

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

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.

A-1 Vessel traffic management - To my knowledge VTM is not yet in place in Durres Port. Traffic management is done in conventional way but there is no VTMS in place. There are plans from General Maritime Directorate to instal the system and soon this system will be in place. This will contribute to better management of the traffic, less accidents, better maritime environmental protection, and faster reaction to search and rescue operations in emergency situations.

A-5. Berth Allocation and docking - there is no Accurate Vessel Positioning (terrestrial and satellite), Accurate Bathymetric Data, Low-Rate Vessel-Port bi- directional communication. Allocation of berthing is done by Port authority and pilots direct the vessels to the allocated berth. The accuracy of the position of the vessel at berth is done by shore references and not by technological means. Bathymetry is not accurate and is dependent of manual surveys which take place in certain frequency. This might allow for non-accurate bathymetry vales and might affect keel clearance of the ship consequently safety of the ship.

B.1 - Freight Management and Control- Containerized and General) cargo pervasive monitoring and control in port areas (docks, warehouses, stores) is done by classical ways. Terminal operator assigns the position of the container in terminal and the reach stacker takes it to this position. Terminal operator is trying to implement the software “NAVIS” for containers terminal management but is in its initial phase of implementing it. This will increase internal performance of containers terminal and reduce container’s movement within the terminal.

B.3 - In-port Smart Navigation - Real-time communication Port-Terminals- Trucks. This system in my knowledge does not exist in Durres Port. This is very important to reduce the truck waiting time and increase terminal efficiency.

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-Railway’s 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 _x and noise)	Distributed monitoring network

D.2 - Road Traffic Level	Distributed monitoring network
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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.

A.3 - Water Incident - Accurate Vessel Positioning (terrestrial and satellite), IoT- based distributed network
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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 manoeuvring 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

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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.3 - Water Incident - Accurate Vessel Positioning (terrestrial and satellite), IoT- based distributed network - the degree of automation in the port is not at the required level. Internet of things has been introduced in port environment and is in the initial implementation phase. AVP - will help in determining the exact place of any water incident and based on hydrometeorological data will help simulate the moving of the pollution spills on the area.

A.4 - Suspicious Vessel / Manoeuvre - Accurate Vessel Positioning (terrestrial and satellite), Vessel-Port bi- directional communication- Installation of the VTMS will make it possible to have the accurate positioning of vessels and monitor suspicious vessel manoeuvring.

B.2 - Gate Automation - counting of vehicles entering/leaving port/terminal is done manually. Gate automation will make it easier and more efficient for port users to manage the in and out flow of traffic of the port.

B.4 - Freight Routing - Port-to-Port, Port-to-Road, Port-to-Railway’s communications - It is very important for all logistic operations. That will enhance door to door logistic concept of transporting goods.

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. X
- Efficiency of industrial processes
- Production of renewable energy X
- Port Grid X

INNOVATION AND NEW TECHNOLOGIES IN ALL TRANSPORT MODES

- Deployment of alternative fuels infrastructure - Directive 2014/94 /EU - 22 October 2014 X
- LNG Retrofit (Realization of a network of points of refuelling for LNG (Liquefied Natural Gas)
- Electrification of port docks. X
- 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. X
- more efficient behaviours. X
- more efficient buildings. X

- more efficient infrastructures (e.g.: lighting)

ROBOTICS AND AUTOMATION FOR

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

AUTONOMOUS VEHICLES (LAND, AIR, WATER)

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

INTERNET OF THINGS AND BIG DATA. X

SIMULATION AND VIRTUAL REALITY. X

CYBERSECURITY. X

8. If other, please, specify

Max 1500 characters, spaces included

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.

I consider the following hindered from a lack of infrastructure:

- Efficiency of buildings
- Port Grid
- Electrification of port docks
- More efficient buildings
- Driverless trucks and vans for logistics
- Internet of things and big data
- Simulation and virtual reality
- Cybersecurity

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.

