

# STRATEGIC PLANNING DOCUMENT OF PORT AUTHORITY SYSTEM, A NEW CITY-PORTS AGREEMENT: THE CASE OF NORTHERN TYRRHENIAN SEA ADSP

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**Abstract** – Legislative Decrees 169/16 and 232/17 have modified Law 84/94, bringing port planning closer to that of European and global port areas, with which the new AdSPs are called to interact and compete. In particular, the changes concern art. 5 of the Law, which introduces the Port System Regulatory Plan, composed of the PRPs of the individual ports of the system and the Strategic System Planning Document (DPSS). The distinction in two levels is similar to that already consolidated in territorial planning: a strategic and guiding level, the DPSS, and an operational level represented by the PRPs. Among the contents of the DPSS, for which institutional agreements between AdSP and territorial bodies are envisaged, there is the identification of the so-called "Areas of port-city interaction". Identifying these areas means redesigning urban and port areas and regaining space, making planning easier by eliminating institutional conflicts through new agreements. The objective of this research, the result and synthesis of the "City-port agreements" degree thesis, is to propose a methodology for identifying the areas of influence of the port on the city, measuring the "degree" of interaction through a system with indicators. The study formed the basis for the perimeter of the new port-city interaction areas within the DPSS of the AdSP of the North Tyrrhenian Sea.

## Introduction

The reference law of Italian portuality, Law 84/94, has been radically re-discussed. The latest reform provides for the reorganization, rationalization and simplification of the port discipline according to a new "system vision", which inserts the port infrastructures in a matrix on a territorial scale, linking them to other nearby maritime contexts according to economic, commercial, logistic and transport vocations.

To the newly-established Port Network Authorities is entrusted the control, the government and the planning of very vast territories, potential logistic ambits constituted

not only from the single harbour nodes, but also from the back ports, from the interports, from the airports and from the great road and railway networks, to organize in relation to the more and more complex commercial exchanges and to the infrastructural and industrial development needs of our Country and Europe [D'Amora et alii, 2019].

The strategic approach is necessarily flanked by the introduction of a new instrument of government of the port territory, the Port System Regulatory Plan, a complex plan, which organizes and develops a plurality of functions related not only to the transport of goods and passengers, but also to industry, shipbuilding, the support of production activities, the connection with the cities and territories, departing significantly from the old port program of maritime infrastructure works planned until a few years ago [Pavia, 2018].

The PRdSP is a composite tool that intercepts a considerable number of themes, even heterogeneous, structured on two levels: the Strategic System Planning Document (DPSS) and the Port Regulatory Plans at the scale of a single port node. The division into two stages and two instruments is an important step in port planning. The drafting of the DPSS becomes in fast the moment in which the possibility of preparing in a coordinated and shared way a medium and long term strategic reference framework for the development policies of vast areas, in which different administrations converge but whose aim is to prepare a system in which the port, the city, the territory and the connection networks constitute a perfectly integrated complex of choices and solutions [Pavia, 2018].

The strategic contents of the DPSS are distinguished between those related to the purely operational scope of the port and those related to the areas of interaction with the city. The aim of this distinction is to make it easier to govern the territory, eliminating administrative conflicts: a clear division of tasks seems to be emerging between the AdSPs, which are entrusted with the planning of the operational port area, and the Municipalities, which must plan the areas of port-city interaction. In reality, the DPSS requires a strong sharing of choices between the two administrations: AdSP and local authorities must necessarily agree on the planning of areas of interaction, the AdSP preparing a discipline of use, and the Municipality promoting projects and interventions consistent with the objectives of port system planning, hoping for redesign de urban areas.

The objective of this research is to propose a methodology to support the identification and perimeter of the areas of interaction between port and city. To this end, a system of indicators has been set up to measure the degree of interaction between the two systems, identifying urban areas where the port has less or more influence. The method has been applied and tested within the cases of interaction relating to the ports of the Northern Tyrrhenian Sea AdSP.

Legislative Decree 169/2016 assigns to AdSP MTS the task of governing the territory of the ports of Livorno, Piombino, Portoferrario, Rio Marina, Cavo and Capraia Island.

## **Areas of port-city interaction**

The relationship between the city and the port still appears to be marked by strong doubts and conflicts. Conflicts between insitutional figures, decisions, use of space, co-presence of heterogeneous functions: the conflicts take place on a “*field*” that follows the linear development of the port and logistic areas, defining itself as a border strip between the urban fabric and the activities related to the port [Di Venosa, 2006].

In the dynamics of transformation of this “*field of conflict*”, widely analyzed by the literature on the subject, it is commonly observed a process of complex separation between two elements: on the one hand, the city tends more and more to reappropriate some portions of the port, especially those of historical and identity character; on the other hand the port is always in constant search of more functional and large spaces to chase the growing innovations of technology and logistics. These two dynamics contrast within the same hinge, causing urban, administrative and social chaos. Also called “*interstitial periphery*” or “*abandoned threshold*”, the hinge often highlights conditions of marginality, the result of its nature as a frontier place between different spatial systems and organizations [Di Venosa, 2006].

