A PLANNING PROCESS FRAMEWORK FOR A PORT ACTION PLAN: THE CITY – PORT RELATIONSHIP

IGNACCOLO Matteo – Associate Professor, University of Catania – matig@dica.unict.it

INTURRI Giuseppe – Assistant Professor, University of Catania – ginturri@dica.unict.it

RUBULOTTA Elena – Research Assistant, University of Catania – erubulotta@dica.unict.it

COCUZZA Elena – External expertise, University of Catania – ecocuzza@dica.unict.it

ABSTRACT

In order to overcome the dichotomy between maritime transport policies and urban sustainable development of the surrounding ports areas, we propose a Port Action Plan scheme and a set of tools for support decisions, define priority of intervention and monitor the plan; this framework will be able to assist practitioners and policy makers. The process structure of the Port Action Plan comes from the so-called IORI scheme of the European Commission for define, monitor and evaluate plans and programs. The introduction of this logical framework in a planning context needs the assessment of measures related to each step: the Input-Output-Result-Impact indicators. In this work we apply this methodology to two port city study cases. Findings show the usefulness of this tool and possibilities for further research.

Keywords: port– city integration, Port Action Plan, PORTA project

INTRODUCTION

It is well recognized the need to identify common strategies and integrated transport/land use planning procedures in order to increase the role of ports as strategic key actors of the maritime and logistics development and as a gateway to access the inner regions: This represents the core of PORTA (PORTs as a gateway for Access inner regions), a project selected by the Programme MED and co-financed by the European Regional Development Fund. Our work rises from this project that aims to define a common approach and implement a planning tool in the port partner network.

In order to assess the Port Action Plan scheme, we firstly discuss the importance of the port-city relationship, then we propose the planning model that is applied to Catania (Italy) and Koper (Slovenia); at last results and conclusions are presented.

The port-city relationship

Each port city has its distinctive feature that depends on city size and port traffic and pattern; for this, the relationship between a city and its port evolves over time. The so called Anyport Model (Bird, 1963) already shows urban expansion and port specialization (see Figure 1).

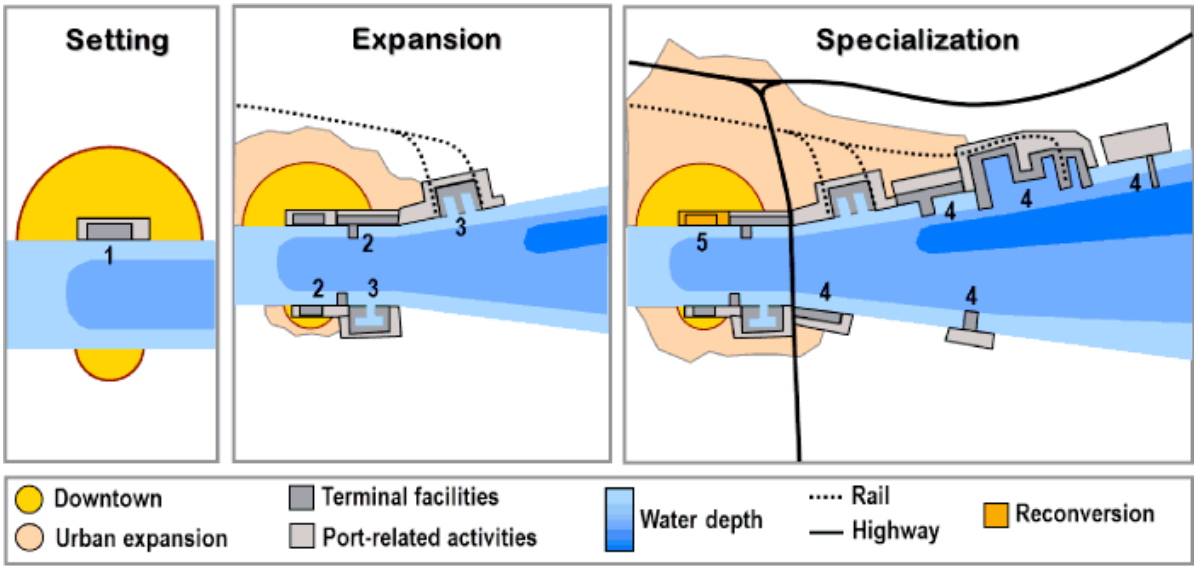

Figure 1 – The Anyport Model (Bird, 1971)

According to Hoyle (2000), a general model of the city-port relationship represents its evolution over time considering six stages (see Figure 2): from a close spatial and functional association, by a separation of city and port due to its expansion, to urban renewal of the original port area and then to an improved port–city integration.

STAGE	SYMBOL ○ City ● Port	PERIOD	CHARACTERISTICS
I Primitive port/city		Ancient/medieval to 19th century	Close spatial and functional association between city and port.
II Expanding port/city		19th - early 20th century	Rapid commercial/industrial growth forces port to develop beyond city confines, with linear quays and break-bulk industries.
III Modern industrial port/city		mid - 20th century	Industrial growth (especially oil refining) and introduction of containers/ro-ro require separation/space.
IV Retreat from the waterfront		1960 s - 1980 s	Changes in maritime technology induce growth of separate maritime industrial development areas.
V Redevelopment of waterfront		1970 s - 1990 s	Large-scale modern port consumes large areas of land/water space; urban renewal of original core.
VI Renewal of port/city links		1980 s - 2000+	Globalization and intermodalism transform port roles; port-city associations renewed; urban redevelopment enhances port-city integration.

Figure 2 – Stages in the evolution of the port–city relationships (Hoyle, 2000)

As a consequence of this varying relation, the port–city interface evolves (Norcliffe et al. 1996) from a symbiosis state, via a rise of "non-port" places and develops into waterfront abandonment that creates a vacuum between city and port (see Figure 3).

