the most selected variables are efficiency, shipping frequencies, infrastructures, location, responses to changes and user needs, and reputation (Demirbas et al., 2014).

Likewise, to measure port efficiency, the performance indicators vary according to daily or potential activities. Some employ productivity approaches, others simulation techniques, while a third current estimates measures by means of stochastic frontier functions, both of production and of costs. (Tongzon, 1995; Talley (1994, 2007); Sánchez et al., 2003; Cullinane and Song, 2006; Merk and Dang, 2012).

Regarding the organization and administration of maritime transport, it is necessary to consider its multi-dimensional nature, which generates links with economic, social, environmental, and institutional aspects as well as a solution-based orientation with logistics processes and supply chains orientations (Carbone and De Martino, 2003; Yap and Lam, 2013). At the same time, there are other approaches that suggest the need for the port to direct its practices toward new environmental management systems (Acciaro et al., 2014; Denktas-Sakar and Karatas-Cetin, 2012; Hiranandani, 2014; Puig et al., 2015). More recently, there have been numerous contributions that address the issue of governance, corporative social responsibility, role of stakeholders, and decision-making through new participatory procedures (Baltazar and Brooks, 2007; Yap and Lam, 2013; González-Laxe et al., 2016; Hall et al., 2014; Brooks et al., 2017; Cheon, 2017; Ignacolo et al., 2018; Bermúdez et al., 2020).

The debate on maritime transport thus constitutes a challenge for sustainable development, demanding to achieve efficiency in cost and in the quality of services. To achieve these objectives, an initiative must be adopted by the actors (public and private) that allows for achieving greater competitiveness and promotes a comprehensive approach that guarantees to show economic, social, environmental benefits. For this reason, ports adjust to new management systems and use tolls that ensure the legitimacy of companies before interested parties, reducing negative impacts on the environment (Geerts and Dooms, 2020; Geerts et al., 2021). It should also be borne in mind that a steady introduction of digitization processes and new computer applications aimed at improving efficiency is now being observed (Barykin et al., 2021).

3. CHARACTERISTICS OF GOOD PRACTICES GUIDE

The goal of a Good Practices Guide on the behaviour and evaluation of maritime and port developments is to establish the basic technical content that should integrate the strategies, agreements, and guidelines to be followed by the Port Authorities to improve their levels of competitiveness and international positioning, as well as to comply with national and European regulations. Basically, it is not just a list of simple objectives but rather refers to contextualizing the goals to be achieved, defining the paths to be taken to meet them, and being able to maintain the same intensity of compliance over a set period.

The proposal of a Good Practices Guide not only puts forward specific recommendations on the operations and technical improvements of the port community or the cities themselves, and their relationship with maritime-port developments, but it also highlights those recommendations to be taken into account with a view to concentrating their efficiency levels. It should also serve as the basis for future updates and recommendations that bring about substantial gains in the achievement of these goals.

Consequently, a Good Practices Guide focuses on establishing details and recommendations, updating management systems, and defining new goals whenever required by new approaches. It is structured on the basis of four traits: vision, mission, value propositions, and strategic lines.

As regards *general vision*, the emphasis is on its necessary recognition as the most solid approach to the management of maritime-port development and the guarantee of sustainability in all its dimensions. In this context, not only does it need a short-term perspective, but it must also become a benchmark for future periods, whether medium- or long-term. Regarding the *mission*, it is considered not only to be the driving force for maritime and port development but it should also define the dynamics and sequences of planning and promotional processes, policy development and monitoring aspects, in order to achieve higher levels of competitiveness and lasting sustainability. Regarding *value propositions*, a Good Practices Guide needs three main courses of action. The first should be considered the driving and planning force in charge of setting the milestones and goals. The second concerns promoting the search for the previously defined general mission. The third must be suitable for usage by technically independent variables and indicators. Finally, when setting out strategic lines, the responses are varied as befits the wide range of situations, diagnoses, and economic indicators. In any case, the *strategic lines* will be grouped into five major vectors: a) planning the development, including infrastructure, equipment, basic investments, and specific installations; b) promoting connectivity and its inclusion in global supply chains, as well as developing and integrating into international logistics; c) continually monitoring and evaluating the levels of efficiency and quality of the operations of port services and available infrastructure; d) promoting the port-city integration dynamics, and e) developing maritime-port operations in an environmental and sustainable manner.

