

# Report on environmental sustainability in the port of Vasto

## ARAP ABRUZZO

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## 1. State of art:

The list in order of importance of the mitigation efforts of the port authorities that is requested for the port of Vasto is inspired by the ESPO GREEN GUIDE 2021, the manual drawn up by ESPO (European Maritime Ports Organization), to which most of the ports Europeans is inspired by the commitment to the environment and sustainability.

On the port of Vasto, there was no port authority until December 2022, but rather a maritime authority.

In April 2022, the regional council approved in the ordinary session the proposal to include the port infrastructure of Vasto in the Port Authority of the Central Adriatic Sea. In December, the port of Vasto became part of the system and is currently experiencing a transition period. Simultaneously with the drafting of the report, the person who dealt with everything concerning the port was the Port Authority, which we interviewed. We learned from them who the stakeholders are, how the infrastructures and services are managed and where to find information. Once established who the port authority was, we reported here the studies on the state of the art, inspired by the ESPO guide.

We can see how the 10 environmental priorities changed from 1996 to 2020, emphasizing that every year since 2016 there has been a change in the list of priorities, reaching 2022 as follows:

1. Air quality
2. Climate Change
3. Energy efficiency
4. Noises
5. Relations with the local community
6. Waste from ships
7. Water quality
8. Port waste
9. Dredging
10. Port development

The data of the current state of the art are reported in the following pages. There are links to attachments that you can read more about.

### **2.1 Air quality management and CO2 reductions (climate change)**

According to the air quality monitoring done by Arta (Regional Agency for Environmental Protection), in February 2012, with a mobile laboratory, the following pollutants were detected: NO<sub>x</sub>, NO, NO<sub>2</sub>, CO, O<sub>3</sub>, PAH, Benzene, Toluene, m-Xylene, PM<sub>10</sub>.

The sampling site was located near a road junction. The traffic of heavy vehicles is directed both to the industrial establishments that insist in the area, and connected to the normal activities of loading and unloading goods of the merchant ships and the flotilla of fishing boats that frequently dock at the port quay. There was a consequent increase in the concentrations of pollutants characteristic of heavy traffic: total PAHs and PM<sub>10</sub>.

On one occasion, the considerable release of PAHs into the air was also highlighted in conjunction with the departure of a merchant ship from the port with meteorological conditions favorable to the propagation of fumes towards the relevant position. On the same occasion there was also an increase in carbon monoxide.

The maximum daily average of PM<sub>10</sub> and PAHs was recorded on days of intense heavy traffic on the road of the site of interest.

The concentrations of the monitored pollutants Nitrogen dioxide, Carbon monoxide, Suspended particles, Ozone and Benzene with references to the limits established by Legislative Decree No. 155 of 13 August 2010 fall within the legal limits for the entire monitoring period. Ultimately, therefore, the measures confirmed, limited to the analyzed substances characteristic of combustion processes, the anthropogenic impact in the area caused by the transit of heavy vehicles and the movements of motor boats inside the port

The document [Allegato 1.pdf](#) is attached.

Furthermore, there are analyzes and studies made by the V.Inc.A by companies operating in the industrial area

### V.Inc.A

“The environmental impact assessment (in the acronym VINCA or VI) is an act envisaged by European Union law which has the purpose of ascertaining in advance whether certain projects could have a significant impact on Sites of Community Importance (SIC), on Special Areas of Conservation and Special Protection Areas (SPAs)”

## **2.2 Noise Management**

We sourced data from the 2007 Port Master Plan, the 2010 Zoning Plan and documents from the 2 major industries surrounding the port.

This is what is reported in the "Non-technical summary of the environmental report of the 2007 port master plan"

In Paragraph 4.4, from page 20 onwards:

“ In the Vasta area, no noise level measurement campaigns have been carried out throughout the territory and no acoustic maps of the territory have been organically drawn up. However, in the area the main sources of noise can be identified as the urban center of Vasto, in the summer, the marina of Vasto, the industrial area adjacent to the port and the railway line (about 55 passenger trains a day and a few dozen freight trains). With regard to vibrations, no data are available that highlight significant impact phenomena. With respect to the acoustic levels of the Study Area and of the Site, no bibliographic data are available, therefore specific phonometric surveys have been conducted in order to describe the acoustic climate at present.

