



ADRIATIC-IONIAN

European Regional Development Fund - Instrument for Pre-Accession II Fund

## PoWER PLUS



# FORESIGHT QUESTIONNAIRE

PoWER PLUS is a project funded by the Interreg V-B Adriatic-Ionian Cooperation Programme (ADRION) which involves 8 partners located in 6 different countries.

It aims at performing a foresight process in order to detect the main issues which may be affecting Adriatic-Ionian ports in the short- to mid-term in the light of the Covid19 outbreak and related economic crisis. The results of these processes will be used to update and, therefore, enhance the main results produced by the former PoWER project, i.e. The PoWER Methodology for building innovation supply Chain, The PoWER Strategy for evolving ports into Innovation Hubs, and the ICT Platform "[PoWERports](#)".

This questionnaire is the first step of the aforementioned foresight process, dedicated to the collection of experts' views on possible future scenarios related to the port areas involved in the project (Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, and Serbia) also in consideration of the wider situation and trends in the Adriatic-Ionian area.

The questionnaire has been developed with reference Next Generation EU and Agenda 2030 goals - which apply both to sea and river ports - and is articulated in 62 questions divided in four sections:

1. Towards smart ports: digital transition of services and processes in the port system;
2. The port in the territory: valorisation of the waterfront and new opportunities for regenerating the physical spaces in the port - city interface;
3. Ports in the Adriatic-Ionian area;
4. The port environment after the Covid19 pandemic outbreak.

Your precious contribution will help the PoWER PLUS team to grasp the complexity and the specificity of the port areas located on the sea and the rivers of the Adriatic - Ionian Region.

Your participation in the survey is on voluntary basis. Your contribution and those of the other experts involved will be consulted and processed by the PoWER PLUS team in order to draft a project document called "Factsheets on local scenarios". The original questionnaire you filled in will be annexed to the abovementioned Factsheets and made available on the PoWERports platform upon your authorisation.

Thank you very much for your time and cooperation. Your feedback is very important to us!

### Disclaimer

This document has been produced with the financial assistance of the European Union. Its content is the sole responsibility of the POWER PLUS project partners and can under no circumstances be regarded as reflecting the position of the European Union and/or ADRION programme authorities.

**By filling in and sending back this document to your contact person you authorise the PoWER Plus team to consult it and process it in order to draft the project deliverable T1.1.2 “Factsheets on local scenarios”. This document will open-access and will be delivered, for prior validation, to the funding Programme’s authorities.**

Moreover, the PoWER Plus team would like to annex a copy of this document, in its original version, to the abovementioned Factsheets and to make it available on the PoWERports platform.

If you wish, the filled-in questionnaire can be published in anonymous form.

- I give my permission to the PoWER PLUS project team to annex a copy of the questionnaire I filled in to PoWER PLUS Project’s deliverable T1.1.2 “Factsheets on local scenarios”.
- I give my permission to the PoWER PLUS project team to make available a copy of the questionnaire I filled on the PoWERports platform.
- I wish my contribution is made available only in anonymous form.

Please, fill in the following table with your data. If you checked the box related to the anonymization of your contact data, they will be consulted only by the PoWER PLUS Project team and not diffused.

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## 1. TOWARDS SMART PORTS: DIGITAL TRANSITION OF SERVICES AND PROCESSES IN THE PORT SYSTEM

A tentative classification of port services in terms of Technological Readiness Level has been made considering 4 macro sectors characterised by a more advanced digital perspective:

- A) Vessel & Marine Navigation;
- B) e-Freight & (Intermodal) Logistics;
- C) Passenger Transport;
- D) Environmental sustainability.

This classification is showed in Tables 1, 2 and 3.

*Table 1 Technological readiness - in standardisation*

Technological readiness - in standardisation	
Service	Enabling functions
A.1 - Vessel Traffic Management	Accurate Vessel Positioning (terrestrial and satellite), Full information about cargo, Low-Rate Vessel-Port bi- directional communication
A.5 - Berth allocation and docking	Accurate Vessel Positioning (terrestrial and satellite), Accurate Bathymetric Data, Low-Rate Vessel-Port bi- directional communication
B.1 - Freight Management and Control	Containerized and General) cargo pervasive monitoring and control in port areas (docks, warehouses, stores).
B.3 - In-port Smart Navigation	Real-time communication Port-Terminals- Trucks

1. According to your experience and knowledge, do you think the table above (Table 1) should be updated? If so, please, propose your version in the table below.