4. HOW CRITERIA OF GOOD PRACTICES GUIDE SHOULD BE ADDRESSED

This is a two-sided question. On one hand, Port Authorities must be able to develop their own competences. In this context, two types of action are provided. The first refers to the management of port service areas and their port uses, in coordination with the competent authorities responsible for land use and town planning, and those concerning the management of the public port domain and maritime signals assigned to them. The second concerns the provision of general services as well as the provision and monitoring of port services to ensure they develop under optimal conditions of efficiency, economy, productivity, and safety while preserving the competences of other bodies as well as promoting industrial and commercial activities related to maritime and port traffic, and coordinating the operations of the different modes of transport.

On the other hand, based on their competences, the designation of port service areas is covered, including land and sea areas, reserved areas, and non-port areas, establishing their intended uses according to the areas. This requires reaching agreements and establishing conventions between the Port Authorities, city councils, and regions so as not to superimpose competences, thus avoiding overlapping between the aforementioned public administrations. This is achieved by incorporating decisions within the framework of and based on the definitions of the urban development plans, and the actions taken in the metropolitan areas.

The basic technical criteria followed in drafting the Good Practices Guide are the criteria that should enable certain essential, compulsory goals to be met and addressed in two directions. The first direction regards its own reality; the second concerns other realities, i.e. comparisons with other ports, cities, services, specialized port terminals, and specific port facilities. Five elements are defined: a) complying with the strategic bases and positioning of the national port policies; b) defining the areas of port development according to their availability and potential; c) identifying infrastructures for access to and interconnection with national and European transport networks to ensure accessibility and connectivity to global supply chains; d) proposing strategic goals and actions to be developed, which are coherent and, above all, viable; and e) determining relations with the nearest city and the surrounding area, and defining the relations and links with other ports and logistics nodes, whether national or international.

Regarding the premises on which the technical criteria of a Good Practices Guide should be based, the strategic plans should be supported by proven technical criteria. There are four fundamental criteria: a) the process must be participative, allowing for a multitude of opinions and groups from different fields and activities; b) the Guide must be drawn up as transparently as possible, both in terms of the information provided and distributed and in terms of the publicity and dissemination of the content of the discussions and proposals; c) the proposed target must be clear. Therefore, the texts must be written in such a way as to avoid waffles and relativisms; d) they must be assessable, both in the course and at the end of the process to know and report on progress and intermediate results.

5. GENERAL OUTLINE OF GOOD PRACTICES GUIDE

The methodology to implement these outlines has three phases: the first defines the Strategic Scenario; the second highlights the Competitive Diagnosis; the third details the General Framework and Master Plans.

The *Strategic Scenario* is defined by the following components: a) the analysis of trade, transport, and logistics; b) the study and monitoring of the behaviour of the shipping companies; c) the evaluation of the best port practices; d) the assessment of national policies; e) the analysis of the maritime-port legal framework. The goal of these components is to guide the Vision, Mission, and Strategic Framework.

The *Competitive Diagnosis* is defined by the following variables: a) geostrategic position and the characteristics of the nearby associated hinterland; b) analysis of the availability of the infrastructures and port spaces; c) range of the port services (in terms of quality, safety, IT, etc.); d) the study of intermodal structuring, whether under maritime or land accessibility; e) the provision of infrastructures and logistic services.

This set of variables enables us to analyse and make projections of both the market and forecasts of traffic and service needs respectively. The goal of these variables is to assess the competitiveness of the system.

Taking into account the *Strategic Scenario* and *Competitive Diagnosis*, the *Strategic Framework* and *Master Plans* will be defined, as well as the business models, management models, and relationship models. This will lead to the development of final strategies and the setting of goals. Using these as a basis, we can specify the goals and actions to follow.

In the specific field of maritime and port developments, two approaches are explored. Some refer to the typology of ports depending on their services, and others highlight the port models. The former are reflected in the context of the discussions aimed at adopting a single valid taxonomy for port management, related to the complexity and diversity of the port business on more than one level. In this regard, we should consider the following elements: a) the *organisational differences*: ownership (public versus private); institutional status (landlord/tool port versus service port); social plans (labour); b) *operational differences*: types of goods handled, vessels served, operating terminals; c) *physical and spatial differences*: location, access, connectivity, available capacity; e) *legal and regulatory differences*: trade and transport policies, administrative procedures, safety and environmental regulations. As a result of this approach, port services and installations are the focus of analysis of the current management models.