The measurement points have been identified so as to be representative of all the intended use classes present and of the main noise sources. The Intended Use Classes were deduced from the use of the land and from the inspections, as the Municipality of Vasto does not have the Acoustic Zoning Plan (PZA). From the phonometric measurements conducted in the Study Area and on the Site, the legal limits established for the Classes of use are generally respected. In the Study area and in the vicinity of the Site, no sources of vibration emissions worthy of analysis in this planning phase of the future development of the port and the connection infrastructures can be detected. With regard to the assessment of the possible impacts, the implementation of the new Port Regulatory Plan of Vasto has potential repercussions on the noise and vibration component associated with the presence of construction site areas, the variation in



boat, vehicular and railway traffic and the construction of new buildings port.

With respect to the activities indicated, it is reasonable to assume that the site areas will be limited and the activities will be carried out in the manner suitable for minimizing noise and vibration emissions and in any case in compliance with the legislation. Furthermore, the traffic of boats will be more intense, but the rationalization of port activities, the greater availability of maneuvering areas and the speed of the boats will make maneuvers easier and faster. With regard to the noise produced by the increase in road and rail traffic, it will be contained below the legal limits thanks to suitable mitigation measures, to be planned during the final design and Environmental Impact Study (sound-absorbing and reflective barriers). Finally, the activities necessary for the construction of new port buildings are comparable to common building activities, therefore they will be temporary and concentrated in the construction phases." Here, in attachment Allegato 2.pdf

In this study it is said that the municipality of Vasto does not have a Plan (PZA), logically on the date on which the study was produced. But in 2010, an acoustic zoning plan was made. In Attachment [Allegato 3.pdf](#), the monitoring map of the area in which the port of Vasto is located, we can see that the same port is located in an area that falls under acoustic class VI (Exclusively industrial areas: exclusively industrial areas with no residential settlements fall into this class ) in which the limit values in LAeq dB(A) during the day and night are 70 (quality) and 70 (attention). Around this area there are surveys that present spatial measurement values compatible with the quality limits. Also according to the Vinca data of the 2 major industries that are around the port, in the renewal documents of the AIA (Integrated Environmental Authorization) it is possible to read that the acoustic impact of the activities carried out in the factories is within the limits of acceptability foreseen by the elaborated PZA from the municipality of Vasto. Below are attachments 4 and 5 of the 2 companies: [Allegato 4.pdf](#) and [Allegato 5.pdf](#)

### ***2.3 Management of sediments***

The document in [Allegato 6.pdf](#) describes the last characterization performed by ARTA Abruzzo in 2019, according to the legislation D.M. no. 173 of 07-15-2016, in which we can find both physical analyzes of the sediments, and chemical analyzes (total organic carbon, total phosphorus, metals, polycyclic aromatic hydrocarbons, organochlorine pesticides, polychlorinated biphenyls, organostannic compounds), and ecotoxicological analyzes. Just in these days the dredging works have been completed with an excavation volume equal to 37000 MC. 15 years have passed since the last dredging done, as you can read in the attachment.

In chapter 9 of attachment 4 the results of the analyzes are reported as follows:

Physical analyses: About 70% of the analyzed samples have a prevailing pelitic composition. In all 29 samples, the percentage of pelite was higher than 10% (threshold value established by DM 173/2016 for use in surface nourishment) and in only one sample the threshold of 30% established by the competent Regional Authority was not exceeded for a submerged renaissance use.

Chemical analyses: The concentrations of the metal analyzes were also compared with the chemical reference levels (L1 and L2). Always taking into account [Allegato 4](#), p. 17-18, we can see that Cadmium is the element that has exceeded the L1 limit in 55% of the cases and in only one case it is also higher than the L2 limit. In the same sample, the exceeding of the L1 limit for Nickel was also detected. In 10 samples out of 29 the parameter Hydrocarbons C>12 exceeded the L2 limit. As regards polycyclic aromatic hydrocarbons (PAHs) in the table on page 19, of [Allegato 4](#), only one sample for the Fluorene parameter exceeded the L2 level, in 6 other cases only the L1 chemical levels. In most of the samples analysed, the concentrations of the organochlorine pesticides sought were found to be below the limits of quantification (LOQ). Values higher than the LOQ were found only for the parameters DDD, DDE, DDT, HCB. Polychlorinated biphenyl (PCB) levels are below the L1 and L2 chemical levels.