To increase the conflict and the connotation of these hinge spaces, together with the heterogeneous and fragmentary nature of the objects inside, the very strong and concentrated presence of different flows and mobility networks, referred to the multiple activities present in the areas. In this perspective, the space through the port city can be interpreted as a powerful, but imperfect, “*connection space*” within which flows, at distinct speeds and with highly differentiated needs, the material flows of carriage traffic to the port and urban crossing, but also the virtual networks of trade, financial transactions that enhance the port node and its planetary relations [Di Venosa, 2006].

The overlapping of these different flows increases the separation between the city and the port, but also the contrasts and critical issues: the conflict, which in many ways can be considered irreducible, can and must also be a central node of which to direct planning in order to mend the relationship between the two systems. The hinge area between the port and the city can therefore become the space for dialogue and cooperation.

The new rationalized port planning, closer and closer to the territorial one, shows particular concentration on the hinge space, the one that literally connects the sea ports, and allows them to function, with the cities and territories. The theme of the definition and perimeter of the areas destined to the operating port and of those of interaction between port and city is in fact one of the cardinal elements of the DPSS, in which a division of a tasks must be delineated: to the Port System Authority that of the management of the operating port, while to the Local Authorities that of the planning of the areas of port-city interface. Despite the separation, in reality the process remains and must remain strongly anchored to a principle of shared choice [Pavia, 2018].

As defined by law, the AdSP must identify and perimeter the port-city interface areas, but it needs an opinion from the municipalities affected by the System, which will then be entrusted with the planning. The identification of the port-city interactions areas is an important but the same time delicate step, as it must constitute a real pact of pact of urban quality and shared planning between the port and the city.

## **Measurement: methods and instruments**

This experimental research work is contained in the degree master’s thesis in Architecture *City Port Agreements*, carried out in collaboration with the Northern Tyrrhenian Sea Port System Authority. The research aims to be a tool to support the DPSS to identify areas of influence and interaction between port and city.

The need to define an *ad hoc* methodology stems from the absence, in the new regulations on port planning, of specific guidelines on the new issues dealt with. The reform

imposes, in fact, within the Document, the perimeter of the areas of port-city interaction, in order to determine new boundaries of competence between port and territorial planning. But it doesn't define how. In addition, the Guidelines issued by the Ministry of Infrastructure and Transport (MIT) for the drafting of the DPSS do not refer to previous methodologies or experiments on the topic of port-city interaction, thus leaving freedom to the AdSPs in the discussion.

The tested method aims to provide an assessment of the degree of interaction through an indicator-based measurement: the choice and use of indicators as a tool to support development and planning policies is now widely recognized and the subject of initiative by the main international and European organizations, which have developed, over the years, pilot experiences and guidelines on characteristics and criteria for the construction of indicator systems.

The proposed methodology is based on a two-step comparative analysis.

- In the first phase a “state of affairs” measurement is made. This makes it possible to determine the most critical areas of interaction and, at the same time, those in which interaction is positive.
- In the second phase, instead, a “project scenario” will be evaluated, in which through the analysis of the general planning and implementation, territorial and port, the coherence of the instruments and projects is determined and therefore the possible need for dialogue between the parties for the best management of the area in question.

Evaluations are carried out on “hinge areas”, areas in which a parallel analysis of physical and functional relationships is carried out, from which emerge projects and emergency issues regarding the interaction between systems. In fact, through the study of territorial planning, including in particular the Territorial Planning Plan (PIT) of the Region of Tuscany and the municipal structural and strategic planning, we highlight those multi-scale elements considered a “statute” of the port-city. At the same time, an analysis of the functional relationship between urban and operational port areas makes it possible to determine the interweaving, or clear separation, between the two areas. The analysis will be based on the location of the urban functions related to port and port activity and the purely port functions in the urban fabric.

The overlapping of the functional and the physical-statutory relationship will allow to divide the study into homogeneous areas, on which to carry out the interaction evaluations. The hinge areas are in different number and size and, in the case of ports belonging to the Northern Tyrrhenian Sea System where the function or class is single (for example port of Rio Marina, where there is only the yacht-tourist function), the evaluation area will be one.

The indicators chosen for the evaluation are the result of comparison and intersection of sets of urban and port indicators, already used or studied by organizations of national and international relevance (OECD, ESPO, etc.) using urban and port indicators. In particular, the research was conducted not explicitly referring to the specific case, but trying to identify the most recurrent, relevant and above all measurable issues in any context.

