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PoWER STRATEGY

for evolving ports into Innovation Hubs

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Deliverable Responsible	RDA Porin (TT Strategies' Leader)
Deliverable Contributors	Doris Sošić (RDA Porin), Marco Padula, Roberto Malvezzi, Francesca Picenni (ITC-CNR)
Deliverable Reviewers	F. Stergiopoulos, T. Glišić, A. Hodžić B, Ceckič, L. Markou

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Introduction

PoWER - *Ports as Driving Wheels of Entrepreneurial Realm* is a EU project funded under the INTERREG V B ADRION Programme. It aims at recovering the historic role of Adriatic-Ionian (ADRION) port cities as pivotal centres of development and exchanges, by stimulating their evolution into so-called "Innovation Hubs" (IHs) to exploit their untapped innovation potential, by turning ports innovation needs into opportunities for a sustainable and integrated development. The transformation into an Innovation Hub, according to the PoWER Project, can be started-up through a three-steps methodology to address specific port-related needs[1]. The implementation of this methodology has brought local stakeholders of the PoWER ports to co-create local innovation pathways, which have been then shared and merged into a transnational Strategy aimed to foster their joint evolution and development, thus turning them in a full-fledged network: The Innovation Hubs Network. In particular, PoWER stakeholders' engagement followed the Triple helix paradigm, by involving: Public Authorities (e.g. Pubic Administrations, Port Authorities, etc.), Businesses and Interest Groups (including SMEs, Sectoral Agencies, Business Support Organizations, Financial Institutions, NGOs, etc.) and Cognitive Institutions (e.g. Schools, Universities, Research Centres).

These actors cooperate together according to the PoWER methodology, as means to incubate local Innovation Supply Chains (ISC) which constitute the backbone of the innovation process carried out in the Innovation Hubs.

The PoWER Methodology[2] is composed by three main phases of co-creation of local innovation pathways, i.e.:

1. Needs Mapping;
2. Ideas and Solutions scouting;
3. Scenarios Foresight.

The strategic co-design is embedded in the third step of this process.[3] Basing on the results achieved and on the information distilled from the previous steps. Short term Scenarios were developed, aimed at fostering concrete innovations on the energy-related themes detected in each port, and long-term Strategic Outlooks (within a 25 to 30 years) were also produced, containing the general coordinates for the evolution of the port into an Innovation Hub, by tackling other critical issues and themes. These Outlooks were then post-processed and

1 The PoWER Project has chosen Energy as the macro topic to be used for the methodology development, testing and validation. Once validated, the Methodology shall possibly apply to any other port-related macro-topic.

2 Koukovinos N., Malvezzi R., Metaxa I., Padula M., Picenni F., Stergiopoulos F., Voutetakis S., Ziogou C., 2019, The Evolution of Ports into Innovation Hubs: A Proposal for the Adriatic Ionian Area, Chemical Engineering Transactions, 76, 1165-1170.

3 D3.1.1 – WPT3 Scenarios Foresight: Working Method

merged, in order to shape a shared long-term Strategy, describing common objectives and approaches (Evolution Pathways) to be pursued together by the ports and the actors gathered in the Innovation Hubs Network.

The creation of the Network will contribute to remove inner cultural barriers, allowing to extend local innovation supply chains to a transnational level, in order to foster the rise of an ADRION-sized innovation system deeply rooted in local realities, and to support the diffusion and scale-up of solutions and best practices.

This document reports the Strategy developed within the PoWER project thanks to the activation of 6 pilot sites where the PoWER Methodology has been tested, shaped and validated, i.e. Bari (IT), Brčko (B&H), Durrës (AL), Igoumenitsa (GR), Rijeka (HR) and Ravenna (IT).

1. Strategy Objectives

The PoWER Strategy is a shared steering instrument for the evolution of ports into Innovation Hubs, which shall constitute the reference framework for the future activities of the Innovation Hubs Network in order to keep pursuing such evolution in the future.

The Strategy is the result of a joint action aimed at capitalizing the results of the process carried out by the PoWER Consortium at local level, and at identifying the common strategic challenges, mostly related to Blue and Green growth, to be tackled after the project finalization, by fostering the rise of a holistic and integrated co-evolution process.

In particular, the PoWER Strategy is composed by four ***Evolution Pathways***, constituting the axes along which the evolution of ports into Innovation Hubs will be actuated. Every Evolution Pathway is articulated through priorities and timelines taken from its constituting topics, which, together, allow the development of a set of dynamics deeply integrated and intertwined among each other. As a result, each Evolution Pathway can be considered, in some way, "transversal" to the others.

The PoWER Strategy also relates to the EUSAIR and EUSDR objectives, thus guaranteeing consistency between the proposed pathways and the wider macro-regional EU strategies for the Adriatic-Ionian and the Danube Regions. Furthermore, stakeholders' commitment will support the participation to EU & regional programmes and the promotion of public/private investments to achieve common goals.

In order to formally establish a strong and virtuous Innovation Hubs Network, Ports and other higher institutional levels will be called upon to sign a dedicated Memorandum of Understanding: *The PoWER Protocol*.

In this document, they will state their commitment to support the ports evolution process into Innovation Hubs with reference to the pathways developed thanks to the implementation of the PoWER Methodology and described in this Strategy, thus guaranteeing a well-founded institutional cooperation among the Hubs of the Network.

2. Strategy Background

The finalization of this Strategy is one of the main PoWER project outputs, to the development of which all previous project activities have contributed, including:

- the co-creation of long and short term scenarios related to each case-study, by means of a Foresight process also based on data gathered on energy-related needs (energy supply-demand, infrastructures, socio-economic conditions), as well as on the ideas and solutions detected to address them;
- the development of innovation supply chains by local/regional stakeholders of the Triple Helix, aimed at customizing and fine-tuning solutions and developing perspectives related to the real-life needs emerged in the case-studies, and to foster transnational cooperation aimed at developing a "critical mass" able to create a competitive advantage for the ADRION area;
- the settlement of interlinked layers, corresponding to the main shared issues and challenges derived by the local case studies, starting from the energy-oriented outcomes of the project, allowing the activation of further thematic processes according to the PoWER joint methodology;
- the development of an open ICT Platform[4] for supporting the implementation of the Strategy – as well as the replication of the Methodology - after the project finalization.
- the development of **Regional Energy Innovation Recommendations**[5]**,** intended as a suite of solutions and proposals aimed at fostering the good implementation of energy-oriented scenarios. This document, which was produced by means of shared analyses and studies filtered by and through feedbacks from the pilot partners, reveal the existence of common grounds in terms of needs and gaps for improving the port greening, diversifying the renewable energies, fostering cooperation between existing R&D centres, education facilities and enterprises, supporting networking, clusters and open innovation environments, and therefore points to the direction of joining forces for the implementation of solutions that address common needs and gaps (Annex 4).

Moreover, the Strategy development process has been supported by the work of two Transnational Teams (TTs):

- TT "Ideas&Solutions": responsible for the elaboration of the selected database of ideas & solutions/patents to be included in the Platform;

[4] http://www.powerports.eu/
[5] DT3.2.2 – Regional Energy Innovation Recommendations

- TT "Strategies": responsible for individuating the common strategic issues among case-studies and for producing the PoWER Strategy.

All outputs of the whole PoWER Methodology implementation have addressed local and transnational target groups as local, regional and national level, such as Public Authorities (e.g. Pubic Administrations, Port Authorities, etc.), Businesses and Interest Groups (including SMEs, Sectoral Agencies, Business Support Organizations, Financial Institutions, NGOs, etc.) and Cognitive Institutions (e.g. Schools, Universities, Research Centres).

As a matter of fact, PoWER pilot ports had the chance to exploit the experience gained through the project activities in order to get a clearer analysis of their current situation and to activate local stakeholders through the establishment of Thematic and Strategic committees, respectively aimed at co-developing the Energy-related Scenarios and the Strategic Outlooks. The involvement and active engagement of local stakeholders was indeed the unifying thread of the whole project methodology and of the Strategy successful implementation.

The **Local Strategic Outlooks**[6] represent the fundamental reference documents for the production of the PoWER Strategy. Indeed, they report the strategic themes and topics beyond the energy issues, detected and developed through the co-design process carried out within the Foresight phase of the Methodology, in relation to the relevant issues that should be addressed in the 2020 – 2045 time horizon, in order to support the PoWER ports in their evolution into territorial Innovation Hubs.

The development of the Outlooks draws on a wide set of background information which has been put together throughout the methodology's implementation process, especially:

- ***Benchmark Analysis:*** it is a comparison between each case-study's current situation and the international status quo[7];
- ***Ideas and Solutions scouting:*** it consists of the hunt for innovative solutions and ideas addressing ports' needs through three different and integrated activities, i.e. *Call for Solutions*, *Gaming Sessions* and *Matchmaking*, aimed at activating local business and educational communities;
- ***Reference foresight frameworks:*** they are the main output of the "horizon scanning phase" of the Foresight process, starting from a SWOT analysis of the case-study ports in order to set target goals to be pursued;

[6] PoWER, Deliverable n. T3.4.3 – Local Strategic Outlooks
[7] PoWER, Deliverable n. T3.4.1 – Benchmark Analysis

- ***Delphi sessions results***: the engagement of experts in Delphi panels allowed further interaction with the local stakeholders and, most importantly, the exchange of views among and feedback from key actors s. a. the ports' administration and local authorities' officers.

All pilot ports have different features (existing infrastructure, degree of development of the cargo and/or passenger port, the importance of the port for the region or country, the quantities of goods transhipped, etc.); however, what unites them is the set of goals of this project, which aims at supporting the evolution of ports into Innovation Hubs, able to act as new transmission belts between regions, and to exploit their untapped entrepreneurial potential.