The second set of approaches are submitted to the analysis of management models, i.e. those aimed at either business, performance, or relations. Their key variables are presented in Figure 1.

In recent times, the business model debate has attracted major attention in the port world. It is subdivided into two maps of interest: one referring to investments, and the other one referring to the provision of services. The options are varied, depending on the selected port model. Four models are identified: *Public Service Port, Tool Port, Landlord Port, and Private Service Port*.

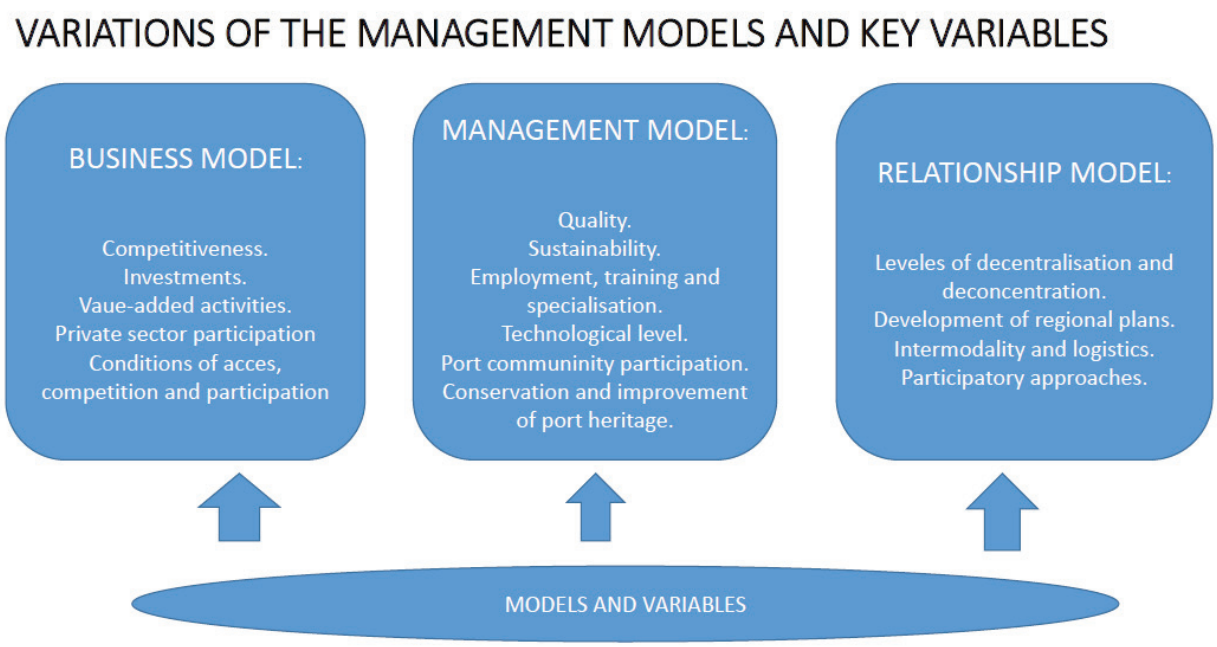

Figure 1.
Variations of Management Models and Key Variables.

6. SCOPE OF MANAGEMENT SYSTEMS AND SUSTAINABILITY INDICATORS

Spanish regulations on ports establish the mandatory submission of Sustainability Reports (Article 54.4 of the Revised Text of the Law on State Ports, D.L. 2/2011), both by the Spanish port system and by the Port Authorities themselves (Puertos del Estado, 2011). Several areas of analysis are established. Firstly, a review of the variables and a redefinition of basic and complementary indicators allow an insight into the maritime-port reality of each port and its links with the cities. Secondly, drafting of synthetic indices allows for the quantification of these variables and facilitates the time-based comparison between years and between the ports themselves. Finally, in the light of the above-mentioned information, an *Aggregate Barometer* of the selected variables can be made, allowing us to clarify the specific behaviours of each port and of the fields of study.

The dimensions selected are divided into four areas: economic, social, environmental, and institutional. Each dimension has its own variables and indicators.