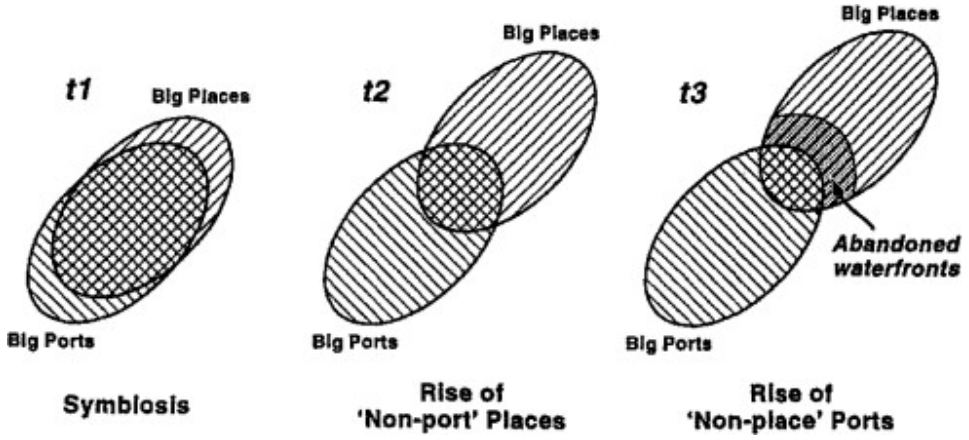

Figure 3 – Model for the port–city interface (Norcliffe et al. 1996)

The next phase concerns the definition of a new pattern (Ducruet and Lee, 2006) for an enhanced port–city proximity trough an urban renewal, a port development and a regeneration of the port–city link (see Figure 4).
As shown in the section about the description of our case studies, both Catania and Koper are currently in the phase of port-city separation but both local authorities are planning for the promotion of port-city integration.

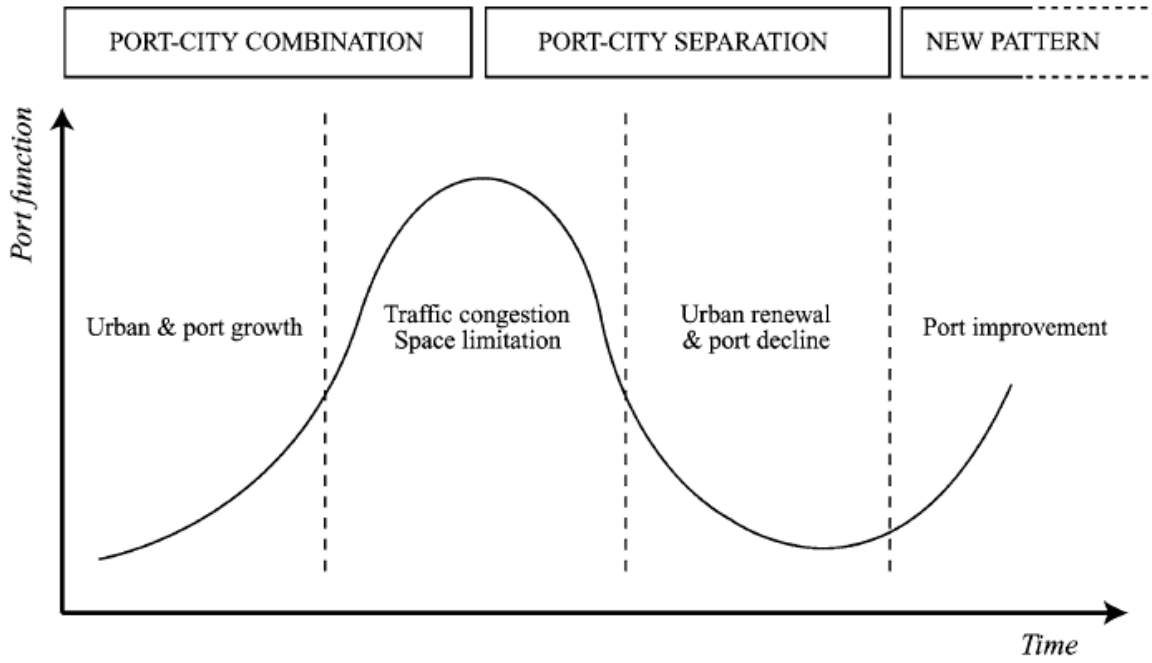

Figure 4 – Logics of port–city spatial and functional evolution (Ducruet and Lee, 2006)

The improvement of the relationship between the city and its port depends also on the relative dimension of the port and the city; these sizes are not even directly proportional but they may converge or diverge. Considering city size and port traffic, according to Ducruet (2004), it is possible to distinguish different typologies of port cities (see Figure 5).

Our case studies differ among them also for the different port–city relative dimension: Catania and Koper may be classified as "Regional city" and "Major port town" respectively.

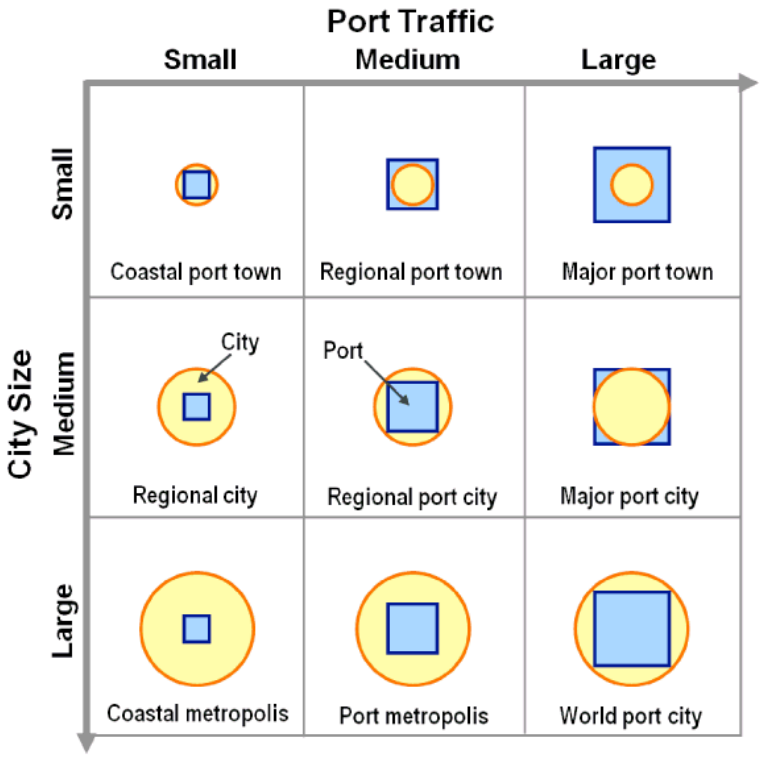

Figure 5 – Typologies of Port Cities (Ducruet, 2004)

The relationship of the city with its port strongly influences the development of port function, urban renewal and the port–city system as a whole; for this it plays a key role in the planning model we propose, as we discuss in the next section.

THE PORT ACTION PLAN FRAMEWORK

A Port Action Plan is a long-term structural and strategic plan with a planned horizon of 10 years, at least. It identifies problems and solutions to enhance the accessibility and sustainability of port systems. Furthermore, a Port Action Plan fixes not only the goals to be gained, but also a monitoring and evaluation system through the identification of a set of performance indicators.