Technological readiness - in standardisation	
Service	Enabling functions
A.1 - Vessel Traffic Management	Accurate Vessel Positioning (terrestrial and satellite), Full information about cargo, Low-Rate Vessel-Port bi- directional communication
A.5 - Berth allocation and docking	Accurate Vessel Positioning (terrestrial and satellite), Accurate Bathymetric Data, Low-Rate Vessel-Port bi- directional communication  Accurate assessment activity for the allocation of appropriate quays and areas to tank cleaning operations and LNG's /other low flash point fuels' bunkering operations

B.1 - Freight Management and Control	Containerized and General) cargo pervasive monitoring and control in port areas (docks, warehouses, stores).
B.3 - In-port Smart Navigation	Real-time communication Port-Terminals- Trucks

2. Please, provide a view on the current situation of the services listed in the table above according to your knowledge. You can address only the services you are familiar with.

Max 1500 characters, spaces included

*Table 2 Technological readiness - not yet in standardization, facing technological challenges*

Technological readiness - not yet in standardization, facing technological challenges	
Service	Enabling functions
A.3 - Water Incident	Accurate Vessel Positioning (terrestrial and satellite), IoT- based distributed network
A.4 - Suspicious Vessel / Maneuver	Accurate Vessel Positioning (terrestrial and satellite), Vessel-Port bi- directional communication
B.2 - Gate Automation	Accounting for users, vehicles and goods
B.4 - Freight Routing	Port-to-Port, Port-to-Road, Port-to-Railways communications
B.5 - Incident at Landside	Distributed monitoring network
C.1 - Info mobility and journey monitor	Journey planner and manager (booking, payment), JIT information delivery
C.2 - Integration with Traffic Control Centres (TCC)	Port-to-road full-fledged data exchange
C.3 - In-port Smart and Autonomous Mobility (including safety)	Real-time communication Port-Vehicles- Pedestrians
D.1 - Pollution Level (including CO <sub>x</sub> and noise)	Distributed monitoring network
D.2 - Road Traffic Level	Distributed monitoring network

3. According to your experience and knowledge, do you think the table above (Table 2) should be updated? If so, please, propose your version in the table below.

Technological readiness - not yet in standardization, facing technological challenges	
Service	Enabling functions

4. Please, provide a view on the current situation of the services listed in the table above according to your knowledge. You can address only the services you are familiar with.

Max 1500 characters, spaces included
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*Table 3 Technological readiness - beyond state of the art, not technologically consolidated*

Technological readiness - beyond state of the art, not technologically consolidated	
Service	Enabling functions
A.2 - Vessel maneuvering in port waters	Accurate Vessel Positioning (terrestrial and satellite), Accurate Bathymetric Data, Real-Time meteo-marine monitoring, HD video sources on vessel & port.
D.3 - Dynamic pricing (all services) to Vessels, Terminals	Distributed monitoring network

5. According to your experience and knowledge, do you think the table above (Table 3) should be updated? If so, please, propose your version in the table below.

Technological readiness - beyond state of the art, not technologically consolidated	
Service	Enabling functions
A.2 - Vessel manoeuvring in port waters	Accurate Vessel Positioning (terrestrial and satellite), Accurate Bathymetric Data, Real-Time meteo-marine monitoring, HD video sources on vessel & port.  Manoeuvring simulation activities in qualified training centres equipped with the necessary facilities in order to prevent accidents and minimise possible risks (risk assessment)
D.3 - Dynamic pricing (all services) to Vessels, Terminals	Distributed monitoring network

**6. Please, provide a view on the current situation of the services listed in the table above according to your knowledge. You can address only the services you are familiar with.**

A.2 Besides some generic courses or some specifications required by the maritime industry (e.g. OCIMF) or by some companies, nowadays, there are no regulatory requirements dictating specific standardised manoeuvring simulation activities according to the port and vessel typology, bot for port and on-board staff.

**7. In your opinion, which of the following sectors need innovation the most?**

**Please, put an "X" next to them; there is no limit to the number of sectors you can check.**

#### **ENERGY**

- Efficiency of buildings
- Efficiency of industrial processes
- Production of renewable energy
- Port Grid

#### **INNOVATION AND NEW TECHNOLOGIES IN ALL TRANSPORT MODES**

- Deployment of alternative fuels infrastructure - Directive 2014/94 /EU - 22 October 2014
- LNG Retrofit (Realization of a network of points of refuelling for LNG (Liquefied Natural Gas))
- Electrification of port docks
- Construction of LNG-powered ships

#### **SEA-RELATED SOURCES OF RENEWABLE ENERGY**

- tidal and sea waves
- hydrogen
- off-shore wind power
- on-shore micro-wind power