The measurements, carried out as already specified in two stages, are carried out in GIS environment, through direct surveys and consultation of technical data sheets attached to plans and projects. The comparison between the current status and the forecast status will be made through matrices, graphs, analysis and cartographic elaborations.

The tested method can be summarised in the following points:

1. Analysis of the physical relations and definition of the statutory elements of the port-city
2. Analysis of functional relationships based on port vocations
3. Identification of hinge areas on which to perform interaction assessments
4. Indicators abacus preparation
5. Measuring in two phases:
  - Current status
  - Future planning scenario
6. Comparison of the two phases
7. Evaluations

## Hinge areas: physical and functional relationships

The assessments are carried out on areas of the territory defined as “hinge areas”, recognised as homogeneous due to the co-presence of the following factors.

First of all, the presence of elements resulting from the analysis of physical interaction: territorial planning, in particular in the PIT and PS of the municipalities in which the ports of the AdSP MTS are inserted, it is highlighted the presence of elements that constitute a statute of the port-city, both of an historical-patrimonial nature and of an emergency and critical nature with regard to the protection of the landscape and the environment. Moreover, the presence of factors resulting from the functional relationship between the city and the port: the urban functions present in the port area and the port functions present in the city fabric form intersections between the two systems, creating a sort of extension of the urban perimeter within the port, and the port perimeter within the city. Such links between city, port and territory create cross-cutting harmony: these presuppose an assessment of compatibility. In fact, the localization of urban functions in the port environment, and vice versa, requires adaptation to the laws and rules of the territory in which it is located, where the criteria for the localization of functions, organization, security and management can be very different. Functional compatibility between port and city is an element underlying the measure of interaction, and thus the balance between the two systems.



Figure 1 - The 13 hinge areas for the analysis of interactions in the port of Livorno.

## Indicators

Monitoring and evaluation through indicators arise from the need to measure actions, interventions and transformations of complex systems. These systems, of an economic, ecological, social, urban planning type, are subject to continuous variations of the phenomena that take place within them; for these reasons it's necessary a constant, fast and effective monitoring of their transformation mechanisms. Due to the large number of elements and reports, monitoring requires operational methods that provide concise and understandable information. Complex systems also include port systems. The specificities that characterize them – activities, resources, interests, problems – are closely related and, in some cases, are “even” of the cities where the ports are located. For these reasons, it's considered necessary to define a methodology for monitoring such links and interactions, using indicators built *ad hoc*. In particular, the indicators will be useful to monitor city-port interaction realities even in very different situations.

The system of indicators is the result of research, comparison and intersection of sets of urban and port indicators already used or studied by organizations of national and international relevance.

The crossing and evaluation of the validity and applicability of the indicators to the case study present in the different sets, allowed to define the indicators and the evaluation themes.

Table 1 - Indicators and evaluation topics.

Indicators	Evaluation topics
Land use and functions	The incidence of functions in the hinge areas
Infrastructure connections and mobility	The accessibility and permeability of the areas with respect to the different flows
Administrative competences and soil law	The relationship between administrative and planning competences (PS-PRP)
Environmental and landscape impacts	The impact of the port area on the city and vice versa. Factors that most influence environmental, landscape and visual issues
Social usability and liveability	Compliance with the quality standards of urban settlements. The usability of hinge areas by citizens
Tourist and cultural attractiveness	The possibility of offering tourist and cultural services, also considering the relationship between the port fabric and urban morphology

The structural scheme of the indicators provides for a series of “operations” to be carried out in order to obtain the processed data that make up the indicator: these are the definitions, heterogeneous for each indicator in terms of units of measurement and quantity. Below is an example of the indicator “Environmental and landscape impacts”.

- Ratio between the protected areas area and the total area of the interface area
- Ratio between the green areas and the total area of the interface area
- Ratio between the surface area of high frequentation area and the total surface area of the interface area
- Ratio between the surface area of warehousing/goods handling areas and the total surface area of the interface area

- Ratio between the surface area of degraded or abandoned areas that alter the waterfront and the total surface area of the interface area
- Ratio between the surface area of reclaimed land covered by the last PRP and the total surface area of the interface area
- Average number of vehicles passing through the area at rush hour (7.45-9.00)

**Reading the data and comparing the results**

The final reading requires a homogenization of the data from the measurements. It is necessary in order to elaborate and represent the interaction assessments to identify a standard of interpretation. Thresholds are therefore defined for the values of the indicators,