Therefore, a Port Action Plan should face frame a long-term vision and maintain the coordination of the short term executive plans and programmes by stimulating, guiding, monitoring and assessing their implementation; it should also encourage a wide diffusion and a continuous revision of the plan, as well as an increasingly participation of stakeholders and citizens in the planning process.

The proposed planning process is based on the logical sequence of the PDCA Cycle, or Deming (1950) Cycle which is an iterative four-step problem-solving model used to ensure continuous improvement of processes and optimal use of available resources. The steps are as follows:

- P – Plan: planning of the Port Action Plan. Establish the objectives and processes necessary to deliver the expected results and identify the set of performance indicators for periodic monitoring and evaluation.

- D – Do: implementation of the Port Action Plan in port system. Implement the processes to gain the identified objectives.

- C – Check: test and control, study and collection of results and feedbacks. Measure the processes and compare the results against the expected results to ascertain any differences using the set of performance indicators identified in phase P - Plan.

- A – Act: action to define and improve the Port Action Plan.

Therefore the Deming Cycle implies a strict correlation of planning, monitoring and evaluation phases (see Figure 6).

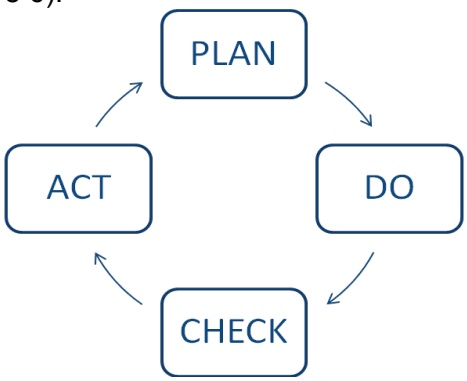

Figure 6 – The Deming (or PDCA) Cycle (Deming, 1950)

Methodological remarks

In compliance with the Indicative Guidelines on Evaluation Methods of the European Commission (2006), the scheme in Figure 7 illustrates the logical framework used in monitoring and evaluation of Structural Fund and Cohesion Fund programmes.
According to this logical framework and seeing it from a bottom-up perspective, an intervention requires resources to be carried out (the *inputs*); in the first instance produces some (physical) *outputs*, which are the direct result of a certain operation (e.g., kilometres of a railroad constructed or consultancy services provided to enterprises) and deal with Operational objectives. The immediate beneficiaries will obtain through these outputs some advantages (such as reduced travelling time or acquired new knowledge in the examples given); these effects are called *results* and concern Specific objectives. Usually an intervention will affect not only direct beneficiaries, but it causes more changes in the socio-economic or natural environment; these effects are called *impacts* and are related to Global objectives.
This method allows to assess the socio-economic performance (efficacy and efficiency) of a plan or programme using a set of indicators related to each step of the mentioned logical framework; therefore it is possible to identify Input-Output-Result-Impact indicators, also called *IORI* indicators.

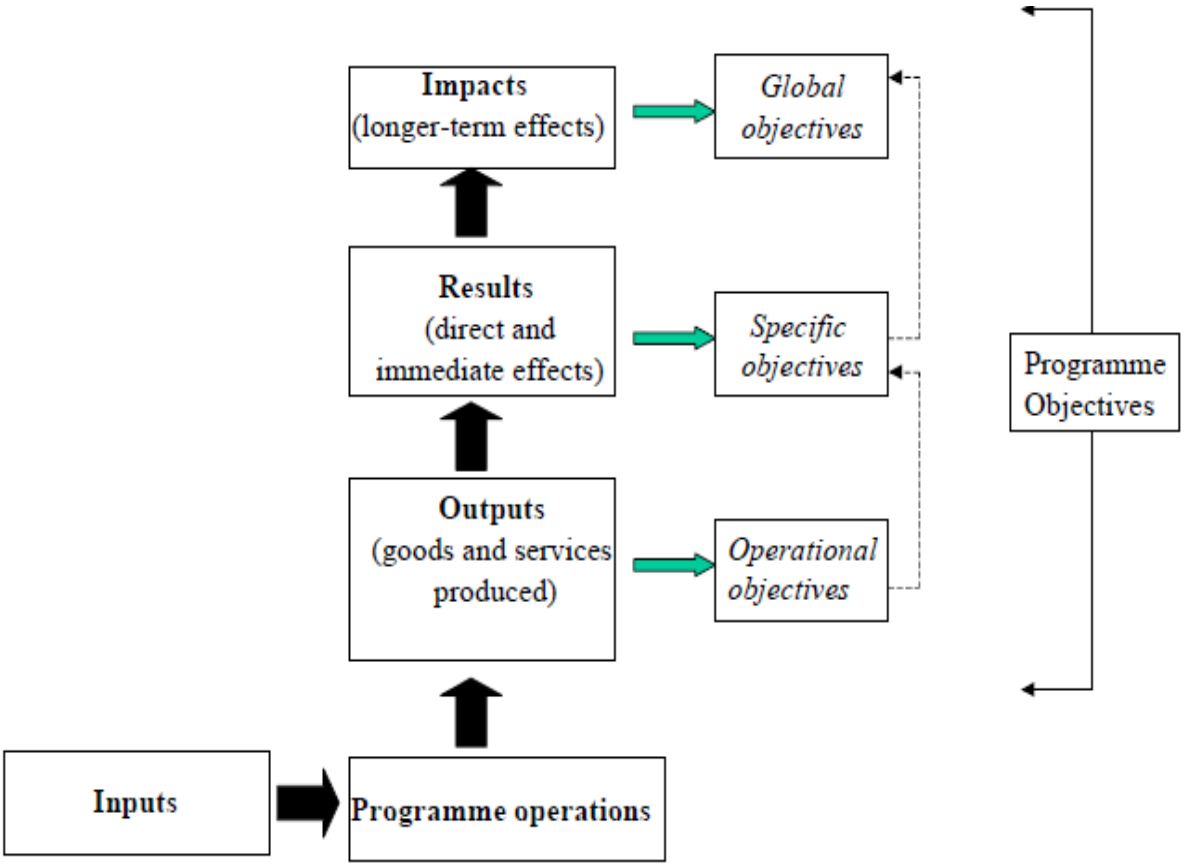

Figure 7 – IORI Framework (EC, 2006)

For their definitions: Input indicators refer to the budget allocated; Output indicators relate to activity so are measured in physical or monetary units; Result indicators deal with the direct and immediate effect on direct beneficiaries and may be of a physical or financial nature; lastly Impact indicators refer to the consequences of the plan beyond the immediate effects.

