



Port Network Authority  
of the Ionian Sea

General and International Affairs Division  
International Relations and Communication Department

## Application for the IAPH 2024 Sustainability Awards

# INTEGRATED ENVIRONMENTAL MONITORING OF TARANTO PORT AREA



Unione Europea  
Fondo Europeo  
di Sviluppo Regionale



Ministero delle  
infrastrutture e della  
mobilità sostenibili

## Supporting info

### The Port of Taranto: general Overview

Ports and their neighboring cities play a considerable role in the local and global economies: port cities around the world are located at the edge of sea and land and serve the same function of facilitating the flows of goods and people. While all port cities are different, they have some common features: together they face important challenges and recognize the need to facilitate the interactions between multiple stakeholders. Over the centuries, many port cities have developed particular shared values, better known as *maritime mindset* or *port-city culture*. The maritime culture is indeed the main element to create a bridge between the Port and its floating community.

**The port-city of Taranto** is nowadays interested by a process of redefinition of its economic and cultural dimensions that, **over the last decades, have been mainly focused on the industrial vocation of the local economy**. The industrial framework of Taranto has overwhelmingly influenced the perception of the city's image and cultural approach both locally and globally. The city's landscape has always been mainly associated to the smokestacks of the steel factory thus contributing to link the image of Taranto to negative and environmentally critical opinions and considerations, at the expense of the natural beauties and huge cultural heritage owned by the city.

Further to the crisis of the steel industry and the consequent instability of the Taranto steel plant, both local, regional and national Administrations started to reshape their policies in order to make action on strategic plans based on the redesigning and differentiation of both economic and productive activities, thus having to **provide the city with greener and more sustainable future perspectives**.

To rethink this preconstructed view of the city, The Port Network Authority of the Ionian Sea – Port of Taranto (PNAIS), together with a number of local private and public Administrations decided to change the course and put the *Sea* at the heart of a general strategy to **renew and revitalize port-city relationship**, thus increasing the actions **addressed to the environmental care of the port and the city**.

*"Ports are at the crossroads of transition"*. The PNAIS is acting as a proactive initiator for **making the port of Taranto a resilient place** where to align different stakeholders and to improve the business climate in order to: reach sustainability goals, increase cohesion with the city and, above all, crystallize the objective of **making the Port of Taranto an increasingly "smart", "green" and sustainable port of call** from an energy point of view.



The Port Authority is strengthening its pivotal role in facilitating sustainable transport, either through **promoting sustainable cruise tourism** or **generating energy efficiency opportunities** as well as **providing source for innovation and a new cohesion between the port and the city**.

To this aim, the PNAIS, in close cooperation and coordination with the Municipality of Taranto, agreed to share a collaborative governance for the programming and redesigning of several interventions aimed at regenerating both the material and immaterial links connecting the port to the city.

### **The Integrated environmental monitoring: how we take care of the port ecosystem.**

On 14 July 2020, the PNAIS submitted the project proposal "**Integrated environmental monitoring of the Taranto port area**" as part of the Action and Cohesion Programme complementary to the National Operational Plan (NOP) "*Infrastructure and Networks*" 2014-2020. The project proposal aimed to create an integrated environmental monitoring system within the Port of Taranto, with the objective of monitoring the state of health of the land and sea under the management of the Port System Authority. The intervention is therefore aimed at the creation and multi-year management of an area monitoring network, in order to monitor the overall quality status of the Port of Taranto's land-sea system through "evenly distributed" measuring points, consisting of the following environmental matrices: "**Water**", "**Sediments**", "**Benthos**", "**Noise**", "**Air**", "**Flora and Fauna**" and "**Filtering Organisms**".