Among the organotin compounds, the Ministerial Decree 173/2016 provides reference values for Tributyltin (TBT) and the Sum of the Total Tin of origin consisting of Monobutyl (MBT) + Dibutyl (DBT) + Tributyltin (TBT). The results show that the L1 limit for TBT was exceeded in approximately 62% of the samples analyzed and in the last sample that the L2 limit was also exceeded. The results obtained by ecotoxicological classification of each sediment sample (reported in attachment 7b of the document that I call [Allegato 4](#) here) show that out of the 29 samples analysed, about 80% have an ABSENT ecotoxicological hazard severity class, while the remaining 20% of the samples can be placed in the MEDIUM severity class.

## **2.4 Waste management**

There is a port waste collection plan ([allegato 7](#)), which is one of those for which there is an obligation to carry out the aforementioned impact assessment study, and was adopted with Ordinance No. 44/2008 of the Maritime District of Vasto, pursuant to the with the Abruzzo Region, with D.G.R. n.491/C of 05/15/2006. The update of the plan was adopted by the competent Authority in June 2016 and transmitted to the Abruzzo Region on 13-06-2016. The Abruzzo Region

– Waste Management Service acquired the floor with note prot. no. 136643 of 15-06-2016.

In chapter 3 of the document ([Allegato 7](#)) it is written: “In this case, the analyzed Waste Management and Collection Plan (PGRRPV), drawn up in 2016 following the guidelines of Annex I to Legislative Decree n. 182/2003, constitutes a revision and an update of the previous Plan, approved with ordinance n.44/2008 dated 11/25/2008 and integrated in the <<Regional Waste Management Plan>> with L.R. n.24 dated 06/07/2006. It concerns the production of waste, including not only waste in the strict sense (discharge on land of waste products similar to urban waste from ships), but also discharges of potentially polluting substances in the event of accidents (e.g. at sea for imports of organisms and exotic agents due to the washing of the tanks or the discharge of bilge water or to the ground due to the accumulation of contaminating substances on the ground). The fundamental principle which inspires the Plan can be deduced from art. 7 of Legislative Decree 182/2003, which prescribes the obligation for the ship's master to <<deliver all waste produced by the ship to the port collection facility before leaving the port>>, in perspective of a complete reclamation of the ship before it undertakes a new navigation and this in the general interest for a greater protection of the marine environment.”

In paragraph 3.2 the following is reported:

“As reported in the Plan, in the Port of Vasto the person responsible for the collection of waste produced by ships has not yet been identified (a specific authorized company to be identified through a public tender).

This service continues to be performed, under the authorization system, by companies in possession of the required qualifications authorizations regarding the collection and transport of waste, registered in the register pursuant to article 68 of the Navigation Code held by the Ortona Port Authority.

Currently, the cargo ships that call at the port of Vasto regularly deliver the waste produced as garbage to the authorized companies pursuant to art. 68 C.N. using the bins inside the port. The same are emptied by the municipal waste collection manager on a daily basis.

Company data for the last 3 years are shown in the table below:

Table indicating the quantity of waste oil and OIL FILTERS collected at the port in three-year period 2019-2021		
PERIOD	Used Oils (Kg) Code CER 130205	Oil Filters (kg) Code CER 160107
Year 2019	3200	171
Year 2020	4500	656
Year 2021	5900	375

As far as the other types are concerned, in particular bilge water and sludge, currently the competent Maritime Authority, if the necessary conditions exist (sufficient storage capacity of the ship, known port of destination and adequate capacity of the tanks on board), authorizes the maintenance on board pursuant to art. 7 of Legislative Decree 182/2003.

Ordinance No. 16 / 2019 NOTICES that the Plan for the Collection and Management of Waste produced by ships and cargo residues of the Port of Vasto (Ch) - 2016 Edition was approved with Resolution D.G.R. n.49/C of 25-01-2019 by the Abruzzo Region, which repeals and replaces Ordinance n. 44/2008 dated 25-11-2008 in the aforementioned premise as well as any other provisions previously issued by the Maritime District Office which are incompatible and/or in contrast with the provisions of the annexed Plan. ([Allegato 8](#) - Article 1).