Framework of the proposed planning model

On a plan it is possible to distinguish three hierarchic levels, that are also relevant for the structural framework of a Port Action Plan:

- the **strategic lines** level, which refers to the global objectives and the evaluation of the economic, social and environmental impacts of the plans;
- the **actions** level, which refers to the specific objectives and the evaluation of the results of the plans;
- the **operative measures** level, which refers to the operational objectives and the evaluation of the outputs of the plans.

Therefore, the above-mentioned impact, result and output indicators could be respectively associated to these three hierarchic levels (see Figure 8).

GLOBAL OBJECTIVE	SPECIFIC OBJECTIVE	OPERATIONAL OBJECTIVE
Strategic Line 1	Action 1.1	Operative Measure 1.1.1
		Operative Measure 1.1.2
		Operative Measure 1.1.3
	Action 1.2	Operative Measure 1.2.1
		Operative Measure 1.2.2
	Action 1.3	Operative Measure 1.3.1
		Operative Measure 1.3.2
		Operative Measure 1.3.3
		Operative Measure 1.3.4

Figure 8 – Three hierarchic levels of a plan: Strategic Line – Actions – Operative Measures

According to this, a Port Action Plan requests to identify a series of global, specific and operational objectives that refers respectively to:

- the impact indicators, in order to monitor the sustainability of the whole plan;
- the result indicators, in order to evaluate the performance of the actions of the plan;
- the output indicators, in order to monitor the implementation of the operative measures which made up each action of the plan.

Consequently, a Port Action Plan is not a list of operative measures without relations; on the contrary, it is constituted by a series of actions, which are made up by several operative measures, and jointly converge towards strategic lines for economic, social and environmental sustainable development of port systems.
The following scheme summarizes the proposed planning model (see Figure 9).

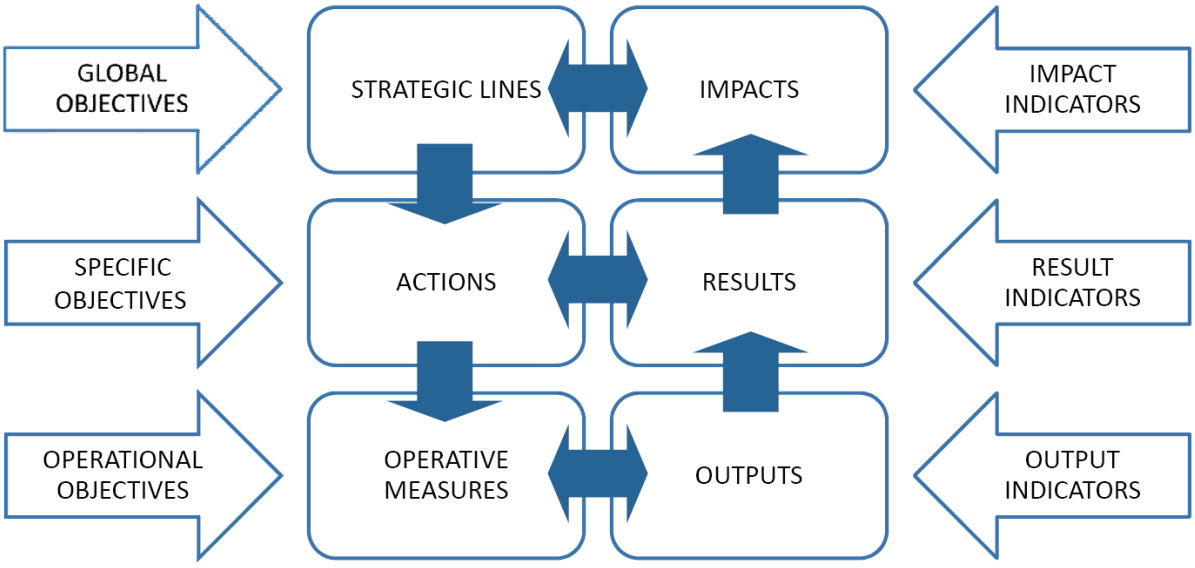

Figure 9 – Port Action Plan planning model (PORTA project, 2011)

The following structural framework, based on the Deming Cycle and IORI framework, summarizes the phases of the proposed planning model and lists the parts that a Port Action Plan should include:

- **P – Plan**
  - Analysis of the state of art;
  - Definition of: global objectives, strategic lines and impact indicators

  - Definition of: specific objectives, actions and result indicators
  - Definition of: operational objectives, operative measures and output indicators
- **D – Do**
  - Implementation of the operative measures, actions and strategic lines
- **C – Check**
  - Monitoring the input – output - result - impact indicators, evaluation of the plan and reporting of feedbacks
- **A – Act**
  - Revision and re-assessment of the plan

With the proposed framework, plan evaluation means the estimation of Output, Results and Impacts through their indicators. An optimal assessment requests the definition of targets for each Output, Results and Impacts, that are quantified objectives in a given time; the monitoring of the plan consists in the periodical calculation of indicators and the comparison of this values with fixed targets.
Target definition depends on various elements like input availability, present situation conditions, planners and policy makers wills, technical, administrative, design and execution times that are necessary.

THE CASE STUDIES

Both analyzed Mediterranean ports are located near the historic city, with all their problems that this entails. In addition this section explores new port plans of Catania and Koper; then the proposed planning tool is applied to case studies in order to improve the port-city relationship.

The port of Catania (Italy)

The port of Catania is an important commercial port of Sicily and has international economic relevance. It is the main port of South-Eastern Sicily for the transport of general cargo and Ro-Ro, with constantly increasing of goods and passengers traffic. It is in a Regional location, on the east coast of Sicily facing the Ionian Sea, into the second town of Sicily (the tenth in Italy) and the main trade catchment. The city of Catania has an area of 180,88 km² with a population of about 290.000 residents, while the metropolitan area has a population of 765.623 and is one of the main economic, touristic, and educational centres in the island, being an important industry hub.
The port area has direct connection with the regional road network and it is proximity to the Bicocca freight village, but it has not operative connections with the railway network; the airport of Catania, which is the first of South Italy, is distant only 4 km. There are two official gates to access the port by road, the gate Dusmet (for pedestrian, bikes, cars and bus) and the Faro Biscari gate, in the south area (for HGVs, cars and bus). The port is adjacent to the old town of Catania, that can be reached in few minutes by road and on foot. The central railway station and the main bus stop are situated at 850 m from the gate Dusmet and the subway station is close.