#### **ENERGY EFFICIENCY IN PORTS' ACTIVITIES**

- more efficient processes
- more efficient behaviours
- more efficient buildings
- more efficient infrastructures (e.g.: lighting)

#### **ROBOTICS AND AUTOMATION FOR**

- increasing efficiency
- increasing safety
- increasing comfortability
- monitoring and improving the flows of goods
- savings in time
- savings in fuel
- savings in personnel

**AUTONOMOUS VEHICLES (LAND, AIR, WATER)**

- driverless trucks and vans for logistics
- drone planes
- for cargo transport
- for parcel delivery services
- drone ships

**X INTERNET OF THINGS AND BIG DATA****X SIMULATION AND VIRTUAL REALITY****X CYBERSECURITY****8. If other, please, specify****Training and education:**

- On new technologies employment;
- Through simulation and virtual reality;
- Continuous training for port operators' update.

**9. With reference to the sectors you indicated in question(s) 7 and 8, is their innovation hindered from a lack of infrastructure? Please, substantiate your answer.**

Max 1500 characters, spaces included

**10. With reference to the sectors you indicated in question(s) 7 and 8, which are the main developments and improvements you consider relevant? Please, substantiate your answer.****When technological innovation happens, it is essential to complement the transition with high qualified training and education in order to make processes more efficient and guarantee occupation.****11. With reference to the sectors indicated in question(s) 7 and 8, which are the Key Enabling Technologies (KET)<sup>1</sup> scientific research should focus on? Which KET could bring the most disruptive innovation? Please, substantiate your answer.**

Max 1500 characters, spaces included

<sup>1</sup> The Commission defines KETs as “knowledge intensive and associated with high R&D intensity, rapid innovation cycles, high capital expenditure and highly skilled employment. They enable process, goods and service innovation throughout the economy and are of systemic relevance. They are multidisciplinary, cutting across many technology areas with a trend towards convergence and integration. KETs can assist technology leaders in other fields to capitalise on their research efforts”  
<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0341:FIN:EN:PDF>

- 12. Which are the innovative interventions you consider most urgent and relevant according to you? Which results you expect they would have?**

Drastically reducing emissions within ports by electrifying docks and deploying - according to on-shore and off-shore possibilities - renewable energy sources (e.g. "wind farm") able to fill the port's energy need

- 13. A digital twin (DT) is a realistic digital model simulating or "twinning" the life of a physical asset; each digital twin is linked to its physical twin allowing to establish a bijective relationship between the DT and its physical twin; a DT follows the lifecycle of its physical twin to monitor, control, and optimize its processes and functions and to predict future statuses.**

How can the digital twin and other technologies be useful for making ports smart?

It may allow an accurate analysis of logistic processes in order to make them more efficient and lower their environmental footprint.

- 14. If you have additional comments, please write them here.**

Max 1500 characters, spaces included

- 15. If your previous contributions are referred to a specific port or area, please, let us know.**

- 16. Briefly describe a FUTURE SCENARIO (25-30 years) related to ports as Innovation Hubs, also in the light of the topics addressed in the previous questions.**  
With "scenario" we mean a narrative story describing how the situation should be in the future also including your hopes and fears.  
You can either refer to a specific port area or, more in general, to Adriatic-Ionian Ports.

Max 4000 characters, spaces included

- 17. Which are the main forces that could drive to the scenario you described? Which would be the main actors involved? Which actions should be taken to realize the future scenario you described?**

Max 1500 characters, spaces included

18. What are the main obstacles and risks to the scenario you described? (within 1500 characters, spaces included)

Max 1500 characters, spaces included

## 2. THE PORT IN THE TERRITORY: VALORISATION OF THE WATERFRONT AND NEW OPPORTUNITIES FOR REGENERATING THE PHYSICAL SPACES IN THE PORT-CITY INTERFACE

1. Which is your opinion on the relationship between a city and its port?

If you are referring to a specific city/port please let us know.

The reference is the port of Genova, where the port-city integration process began in 1992 with the realization of Renzo Piano's project for the exploiting the old port. Since then, a number of port regeneration interventions were realised, s.a. the promenade "fascia di rispetto Genova Prà" and the eastern ("levanter") waterfront design, as well made by Renzo Piano. These projects were pivotal for the city's development.

2. Which is your opinion on waterfront enhancement as an opportunity to reconnect cities with their ports?

I think it is essential to connect the city to its port by creating spaces that citizens can live and that are place side by side to the operative and production areas.