## **2.5 Water Management**

The quality of marine-coastal and transitional waters is determined using the indicators established by Legislative Decree 152/06, by the Decrees of the MATTM 131/08, 56/09, 260/10 and by Legislative Decree 172/15, which implement the objectives introduced by the Framework Directive of the European Parliament and of the Council (WFD/2000/60/EC, European Union, 2000).

The Ministerial Decree 260/10, "Regulation containing the technical criteria for the classification of the state of surface water bodies, for the modification of the technical standards of the legislative decree 3 April 2006, n. 152, prepared pursuant to article 75, paragraph 3, of the same legislative decree", provides for new elements for the classification of the quality status of water bodies, identifying the qualitative elements for the classification of the ecological status and implementing the criteria for the typification of surface water bodies.

Legislative Decree 172/15, implementing decree of Directive 2013/39/EU, modifies Directive 2000/60/EC as regards priority substances in the water policy sector. It modifies the articles 74 and following of Legislative Decree 152/06, in particular art. 78 on the subject of environmental quality standards for surface waters for the purpose of determining good chemical status.

Decision (EU) 2018/229, as implementation of Directive 2000/60/EC of the European Parliament and of the Council, indicates the values of the classifications of the monitoring systems of the Member States resulting from the geographic intercalibration exercise for the Mediterranean Sea and repeals the decision 2013/480/EU of the European Commission.

This act, together with the "Technical criteria for the classification of the ecological status of water bodies of coastal marine waters. Biological Quality Element: Phytoplankton" and "Implementation of Directive 2000/60/EC. Classification of the ecological status of coastal marine water bodies - EQB Macroalgae, Benthic Macroinvertebrates,

Angiosperms” by ISPRA establishes the class limits and reference conditions for the EQB to be used for the classification of the ecological status of coastal marine water bodies relating to the Type II-A Adriatic. The classification of marine-coastal bodies of water is defined on the basis of their chemical status and ecological status, according to the indications provided by the aforementioned standards.

Each body of water is assigned an ecological status and a chemical status: the first is given by the monitoring of the biological quality elements, the supporting physicochemical quality elements and the supporting chemical elements (specific pollutants not belonging to the list of priority - table 1/B of Legislative Decree 172/15); the second from the monitoring of substances in the priority list (table 1/A for the water column and biota matrix and 2/A for the sediment matrix of Legislative Decree 172/15). The classification of each body of water provides for the elaboration of quality indices based on the annual monitoring campaigns and on the related biological, hydrological, physicochemical and chemical parameters. As written in [Allegato 7.pdf](#), it follows that body of water 2 is of interest to us for the state of the art of the port of Vasto.

BODY OF WATER 2 (IT13IT12\_RICCIO\_VASTO\_ACB2)

BODY OF WATER Riccio-Vasto	Distance from the coast m	Bottom depth	Latitude
RICCIO	0	0	42°22'44.45"
	3.000	14.4	42°22'44.18"
VASTO	0	0	42°06'34.28"

The monitoring network in Vasto is located exactly on Punta Aderci

VASTO PUNTA ADERCI	VA10	42°11'02"	14°41'09"
	VA12	42°12'08"	14°42'12"

All analyzes are reported in [Allegato 9](#)



### 3. Tools, methodologies and recommendations to improve the state of the art:

The main tool to be used to improve the state of the art is the ESPO 2021 Guide. Understanding the port and its Governance is important for establishing or planning interventions that make it more sustainable, or as defined in the European Guide, Green Port, which I report below. Speaking of a predominantly commercial port and today of great national interest, which has become part of a larger management system that includes other Adriatic ports, the tools that could be used are many, **from the modernization of infrastructures with green systems and low environmental impact, in case the management itself is lean management, to a range of services that could be improved and which would potentially be included not only in commercial, but also in public utility or even regulatory functions.** As regards the task of 'greening' the port, it is important to consider the differences in port governance.

Port Governance has a strong influence on the tools that a port can use to influence ecological behaviour. If the main task of a port authority is to administer and manage port infrastructure, it cannot force other port actors to go greener through regulation. Instead, it has to rely on the tools at its disposal, such as the definition of conditions in land lease and concession agreements or the implementation of incentive systems in infrastructure tariffs, which have a limited impact when it comes to changing the investment decisions of the shipowners.