Economic dimension - It reflects the basic indicators that refer to both the structure and the business. Emphasis is placed on the value generated and productivity, economic and financial situation, investment levels and structures, the business itself, and the operation and quality of services. In the medium to long term, it seeks to achieve economic viability in the framework of contribution to the economic and social development of the surrounding area. Therefore, an analysis is made of the situation and evolution of economic business and the role of the port in the economic and social development of its surrounding area. Its indicators are linked to financial stability, diversification of clients, efficiency of the uses of the asset, structure of investments, and assessment of the economic and social impact of the activity (Table 2).

Table 2.
Economic dimension indicators.

Economic structure indicators	Business indicators
- turnover per employee	- occupancy fees
- EBIDTA per employee	- vessel fees
- return on assets	- activity fees
- EBIDTA per tonne	- tonnes per m^2 of service areas
- debt service	- tonnes per metre of active dock
- operating expense/income	
- public investment/cash flow	
- third-party investments / public investments	
- asset renewal rate	
- GVA of port community	
- contribution to indirect employment	

Social dimension - Its goal is to contribute to the economic and human development of people within a framework of respect for their integrity and their participation in all decisions that affect society. An analysis is made of the resulting dynamics of measuring the intensity of how value is generated for the society itself and how the principle of transparency and communication with citizens can be guaranteed. Its variables are linked to equality policies, training and knowledge management,

Table 3.
Social-dimension indicators.

Social-capital and human-capital indicators	Equality and health indicators
- casual workers	- percentage of women out of total workers
- percentage of workers covered by collective agreement	- personnel renewal rate
- percentage of workers who follow training programmes	- wage gaps
- average hours of training	- accident frequency and severity level rate
	- annual absenteeism rate
	- training activities in prevention

job security, participation in decision-making, service quality, and improvement of the port-city interface. It includes both social capital and human capital, equality and health. Therefore, the indicators centre on employment and training, gender equality and labour structure, occupational accidents and health, and safety at work (Table 3).

Environmental dimension - Its goals are based on protecting natural capital, optimising the management of natural resources, focusing on their renewal. They centre on analysing the pressure or impact of activities on the environment and supervising the actions taken by the Port Authorities to limit the impact on the port communities and the environment as a whole. Their variables are identified with environmental management and related economic resources, environmental quality, eco-efficiency, and management systems in the port community. They cover several analyses, including economic behaviour of the Port Authorities in terms of environmental matters, environmental training, land-use efficiency, and energy and water consumption. Likewise, regarding environmental quality, emphasis is placed on the quality of inland waters, sewage and waste-water treatment, and waste recovery (Table 4).

Table 4.
Environmental-dimension indicators.

Environmental-management and eco-efficiency indicators	Environmental quality indicators
- investments and expenses associated with the implementation of environmental-management systems - investments and expenses in environmental monitoring - ground-cleaning expenses - water-depth cleaning costs - percentage of workers with environmental training - percentages of ground service areas installed in active facilities - percentage of electricity and water consumption by surface area of service area	- percentage of surface of service areas with rainwater collection network - percentage of surface area of land service areas with a sewage system, connected to the municipal collector or to a WWTP (waste-water treatment plant) - percentage of the surface that discharges into septic tanks - percentage of recovery of USW (urban solid waste) - percentage of recovery of hazardous waste - percentage of oil recovery - percentage of contaminated dredging with respect to the total

Institutional dimension - It defines the transparent and independent governance framework, whose decisions are made according to objective criteria within a framework of action that guarantees the development of the above-mentioned dimensions. Its analyses focus on studying the actions and resources mobilised to ensure progress in the aforementioned three dimensions, as well as the actions taken to ensure the functionality of the infrastructures and services provided by the port. Its variables include governance, equality, infrastructures, services, integration of global transport chains, and sustainable mobility. The following indicators are considered relevant: R&D activities, port-city interface, promotion abroad, social action and infrastructures and services, as well as those indicators concerning the protection of human and natural capital, and those associated with risks to human capital and natural capital (Table 5).

Table 5.
Institutional dimension indicators.

Institutional capacity indicators	Protection of human- and natural-capital indicators
- investments and expenses in R&D&i - investments and expenses in improving the port-city interface - trade promotion - investments and expenses in cultural initiatives, social programmes, foundations, etc. - percentage of land area for commercial and concession use - percentage of cargo tonnage in concession area - use of the railway - use of roll-on roll-off (Ro-Ro) loading/unloading	- economic resources used in protection and security - economic resources used in environmental matters

To sum up, the requirements of the above-mentioned indicators have a number of attributes: a) they present a global view of the strategy; b) they outline the evolution over time of the policies and actions undertaken; c) they inform of the Port Authorities' relationships with the stakeholders; d) they allow for the comparison between different and rival ports; e) they suggest permanent lines of improvement; and f) they can be constantly verified.