- INTERNET OF THINGS AND BIG DATA
- CYBERSECURITY

11. With reference to the sectors indicated in question(s) 7 and 8, which are the Key Enabling Technologies (KET)¹ scientific research should focus on? Which KET could bring the most disruptive innovation? Please, substantiate your answer.

CYBERSECURITY

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

Max 1500 characters, spaces included

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?

DT help port managers understand the way port is operating, identify the gaps and remedy the inappropriate operations.

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.

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¹ 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>

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.

20-30 years from now I see port operations fully automatised. The ship (probably we will experience non maned ships - fully automated) will transmit all pre-arrival details and will be instructed automatically by the port where to berth. Procedures will be performed automatically, and the loading/unloading operations will start immediately avoiding all actual delays. Non-physical barriers will not exist. Cargoes will be digitally assigned and stored by automated guided vehicles (AGV). Cargo distribution to destination will be through automated distribution systems. That will optimise operations and port performance, minimise delays, reduce the accident potentials.

My concern about the future regarding the high automatization and IoT, is cyber security. The port should work continuously in maintaining safe and secure the operating systems of the port.

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?

Innovation, technological developments, automatization and IoT

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 dynamics of development. When a city and a port stand together, they always try to expand their space - the city wants to expand toward the sea and the port requires more land (toward the city), like the case of Durres Port.

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

To reconnect cities with ports, the services offered by the ports, should be in direct connection with city activities. Today, many ports have been reallocated due to the vast land areas they need for cargo and container's storage. Instead, they are developing marinas, cruise and ferry terminals.

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.

I think that could be a good solution.

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

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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?

The city and the port (commercial activities) cannot live together, due to the negative externalities a port produces. Furthermore, a port is not serving local community, but its hinterland extends beyond the city, beyond the country and sometimes beyond the region. Therefore, it should be an autonomous system, of course cooperating with the city.

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.

ILA and SEZ are very important elements of generating cargo volumes, employment, and technological transfer. SEZ create VAS, and the experience in Chinese ports has shown that SEZ have impacted in a very significant way port development

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.

Definitely. As per above, they generate cargo volumes, production, employment, and technological transfer.

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

Max 1500 characters, spaces included

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

It should start from the higher governmental levels (government, ministry...) and up to the port users. Defining clear decarbonisation goals for the sector will help port managers and operators set their goals and find ways to achieve them.

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.

Rivers cannot play a significant role regarding connections for there are navigable rivers in the area. Seas are of vital importance because the ports located in the Adriatic and Ionian seas have a very important and geopolitical role. Through these ports our region connects with other regions of the world. Rijeka is becoming another pole regarding intercontinental connection with the new deep port that are developing lately. Durres Port has a very strategic position and good road connections with EU Ten T (corridor VIII and Corridor X). Development of the rail will enhance its role.

Recent geopolitical events happening in the Black Sea, will enhance the strategic role of the Adriatic and Ionian ports.

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 X
- On field researches
- Surveys and data analytics X

PUBLIC ADMINISTRATION

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

ENTREPRENEURIAL INNOVATION

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

BUSINESS

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

EMPLOYMENT DECREASE

NEW SUITES OF SKILLS X

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 X
- Green shipping X
- Exploitation of marine resources
- Innovation in tourism X
- New solutions for environmental resilience

DE-CARBONIZATION OF PRODUCTS AND PROCESSES

SCIENTIFIC RESEARCH

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

CULTURAL PRODUCTION

- Digital sector X
- Traditional sectors (e.g. theatre or cinema)
- Heritage preservation X
- Design professions X
- Journalism, books and essay writers

SUSTAINABILITY

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

14. If other, please, specify

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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.

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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 the main obstacles?

- Digitalisation and Automatization
- Staff training

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.

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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?

Coming back to the normal. Refreshing skills and especially safety and security knowledge

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

Crews have got rusty and their reaction on emergencies is unsatisfactory due to the lack of drills during pandemic restrictions.

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?

As per above sections.

5. How the port-urban landscape is changing?

-

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

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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.

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