3. Is a territorial waterfront with an integrated transport system consisting of the three-track coastal light rail (tramway), cycling and pedestrian roads, and coastal navigation a good solution for transport and mobility along the territorial waterfront? Please, substantiate your answer.

Genova has experimented sea urban transport linking the city with the Pegli delegation. This initiative was successful from the touristic point of view, nevertheless, it hasn't brought relevant improvements to mobility, mainly due to the slowness of the used transport typologies.

4. In case you are involved in a port development process, please, describe your experience in relation to Blue Economy development.

The merchant navy academy was involved in the Genova port's development process by conducting a research on Terminals' workers training and educational needs in the light of automation as working processes changer. The research involved the employers' and trade unions' side and brought to the design of a Higher Technical Institute path aimed at forming new professionals, i.e. "Higher Technician in port automation processes' management". This path offers multiple skills crossing automation, robotics and IT. Moreover, continuous training programmes aimed at preparing workers to the transition were funded by the Port System Authority of the Western Liguria Sea.

5. A renewed development of port economy, that considers the city with the port in the same system, would be able to drive overall competitive economic development in the current global economic challenge. What is your opinion?

As mentioned in point 1, the development of the city of Genova cannot be considered without its port. Therefore, I think, it is a pivotal match for port cities development.

6. Did you experience Integrated Logistics Areas (ILA) or Special Economic Zones (SEZ)? Do you think that ILA and SEZ can be considered as complementary to the port systems? Please, substantiate your answer.

No, not directly.

7. Do you believe that the Special Economic Zones ("SEZ") can represent an opportunity for the development of the territories of the less developed regions? Please, substantiate your answer.

SEZs surely are a development opportunity, especially when they involved peripheral areas outside the city.

8. Do you think that the Special Economic Zones ("SEZ") could be rethought in an ecological key? Please, substantiate your answer.

I don't know, it might be possible thanks to suitable projects.

9. Which subjects should primarily participate in the decarbonisation effort of the Port-City System? Please, substantiate your answer.

Government/ Regions/ Provinces/ Municipalities/ Port System Authorities and private enterprises in the port area.

10. What and how much is currently being done for the depollution and decontamination of the Port areas?

Max 1500 characters, spaces included

11. Is the economic and social development of traditional relations with neighbouring countries via the Adriatic-Ionian ports feasible? Please, substantiate your answer.

Max 1500 characters, spaces included

12. Do you think that the seas and rivers of the Adriatic-Ionian area could be main players in the Mediterranean geopolitics? Please, substantiate your answer.

Max 1500 characters, spaces included

13. In your opinion, which of the following sectors need innovation the most? Please, put an “X” next to them; there is no limit to the number of sectors you can check.

#### SOCIAL SCIENCES

- Social innovation
- Social inclusion and discrimination
- Gender studies
- Inclusive or participation processes
- Facilitation for innovation
- On field researches
- Surveys and data analytics

#### PUBLIC ADMINISTRATION

- Economic development strategies
- Public procurement: works
- Public procurement: services

## **ENTREPRENEURIAL INNOVATION**

- Start-ups
- Internationalization
- Digitalization (e.g. additive manufacturing)
- Industrial design
- Service design
- Internal organization

## **BUSINESS**

- Investing and trading
- Commerce
- Crafts
- Small and Medium industries
- Large industries
- Services (logistics, software, consultancies, etc.)
- Restoration
- Tourism and Leisure

## **EMPLOYMENT DECREASE**

### **NEW SUITES OF SKILLS**

### **SEA-RELATED SOURCES OF RENEWABLE ENERGY**

- tidal and sea waves
- hydrogen
- off-shore wind power
- on-shore micro-wind power

### **BLUE GROWTH**

- Fishery and aquaculture
- Green shipping
- Exploitation of marine resources
- Innovation in tourism
- New solutions for environmental resilience

### **DE-CARBONIZATION OF PRODUCTS AND PROCESSES**

### **SCIENTIFIC RESEARCH**

- Theoretic or base research
- Applied research
- Private R&D investments

### **CULTURAL PRODUCTION**

- Digital sector
- Traditional sectors (e.g. theatre or cinema)
- Heritage preservation
- Design professions

- Journalism, books and essay writers

#### **SUSTAINABILITY**

- Circular economy
- Innovative products
- Waste management and recycling
- Intelligent mobility
- Disposal of ballast water sediments in the port area - art. 5 of the Ballast Water convention, in progress ratification)

14. If other, please, specify

15. With reference to the sectors indicated in questions 13 and 14, which are the main obstacles to their development?

Max 1500 characters, spaces included

16. With reference to the sectors indicated in questions 13 and 14, which are the Key Enabling Technologies (KET) scientific research should focus on? Which KET could bring the most disruptive innovation? Please, substantiate your answer.