The aim is to carry out the monitoring of the entire port area through a network of homogeneously distributed stations/measuring points, by which it is possible to systematically measure over time a defined set of parameters concerning all the environmental matrices of interest:

- **Sea water and groundwater** by means of:
  - a general network of 10 fixed stations for the continuous survey of sea water;
  - a general network of 46 mobile stations for the quarterly survey of sea water;
  - a general network of 26 ground piezometers for the quarterly survey of groundwater;
- **Air** by means of 3 fixed monitoring stations for the survey of PM<sub>10e</sub>, PM<sub>2,5</sub>, SO<sub>2</sub>, NO/NO<sub>2</sub>/NO<sub>x</sub>, CO, O<sub>3</sub> and BTEX;
- **Noise** by means of 4 long-term noise monitoring control units;
- **Soil** to survey:
  - the evolution of the shoreline and of the beach profiles in the stretch of coast west of the Multipurpose Pier, in order to evaluate any unexpected effects caused by the new breakwater to be built in the future;
  - the suitability for vegetation development in the reclaimed area west of Punta Rondinella;
- **Sediments** by taking samples at 15 points in the sea for chemical analysis;
- **Flora and Fauna**;
- **Filter feeders** by means of the "*Mussel Watch*" protocol at 9 points;
- **Benthos** through the taking of sediment samples at 7 points to be subjected to the recognition and counting of the biocoenosis present with the determination of their characteristic indices.

The monitoring system will be implemented through the following interventions:



- the creation of a network of sensors for environmental monitoring, to be installed in port areas;
- sampling of environmental matrices, in order to determine parameters not detectable by the installed sensors by laboratory analysis;
- data acquisition and related management;
- definition of the reference workflow for the planning and management of monitoring activities;
- development of a database for data collection and front-end development for distributing information related to monitoring data with stakeholders.

The project is also empowered by its dedicated **digital platform** – currently available for internal users – which represents the **key element in terms of digitalization and innovation**, thus introducing innovative digital technologies in the port management and operations. In the platform, in addition to the sections for consulting continuous and periodic data, there is a section dedicated to the forecasts, for the port area, of some weather parameters for the following 24 hours and a 3D section, which allows users to view the forecasts for the next 48 hours of some parameters, such as direction and speed of currents, temperature, salinity and water level. Therefore, it allows to have, well in advance, a series of information which could, for example, allow port operators to evaluate the opportunity to carry out certain activities or not, depending on the specific weather and sea conditions of the port area. The digital platform will boost data collaboration with the main stakeholders involved in the project as well as speed up process and documentation flows within the Port Community System.

The monitoring data will be shared with the various stakeholders (control bodies, citizens, enterprises, etc.) through a web portal/platform set up by the contractor, allowing the parties (not only experts) to have an overview of the environment. The monitoring service in question represents a total novelty, since in recent years the Administration has always carried out punctual and non-coeval environmental monitoring, as linked to the specific infrastructural action, how to monitor the impact on the surrounding area. The planned network, on the other hand, is not built on the monitoring structure - that is divided into pre, ongoing and post-project phases. Hence, for the "area" monitoring, individual project monitoring plans may begin at any time, without the risk of jeopardising the seamless acquisition of large-scale information. This information, in addition to allow the monitoring of the impacts coming from the execution of infrastructural works, will also lead to a broad and coherent vision of the dynamics of the port area.

**Stakeholders involved:** Professionals; Economic Operators that provide services and works; Enterprises; Port Operators and Concessionaires; ARPA Puglia; Harbour Master's Office; Other Administrations. Comando zona fari e segnalamenti marittimi - MARIFARI Taranto (*Command of Lighthouses and Maritime Signals*).

**Temporary Grouping of Companies managing the project:** *Ambiente SpA / T&A Srl / CISA SpA / Studio Effemme Chimica Applicata srl.*

**Implementation tools:** Engineering services, participation in European projects, workshops and events, digital platform.

[→ For further technical information, please see the attached report.](#)



### **Environmental care as common goal: Let's design the port of the future together**

The **Three-Year Operational Plan 2023-2025**<sup>1</sup> of the Port Network Authority of the Ionian Sea (PNAIS) identifies **six main strategic objectives** to be achieved by 2025: *business intelligence & digital port operations, sustainability, energy transition & environmental transition, infrastructures & logistics, port and territory, internationalization, governance & accountability*. To reach these goals, the Authority is shaping its mission in order to keep up with the evolution of the port ecosystem and to bring new sustainability achievements in the port domain. More specifically, **action nr. 4** is fully dedicated to the project of integrated environmental monitoring (for further information, see: [https://port.taranto.it/attachments/article/2421/Annex\\_2\\_Actions\\_of\\_Plan\\_2023-2025\\_EN.pdf](https://port.taranto.it/attachments/article/2421/Annex_2_Actions_of_Plan_2023-2025_EN.pdf)).