3. Strategy Development

The PoWER Strategy has been drawn out of a two-years-long process of engagement of the piloting project partners – as well as local stakeholders gravitating to the case-study ports - in order to grasp their intentions, synergies and added values underpinning each port strategic outlook eventually emerged. To this regard, physical and digital workshops have been carried out under the framework of the Transnational Team "Strategies", in order to carry out an iterative path aimed at synthesizing the strategic challenges common to the PoWER ports into one shared PoWER Strategy. Key steps of this path were:

- agreement on the Transnational Team "Strategies" working method and objectives;
- compilation of a standard template aimed at supporting the drafting of a preliminary Local Strategy Outlook version;
- cross-check of correspondences, synergies and differences among the preliminary Local Strategic Outlooks;
- structuring, discussion and validation of a preliminary common framework as a baseline for the Strategy;
- detection of key topics for each port according to the **preliminary framework** briefly synthesized in the tables reported at the end of this list;
- production of a **Baseline Strategic Framework** based on the key topics above, so to achieve a first clustered matrix (Annex 1);
- finalization of each port's Local Strategic Outlook according to the results of the Foresight processes carried out by the Local Strategic Committees;
- integration of the Baseline Strategic Frameworks with the Local Strategic Outlooks;
- drafting of a **Final Reference Table** (Annex 2) including all the topics listed by each Baseline Strategic Frameworks and Local Strategic Outlooks;
- clustering of the final reference table items in order to identify **Shared Strategic Topics** and double-check of their recurrence in each case-study (see Annex 3), both with reference to the relevance assumed by each topic respect to the overall local strategies, as well as to the priority assigned to them;
- re-processing of the eight Shared Strategic Topics emerged into the four **integrated Evolution Pathways** constituting the pillars of this Strategy.

The following tables synthesize the key topics detected for each port according to the **preliminary framework** underpinning this Strategy

PORT OF BARI
• Completion of the Port Community System and improvement of the system to support security checks; interconnection with external ITS systems. • Redevelopment works and docks for the docks descanted to ferries, ro-ro, motorway of the sea and cargo will include maintenance and deepening of depths, rehabilitation and upgrading of docks and defence works and enhancement and upgrading of passenger maritime stations. • Improvement of state-owned building to support Operations and Institutions; energy efficiency and interventions aimed at improving the quality of the port environment; reducing pollution; port point for Liquefied Natural Gas (LNG). • Increase the use of renewable sources. • Strengthening connections to the infrastructural networks outside the port area.

PORT OF RIJEKA
• Introduction of new technologies that improve building performance. • Reconstruction of the port infrastructure and suprastructure that include: extension of the container terminal operating area to accommodate larger full container vessels (dredging of 130 m of quay over berths to support the docking of vessel up to 400 m; and additional dredging of 438m of quay to a depth of 16,5m); reconstruction and establishment of a passenger terminal (cruise). • Introduction of new energy renewable sources: Key indicators (KPI) for the energy measurement; create reliable systems for collection and analysis of data; introduce energy control system and system for renewable energy; introduce new equipment which will be energy efficient; LNG terminal on island of Krk. • Passenger cruise terminal will enable further development of the local economy, visiting touristic attractions of the region etc.

PORT OF DURRES
• Simplification and standardization of transport procedures, implementation of Automatic Identification Systems and of Intelligent Tracking Systems. • Establishment of satellite terminals for containers and reorganization of port space to increase its utilization. • Energy – Efficiency Management system that will perform Energy Audit, creation of reliable systems for collection and analysis of data and create energy control system. • Analysis of real power demand in the future, identification of all available spaces where renewables can be installed, undertake of preliminary feasibility assessments for wind and wave energy, coordination with other port operators for cooperation in the area of renewables, implementation of technical

research, experiments, pilot projects and tests of renewable energy technologies and RES (Photovoltaic systems).

PORT OF IGOUMENITSA

- Increase of capabilities to accommodate larger passenger and cargo ships-expansion 'Phase C'. Igoumenitsa as a terminal for cruise ships journeys and creation of marina-short distance cruises in the Ionia. Port of Igoumenitsa will do infrastructure work (road network) and administrative procedures to interconnect with Customs Control at Mavromati, Thesportia, to facilitate trade with Albania. Port of Igoumenitsa will make integration into railway networks – creation of new ˝transport corridors˝. This port will be as logistic centre 'Igoumenitsa Freight Village'. This port will also provide dedicated services of transport, storage, management and distribution of goods.
- Creation of an Energy Hub for distribution of LNG to the mainland. This port will also make common initiatives and greater interaction with local authorities in the area of waste management and energy saving, enhance the role of the port as a demonstrator pilot for new initiatives in environment and energy and will develop plans and procedure regarding environmental and energy management.
- Port as point of reference for demonstrating innovative project based on alternative fuels (e.g. Hydrogen)
- Strengthening infrastructural connections with motorways network in Greece.

PORT OF RAVENNA

- Smart port: digital transition.
- Enhancing multimodal transport of maritime goods.
- Green port: addressing climate change, air quality, water quality, waste collection and valorisation, circular economy, efficiency, durability and performance of buildings.
- Enhancement of jobs and skills.

PORT OF BRČKO

- Post as a showcase of implementation of energy and environment-related technologies (including RES): further development and transformation, additional revenue, testing and promoting of innovative technologies.
- Expansion of port activities through development and modernization of Brčko port infrastructure: increase of traffic flows; regional economic growth; greater storage in port; faster and easier trading.
- Port as a part of the word's transport community: to serve as an important entry gate and wider interconnection

4. The PoWER Strategy

4.1 Main Evolution Pathways

The PoWER Strategy for the evolution of ADRION ports into Innovation Hubs consists in four **Evolution Pathways,** in which the identified shared strategic topics are grouped as follows.

EVOLUTION PATHWAYS	SHARED STRATEGIC TOPICS
Port as Logistic Hub	Integration with infrastructures Expansion or optimization of operational spaces Enhanced Logistics and multi-modality
Port as Digital Hub	Digital transition
Port as Sustainability Hub	Environmental protection and circular economy Energy
Port as Economic Hub	Tourism Promotion of local economy

Such Pathways are the axes along which the evolution of ports into Innovation Hubs can be articulated. Each Evolution Pathway can be detailed through priorities and timelines taken from its constituting topics, which allow drafting a set of integrated and intertwined inner dynamics enabling the joint definition of a basic “roadmap” for the Strategy.

As a result, each Evolution Pathway can be considered, in some way, “transversal” to the others: such an interdependency is intended to enhance a homogeneous and flexible implementation of the Strategy, since by addressing one specific pathway, fruitful synergies and added values would be activated, to be capitalized in order to a smooth implementation of the other pathways.

In the following tables the general dynamics of each Pathway are described in short.

A. PORT AS LOGISTIC HUB

PoWER ports consider the **upgrade and integration of current infrastructures** (such as transport, energy and ICT) a strategic issue in order to increase transport capacity and connectivity from and to the port, and to enhance multi-modality (road-railway-water).

Aim of this objective is to ease and make ports' operations fluid, as well as to reduce the environmental burden on the urban areas, so to pave the ground for a sustainable and progressive growth of port activities.

The fulfilment of this goal is considered by the PoWER ports as a mid-to-long term perspective, not directly dependent on the ports planning and operative capacity: therefore, while keeping on working in order to achieve it, two further strategic actions should be put in place.

The first strategic action is related to the **enhancement of port operational spaces**, which, in case the port area is constrained, may take the way of an optimization of available spaces and facilities, while, otherwise, it may lead to an extension of existing port areas according to multiple purposes (e.g. new containers, passenger or cruise terminals, storage facilities, LNG terminals, etc.). A particular facet of this goal is connected to the exigency of reusing or regenerating dismissed port areas, with special regard to those closer to or included in urban settings, with the aim of strengthening the urban relations between port and city.

The second strategic action is related to the **enhancement of multi-modality and logistic services** at the port level, with the aim to increase port operations' efficiency in the short term. Examples of this action range from increasing productivity of current transport services and facilities, enhancing multi-modal services, greening transport operation and providing dedicated services (such as the "freight village" concept). Such action is thus oriented to improve the quality of logistics services, in order to prepare them, among others, to fully exploit the future opportunities given by infrastructural enhancements expected in the mid-long term.

B. PORT AS DIGITAL HUB

PoWER ports consider **digital transition** as a relevant short-term perspective, aimed to enable and fertilize the uptake of development actions across all the other pathways. While digital infrastructures should be enhanced according to Evolution Pathway A, ICT services and systems would offer a decisive contribution on two different lines of innovation:

1. **optimization and enhancement** of existing processes, such as ports logistics and communication;
2. **launch of new actions** addressing further strategic topics, such as waste management, energy efficiency, automation and 4.0 industry.

C. PORT AS SUSTAINABILITY HUB

PoWER ports consider sustainability as a relevant strategic perspective and identify **energy and environment** as two prior fields for increasing the sustainable development of port operations and for triggering port-based innovation. This Evolution Pathway has a threefold time horizon, based on short, mid and long term perspectives.

The long-term perspective is connected to the construction of relevant energy infrastructures (connected to Evolution Pathway A) s. a. LNG terminals, able to stimulate the activation of high level services, businesses and investments.

In the short-term perspective, PoWER ports **should become the showcase** of a wide range of available technologies and processes connected to energy efficiency and sustainability (from RES to alternative fuels, from waste management, including sea waste, to recycling, from EE measures, including smart grids, nZEB standards and lighting, to pollution reduction measures, etc.) with the twofold aim to directly contribute to the ports activities' enhancement, as well as to raise awareness on the potential of such themes for the ports' long-term investment and development strategies.

Furthermore, PoWER ports **should also become the testbed** of innovative technologies and processes in both sectors (from hydrogen power to biofuels, from innovative RES to circular economy models, from green transport to green shipping, etc.) with the twofold aim to stimulate port-related research and innovation activities, to expand the showcase setting to emerging or future technologies, and to prepare the ground for their full-fledged development and uptake in the mid-term, so to pave the ground now for a competitive advantage to be gained tomorrow.

By coupling energy and environment fields in one Evolution Pathway, PoWER ports aim at becoming innovation drivers at a regional scale level, as well as pivotal centres for the generation of structural synergies between blue and green growth.