Max 1500 characters, spaces included

17. With reference to the sectors indicated in questions 13 and 14, which results would the adoption of the disruptive technologies described in the question above (n. 16) lead to?

Max 1500 characters, spaces included

18. Briefly describe a FUTURE SCENARIO (25-30 years) related to ports and their cities/ territories, also in the light of the topics addressed in the previous questions.

With “scenario” we mean a narrative story describing how the situation should be in the future also including your hopes and fears.

You can either refer to a specific port area or, more in general, to Adriatic-Ionian Ports.

Max 4000 characters, spaces included

19. Which are the main forces that could drive to the scenario you described? Which would be the main actors involved? Which actions should be taken to realize the future scenario you described?

Max 1500 characters, spaces included

20. What are the main obstacles and risks preventing the realisation of the scenario described?

Max 1500 characters, spaces included

21. If you have additional comments, please write them here.

### 3. PORTS IN THE ADRIATIC-IONIAN AREA

1. In your opinion, what is the untapped potential for enhancing energy efficiency in Adriatic-Ionian ports?

Max 1500 characters, spaces included

2. Which are the main drivers towards that enhancement increasing energy efficiency? Which are the main obstacles?

Max 1500 characters, spaces included

3. With reference to the two previous answers, which are, in your opinion, the main challenges ports, free zones and the global shipping industry will have to face? What should be done to mitigate their negative impacts?

Max 1500 characters, spaces included

4. How does the development of ports affect the local community? Please, refer both to the city- and the wider region-level.

Max 1500 characters, spaces included

5. Do you think that in the Adriatic-Ionian area water transport is underdeveloped as compared to other types of transport? What if compared to other geographical areas?

Max 1500 characters, spaces included

6. Climate change is requiring a quick and resolute transformation in all sectors (e.g. industry, society, organization, urbanization, etc.). How could Adriatic-Ionian ports and their cities contribute?

Max 1500 characters, spaces included

**7. If you have additional comments, please write them here.**

Max 1500 characters, spaces included

**8. Briefly describe a FUTURE SCENARIO (25-30 years) related to Adriatic-Ionian port areas, also in the light of the topics addressed in the previous questions.**

With “scenario” we mean a narrative story describing how the situation should be in the future also including your hopes and fears.

You can either refer to a specific port area or, more in general, to Adriatic-Ionian Ports.

Max 4000 characters, spaces included

**9. Which are the main forces that could drive to the scenario you described? Which would be the main actors involved? Which actions should be taken to realize the future scenario you described?**

Max 1500 characters, spaces included

**10. What are the main obstacles and risks preventing the realisation of the scenario described?**

Max 1500 characters, spaces included

**11. If you have additional comments, please write them here.**

#### **4. THE PORT ENVIRONMENT AFTER THE COVID19 PANDEMIC OUTBREAK**

- 1. According to your knowledge, which are the main challenges that affected ports and port cities after the Covid19 pandemic outbreak?**

Max 1500 characters, spaces included

- 2. What impact had/have lockdown actions on vessel traffic??**

Max 1500 characters, spaces included

- 3. What role can port authorities play in managing the emergency? Has their role changed only temporarily or will it be changed for good? Please, substantiate your answer.**

Max 1500 characters, spaces included

- 4. How are the relations between port and city changing?**

Max 1500 characters, spaces included

- 5. How the port-urban landscape is changing?**

Max 1500 characters, spaces included

- 6. What are the previously existing problems, limitations or needs which the pandemic has emphasized?**

Max 1500 characters, spaces included

**7. How could the Covid19-related emergency become an opportunity to grow for port areas?**

Max 1500 characters, spaces included

**8. Is the ecological footprint of port cities going to decrease? Please, substantiate your answer.**

Max 1500 characters, spaces included

**9. Briefly describe a FUTURE SCENARIO (25-30 years) related to port areas' post-pandemic situation, also in the light of the topics addressed in the previous questions.**

With "scenario" we mean a narrative story describing how the situation should be in the future also including your hopes and fears.

You can either refer to a specific port area or, more in general, to Adriatic-Ionian Ports.

Max 4000 characters, spaces included

**10. Which are the main forces that could drive to the scenario you described? Which would be the main actors involved? Which actions should be taken to realize the future scenario you described?**

Max 1500 characters, spaces included

**11. What are the main obstacles and risks preventing the realisation of the scenario described?**

Max 1500 characters, spaces included

**12. If you have additional comments, please write them here.**