Figure 10 – View of the Port and the City of Catania

Land area of the port	678.300 m^2
Water area	580.000 m^2
Total linear length of the quays	1.995 m
Number of berths	20
Average depth of seabed	7 m

Figure 11 – Main physical characteristics of the Port of Catania

Container (t)	529.122	Container (TEU)	20.247
Rolling stock (t)	4.131.269	Cars (units)	259.024
General cargo (t)	303.399	N. passengers	440.780
Dry bulk cargo (t)	6.956	N. vessels	27.789.439
Liquid bulk cargo (t)	382.111	N. Cruise	218

Figure 12 – Maritime throughput of the Port of Catania during year 2010

Catania in recent years has become an interesting cruise destination; as port supply is not able to contain the growth of transport demand of last years, the congestion of port areas today is a main critical for cruise traffic; this is also due to the fact that the passenger terminal is not for the exclusive use.

The port area is managed by the Port Authority of Catania, a public corporation instituted by National Law n. 84/94 in order to coordinate, plan, promote and monitor port operations and

other commercial and industrial activities in ports. This Law controls the regulations of the ports and establishes the definition of a Port Regulatory Plan (PRP) that all ports are obliged to adopt (except those with exclusive tourist destination). This structural plan divides the port area in two zones: operative port (with infrastructure links) and interaction port-city areas.

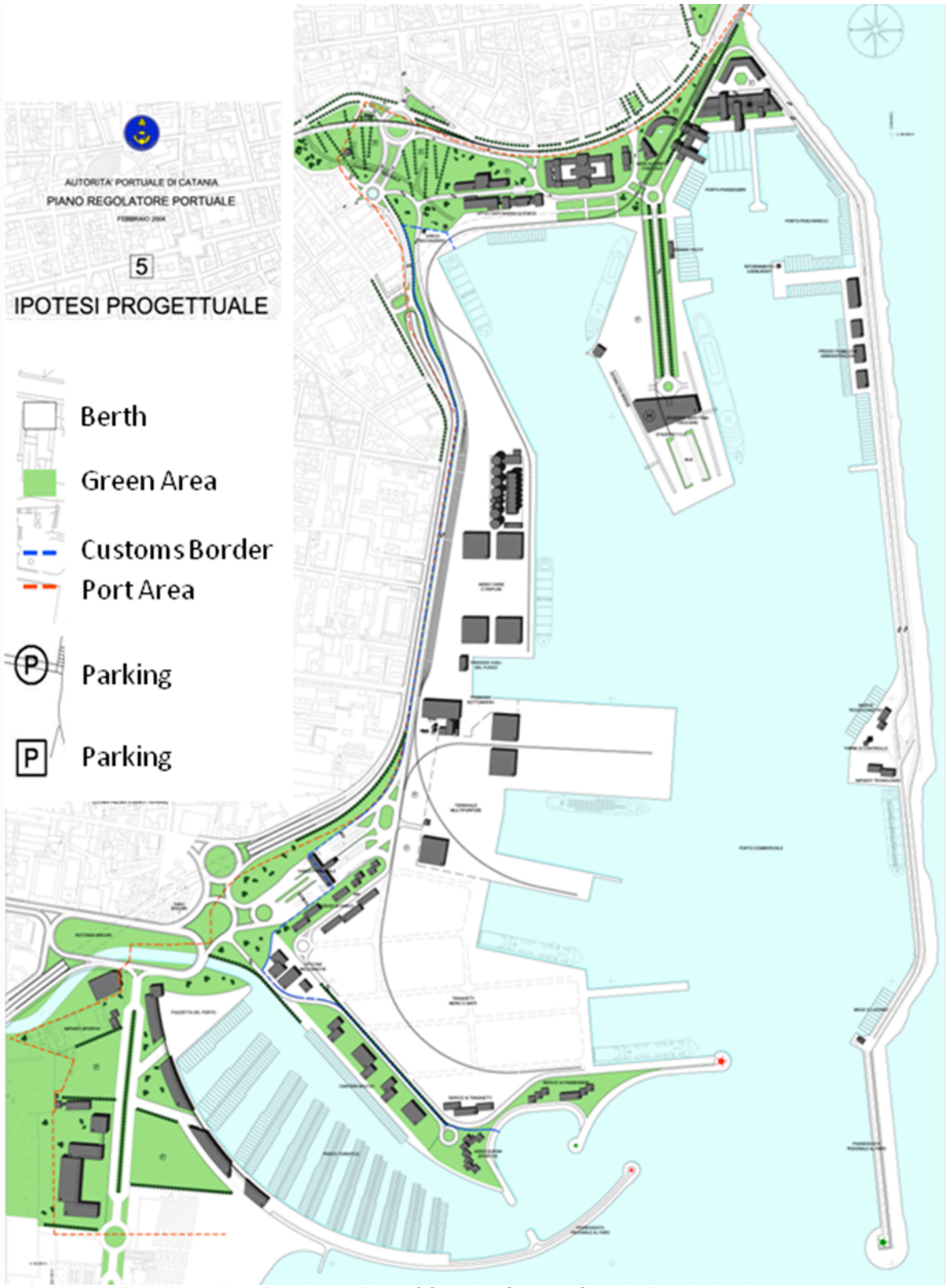

Figure 13 – Port Regulatory Plan of Catania (Source: Catania Port Authority, 2004)

The PRP of Catania (at this time pending approval) divides the port in distinct areas, according to categories of Functions (cargo traffic, passengers traffic, pedestrian mobility, touristic port) and provides the following interventions (see Figure 13):

- the north area (quays Old Port and New Port and areas behind along with the Molo di Levante) must be freed from the Customs border and have destinations such as to enable the "urban" use of the yards and docks and the establishment of an appropriate waterfront, in order to improve the integration port/urban areas. In the project, the Central Pier will be used only as cruise terminal with the Green Axis, a great avenue that allows road access and walking to the port and connects it to the waterfront and the city.
- in the central port area (along Colombo road) the transfer of commercial port activities (Ro-Ro, containers, dry bulk, liquid bulk, general cargo). The New Commercial Dock will be expanded to increase the number of the berths and will be equipped with aprons for easy allowing flow of vehicles in boarding and disembarking and parking of those on hold.
- in the south area will be realize a New Touristic Port (with 500 berths for yachts).

The port of Koper (Slovenia)

The port of Koper is located in the Coastal-Karst statistical region (in the south-west of Slovenia) that has an area of 1,044 k m² with estimated population of 106,000 inhabitants, of who 49.303 live in the coastal city of Koper and 5.490 in the old town. It is the only international cargo/commercial port in Slovenia and the port area counts 0,89% of the territory. Although there are several ports situated in the North of the Adriatic (Rijeka, Koper, Trieste, Monfalcone, Venice and Ravenna Within are within 300 km) and all of them are international ports.