D. PORT AS ECONOMIC HUB

PoWER ports pursue their evolution into economic catalysers at local and territorial scale and envisage two main fields on which to foster the development of economic activities.

The first field is tourism, where objectives set in LSOs vary from port to port, but generally agree to pursue the following main improvements:

- **touristic facilities** (e.g. marina, restaurants, passenger terminals, etc.);
- **touristic offer and services** (e.g. fostering nautical tourism, connections with inland or onshore touristic destinations, cruise ships stops, also in view of deseasonalisation, etc.);
- **tourism logistics** (optimization of touristic flows).

The integration of these three layers will provide a relevant contribution to expand touristic season, turning ports into touristic destinations themselves, as well as into gateways for exploring the natural and cultural heritage of the city and its territory.

The second field is the role of port as a promoter of territorial economy, intended, at least, at a regional-scale level. On one side, the facilitation of trading operations allowed by the combination of the PoWER Evolution Pathways will boost the export potentialities of local enterprises and supply chains, favouring the setting up of joint initiatives. On the other, the role of port as a touristic hub will favour the increase in the demand of local goods from tourists, especially in the framework of an enlarged concept of knowledge-based tourism aimed at a comprehensive valorisation of local culture and cultural heritage in all their aspects. To this extent, the relevance in the future of the cultural and creative businesses in close connection with evolved tourism and integrated branding strategies has been underlined. Since tourists have evolved into one of the best testimonials of a territory abroad, this may also be capitalized into strategies of foreign markets penetration.

The timeline of this Pathway closely depends on the implementation of preliminary actions and measures coming especially from Pathways A and B

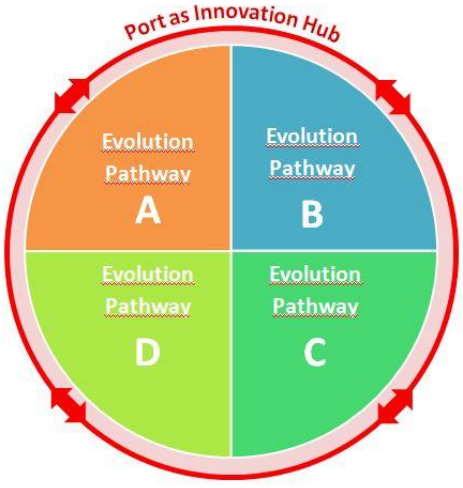
Overall Strategy time framework

	Time range		
Transition Pathways	**Short**	**Medium**	**Long**
A. Port as Logistic Hub			
B. Port as Digital Hub			
C. Port as Sustainability Hub			
D. Port as Economic Hub			

4.2 Reframing the PoWER Innovation Hub concept

Other transversal topics (see Annex 2) were individuated in the Local Strategic Outlooks in relation to the further elaboration of the Innovation Hub concept, which, in the light of the experience carried out during the project implementation, is pivotal for the architecture of the PoWER project.

For this reason, such topics have not been clustered into a further Evolution Pathway, but are considered together as the framework for the **"Port as Innovation Hub"** to be intended as an essential pre-condition upon which the fruitful, effective and integrated pursue of all Evolution Pathways should be based.



In fact, the Innovation Hub, by introducing a persistent and inclusive innovation process, is aimed at preparing the breeding ground for stimulating the joint achievement of ports' innovation at the human, social and institutional level.

In this context, on one side, by signing the **agreements**, the stakeholders intend to pursue the concrete realization of the innovation projects related to energy-oriented themes individuated in the scenario; on the other, by subscribing **protocols**, the relevant actors of the area will pursue the implementation of the strategy, by working out successive thematic scenarios which will progressively compose an organic framework for the rise of the Innovation Hub. This will allow to deeply affect and innovate actual planning and decision making processes, according to a "circular innovation chain" logic.

Rather than striving to produce an ultimate definition for the Innovation Hub, it seems more sensitive to work on **a possible taxonomy of such a concept**, through which to describe semantics, expectations and objectives, as emerged in the reflections carried out by PoWER partners during the project. Such work is synthesized in the following table, and allows to get an inspiring overview on the overall outline of the PoWER Innovation Hubs; in the first column the key-concepts of the taxonomy are listed, followed by the objectives associated by PoWER ports to each of them. Finally, a correspondence is produced between the Key-concepts and the framework of actions and approaches of the PoWER Methodology.

The PoWER Innovation Hub taxonomy		
Key-concepts	Related objectives	PoWER tags
Systemic vision	Port system is not limited to port areas: it involves a wide range of infrastructures, actors, processes and relationships, which should be investigated, understood and managed as a system.	Needs mapping
PA's enhancement	PAs should evolve the capacity to facilitate the development of robust strategic visions for the future port evolution.	Foresight
Stakeholders' engagement	Structural engagement in the decision making and planning of relevant stakeholders from the Triple Helix model, that are Public Authorities (with special reference to Port Authorities and local Municipalities), Businesses (of any kind), Cognitive Institutions (Schools, Universities and Research Bodies).	Networking
Open planning	Definition of shared strategies and plans according to an open involvement approach that should include, at different levels, stakeholders, employees, customers, and the local community.	Co-design
Partnering	Establishment of public-private partnerships as way of implementing ports development strategies and plans.	Matchmaking Protocols Agreements
Internationalization	EU networking and projects for the exchange of best practices and for the implementation of single actions of the ports strategies (both material and immaterial).	EUSAIR framework
Up-skilling	Empowering key actors through the acquisition of crucial competences and behaviours necessary to drive the innovation (e.g. digital, technical, management, etc.).	Innovation Supply Chains

4.3 Strategy Evolutionary Dynamics

The framework outlined in the previous pages allows a further level of synthesis, aimed at drawing out **the general dynamics underpinning** the 4 Evolution Pathways, and to illustrate comprehensively the evolution route of ADRION ports into Innovation Hubs. In particular, two general dynamics have been detected:

- **Inwards dynamics**, regarding the (re)connection between port, city and territory;
- **Outwards dynamics**, regarding the transnational (re)connection of ARION ports.

Such dynamics are duly described in the following tables.

INWARDS DYNAMICS
The PoWER Strategy considers the role of ports as drivers of innovation and development for the city and the related territory at the regional scale of utmost importance. The reconnection between the port, the city and the territory is pursued according to the following main lines of action: • **strategic reconnection:** the upgrade of ports into economic hubs will allow creating or strengthening relations between ports, cities and territories, generating a demand for coordinated strategies, policies and services extended to many economic areas, from the tourism-related ones, to local productions, up to cultural and creative businesses; • **immaterial reconnection:** engagement of local and territorial actors of the Triple Helix in the co-creation of scenarios and strategies and in the connected establishment of partnerships for their implementation, will innovate planning and decision making approaches of ports in the direction of a higher opening to local communities; • **environmental reconnection:** integration with local infrastructures, enhancement of logistics and achievement of environmental goals will allow to reduce the port impact on the city, thus creating the conditions for a progressive re-taking of the port by the city life; a crucial role will be played by actions aimed to the reuse of dismissed port areas and facilities with an urban value, as well as by the reduction of transport and traffic burden generated by port operations; • **thematic reconnection**: the differentiation of services offered by the port in its role of touristic hub as well as a of showcase and testbed of innovation, by enhancing the urban sphere of ports, will generate osmotic relations with the city, allowing for a smoother transition between the two realms and paving the way for further opportunities of exchange and development.

OUTWARDS DYNAMICS

The PoWER Strategy, through the combination of the Evolution Pathways described above, will empower a deeper penetration of PoWER ports into wider-scale trading routes. The expression by of the each PoWER ports of their local strategic outreach (*) opens to the opportunity of establishing a close cooperation among them, in view of the potential transformation of the ADRION ports into an integrated logistics ecosystem. Creating such ecosystem will enable ADRION ports to foster, in the mid-long term, the redirection, across the ADRION area, of good flows traditionally directed towards the Northern Europe ports, according to these two general dynamics:

- **Inbound flow:** from and to Central Europe, Italy and the Balkan sector;
- **Outbound flow:** from and to relevant transnational markets, with special reference to the Mediterranean/Black Sea area, and the Eastern ones.

This evolution would allow PoWER ports to leverage on their positioning in relation to the dominating trading routes, and to take on a new strategic placement in the world's globalized dynamics. Such a trend is already ongoing, as testified by the activation of the NAPA (North Adriatic Ports Association), which encompasses Ravenna, Venice, Trieste, Koper and Rijeka, and by the existing cooperation between Igoumenitsa and Bari, and could be greatly enhanced by the establishment of the Innovation Hubs Network, and by the successful implementation of the PoWER Strategy.

(*) Specific projections expressed by PoWER ports. Durres: regional markets in Northern Macedonia and Kosovo. Igoumenitsa: Greece's western gate to the Balkans. Ravenna: trans-regional outreach in Northern and Central Italy. Rijeka: doorway to Northern Balkans. Brčko: doorway to the Danube area. Bari: trans-regional outreach in Southern Italy.

5. Wider strategic context of the PoWER Strategy

PoWER gathers both sea ports of the ADRION area (Ravenna, Bari, Rijeka, Durres and Igoumenitsa) as well as inland port cities (Brčko and Novi Sad) which form the joint between the ADRION and the DANUBE area. Hence, PoWER project constitutes a hinge between the EUSAIR and EUSDR strategies, which are both deeply addressed by the project, as well as other relevant EU strategic documents.