7. BASIC PRINCIPLES AND STRATEGIC GOALS OF THE GOOD PRACTICES GUIDE

The goals depend on the strategic lines. An analysis of most of the recent port reforms, both those implemented in Europe and in Latin America, shows that the strategic lines are very much the same. Schematically, the main lines can be quantified in five areas, trying to cover most fields of action: a) promoting the strengthening of the institutional framework itself; b) encouraging the modernisation of infrastructure and connectivity; c) fostering the port services competitiveness; d) driving the integration of value-added logistics activities as part of global supply chains; e) integrating the territory in a sustainable manner in the port-city relationship. Combining the aspects highlighted above, we have created the following summary chart (Table 6), in which the four dimensions are integrated.

Table 6.
Combination of economic, social, environmental, and institutional dimensions.

Economic dimension	Institutional dimension
- economic and financial situation - level and structure of investments - business and services - generated value and productivity - economic and social impacts - employment - internal communication and conditions of participation	- legal functions and forms - governance - infrastructures and capacity - services market - integration in the transportation system - institutional communication model - commercial promotion of the port national and international institutional commitments
Social dimension	**Environmental dimension**
- employment - training - staff structure and equality levels - health and safety at work - employment and services in the port community environment	- environmental management - environmental quality: air, water and noise pollution. - dredging material and waste system - natural environment - eco-efficiency

Briefly, the basic principles of the strategic lines are characterised by: a) increasing maritime and river connections; b) improving land accessibility; c) promoting a sustainable development of port infrastructures; d) establishing systems of administrative coordination and simplification; e) promoting alliances and agreements between ports and between companies; f) promoting the training of human resources; g) spearheading the port cluster; h) monitoring compliance with environmental protection regulations and minimising environmental impacts; i) improving the supply of logistics services; j) promoting the reduction of tariffs, prices and port costs in order to make them competitive with respect to the main nearby rival ports; k) ensuring the quality and efficiency of port services; l) developing and increasing port activity, positioning port terminals as logistics platforms; m) promoting port-city integration; n) expanding citizen support and social cohesion; o) promoting the use of information technologies; p) promoting passenger ships and cruise ships traffic. These variables can be grouped into four major sections, based on a balanced scorecard, which both the Spanish port system and other Latin American systems applied, or have been applying since the beginning of the century. For example, we can classify the strategic goals following the traditional guidelines of a balanced scorecard (Table 7).

Table 7.
Classification of the main strategic goals based on the frameworks of actions.

Frameworks	Goals
Economic	- infrastructures and connectivity - global supply chains - port services - port-city integration - developing and increasing port activity, positioning port terminals as competitive logistics platforms - integrating the territory in a sustainable way to achieve a responsible, cohesive and fair social model
Customers	- improving the supply of logistics services - promoting the reduction of tariffs, prices and port costs - ensuring the quality of services
Environment	- expanding citizen support - minimising environmental impacts - minimising security and protection incidents
Processes	- increasing maritime and river connections - improving land accessibility (intermodality) - adapting the supply of logistics services - promoting the sustainable development of port infrastructures - ensuring the efficiency of port services - promoting the development of Logistics Activities Zones (LZs) - integrating security and protection - monitoring compliance with environmental protection regulations - promoting passenger and cruise traffic - encouraging port-city integration
Resources	- promoting the updating of strategic lines - promoting the use of information technologies - spearheading the port cluster - boosting the relationship model of Port Authorities with the environment - promoting the training of human resources - encouraging alliances and agreements - establishing systems of coordination and port simplification

The global trends of port developments are thus stimulated by increasing interactions between economic areas. Due to these globalisation trends, countries, regions and cities are competing in only one global market, which has resulted in a dramatic increase of competition in the international trade and in business world. Shipping lines have become key stakeholders, constantly consolidating via mergers and alliances. Whereas ports are fixed in space, vessels have the ability to easily move. Due to this limitation, ports are dependent on the shipping lines, which are constantly restructured. Based on the current international maritime-port configuration, the main changes are shown in Table 8.