The above objectives are the result of an innovative strategy that the PNAIS decided to adopt in order to **measure the image of the port through the active participation of the local and national stakeholders**. By the launch of a dedicated survey, the PNAIS had the possibility to define a list of targets to be achieved over a period of three years by listening to the needs and perceptions of the local community in order to *plan the port with the city* as satisfactorily as possible to the stakeholders. At the same time, the Authority had the possibility to raise its *institutional accountability* and to set a criterion on the image perceived by those actors involved in the poll.

The Port Authority is strongly engaged in activating partnerships aimed at researching and testing **innovative projects and models to improve the environmental and energy performance of port activities and life**, including alternative fuels, in line with European plans.

The DEASP (Energy and Environmental Planning Document) adopted by the Port Authority and updated in 2022 crystallizes the objective of making the Port of Taranto an increasingly "smart", "green" and sustainable port also from an energy point of view.

To this aim, the construction of 3 Cold Ironing systems at the public/concession docks is planned. Among these, the San Cataldo Pier plays a role of primary importance, as it is intended for cruise traffic, which the AdSP has identified as one of the strategic assets for the growth of the port and the territory. The intervention concerns the creation of a network of systems for the supply of electricity from the shore to ships during the mooring phase, to minimize the use of auxiliary engines on board, emissions of CO<sub>2</sub>, nitrogen oxides and dust thin, as well as the acoustic impact.

Furthermore, an expression of interest was presented for the identification of state-owned maritime areas with related stretch of waters outside the port breakwaters, to be used for the construction of infrastructures suitable for guaranteeing the development of investments in the shipbuilding industry for production, assembly and launching of floating platforms and electrical infrastructures functional to the production of wind energy at sea.

**The commitment to raising awareness and disseminating environmental issues among experts or citizens or students is also extremely relevant.**

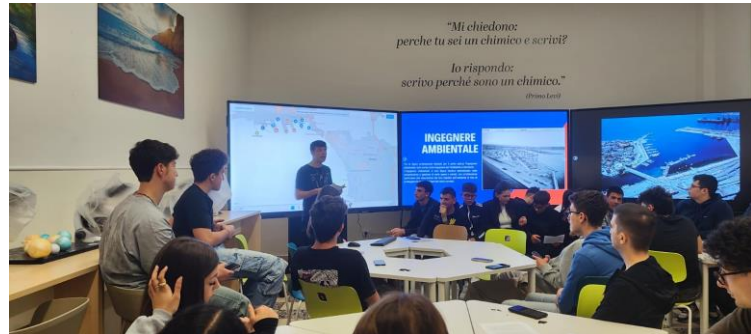
Over the last few years, the organization has implemented openness policies, encouraging concrete and participatory integration also through collaborations with schools and universities, signing

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<sup>1</sup> <https://port.taranto.it/index.php/en/news-eng/2417-news-of-07-04-2023-approvazione-del-nuovo-piano-operativo-triennale-2023-2025-2>



agreements for the activation of internships and PCTOs (Transversal Orientation Skills Paths), with the aim of making young students protagonists of a training course of knowledge and direct experimentation of the dynamics that distinguish the life and culture of the port, through an expanded vision of environmental sustainability. During the educational activities, starting from 2024, the Port Authority has decided to include a tailored presentation on the integrated environmental monitoring to allow students understand the importance of sustainability of port operations and its influence on the surrounding ecosystem and community.



The above projects contribute to the achievement of the following UN Sustainable Development Goals (SDGs):

**6** CLEAN WATER AND SANITATION



**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE



**13** CLIMATE ACTION



**14** LIFE BELOW WATER



**16** PEACE, JUSTICE AND STRONG INSTITUTIONS



**17** PARTNERSHIPS FOR THE GOALS