In particular, PoWER is contributing to EUSAIR on the following Topics:

- **Topic 1.1: Research, Development and Innovation platforms.** ICT Platform to support the PoWER Strategy will boost Research, Development and Innovation activities on themes to be focused during the project (e.g. clean sea shipping to foster blue tech and green tourism). **Macro-regional cluster development.** PoWER aims at building the IHN as a transnational innovation system for empowering relevant sectors of the ADRION area smart growth. **Promoting start-ups.** By creating connections between enterprises and research PoWER will favour knowledge transfer among key stakeholders.
- **Topic 1.3: Institutional capacity.** PoWER aims to sign protocols among Ports to implement the IHN; public bodies will be involved to share common understanding and to jointly design and plan future actions. **Data and knowledge sharing.** PoWER aims to realize a research-driven innovation process, supported by the platform; this will allow for a thorough data and info dissemination among general public, a deeper engagement of stakeholders and a coordinated control of PAs on projects advances. **Maritime skills.** During local processes key actors will individuate the opportunities connected to energy-oriented as well as other themes for fostering innovation, with a direct impact on jobs and skills empowerment of workers, technicians, professionals. **Citizen and business awareness and involvement** [not aligned]. PoWER promotes people awareness regarding: contents (EE and RES related, as well as other technologies), behaviours, skills and competences, collaborative capacity to connect sectors into innovation supply chains
- **Topic 2.1: Clustering port activities. Harmonisation and cooperation** are 2 leading assets of PoWER for delivering smart, improved & attractive processes/services.
- **Topic 2.2: Developing the WBCN (Western Balkan Comprehensive Network).** Cooperative experience within IHN will feed the WBCN, as to set IHs as nodes of the TEN-T corridor.
- **Topics 4.1: Fostering Adriatic-Ionian Cultural Heritage / 4.2. Expanding the tourist season.** PoWER aims at acknowledging proto-industrial architecture in port areas, where to activate innovation-linked functions, able to extend and integrate the idea and the timing of touristic flows.

PoWER is contributing to EUSDR on the following Areas and Actions.

- Priority Area 2 (EE and RES);
- Priority Area 7 (cooperate in implementing the Innovation Union initiative; stimulate the emergence of innovative ideas using Living Labs);
- Priority Area 8 (foster cooperation & exchange of knowledge between SMEs, academia and public); PA9 (foster cooperation between stakeholders of labour market, education and research, policies; support entrepreneurship);
- Priority Area 10 (improve the trust of citizens and stakeholders. in PAs).

Moreover, PoWER addresses the H2020 flagship "Innovation Union" on the following themes:

- Knowledge (creation of business-academia collaborations; creating a proper environment for research);
- Good ideas to market (attracting innovative businesses and private investments by linking schools and Universities to research);
- Regional and social benefits (integrating RIS3 as means for efficient and synergic use of structural funds and private investments, and for fertilizing RIS3 in IPA regions; social innovation through gaming approach, and by bridging ideas to business/research);
- Innovation partnership (creation of Innovation Supply Chains through connecting education, research, enterprise and PAs).

In this framework, PoWER results will enable IHN to implement further H2020 projects on the basis of its results. In particular, PoWER energy-oriented approach will contribute to the 20-20-20 targets, as reinforced by the COP21 agreement [EU COM (2016)110].

Finally, EU COM(2013)295 individuates Ports as engine for growth: PoWER complies with its directions, supporting joint policy making, collaborative approaches and jobs empowerment, and integrating IHN within TEN-T nodes (PoWER EU sea ports belong to the short list of ports of the Core EU Network and Durres will be a crucial node of EU PAN corridor 8). The centrality of cities for EU growth is also recognized in the path towards the pact of Amsterdam (EU Urban Agenda): pursuing urban relations between Ports and Cities is an essential feature of PoWER.

Basing on this background, a synthesis table of the main correspondences between EUSAIR, EUSDR and PoWER Strategy has been compiled, which is showed in Annex 5.

CONCLUSIONS

The PoWER project worked on transforming of the multi-layered challenges featured by modern ADRION ports, starting from the energy-oriented ones, into an opportunity to integrate, cross-fertilize and empower the innovative energies of a territory, by means of the collaborative processes that have been carried out in the pilot port areas.

All the results described above are not limited to frame a shared Strategy for PoWER ports: they mirror the pursue a specific and shared identity, to be established upon the common features inherited from a long history, which claims for the ADRION ports to preserve and recover their nature of mid-sized urban ports closely interacting among each other, deeply embedded in their cities life, routed in their regional dynamics, and projected towards long-range relationships. The PoWER Strategy is coherently striving to foster and enhance such an identity and vision for the future, and to translate it into a dynamic perspective able to mould an autonomous development model for the ADRION ports with respect to the great global ports and port cities, and to formulate a clear mission for the cooperative framework of the Innovation Hubs Network.

Triggering the institutional commitment to this Strategy implementation through the signature of the PoWER protocol will be the last step to be achieved within the framework of the EU funded PoWER project and, at the same time, the first step for initializing a deep transnational cooperation aimed to effectively pursue the evolution of the ADRION ports into a well-connected network of Innovation Hubs.

Annex 1 - Baseline Strategic Framework

Legend

Port Priorities
Common Themes and issues

Individual common strategic issues for PoWER Strategy							
N°	**Strategic Theme and issues**	**Port of Bari**	**Port of Ravenna**	**Port of Brčko**	**Port of Rijeka**	**Port of Igoumenitsa**	**Port of Durres**
1	**Better planning system**	• better communication with port authority • better planning system for urban logistics with City of Bari					• create new KPIs for measuring performance ensure employee involvement • achieve a better integration of processes and system • ensure faster communication of data with other port partners
2	**Information Communication Technologies**	• completing the Port Community System; • enhancement of systems to support security checks; • interconnection with external ITS systems • smart port	• smart port; green port • digital transition	The port as a showcase of implementation of energy and environmental related technologies: • further development and transformation • additional revenue • testing and promoting of innovative technologies	• introduce new technologies that improve building performance		• simplify and standardize transport procedures • implement Automatic Identification Systems • implement intelligent Tracking Systems

3	**Increased utilization of port space** **Infrastructure** **Logistics**	Redevelopment works and docks for the docks descanted to ferries, ro-ro, motorway of the sea and cargo: • maintenance and deepening of depths, rehabilitation and upgrading of docks and defence works • enhancement and upgrading of passenger maritime stations	- logistic: multimodal transport of maritime goods	Expansion of port activities through development and modernization of Brčko port infrastructure: • increase of traffic flows • regional economic growth • greater storage in port • faster and easier trading	• extension of the container terminal operating area to accommodate larger full container vessels (dredging of 130 m of quay over berths to support the docking of vessel up to 400 m; and additional dredging of 438m of quay to a depth of 16,5m) • reconstruction and establishment of a passenger terminal (cruise) • reconstruction of the port infrastructure and suprastructure	• infrastructure for e.g. LNG • integration into railway networks-creation of new 'transport corridors' • port as logistic Centre 'Igoumenitsa Freight Village' • provision of dedicated services of transport, storage, management and distribution of goods • increase of capabilities to accommodate larger passenger and cargo ships-expansion 'Phase C' • infrastructure work (road network) and administrative procedures to interconnect with Customs Control at Mavromati, Thesprotia, to facilitate trade with Albania • Igoumenitsa as a terminal for cruise ships journeys • creation of marina-short distance cruises in the Ionian	• establish satellite terminals for containers • reorganize port space to increase utilization

4	**Increased Productivity of Transport**	• to promote 'green' mobility within ports with the spread of electric or methane cars; electric bike and bicycle lane • to support and direct dealers and operators to launch similar energy efficiency policies for their activities and equipment		• Rehabilitation and modernization of the Sava river waterway: • better business oriented port • employment • transport & traffic improvement • eco improvement • market expansion			• optimize trips and truck utilization • transfer mora cargo towards rail transport
5	**Funding Strategies**	• use of regional funds and EU funds		• use of regional funds and EU funds • identify areas of interest for regional cooperation			• identify the priorities of the Government's and the EU, try to adapt to those priorities • identify areas of interest for regional cooperation • identify possible local and regional partners that could be involved in overarching projects
6	**Energy-Efficiency** **Management system** **Environment** **Energy-Efficiency** **Management system** **Environment**	• improvement of state owned building to support Operations and Institutions • energy efficiency and interventions aimed at improving the quality of the port environment • reducing pollution: policy of green port (water quality, management of port waste) • port point for LNG	• green port: climate change, air quality, water quality, waste collection and management • circular economy: efficiency of building durability performance and waste valorisation	Increase of energy efficiency can be achieved by following: • reducing energy demand, • using renewable energy sources, • retrofitting of buildings, • using smart solutions, • introduction of new services, • establishment of the energy management system,	• energy renewable sources • Key indicators (KPI) for the energy measurement • create reliable systems for collection and analysis of data • introduce energy control system and system for renewable energy; • introduce new equipment which will be energy efficient;	• creation of Energy Hub for distribution of LNG to the mainland • common initiatives and greater interaction with local authorities in the area of waste management and energy saving • enhance the role of the port as a demonstrator pilot for new initiatives in environment and energy	Energy Efficiency Management System: • perform Energy Audit • create reliable systems for collection and analysis of data • create energy control systems

				• using energy efficient equipment and • continuously conducting research and development	• LNG terminal on island of Krk.	• developed plans and procedure regarding environmental and energy management	
7	**Reduction of diesel use**	• reduction of diesel use improving the green port strategies					• electrification of diesel-powered cranes • diesel substitution with natural gas • shift operations away from diesel-powered equipment to electrical-powered equipment • minimize horizontal activities (reach stackers)
8	**Shore-to-ship power**	• electrification of ferry docks for ground power (construction of a cold ironing plant for docks for mooring of ropax ferries on community lines)					• identify short term and long term obstacles that prohibit shore-to-ship power • identify power network requirements for shore-to-ship supply • identify government and EU policies and incentives that can make shore-to-ship viable commercially • pair Shore-to-ship with RES generation