The majority of Ro-Ro traffic in the Port of Koper is represented by cars and this terminal is the major of the Adriatic. There is only one official gate to access the port by road; it has 4 lanes – two on each side. There are three railway tracks connecting the Port to the shunting station Srmin; inside the port area there are 30 km of railway tracks, ensuring the connection of each terminal to the railway infrastructure.

For this, all the terminals of the Port of Koper are connected both with the railway and road infrastructure and the inland terminal in Ljubljana in one hour by road and 4 hours by rails. The Italian airport Ronchi dei Legionari is distant 67 km and the main Slovenian airport, in Ljubljana, is distant 124 km; both airports are connected only by road.

The port is situated 500 m from the old town of the Municipality of Koper, that can be reached in few minutes by road; but the port is actually only an operative port, so it is closed to citizens and tourists. The railway station is situated within 1000 m from the port and bus stops are present within 300 m from the port gates. The city centre is for exclusive use of pedestrians within 300 m /1000 m from the port gates.

The passenger terminal at the Port of Koper is the youngest of the terminals, because the idea of developing it took place on 2005 with the Municipality of Koper. In fact, in recent years Koper has become a interesting cruise destination, as it is an interesting medieval city as well as the many sightseeing easily accessible by bus, which Ljubljana, Postojna caves,

Lipica stud farm, the city of Piran. Year 2009 and 2010 saw a traffic with over 30.000 passengers and it increases in 2011 with more than 100.000 passengers.

Figure 14 – View of the Port and the City of Koper

Land area of the port	2.770.000 m^2
Water area	1.660.000 m^2
Total linear length of the quays	7.500 m in year 2010
Number of berths	26
Average depth of seabed	15 m

Figure 15 – Main physical characteristics of the Port of Koper

Container (t)	5.309.354	Container (TEU)	589.314
Rolling stock (t)	665.878	Cars (units)	447.689
General cargo (t)	1.383.354	N. passengers	108.729
Dry bulk cargo (t)	6.769.845	N. vessels	1.958
Liquid bulk cargo (t)	2.933.891	N. Cruise	589.314

Figure 16 – Maritime throughput of the Port of Koper during year 2011

The port area is managed by Luka Koper, the company to which the Slovenian government has signed a concession agreement. In the decade form year 2000 to 2010 no strategic planning document was approved for the Port of Koper. The National Spatial Plan for the Port of Koper, which represents the port development plan, was prepared from 2006 with the active involvement of Luka Koper and adopted in June 2010 by the Slovenian Government.

Figure 17 – The planned configuration of port of Koper (Source: Luka Koper)

In the National Spatial Plan it is possible identify three main interventions areas:

- The first wants to improve the operation of the port with the following operations: Pier I will also feature the Fruit Terminal; Second Pier will enable the modernization of the Bulk Cargo and Liquid Cargo Terminals, whereas the General Cargo Terminal and the Timber Terminal with extended storage capacity with versatile roof-greenery will be relocated in the immediate hinterland; Third Pier will be used for a new container terminal facility. In order to relieve traffic congestion in the vicinity of Koper's old town centre, will be realized a new entrance for heavy goods vehicles (HGVs) to the port area.
- The second aims to improve interaction between the port and the city: In order to promote the tourist potentials of city of Koper, the port area near the old town will be transformed. Thus it will be realized the new Passenger Terminal and a touristic port.

The area near the Passenger Terminal will be redeveloped, also thanks to the realization of commercial activities, new recreational functions and catering, car parking. The facility - which will also encompass passenger vehicle loading ramps - will be made available to the municipal authorities for the development of Adriatic ferry services. Parking areas will also be provided and an access route created via a new seafront road along the northern side of the old city centre.

- The third aims at the sustainability of the surrounding area: a seafront promenade for walkers and cyclists will be constructed from Ankaran and the new sport and recreational area to the Passenger Terminal and Koper's old town centre. The small harbour at Sveta Katarina, adjacent the recreational area to the southeast of Ankaran, will be additionally developed as a marina; a boat repair yard together with a water-sports centre and a multi-purpose event facility are also envisaged.

APPLICATION OF THE METHODOLOGY TO CASE STUDIES

The proposed planning model, based on the PDCA cycle joint with the IORI framework, is now applied to Catania and Koper ports that are facing a new phase of strategic planning, as seen in the previous section. After the examination of each planning document we have found that, among the global objectives, both cities intend to improve the relationship between the port and citizens and tourists; this may be considered a Strategic Line. Therefore, referring to their common Strategic Line that aims to "Promote port-city integration", we have structured the related contents of each plan into Actions and Operative Measures and then we have defined a set of indicators able to evaluate and monitor the plans as previously rearranged.

Restructure of the plans

Both for Catania and Koper we have now organized respective planned interventions according to the structural framework into several operative measures that made up a series of actions which jointly converge towards the selected strategic line. In particular Tables 1 and 4 show the Strategic Line and relative Actions; Tables 2 and 5 summarize the Operative Measures (OM) and Tables 3 and 6 illustrate the correspondence between Actions and OM.
In order to immediately identify each Action and OM, we have assigned to each of them an alphanumeric code in which: the first letter stands for the port (C: Catania, K: Koper), the second letter means the intervention planning level (A: Action, OM: Operative Measure), the number is an ID in ascending order.

Table 1 – Strategic Line – Actions for the port of Catania

STRATEGIC LINE	Promote port-city integration	
ACTIONS	C A 1	Make the waterfront
	C A 2	Improve pedestrian accessibility
	C A 3	Improve public transport accessibility
	C A 4	Develop citizens facilities
	C A 5	Develop tourists services
	C A 6	Create green areas

Table 2 – List of the Operative Measures for the port of Catania

OPERATIVE MEASURES	
C OM 1	transfer port operations away from the area near the historical city centre
C OM 2	create a new customs gate
C OM 3	realization of rail access to the terminals
C OM 4	abatement of customs border
C OM 5	realization of seafront pedestrian areas
C OM 6	realization of promenade for walkers from Duomo to the waterfront and Central Pier
C OM 7	realization of public green areas in the waterfront and in the Central Pier
C OM 8	turn Central Pier only for cruises
C OM 9	realization of a Rail Station (FCE) in the Central Pier
C OM 10	realization of a Maritime Station for passengers in the Central Pier
C OM 11	realization of a Bus Station in the Central Pier
C OM 12	realization of four gate for cars/bus
C OM 13	realization of Parking areas
C OM 14	creation of commercial activities, public offices and services for citizens
C OM 15	creation of hospitality, catering and sports facilities
C OM 16	realization of an Touristic port
C OM 17	realization of an Fishing Port