Table 8.
Main structural changes in recent years.

Category of change	Phenomenon	Outcome
Shipping alliances	Large shipping lines have encouraged mergers, acquisitions and alliances, consolidating their role as market leaders in order to maximise their market shares and minimise their operational costs.	Currently, shipping lines provide global networks in which a mega carrier or a business alliance can move goods freely in the global marketplace.
Greater-sized vessels	Larger vessels are commissioned and are built, primarily, to achieve economies of scale.	Due to the limits of the depth of container ports, few ports can directly serve the giant trans-oceanic vessels.
Intermodality	The intermodal interior hubs facilitate the transport of containers over longer distances between continents to establish a connection with a port.	The port's hinterland and foreland expand. This trend further stimulates globalisation of the port management and its operations.

In order to meet greater demands from shipping lines, ports are forced to respond by expanding back-up areas, creating logistic centres and establishing new terminals to enhance and/or sustain their competitiveness.

8. CONCLUDING REMARKS

The strategic proposals of Port Authorities concerning the strategic frameworks of the cities must address four contextual elements: productive, social, territorial, and institutional aspects. In the productive context, the specific characteristics of transport and logistics should be taken into account. Likewise, there is a need to contextualise the functions of transport demand (including the productive strategies of e.g. the freight companies and the organisation of the productive systems), and the functions of transport supply (which covers, among other elements, the costs of the carriers, economic models of the carriers and levels of maritime and land accessibility). The social context integrates the characteristics of transport and logistics in general. It includes the methods of organising work and its activities, characteristics of professional groups, management modalities, and interactions between individual and collective activities. In the territorial context, it is necessary to analyse nodes and places of transport, and their role in the structuring of the space. Gateway ports to the regions and transport nodes are surveyed. Finally, the institutional context evaluates nodal distribution policies, sustained transport, and investment policies in linear and nodal infrastructures, depending on the modalities of the transport and logistics agents, and the role of the territories themselves in their different management and action models.

To sum up, there are numerous parallel and at times contradictory trends between urban spaces and port spaces. In some situations, emphasis must be put on what is called the *resistance effects* affecting the vulnerability of cities (e.g. those due to trends arising from the construction and location of port terminals that affect the urban environment, such as different environmental risks, presence of dangerous freight, or those linked to the location of heavy-industry activities). Likewise, there are other effects arising from inequalities and urban imbalances, such as those observed when there are *frontiers* between the port and the city, in which the citizens lose their homes due to the demolition of areas, neighbourhoods or historical places in the interests of activities directly or indirectly related to maritime-port activities and configuration. In these cases, it is necessary to ensure that the existing spaces between the city and the port are not conducive to encouraging the aforementioned inequalities or urban imbalances in border areas, which are normally subject to urban speculation or the harmful effects linked to municipal decisions.

To date, very specific problems still concern the processes of adaptation between the city and the port. These are the decisions that can be made based on the needs of the region to commit to the coastal landscape, preventing the Port Authorities from demolishing a building or specific installation (e.g. with historical or architectural value) inside the port, or discovering the value of urban areas and harnessing their potential for exchanging uses (reciprocity).

We are facing situations related to *space disputes*, i.e. the presence of drivers of vulnerability and patterns of inequality depending on the spaces, hence the need to define specific strategies that focus on three areas: defining port spaces and their uses; port planning; and, above all, considering the views of the affected population in question. Each initiative may have a meaning and, obviously, a value. Different relationships are generated within the scope of the port-city relationship. Their values are different and asymmetrical. Therefore, given the

disparity of cases and possible scenarios, all initiatives must be conditioned by the vision, mission and a future strategy. Current port trends strengthen the processes of containerisation, presence of specialised port terminals, extensive developments in intermodality, and insertion of maritime-port activities in the global supply chains (Rodrigue and Notteboom, 2009). These goals, already present in the most dynamic port cities in the world, are reinforced by the integration of transport modes and the presence of highly internationalised companies (or business alliances) that seek to dominate both hinterland and foreland relations. A port-city strategy must be based on a primary concept: raising awareness of the importance of the maritime dimension, *seeking a new stage of maritime renewal*. This means increasing the interaction between resources and activities, strengthening and fostering the quality of life and well-being of the people, and the establishment of a shared, adopted, and committed strategy.

CONFLICT OF INTEREST

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