9	**Efficient Lighting technologies**	• to improve the energy efficiency of lighting system of the docks and the internal roads network		• lightening system can be improved by replacing the existing lighting with modern LED lighting.			Efficient lighting Technologies: • identify the appropriate levels of indoor and outdoor lighting • Identify areas where lighting can be automated • identify the appropriate LED fixtures that fit the lighting purpose • identify reliable and reputable suppliers of LED lighting equipment
10	**Improvement of Building Envelopes**		• re-activation of areas and buildings		• make a complete renovation of the existing infrastructure and suprastructure of the buildings among Rijeka's port		• perform energy inspections of buildings • identify measures that may improve building performance • apply new technologies that improve building performance
11	**Renewable energies**	• increase the use of renewable sources for buildings (photovoltaic panels)		• increase the use of renewable sources for buildings (heat pumps, photovoltaic power plant)	Introducing new energy renewable sources: • introduce Key indicators (KPI) for the energy measurement • create reliable systems for collection and analysis of data • introduce energy control system • introduce systems for renewable energy	• point of reference for demonstrating innovative project based on alternative fuels (e.g. Hydrogen)	• analyse real power demand in the future • identify all available spaces where renewables can be installed • undertake preliminary feasibility assessments for wind and wave energy • coordinate with other port operators for cooperation in the area of renewables

					• introduce new equipment who will be energy efficient • LNG terminal on island Krk (not included in port area)		• conduct, technical research, experiments, pilot projects and tests of renewable energy technologies • RES (Photovoltaic systems)
12	**Promotion**	• improvement for tourist activities - green tourism		The port as a promoter of local economy: new tourism activities: • quality of life improvement • modest profit • image improvement	• Redirection of the World Maritime Container Traffic Flow Far East-Europe from Northern sailing route via English Channel to Southern sailing Route via the Adriatic Sea as a shorter navigation route compared to the ports of northern Europe • creation of single area of North Adriatic container port system	• port as promoter of local economy: trade with Albania • promoter of local economy: new tourism sustainable activities • role as Greek western gate to Balkans	
13	**Partnership in EU projects**	• innovation and research projects; better planning for urban policy	• several EU project linked with before priorities: reactivation of buildings, work and skills, logistic, sea shipping, waste management, circular economy, air quality • innovation and research under the UIA program for Innovation of Urban Policies and new EU programming in 5 mission area			• participating in network and collaborations with universities and research centres in Greece • preparation of development plans and prep-studies • know-how of port personnel	

14	**Other of importance for port**	• connection to infrastructure networks outside the port area • towards blue economy	• work and skills	The port as a part of the word's transport community: • to serve as an important entry gate • wider interconnection	• further development of local economy, visiting touristic attractions of the region etc. because of passenger cruise terminal	• infrastructure of motorways in Greece	
	TIME HORIZON	2020-2030	2020-2027	2020-2040	2020-2040	2020-2030	2020-2045

Annex 2 - Final Reference Table

STRATEGIC TOPICS TAKEN FROM THE LOCAL STRATEGIC OUTLOOKS (LSOs)									
LSO	PoWER PORT	TOPIC A	TOPIC B	TOPIC C	TOPIC D	TOPIC E	TOPIC F	TOPIC G	TRANSVERSAL TOPIC
1	BARI	Port as energy node (e.g. alternative fuel, LG centre) - long term	Energy Center: improvement of public buildings, TES, EE measures, actions to contrast pollution - short term	Integration with large scale infrastructures (transport, energy, ICT): link with Topic A	Logistics services (connection with the green economy, port communication system)	Expansion of port facilities (link with Topic D): - drainage, docks upgrading, defence works, enhancement of passenger maritime stations.	Promotion of local economy: fostering trade in favour of local businesses	Promotion of local economy: fostering tourism (e.g. cruise ships)	Extended partnerships
2	BRČKO	Intermodal gate (river, rail, road), faster and easier trading	Expansion and modernization of port infrastructures; new container docks, expanded storage capacity	Sava River waterway modernization	Promotion of nautical tourism (marina, restaurant, and innovation centres: this is a second stage development)	Port as a showcase and demonstration site for Energy and Environmental technologies	New container terminal and Sava waterway will allow BIH “opening to the world” by empowering exporting companies to trade their goods easier and faster on the world market		Community engagement
3	DURRES	Better planning (e.g. expanding engagement and partnerships)	ICT development (e.g. traffic management, terminal operating systems, etc.) - link with Topic A	Optimisation of available spaces: satellite terminals for containers and reorganization of existing areas	Optimisation of transport productivity (rail and trucks) also through ICT - link with Topic F	Energy Efficiency management system for collection and analysis of data and create energy control system	Energy Efficiency measures (GHG reduction, ships-to-shore power, efficient lighting, NZEBs, RES s. a. photovoltaic, wind and sea		Extended partnerships

							energy): demand analysis feasibility, studies, coordination with other Pas, pilot projects and testing		
4	IGOUMENITSA	Port as Energy node and point of reference (e.g. alternative fuel such as hydrogen, LNG hub) - long term	Port as energy and environmental centre (plans and procedure + pilot demonstrations of new initiatives, e.g. waste management, RES, electric mobility, lighting, etc. including ICT to make users proactive - short term	Integration with infrastructures (roads and motorways, railways, energy) link with Topic A - long term	Logistics services: "Freight Village" including services for transport, storage, management and distribution of goods.	Expansion of port facilities (link with Topic D): larger cruise and cargo ships, LNG hub	Promotion of local economy: fostering trade with Albania (e.g. connection with Customs Control at Mavromati - Thesprotia)	Promotion of local economy: fostering tourism (e.g. new marina, Thesprotia Region and Corfu, cruise ships)	Extended partnerships
5	RAVENNA	Digital Transition (enabling digital infrastructures and services)	Air and water quality	Logistics (multimodality, trade of regional goods, touristic flows)	Maritime transport (nautical sector, alternative fuels)	Circular economy (waste management and reuse)	Reactivation of buildings and areas, including energy efficiency of buildings	Jobs and skills	Extended Partnerships, EU Projects
6	RIJEKA	Extension of the container terminal	New passenger terminal (also for cruises)	Reconstruction of port infrastructures (intermodality)	Logistics for redirecting goods flow to central Europe	RES resources + energy efficiency of buildings (ICT: system for data collection and analysis, control system)	LNG terminal at Krk island	The new passenger cruise terminal will enable further development of the local economy, visiting touristic attractions of the Region etc.	Partnerships in EU projects

Annex 3 - Shared Strategic Topics

		SHARED TOPICS CLUSTERED FROM THE LOCAL STRATEGIC OUTLOOKS							
		1	2	3	4	5	6	7	8
LSO	POWER PORT	Integration with infrastructures	Expansion or optimisation of operational spaces	Enhanced logistics and multi-modality	Digital Transition	Environmental protection and circular economy	Energy	Tourism	Promotion of local economy
1	BARI	X (Energy and Transport)	X (Expansion)	X (Green economy)	X (Port communication system)	X (Contrast to pollution actions)	X (Alternative fuels, LNG, EE)	X (Cruises)	X
2	BRČKO	X (Waterways)	X (Expansion)	X (Intermodal gate)	---	X (Environmental demonstrators)	X (Energy demonstrators)	X (Nautical tourism)	X
3	DURRES	---	X (Optimisation)	X (Transport productivity)	X (ICT services)	X (reduction of diesel use)	X (EE management system, GHG, ships-to-shore power, NZEBs, RES, lighting)	---	---
4	IGOUMENITSA	X (Energy and Transport)	X (Expansion)	X (Freight Village)	X (Waste management)	X (Demonstrator, waste management)	X (Alternative fuels, LNG, RES, lighting, electric mobility)	X (Marina, touristic hub)	X
5	RAVENNA	X (Multimodal infrastructure)	X (Reactivation)	X (Multimodality)	X (Digital infrastructures and services)	X (Air and water quality, waste management)	X (Alternative fuels + EE)	X (Touristic flows)	X
6	RIJEKA	X (Port infrastructures)	X (Expansion)	X (Redirecting flows)	X (EE)	---	X (LNG hub, RES + EE)	X (new passenger terminal)	X (linked to tourism)
	TOTAL	5/6	6/6	6/6	5/6	5/6	6/6	5/6	5/6

	ASSUMED RANKING	1	2	3	4	5	6	7	8
1	BARI	?	?	?	---	A		?	?
2	BRČKO	C	A	B	---	A		A	---
3	DURRES	n.a.	A	B	B	---	A/B/C	C	
4	IGOUMENITSA	C	A	B	---	A	A/B/C	B	C (linked to infrastructures)
5	RAVENNA	A		A	A	B			A (linked to infrastructures)
6	RIJEKA	B	A	b	---	---	C	A	---
	TOTAL	B/C	A	B	A/B	A/B	A/B/C	B	B

Note: A, B and C levels used for this ranking were assigned by basing on the scattered information of different kinds (e.g. explicit ranking, direct statement, context derived) present in the Strategic Outlooks, and have to be intended as follows:

- A: short term/most relevant,
- B: mid-term/average relevance
- C: long term/lower relevance

Annex 4 - Regional Energy Innovation Recommendations

All PoWER pilot sites have received a template for collecting information, which considered two main fields:

1 **Category:** This field classifies and clusters the collected information under broader categories that signify the nature of the identified recommendation. This classification helps to determine the general direction along which a path forward should be provided. In order to have a generic approach the following categories have been considered:
   a) Technical;
   b) Process;
   c) Organisational;
   d) Regulatory;
   e) Financial;
   f) Policy;
   g) Other (if any).

2 **General needs:** A broad list of needs, also used within the framework of project activities for the facilitation of the "Call for Solutions" activity has been considered. This can be considered as general axes, verified by the project's previous activities, along which specific recommendations can be provided. A total of 14 needs has been considered as follows:
   a) Supply of energy to ships;
   b) Efficient distribution of LNG;
   c) Energy data collection and analysis;
   d) Microclimate improvement;
   e) Facilitation to virtuous behaviour;
   f) Spaces and/or logistics rationalisation;
   g) Distribution of compressed air and fluid;
   h) Renovation of existing HVAC systems;
   i) Three-year payback period;
   j) Roofs to produce energy;
   k) Lighting /equipment management;
   l) Lowering peak power;
   m) Implementing RES production;
   n) Zero energy mobility for tourists.

Forty recommendations of gaps and needs have been gathered in total.

The great majority of these needs and gaps are classified as “Technical” (57,5%), followed by “Organisational” (20%) and “Policy” (10%). Interestingly, no recommendation under the category “Financial” has been received.