Table 3 – Match Actions to Operative Measures for the port of Catania

ACTION		OPERATIVE MEASURES																
		C OM 1	C OM 2	C OM 3	C OM 4	C OM 5	C OM 6	C OM 7	C OM 8	C OM 9	C OM 10	C OM 11	C OM 12	C OM 13	C OM 14	C OM 15	C OM 16	C OM 17
C A 1	Make the waterfront	●	●		●	●	●	●							●	●		
C A 2	Improve pedestrian accessibility	●	●		●	●	●	●	●	●	●	●			●	●	●	●
C A 3	Improve public transport accessibility			●						●		●	●	●	●	●		
C A 4	Develop citizens facilities				●	●	●	●		●		●	●	●	●	●	●	●
C A 5	Develop tourists services				●	●	●	●	●	●	●	●	●	●		●	●	
C A 6	Create green areas	●			●	●	●	●	●		●				●	●	●	●

Table 4 – Strategic Line – Actions for the port of Koper

STRATEGIC LINE	Promote port-city integration	
ACTIONS	K A 1	Make the waterfront
	K A 2	Create pedestrian accessibility
	K A 3	Carry out cyclist accessibility
	K A 4	Create public transport accessibility
	K A 5	Create citizens facilities
	K A 6	Create tourists services
	K A 7	Promote public support

Table 5 – List of the Operative Measures for the port of Koper

OPERATIVE MEASURES	
K OM 1	retreat port operations from the urban zone
K OM 2	create new entrance to the port zone for HGVs
K OM 3	establish a direct four-lane highway between the motorway and the new entrance
K OM 4	adequate existing entrance (to serve no more HGVs but other transport modes)
K OM 5	create an access route via a new seafront road along the northern side of the old city centre
K OM 6	create a seafront promenade for walkers and cyclists
K OM 7	establish a modern central bus station
K OM 8	establish a new garage parking for local inhabitants
K OM 9	realize a new Passenger Terminal
K OM 10	provide Parking areas near Passenger Terminal
K OM 11	creation of hospitality, catering and recreational amenities
K OM 12	extend the marina (new sports and recreational facilities)
K OM 13	involve local citizens on the port Development Strategy

Table 6 – Match Actions to Operative Measures for the port of Koper

ACTION		OPERATIVE MEASURES												
		K OM 1	K OM 2	K OM 3	K OM 4	K OM 5	K OM 6	K OM 7	K OM 8	K OM 9	K OM 10	K OM 11	K OM 12	K OM 13
K A 1	Make the waterfront	●	●	●	●	●	●					●	●	●
K A 2	Create pedestrian accessibility	●	●	●	●		●	●	●	●		●	●	●
K A 3	Carry out cyclist accessibility	●	●	●	●		●	●				●	●	●
K A 4	Create public transport accessibility				●	●	●	●		●	●	●		
K A 5	Create citizens facilities				●	●	●	●	●			●	●	●
K A 6	Create tourists services					●	●	●	●	●	●	●	●	
K A 7	Promote public support	●			●	●	●	●	●			●	●	●

Schemes for plans evaluation and monitoring

For both case studies, planned interventions are now organized according to the structural framework into Strategic Line – Actions – Operative Measures. In order to evaluate and monitor the plan, each level should be characterized by respective Impact – Result – Output indicators. For this, Tables 7 and 10 show the Strategic Line and its Impact indicators; Tables 8 and 11 illustrate Actions with their Result indicators; lastly Tables 9 and 12 summarize the Operative Measures and the relative Output Indicators.

Table 7 – Strategic and Impact indicators for the port of Catania

STRATEGIC LINE	Promote port-city integration	*number of inhabitants and tourists trips from/to the port*	*Impact indicators*
		pedestrian accessibility index	
		cycle accessibility index	

Table 8 – Actions and Result indicators for the port of Catania

ACTIONS	C A 1	Make the waterfront	*m² waterfront*	*Result indicators*
	C A 2	Improve pedestrian accessibility	*% of walk trips*	
	C A 3	Improve public transport accessibility	*% of transit trips*	
	C A 4	Develop citizens facilities	*number of citizens*	
	C A 5	Develop tourists services	*number of tourists*	
	C A 6	Create green areas	*m² green areas*	

Table 9 – Operative Measures and Output indicators for the port of Catania

OPERATIVE MEASURES		*Output Indicators*
C OM 1	transfer port operations away from the area near the historical city centre	*m² of port area cleared*
C OM 2	create a new customs gate	*yes/no*
C OM 3	realization of rail access to the terminals	*m rail*
C OM 4	abatement of customs border	*m pulled down*
C OM 5	realization of seafront pedestrian areas	*m² pedestrian area*
C OM 6	realization of promenade for walkers from Duomo to the waterfront and Central Pier	*m² pedestrian path*
C OM 7	realization of public green areas	*m² green area*
C OM 8	turn Central Pier only for cruises	*number of cruises/month or year*
C OM 9	realization of a Rail Station (FCE) in the Central Pier	*m² of rail station*
C OM 10	realization of a Maritime Station for passengers in the Central Pier	*m^3 of passenger terminal*
C OM 11	realization of a Bus Station in the Central Pier	*m² of bus station*
C OM 12	realization of four gate for cars/bus	*yes/no*
C OM 13	realization of Parking areas	*number of parking spaces*
C OM 14	creation of commercial activities, public offices and services for citizens	*number of services*
C OM 15	creation of hospitality, catering and sports facilities	*number of facilities*
C OM 16	realization of an Touristic port	*number of berths*
C OM 17	realization of an Fishing Port	*number of berths*

Table10 – Strategic and Impact indicators for the port of Koper

STRATEGIC LINE	Promote port-city integration	*number of inhabitants and tourists trips from/to the port*	*Impact indicators*
		pedestrian accessibility index	
		cycle accessibility index	

Table11 – Actions and Result indicators for the port of Koper

ACTIONS	K A 1	Make the waterfront	*m² waterfront*	*Result indicators*
	K A 2	Create pedestrian accessibility	*% of walk trips*	
	K A 3	Carry out cyclist accessibility	*% of cycle trips*	
	K A 4	Create public transport accessibility	*% of transit trips*	
	K A 5	Create citizens facilities	*number of citizens*	
	K A 6	Create tourists services	*number of tourists*	
	K A 7	Promote public support	*number of events*	