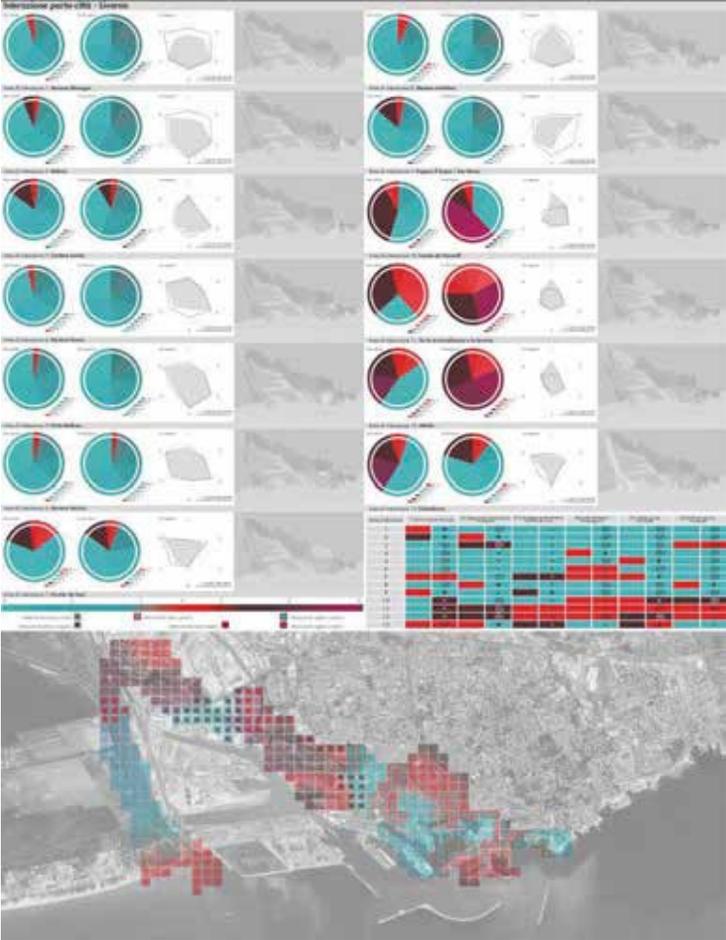


Figure 2 - Synthesis table related to the port-city interaction of the port of Livorno.

which allow the classification in positive, average and negative according to the type of indicators chosen. The thresholds are conventionally defined as follows:

- Negative assessment: from -3 to -1
- Average or irrelevant rating: 0
- Positive rating: from +1 to +3

In the case of indicators with a large number of heterogeneous measurements, e.g. where both qualitative and quantitative definitions are present, it has proved necessary to define coefficients of homogenisation of data.

The results of the analysis have been proposed in summary graphs. The structure provides for a division into hinge areas, for which the results of the analysis of the status of the project and their superimposition in the form of a kiviatic diagram are graphically displayed.

The analysis relating to all the hinge areas are put together and summarized in a graphic matrix in which, in addition to the comparison between “before and after” (from negative to positive / from positive to negative), comparisons based on spin are highlighted: the results show, in some cases, how in some areas the evaluation always remains of the same degree but undergoes a slight decrease in positive or negative.

## Conclusions

The port reform has introduced new moments and tools to support dialogue and consultation between ports and local administrations. In the Strategic System Planning Document, a connecting element between port planning and territorial planning of large areas, the dialogue between administrations is addressed to the strategic choices regarding the perimeter and the redesign of urban spaces, defining long-term agreements. Such agreements can be facilitated if the products on which the dialogue is based are the result of detailed and rigorous analysis.

In the absence of specific guidelines and consolidated experience in this field, this research aims to define a method for the perimeter of port-city interaction areas. The method has made it possible to identify on which urban areas the port has the greatest influence and generates relationships, recognizing potential and criticality, measuring how much the factors belonging to the two areas are present and connected within.

The evaluation showed how marginal areas of the urban fabric, not considered by urban and port planning – or, in some, not considered in any planning tool – as an area of interaction, can actually reveal a high degree of influence: for the strong presence of functions belonging to one of the two areas, for the presence of promiscuous traffic, for the incongruous use of land, for the visual and landscape impact of infrastructure. The research has therefore made it possible to identify the forgotten, critical areas, those in which interaction is not yet controlled, on which it's necessary to open a joint planning dialogue.

Secondly, the study of projects currently being implemented or planned in a future planning scenario has, in some cases, made it possible to confirm the willingness – on both institutional sides – to continue to plan interventions jointly: in these cases the projects are homogeneous and consistent with each other. However, the evaluation also finds cases where the agreements have not worked or have now been successful: some of the planned measures, although improving in some respects, may be worse for other or have a high impact. This shows that, in some areas where planning is not joint, it is necessary to share choices instead.

The proposed solution forms the basis on which the subsequent perimeter of the port-city interaction areas will take place, including in the new elaboration many areas that had previously been completely neglected in the pre-form PRPs. In fact, the analysis shows the need to widen the “joint planning perimeter”.

Of course, the proposed method doesn't have the ambition to propose itself as a single solution to the problem under study; however, it tries to demonstrate what a rigorous and coherent methodology could be, if amplified and applied to similar cases, to better management and shared planning.

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