In terms of needs, most of the needs are related to the “implementation of RES production” (16,67%) followed by “spaces and/or logistics rationalisation” (9,80%) and “Energy data collection and analysis” (8,82%).

The above statistics reveal that the ports under study:

- refer to themselves as lagging in terms of new technologies for energy saving application on a technical level;
- highlight a need for better operations’ management and organisation, possibly leading to a reduction of energy consumption as part of their operating expenses;
- appear to focus mainly on areas seemingly producing more effective results in a shorter time frame;
- appear to disregard needs and gaps that are strongly linked to central (government) administration or financial institutions - which provide them a degree of inflexibility and dependence - with actual results produced on a longer time frame;
- detected a need to efficiently implement renewable energy applications for which a great potential exist;
- seem to have an imminent need to exploit spaces and rationalise the logistics procedures, which could also have positive energy saving results (e.g. use spaces for RES production);
- showed concern over energy data management; ports identify the need to collect more data and apply ICT in order to design and implement energy efficiency measures.

The 40 recommendations emerged are listed in the tables below. They refer to the 14 needs detected as a starting point of the process implemented, namely:

1 Supply of energy to ships during the docking phase in the port;
2 Efficient distribution of LNG;
3 Energy data collection and analysis;
4 Microclimate improvement;
5 Facilitation to virtuous behaviour;
6 Spaces and/or logistics rationalization;
7 Methods and solutions for an effective distribution of compressed air and refrigerant fluid to make production processes more efficient;
8 Methods for the complete renovation of existing HVAC systems;
9 Three-years payback period;

10 Roofs to produce energy from the bound or dated buildings;

11 Efficient lighting/equipment management;

12 Lowering peak power and Excessive reactive electricity;

13 Implementing RES production;

14 Zero energy mobility for tourists.

PROCESS 1	
ID	Bari Rec. 1
Title	Port Regulatory Plans (2017-2020 POT)
Needs	1, 2, 3, 13
Description	The Port Energy Plan must allow private operators that they operate in port to have access to benefits for the green reconversion of their production processes and the efficiency of the structures for energy purposes. From the infrastructural point of view, it will be necessary to intervene on the electric distribution network, currently integrated with the adjacent urban area, to allow the creation of a single electricity system that ensures economic benefits for private and public users located within the port areas, also identifying energy production systems for self-consumption compatible with the urban environment.

PROCESS 2	
ID	Ravenna Rec. 3
Title	Structured training on Energy Efficiency into Ports
Needs	5
Description	Structured training and organization both at public and private level have to be developed and implemented on long term in order to foster the awareness raising on energy efficiency issues and energy management procedure into Ports framework. Since behaviour can influence the energy demand/savings up to 15% of the overall consumptions, a strategic action at this level can be pushed also through incentives on dedicated training and capacity building on these topics.

POLICY 1	
ID	Bari Rec. 2
Title	New process regulations for EE in ports
Needs	1, 2, 6, 13, 14
Description	The aims are: • redefinition of the territorial areas • increase of ferries traffic and cruise port traffic, infrastructural systems • and productions suitable and useful equipment and services avoiding the • abandonment of open spaces that can lead to phenomena of social • degradation and crisis of public safety, but also from the degradation and • age of buildings • Port-territory integration system and blue-growth actor port system a valid • usability of public spaces; • an environmental sustainability of transformations; • a means to build an attractive image of the city and territory on a large • scale. • Improvement of the port-territory relationship • Development of territorial marketing actions • Process of sustainable maritime tourism • Improvement of services and reception of transfers in transit.

POLICY 2	
ID	Bari Rec. 4
Title	A new policy: reduce of pollution in the port
Needs	4
Description	The port area of Bari should be improved by reducing pollution and thus reducing the bad smell of algae, but also by educating citizens not to pollute with waste. It requires services and attractions for young people, such as an aquarium, a water park and interactive museums, green spaces and monuments. Need to implement the area used to accommodate more cruise ships. The recommendation provides for actions targeted with the objective of spread the knowledge and the culture of protection environment and risk management to the territory, with particular reference to the system coastal and port. The forum among the students was of a technical-scientific nature, regarding the protection of the coasts and the sustainability of the ports, a debate on the issues of environmental sustainability in ports, the management of dredged sediments, of the application of the new environmental legislation, ship traffic, development of engineering, technological innovation.

POLICY 3	
ID	Rijeka Rec. 2
Title	Redirection of the World Maritime Container Traffic Flow Far East – Europe from Northern sailing route via English Channel to Southern Sailing Route via the Adriatic Sea.
Needs	4,5,6,7,9
Description	The ultimate goal of cooperation among ADRION ports should be the creation of a single area of North Adriatic container port system. Several limitations have to be considered: port and hinterland connectivity infrastructure development (full implementation of block-trains and traffic network enhancements), and port terminals expansions providing access to Mega (20000 TEU) container vessels, - Mutual tendency of Adriatic relatively small, transit ports could positively influence the competitiveness and the size of the gravitational area, and therefore the transit cargo amount for European hinterland countries. Port of Rijeka has to maximize advantages of natural geographical traffic container flow which passes through the Adriatic sea, that represents the shortest sea and land connection between Far East ports and European ports.

ORGANIZATIONAL 1	
ID	Bari Rec. 3
Title	New financial regulations for EE in ports
Needs	4, 6, 10, 14
Description	The port area of Bari is a very varied area: on one side the old city and on the other the abandoned industrial areas. It is very important to define a seam between the port, the old city and the abandoned industrial areas. Therefore, it is very significant to redevelop these areas taking into account the needs of the entire city and the area that welcomes many tourists with the support of the public administration and port authority. Another important aspect is to reduce the costs of classic energies and implement new technologies for the use of renewable sources, in the in new regenerated areas.

ORGANIZATIONAL 2	
ID	Durres Rec. 1
Title	Energy-Efficiency Management systems
Needs	3, 13
Description	Durres Port should implement a proper Energy Management System, such as ISO 50001. This system is a voluntary standard, which prescribes steps and strategies for a suitable energy management system. This system is useful because it serves to analyse in depth the energy uses of the port and based on this analysis can identify different strategies and virtuous behaviour for energy efficiency. This system however requires a proper commitment by the port authority in the form of resources assigned for measuring, and evaluating energy use.

ORGANIZATIONAL 3	
ID	Durres Rec. 14
Title	Implementation of Intelligent Transport Systems
Needs	3, 6, 12
Description	Durres Ports should utilize available optimization tools such as Intelligent Transport Systems (ITS) that enhance operability and can lead to savings up to 15% or more depending on the baseline. The optimization tools anticipate yard traffic and container flows, and minimize crane and vehicle moves in the yard through sophisticated planning algorithms and better operational management systems. These systems will also contribute to minimize peak power.

ORGANIZATIONAL 4	
ID	Rijeka Rec. 3
Title	Reconstruction and establishment of a passenger terminal
Needs	4,6,11,14
Description	Passenger cruise terminal should have to be located as close to the city with good road connections for buses, taxi, etc. Sufficient depth of sea should be provided for the safety berth of passenger ships. Within a radius of 50-70 km there are a large number of touristic attractions that need to be valorised. It is realistic to expect a significant increase in passenger cruise vessels arrivals in the near future. All actions should be coordinated with city travel agencies.

ORGANIZATIONAL 5	
ID	Igoumenitsa Rec. 5
Title	Development of an overall energy management system
Needs	3,4,5, 8,11,12,13
Description	The basic idea is to create a central infrastructure for an overall energy management of the port operations. This requires the development of infrastructure of sensors and data logger systems which monitors the energy impact of various port operations. All information could be transferred through IT to a central station where overall decisions are made that affect (reduce) the energy impact of operations. The role of this centre is also strategic as it will serve as a planning operator for further investments in energy saving.

ORGANIZATIONAL 6	
ID	Igoumenitsa Rec. 6
Title	Proactive Energy Saving Behaviour
Needs	5
Description	Users of energy have a considerable role in efforts to reduce energy consumption. Patterns of use determine to a certain effect the energy profile of the organisation. Significant gains could be achieved e.g. in peak energy reduction by effectively shifting the energy use during the time. For this purpose, a framework of information flow of energy consumption measures should be developed coupled with advancements and introduction of smart devices in people's everyday lives. A dedicated campaign can be executed for port's employees as a pilot case. The effect of their work habits to the energy consumption could be optimised. They could use information through their mobile devices. The results could be used to run a broader campaign for all port users.

ORGANIZATIONAL 7	
ID	Brčko Rec. 2
Title	Establishment of the energy management system in port
Needs	3,5,9
Description	Currently the Brčko port lacks energy management, which represent the most efficient source of energy, in the wider sense. It reduces the need for energy, as well as environmental impacts and climate change. It manages the organization from the energy aspect and connects all energy-related activities with other activities in the organization. It also ensures continual improvement of procurement and energy utilization processes in the organization of any type. Empirical experience from energy audits in the industry show that introduction or implementation of organizational measures provided by the energy management system, significant energy savings of 15 to 20% can be achieved. Innovation can be triggered through the introduction of energy management systems, i.e. through the application of organizational measures. The gradual development of this organizational system will establish optimal measures related to the technical energy and technical-technological system, which enables investments with minimal risk and parallel development of the system of energy supply and energy transformations on the one hand and energy use in operations and for comfort. A successful and promising vision of Ports as Innovation Hub is a result of people's satisfaction and the proper management and authority system.

ORGANIZATIONAL 8	
ID	Ravenna Rec. 2
Title	Logistic improvements through Public/Private Stakeholders joint strategies development
Needs	6
Description	Supporting actions from an Organizational point of view have to be implemented in order to improve Logistic infrastructures and framework through Public/Private Stakeholders joint strategies development. To this extent, an integrated planning of governance at different levels (e.g. Municipality, Port Authority, Region, Private initiative Plans, etc.), has to be facilitated. An infrastructural shared strategy and plan have to be implemented in order to develop an effective and efficient logistic value chain. Indeed, Logistic is one of the most relevant key topics into Ravenna port with huge spill overs/relapses on Local and regional economy.