Table 12 – Operative Measures and Output indicators for the port of Koper

OPERATIVE MEASURES		*Output Indicators*
K OM 1	retreat port operations from the urban zone	*m² of port area cleared*
K OM 2	create new entrance to the port zone for HGVs	*yes/no*
K OM 3	establish a direct four-lane highway between the motorway and the new entrance	*m² road constructed*
K OM 4	adequate existing entrance (to serve no more HGVs but other transport modes)	*yes/no*
K OM 5	create an access route via a new seafront road along the northern side of the old city centre	*m² seafront road*
K OM 6	create a seafront promenade for walkers and cyclists	*m² pedestrian and cycling path*
K OM 7	establish a modern central bus station	*yes/no*
K OM 8	establish a new garage parking for local inhabitants	*number of parking spaces*
K OM 9	realize a new Passenger Terminal	*m^3 of building*
K OM 10	provide Parking areas near Passenger Terminal	*m² of parking area*
K OM 11	creation of hospitality, catering and recreational amenities	*number of facilities*
K OM 12	extend the marina (new sports and recreational facilities)	*m² of extended marina*
K OM 13	involve local citizens on the port Development Strategy	*number of initiatives*

Results

Comparing the application of the methodology to our case studies, it is clear that the same global objective is pursued in a different way because of local distinctive features; in spite of that, the proposed planning model is able to adapt to different situations.
Particularly, most of Actions planned for Catania and Koper are very similar and regard the waterfront (C A 1 and K A 1), pedestrian and public transport accessibility (C A 2-3 and K A 2-4), citizens and tourists facilities (C A 4-5 and K A 5-6), even if Koper has to create pedestrian accessibility (now not permitted) while Catania should improve the existing one.

Different Actions regard the "creation of green areas" (C A 6) brought by Catania while Koper proposes the "creation of cycle accessibility" (K A 3) and the "Promotion of public support" (K A 6).
Operative Measures are more specific to each case because they refers to basic interventions in a short-term planning level. In spite of that, a lot of OM are comparable: the need to move away port operations from the area near the city centre (C OM 1 and K OM 1), the idea to reroute trucks traffic to avoid the urban centre (C OM 2 and K OM 2-3), the creation of a seafront promenade (C OM 5-6 and K OM 6), the establishment of garages and parking areas (C OM 13 and K OM 8-10), the realization of a new Passenger Terminal with a close bus station (C OM 10-11 and K OM 7-9), the creation of services and amenities both for citizens and tourists (C OM 14-15 and K OM 11-12).
Main differences on Operative Measures are due both to the dissimilarities of Actions and to local peculiarity; in fact Catania aims to create public green areas (C OM 7) and plans the establishment of a rail station into the port (C OM 3-9); on the other hand, Koper wants to create cycling paths (K OM 6) and involve local community in port development (K OM 13).
In addition, Tables 3 for Catania and 6 for Koper show the match of Actions to Operative Measures. This will be an useful tool both for the evaluation of the plan and especially for the definition of priorities among OM; in fact it is possible identify Operative Measures that affect more Actions and give them precedence. Alternatively if there is an overriding Action, this matrix identify the OM that allows the realization of this Action.

CONCLUSIONS AND FURTHER RESEARCH

The results indicate that the proposed planning model is flexible to the adaptation to various typologies of port cities that may be characterized by different interventions and by a variety of indicators.
Moreover, in this work we have applied the process framework to already defined plans of Catania and Koper, but it will be relevant to use the proposed model during the planning (phase P of the Deming cycle).
Therefore our theoretical example shows the usefulness and flexibility of the proposed planning model that may be introduced to real cases.
In conclusion it is possible to note that the proposed framework shows great implications both for policy and research. In fact it will be a suitable tool for policy makers, that would be helped during a planning and decision process, and also for researchers, because it is possible to define in various way the set of indicators and their calculation; for example regarding the evaluation of accessibility indices (that in our case studies are Impact indicators) there is a wide literature that deals with this topic (Handy and Niemeier, 1997; Geurs and van Wee, 2004; Rubulotta et al., 2012).
Further research should focus on: the important task due to the waterfront, the role of shared spaces between port and city, the relevance of port accessibility with soft mobility, the usage of impact models.

REFERENCES

Bird, J. (1971). Seaports and Seaport Terminals. Hutchinson & Co., London.

Catania Port Authority (2004). Piano Regolatore Portuale

Deming, W.E. (1950). Elementary Principles of the Statistical Control of Quality, JUSE.

Ducruet, C. (2004). The Trans-scalar Development of Transportation Hubs: a Quantitative Comparison of European and East Asian Container Port Cities in the 1990. Bulletin of the Institute of Business and Economic Research (Inha Univ.) 18, no.2: 171-199.

Ducruet, C. and S. Lee, (2006). Frontline soldiers of globalisation: port-city evolution and regional competition. GeoJournal, 67 (2), pp. 107-122.

EC (2006). The New Programming Period 2007-2013. Indicative Guidelines on Evaluation Methods: Monitoring and Evaluation Indicators, Working Document No. 2.

Geurs, K. T. and B. van Wee (2004). Accessibility evaluation of land-use and transport strategies: review and research directions. Journal of Transport Geography, 12, pp. 127–140

Handy, S. L. and D. A. Niemeier (1997). Measuring accessibility: an exploration of issues and alternatives.Environment and Planning A, 29(7), pp. 1175 – 1194

Hoyle, B. (2000). Global and local change on the port–city waterfront. The Geographical Review, 90 (3), pp. 395–417.

Luka Koper, http://www.luka-kp.si

NAPA - North Adriatic Ports Association, http://www.portsofnapa.com

Norcliffe, G., K. Basset, and T. Hoare (1996). The emergence of postmodernism on the urban waterfront. Geographical perspectives on changing relationships. Journal of Transport Geography, 4 (2), pp. 123–134.

PORTA project, www.porta-project.eu

PORTA project (2011). Port Action Plan Guidelines - Component 4: Port Action Plans, Sub-Component 4.1: Drafting of port management guidelines.

PORTA project (2012). Drafting and Adopting Action Plans by Luka Koper - Component 4 Port Action Plans, Sub - Component 4.2 : Drafting and Adopting Action Plans.

Rubulotta, E., M.Ignaccolo, G. Inturri, and Y. Rofè, (2012). Accessibility and Centrality for Sustainable Mobility: A Regional Planning Case Study. J. Urban Plann. Dev.. .doi: 10.1061/(ASCE)UP.1943-5444.0000140