Port infrastructure charges represent a small part of total ship calls and an even smaller part of a ship's total voyage cost. Typically, as owners, port authorities manage port land and infrastructure and are responsible for port development. The management of the main services to ships, in particular the handling of goods, is entrusted to private operators. The management of the main services to ships, in particular the handling of



goods, is entrusted to private operators. Cargo handling services are usually in the hands of private operators to which it is guaranteed the use of the port land through lease agreements or transfers of public areas. In a limited number of cases, port authorities act as operators. In some cases, they provide services of general economic interest and/or commercial services (including the handling of goods).

As part of the regulatory function, port authorities ensure the application and compliance with the rules and regulations established by local, regional, national or other agencies. Through the community manager function, the port authority can help solve hinterland bottlenecks, address environmental issues, deliver training, education and digitized services, and attract new businesses for ports as a whole. Many ports are owners when it comes to (maritime) shipping operations, but are taking a more active role in clean energy. They facilitate, co-invest and sometimes become operators themselves. The Port Authority is fully accountable and mandated to meet emission reduction targets and reduce the environmental footprint for all activities within its remit.

Since the majority of European ports are made up of "owner" ports, the liability is limited to their management, the port offices and buildings they manage, the means of transport (fleet) and/or all the services offered by the port authority (for example, technical nautical services which are still managed internally). When we speak of port, therefore, we must not mean only the port itself (port authority), but also the port area, where a distinction is made between transport activities within the port area and all other activities within the port area. port area and all other activities, including industries, energy, real estate, etc. within the port area, or the wider community around the port.

The port area includes all the players who operate there. The role of the port authority is to coordinate all actors, where necessary, to enable smooth and efficient port operations in complex logistics chains. The port authority has direct influence on greening activities within its remit. They may use tools such as green discounts on tariffs, modal split targets,

specific provisions in lease or concession agreements, or a bilateral memorandum of understanding or letter of intent, although they are often forced to use non-binding tools to influence the various independent stakeholders and facilitate the greening of the port area. Activities related to port transport involve maritime transport, including related activities such as cargo handling, passenger services, towage, etc.

Measures and initiatives to reduce the negative externalities of transport can include technical and operational measures, as well as modal shift ambitions and efficiency measures. With regard to cargo handling, for example, the design and construction of a railway connection was already started in the port of Vasto which will make it possible to take advantage of intermodal transport with a low environmental impact, offering a discount for the use of ecological trains or cars operators. Not only a discount on rail transport, but also for road transport with more sustainable fuel vehicles such as hydrogen or gas, or for the operating machines that work internally in the port.

L'autorità portuale può svolgere un ruolo significativo nell'aumentare l'efficienza e la fluidità delle operazioni portuali nel loro complesso, ma dipende anche dalla stretta collaborazione di tutti gli attori portuali e dell'adempimento delle loro responsabilità in relazione alle proprie operazioni. I porti sono spesso visti come un'area di considerevoli esternalità negative, pur avendo un ruolo limitato nella mitigazione delle suddette al di fuori dell'area portuale. Tuttavia i porti contribuiscono in modo significativo ad affrontare la sfida del cambiamento climatico attraverso azioni positive. Il porto di Vasto può essere un partner nella realizzazione della transizione energetica nella regione Abruzzo, contribuendo così positivamente alla decarbonizzazione dell'economia europea. Può essere un luogo importante per la facilitazione, la produzione e la fornitura di soluzioni energetiche pulite, ma soprattutto può creare sinergie tra le industrie presenti nel porto stesso e intorno ad esso ed evitare trasporti inutili avvicinando la produzione e la manodopera agli agglomerati urbani e ai centri di consumo.

The port authority can play a significant role in increasing the efficiency and smoothness of port operations as a whole, but it also depends on the close cooperation of all port actors and the fulfillment of their responsibilities in relation to their operations. Ports are often seen as an area of considerable negative externalities, although they have a limited role in mitigating the aforementioned outside the port area. However, ports contribute significantly to addressing the challenge of climate change through positive action. The port of Vasto can be a partner in the realization of the energy transition in the Abruzzo region, thus contributing positively to the decarbonisation of the European economy. It can be an important location for the facilitation, production and supply of clean energy solutions, but above all it can create synergies between the industries present in and around the port itself and avoid unnecessary transport by bringing production and labor closer to urban agglomerations and consumer centers.