TECHNICAL 1	
ID	Bari Rec. 5
Title	Sustainability of the environment
Needs	1, 2, 7, 13,14
Description	Technology is increasingly focusing on interventions that enhance "green" programs in ports and armaments. The recommendation stands involving schools and cities, just to favour a more extended environmental culture. The European Union's environmental sustainability strategies are addressed with ever increasing attention to the blue economy, a powerful tool for guarantee well-being and prosperity. With the twofold objective of creating valid conditions for young people can create new jobs and while providing the economy of the sea regenerating lifeblood, through a prepared and qualified entrepreneurial class and attentive to the green. The economy of the sea has a significant multiplicative force. For every euro produced by the blue economy 1.8 are activated in the rest of the economy.

TECHNICAL 2	
ID	Bari Rec. 6
Title	Energy production on benches from renewable sources
Needs	1, 2, 13,14
Description	The recommendation consists in designing the benches of the port area of the city of Bari as generators of electric current. The bench seat can consist of a coloured photovoltaic panel that absorbs solar energy and transforms it into electricity, which can be used for public lighting in the area.

TECHNICAL 3	
ID	Durres Rec. 2
Title	Substitution of diesel mobile cranes with electrical mobile cranes
Needs	11
Description	Diesel mobile cranes in Durres are not efficient. The average level of energy consumption per box for horizontal activities in the last three years was on average 4.25 liters of diesel equivalent. Meanwhile, electrical cranes consume, on average, 7.9 kwh per move and the spread is narrower. This indicates that electrical cranes are in almost all cases more energy efficient than diesel ones- Therefore the recommendation would be to substitute of diesel mobile cranes with bus bar-powered RTGs equipped with online braking. Research indicates that they can reduce energy consumption by up to 60%.

TECHNICAL 4	
ID	Durres Rec. 3
Title	Shore-to-ship power
Needs	1
Description	Ports are increasingly conscious of emissions generated within them, which can strain the relationship with nearby communities. As a result, neighbouring communities are not inclined to allow port expansion. Shore power, consequently, is becoming more and more attractive to eliminates emissions from ships at berth, which are the biggest polluters at the port. Secondly, shore power increases the utilization rate of the equipment by ships, and consequently reduces the overall costs. This reinforces the appeal of shore power. Therefore, it is recommended the installation of shore power cable receptacles and the associated electrical management system. Since different ships have differing electric parameters it is recommended installation of power transformers and frequency converters to accommodate different ships.

TECHNICAL 5	
ID	Durres Rec. 4
Title	Use of biogas and natural gas instead of diesel
Needs	2
Description	Use of biogas and natural gas instead of diesel is advantageous, since they do not contain sulphur or heavy metals. When burned, they emit lower levels of CO2 compared to coal, diesel, gasoline, or liquefied petroleum gas (LPG). Natural gas, for example, produces 20% less CO2 than gasoline, and it is, therefore, considered the cleanest of the fossil fuels. Alternative fuels that may be available for Durres Port are biogas, and natural gas. Biogas is a mixture of methane, natural gas, and other gases produced from the decomposition of organic materials. It is produced naturally in landfills and from the processing of animal waste, sewage and crop waste. Meanwhile, natural gas can be provided in the form of Liquefied natural gas (LNG) and Compressed Natural Gas (CNG).

TECHNICAL 6	
ID	Durres Rec. 5
Title	Use of LED for warehouses
Needs	11
Description	With the advent of LEDs, a new alternative is available which, even though expensive, is vastly more energy efficient. LEDs use a small fraction (10% or less) of the energy required for incandescent lamps, and they last for 10 years, or more, which saves on maintenance requirements. The prices of LEDs have decreased sufficiently, so that it is now cost-effective for many warehouses.

TECHNICAL 7	
ID	Durres Rec. 6
Title	Automation and control of lighting
Needs	11
Description	The DPA should determine how much light is really necessary in the different facilities; and where is it needed the most. Automated warehouses, where there is little human activity, require much less lighting than a fully staffed facility. Timers or sensors can turn lights on or off when someone moves in or out some parts of the warehouse. Meanwhile, photo-sensors activate lamps automatically at dusk and turn them off automatically at dawn.

TECHNICAL 8	
ID	Durres Rec. 7
Title	Improving the insulation of buildings
Needs	6, 7
Description	Improving the insulation of buildings is a proven way to reduce both heating and cooling costs. Wall and roof insulation levels vary according to needs determined by the climate zone. Warehouses without insulation typically lose energy to the environment. Insulation can be spray foam or loose fill insulation. Spray foam insulation is more expensive, but twice as efficient. Loose fill is a compromise alternative that is easy to install in existing spaces, but still provides superior insulation. Doors also need to be insulated to reduce conduction losses. It is also important to properly insulate interior partition walls between semi-heated and conditioned spaces.

TECHNICAL 9	
ID	Durres Rec. 8
Title	Air Conditioning control and automation
Needs	6, 7
Description	Conditioning and ventilation systems are also a huge drain on energy if used indiscriminately. Not all areas of a building require climate control at all times. If a warehouse is automated or unoccupied much of the time, it is important to evaluate the level of air conditioning, which is really necessary to make the environment comfortable or to store the company's products. Programmable thermostats with time-clocks, setbacks, and demand control ventilation can be used to reduce energy requirements. Installing internet thermostats on remote unit heaters will enable monitoring and control of multiple units that may sometimes get left in the heating position even during the summer. Buildings should be divided into thermal zones with separate controls based on space functions.

TECHNICAL 10	
ID	Durres Rec. 9
Title	Heating recovery system, cooling, and ventilation management
Needs	8
Description	Regular maintenance of heating, ventilation, cooling, and refrigeration systems, including changing filters, is important for good operation and to avoid wasting energy. With heat recovery systems, exhaust heat from mechanical equipment can be captured and used for space heating. Heat recovery options include condenser coils or heat recovery for the hot water supply.

TECHNICAL 11	
ID	Durres Rec. 10
Title	Installation of photovoltaics
Needs	13, 9, 4
Description	Photovoltaic systems offer a number of opportunities for powering remote terrestrial applications, including battery charging for navigational aids, signals, telecommunications equipment and other critical, low-power needs. PV power systems for commercial uses, both for stand-alone, remote power and utility-connected applications.

TECHNICAL 12	
ID	Durres Rec. 11
Title	Microclimate Improvement
Needs	10, 13,14, 4, 9
Description	Install photovoltaic panels at parking areas, and roofs for charging transportation vehicles within the port and to improve microclimate during hot days. These installations can be used to charge local transportation producing zero energy mobility for employees or tourists. The energy generation systems should be analysed economically to assess their payback period.

TECHNICAL 13	
ID	Durres Rec. 12
Title	Installation of Wind power
Needs	13, 9
Description	Durres Port has a convenient position for installation of wind energy. Average wind speed in Albania is around 6 meters per second (m/s). Considering the installation of 850 kW of unitary power, it is possible to obtain a daily production of 2.6 MWh. The wind farm can be composed of small turbines that can be mounted at the side of buildings, which could provide 76.9 MWh per day. This may cover around 45% of the maximum capacity of the facility. The energy generation systems should be analysed economically to assess their payback period.

TECHNICAL 14	
ID	Rijeka Rec. 1
Title	Extension of the container terminal operating area
Needs	1, 2,5, 7, 13
Description	Adriatic Gate Container Terminal (AGCT), a subsidiary of International Container Terminal Services (ICTSI), has unveiled expansion plans at the Port of Rijeka in Croatia. The one-year expansion plan will enable the terminal to accommodate larger full container vessels. AGCT has drawn a blueprint for the expansion in association with the Rijeka Port Authority. The expansion includes a two-phase dredging scheme with the first phase fully approved. Under the first phase, the dredging of 130m of quay over berths one and two will be carried out. It will support the docking of vessels with a length overall of up to 400m. Work is scheduled to be completed by the middle of next year and will provide 438m of berth with a depth of 15m. As part of the second phase, additional dredging alongside the 438m of quay to a depth of 16.5m will be completed. Upon completion of both phases of work, AGCT will be able to accommodate vessels that have a capacity of 20,000 twenty-foot equivalent units (TEU), an overall length of 400m and a beam of 59m.

TECHNICAL 15	
ID	Rijeka Rec. 4
Title	Introducing new energy renewable sources
Needs	13, 4, 5
Description	Port of Rijeka currently does not use any renewable energy sources at the moment but the port authorities have a highly positive attitude towards renewable energy sources and energy efficiency issues. They are now in process of creating plans for replacing existing old equipment with new one who will be energy efficient.

TECHNICAL 16	
ID	Rijeka Rec. 5
Title	Reconstruction of the port infrastructure
Needs	5,8,11,12,13
Description	Perform the reconstruction and construction of capital transport infrastructure and facilities (e.g. building facade and bad state of thermal isolation).

TECHNICAL 17	
ID	Rijeka Rec. 6
Title	Reconstruction of the port infrastructure ad suprastructure
Needs	3,5,11,12,13
Description	According to the DIRECTIVE 2014/94/EU of the European parliament and of the council of 22 October 2014, on the deployment of alternative fuels infrastructure in article (20), The Trans-European Network for Transport (TEN-T) guidelines recognise that alternative fuels serve, at least partly, as a substitute for fossil oil sources in the energy supply to transport, contribute to its decarbonisation and enhance the environmental performance of the transport sector. The TEN-T guidelines require, with regard to new technologies and innovation, that the TEN-T is to enable the decarbonisation of all transport modes by stimulating energy efficiency as well as by introducing alternative propulsion systems and the provision of corresponding infrastructure.

TECHNICAL 18	
ID	Igoumenitsa Rec. 1
Title	LNG storage at the port
Needs	2
Description	The Igoumenitsa port is strategically situated at the western part of the country, serving as a gate to the West Balkans. As natural gas (NG) is currently promoted as a new source of energy in the region, the port can develop processes and infrastructure to be considered as a storage place for liquefied NG. This would increase its strategic role in the ADRION Area and offer new prospects for energy performance improvement and employability in the region. Last but not least, the existence of an LNG infrastructure open possibilities for producing other forms of energy vectors such as hydrogen to be used in fuel cells.

TECHNICAL 19	
ID	Igoumenitsa Rec. 2
Title	RES applications
Needs	12, 13
Description	Several opportunities for RES applications and development exist for the port of Igoumenitsa. PV installations for providing electrical energy can be utilised to reduce peak loads at the port, especially when combined with battery storage. Electrical energy produced by RES can also be used to serve an infrastructure for electric vehicles chargers, thus opening new prospects for greening the transport within the port. Innovative architectural designs employing building integrated PVs can be used.

TECHNICAL 20	
ID	Igoumenitsa Rec. 3
Title	New and efficient lighting equipment and management
Needs	11
Description	Lighting, especially exterior lighting, constitutes a significant part of the overall electrical energy consumption of the port. New lighting solutions could be applied. These could refer to the substitution of ordinary lamps with more technologically advanced solutions (e.g. LED) and the application of smart algorithms for lights management (e.g. controllable dimming based on occupancy, period of day, season etc.). Significant saving could then be derived.

TECHNICAL 21	
ID	Igoumenitsa Rec. 4
Title	Integration of BMS systems
Needs	3,4,8,11,12
Description	The port of Igoumenitsa is characterised by a fragmented approach as regards the collection of real-time energy data and their integration into existing building management systems (BMS). Nowadays, basic functions are implemented related mainly to the overall central operation of HVAC systems. However, the application of data logging and communication systems that convey real-time information can be used to produce an optimised result as regards the operation of heating and especially cooling, the main source of electrical energy consumption in the terminal buildings. Sensors collecting data of external and internal environmental conditions, occupancy rates, use of equipment etc. could transfer information to the BMS refining its response with regards the microclimate improvement with significant energy savings.

TECHNICAL 22	
ID	Igoumenitsa Rec. 7
Title	Smart/Electric mobility
Needs	14
Description	Energy consumed in the area of transport in the form of fuel energy is also an important factor for ports. Ports usually occupy vast areas of space, and internal transport is necessary to facilitate ordinary day-to-day operations. Electric vehicles supplied by energy provided by RES could be an option to substitute the energy and environmental impact of cars. More than that, ports serve as excellent pilot case candidates for offering clean transport energy solutions. Electric bikes could be offered for port visitors and tourists to be used around the city. The port could serve as a charging and parking station. In this way the port could lead the way for application of clean transport all around the city and the area.

TECHNICAL 23	
ID	Brčko Rec. 1
Title	Renewable energy technologies
Needs	4,10,13
Description	Since fossil fuels are finite it is necessary to develop methods of saving and efficient use of existing energy resources and introducing new energy sources and intensifying the work on refining and finding new alternative, renewable energy sources. Primary step is also to determine energy performance and energy consumption of facilities, set out achievable energy efficiency targets, define and adopt measures to increase energy efficiency. In the near future the Brčko port has to minimize the use of coal also due to strict EU policies which are transposed to BiH legislation through the Energy Community Treaty. This is driver for transformation of the port to an Innovation Hub. Many resources are available in the port such as space for demonstration of renewable energy technologies (roof of warehouses etc.), unused areas etc. Based on that, the port can transform into an innovation hub for renewables energy such as heat pumps, solar technologies - photovoltaic power plants, sustainable biomass etc.

TECHNICAL 24	
ID	Ravenna Rec. 1
Title	Data monitoring and acquisition
Needs	3, 9
Description	Supporting action to trigger data monitoring and acquisition campaigns through private companies and stakeholders in order to have a clear vision on consumptions and the awareness raising on the potential measures to be implemented. Moreover, in order to reach the abovementioned goal, a proper framework has to be built in order "to push" an open data sharing among Public and Private stakeholders.

REGULATORY 1	
ID	Bari Rec. 7
Title	Smart Infrastructure
Needs	3, 6
Description	One of the specific objectives of the plan concerns the redevelopment of the Terra di Bari waterfronts, fundamental for the urban development policy of many cities, so much to hire the value of "territorial marketing" action. The coastline - rich in infrastructures - is the international border of the entire metropolitan system from the cities on the sea opens to the economic and cultural exchange of the Adriatic and Mediterranean areas. The coastal strip has always been one resource from which it has drawn a multiplicity of economic actors (logistics, fishing, agriculture, trade, tourism, stone industry). "The perspective of the Plan is therefore not to imagine for the metropolitan waterfront a unified planning e super ordinate, difficult to implement, but rather to plan interventions "case by case" actually feasible and monitorable, able to transform the appearance coastal "from below". These interventions concern: the realization of new polarities on the seafront of coastal centres, according to a program shared that introduces urban functions into each of them of metropolitan rank, according to an integrated and non-integrated logic competitive, to be achieved through high quality interventions Architectural.

REGULATORY 2	
ID	Durres Rec. 13
Title	Require new legislation to facilitate renewable energy
Needs	13
Description	Albania is in the process of developing new legislation to facilitate renewable energy development. DPA should get involved in the preparation of the new draft law on Renewable Energy Resources (RES), which is based on the Directive 2009/28/EC. An important item of the draft law will be the establishment of the renewable energy fund. The **Fund** shall be used for financing projects and studies for identification of the renewable energy potentials in the country; for financing projects that support the use of renewable energy sources, for providing incentives for them; for testing and monitoring the new technologies utilizing energy from renewable sources; for financing awareness campaigns for the use of renewable energy sources, etc.

REGULATORY 3	
ID	Brčko Rec. 3
Title	Legal framework
Needs	5,6
Description	The main obstacle for transforming Ports into Innovation Hubs would be lack of interest at all levels of authority for making any changes in this regard, especially if changes do not generate profit. For easier and faster transformation of ports into Innovation Hubs, it is necessary to create legislative frameworks that facilitate the obtaining of administrative permits in terms of reconstruction work. This is considered as one of the main reasons why innovation/entrepreneur ideas lack implementation. Long term obstacle is lack of managers who would keep going transformation as a constant process. Also, lack of knowledge at all levels of authorities on the needs for adaptation to climate change (especially in case of ports) is a serious obstacle. Moreover, complicated administrative procedures for permitting of any activities in public facility, such as ports, represent also a great obstacle.

Annex 5 - Comparison among the EUSAIR, the EUSDR and the PoWER Strategy

Strategy	European Union Strategy for the Adriatic and Ionian Region (EUSAIR)	European Union Strategy for the Danube Region (EUSDR)	PoWER Strategy
General objective	The general objective of the EUSAIR is to promote economic and social prosperity and growth in the region by improving its attractiveness, competitiveness and connectivity. With 4 EU members and 4 non EU countries the strategy will contribute to the further integration of the Western Balkans.	EUSRD intends to develop coordinated policies and actions in the area of the river basin, reinforcing the commitments of Europe 2020 Strategy towards the smart, sustainable and inclusive growth based on four pillars and twelve priority areas. These shall tackle key issues as mobility, energy, biodiversity, socio-economic development or safety.	The PoWER Strategy is a shared planning instrument for the evolution of ports into Innovation Hubs, which will constitute the reference framework for the future activities of the Innovation Hubs Network.
Thematic pillars	1 Sustainable Tourism 2 Environmental Quality 3 Connecting the Region 4 Blue Growth.	1 Protecting the environment 2 Building Prosperity 3 Strengthening the Region 4 Connecting the Region	1 The PoWER methodology for facilitating the collaboration between enterprises and research institutions and, in so doing, speeding up the building of ISCs; 2 The Innovation Hubs Network (IHN); 3 The IHN joint Strategy for the evolution of ports into Innovation hubs, supported by an ICT Platform devoted to its implementation.
Priority areas	• Diversified tourism offer (products and services) • Sustainable and responsible tourism management (innovation and quality) • The marine environment • Transnational terrestrial habitats and biodiversity • Maritime transport • Intermodal connections to the hinterland • Energy networks • Blue technologies • Fisheries and aquaculture • Maritime and marine governance and services	• Strengthening mobility and inter-modality of transport • Encouraging the development of sustainable energy sources; • Strengthening cultural cooperation, tourism and people-to-people contacts; • Preservation of water quality; • Environmental risk management; • Conservation of biodiversity, landscape and air and soil quality; • Development of a knowledge society through research, education and information technology; • Strengthening the competitiveness of entrepreneurship and the development of economic clusters; • Investing in people and skills;	• Common theme and issues: • Information, Communication, Technologies • Increased utilization of port space • Infrastructure • Energy – Efficiency, Management system, Environment • Renewable energies • Other of importance for ports

		• Strengthening institutional capacity and cooperation; • Joint consideration of security issues and combating organized crime.	
Links to PoWER Strategy	**Programme priority specific objective:** support the development of a regional innovation system for the Adriatic-Ionian area. PoWER wants to bring a change of paradigm by building on collaborative capacities rather than competition among actors; it requires the construction of mutual trust, a challenging path for the ADRION area, but essential for creating there a laboratory of future Europe.	Partnership regards 6 countries and 10 partners in 2 core areas: Adriatic-Ionian coastline and Balkan Inland, which is the joint to the Danube area, regarded by PoWER as essential for fostering in-depth territorial cooperation.	PoWER will tackle energy-oriented challenges to empower ports' evolution towards Innovation Hubs, implementing a process composed by Needs Mapping phase and Scenario Foresight, related to real case studies selected within the port areas.

List of acronyms

EE	Energy Efficiency
EU	European Union
EU COM	European Commission
EU PAN	Pan-European corridors
EUSAIR	European Strategy of Adriatic and Ionian Region
EUSDR	European Strategy of Danube Region
ICT	Innovation and communication technology
IH	Innovation Hub
IHN	Innovation Hub Network
ISC	Innovation Supply Chain
KPA	Key indicators
LNG	Liquefied Natural Gas
RES	Renewable energy sources
TEN-T	Transport Network