Tools that the port authority may consider:

- Purchases and investments related to the infrastructure and operations of the port authority taking into account energy efficiency and ecological efforts;
- Development of green plan for the port authority (e.g. not using single-use plastics, encouraging green mobility of staff such as cycling and carpooling, such as reducing paper use, ) and energy efficiency and green considerations for own ships;
  - Procurement and concession policy (example: green clauses in service contracts and tenders)
- Port infrastructure (example: climate adaptation of infrastructure, energy efficiency improvement of port authority buildings)
- Create a roadmap for greening activities of ports following the Green Guide that ESPO drafted as a suggestion for a specific roadmap for each port.

#### 4. Some examples to take inspiration from:

##### Air and Climate:

Air quality monitoring system with an intelligent environmental platform. ( see [espo.be/practices/Balearic-ports-air-quality-monitoring-system-and-s](https://espo.be/practices/Balearic-ports-air-quality-monitoring-system-and-s) )

System of sensors, big data and artificial intelligence resources in the port to reduce the impact of port operations on the city, monitor port and ship emissions and optimize the performance of port operations. Project already under development in the port of Valencia which aims to reduce port traffic congestion and reduce CO2 emissions by 10% from trucks in the port. ( [espo.be/practices/green-ports-digital-tools-towards-sustainability](https://espo.be/practices/green-ports-digital-tools-towards-sustainability) )

## 5. Hydrogen

### Best Practices:

#### Air and Climate:

Air quality monitoring system with an intelligent environmental platform. ( see [espo.be/practices/Balearic-ports-air-quality-monitoring-system-and-s](https://espo.be/practices/Balearic-ports-air-quality-monitoring-system-and-s) )

System of sensors, big data, and artificial intelligence resources in the port to reduce the impact of port operations on the city, monitor port and ship emissions, and optimize the performance of port operations. Project already under development in the Port of Valencia that aims to reduce port traffic congestion and reduce CO2 emissions by 10 percent from trucks in the port. ( [espo.be/practices/green-ports-digital-tools-towards-sustainability](https://espo.be/practices/green-ports-digital-tools-towards-sustainability) )

#### Alternative Fuels and Renewable Energy:

Taking a cue from northern ports, for example Rotterdam, a sea corridor for green hydrogen logistics could also be considered. A project is underway to start in 2028 among four companies for this sea corridor that will connect the ports of Sines in Portugal and Rotterdam in the Netherlands. Green hydrogen is produced in Sines, converted to liquefied hydrogen, and a dedicated liquid hydrogen transporter will export it to Rotterdam (<https://www.espo.be/practices/a-green-hydrogen-logistic-maritime-corridor-to-con>).

In addition, the Rotterdam Port Authority and an energy company have signed a memorandum of understanding for the development of green hydrogen production at the energy company's site in Maasvlakte so as to make Rotterdam an international hub for hydrogen production and import and for hydrogen transit to other countries in northwestern Europe. These plans are based on the results of a recent feasibility study showing that the location on Maasvlake is ideal for large-scale production of green hydrogen using energy generated by

North Sea wind farms. (<https://www.espo.be/practices/hydrogen-production-at-the-port-of-rotterdam>)

In the wake of this example, a corridor could be intercepted in the port of Vasto that goes to the North or at least to countries that would demand it, for example, to power heavy transport. This is because the project that will see the light in Vasto on the new green hydrogen production plant could be the spin-off for the creation of a Hub in the vast port. Connecting with northern ports or creating a corridor with other ports is possible, as ADSP of the Central Adriatic Sea with its presence at the Breakbulk fair in Rotterdam with its own representative stand has made known the potential of the Ancona-Ortona-Vasto port system, in this case on the transport of general cargo, but above all to increase the opportunities for choosing its port infrastructure.

Vasto, in this context, could represent a useful junction within the Mediterranean, especially taking advantage of the skills that we can find from the ex-Cotir experience, which possesses within it, the coexistence of the company that deals with handling within the port area, and also take advantage of the technologies of storage own derivatives of the territory, such as that of the multinational Walter Tosto, which is also involved in the H2 project