

THE CONTEXT

Ports are hubs connecting different types of transport systems at global and regional level. However, freight loading and unloading operations and passengers' mobility have significant impact on the environment, especially on air quality, water and noise pollution as well as CO₂ emissions. For this reason, ports can act as drivers for the implementation of more **efficient and greener transport policies**.

THE PROPOSED SOLUTION

SUPAIR – Sustainable ports in the Adriatic–Ionian Region is a 24-month-long **ADRION–ETC project** that responds to such challenge by improving the ability of port authorities to assess the negative externalities caused by their port operations and to plan and implement measures to become a sustainable port.



THE RESULTS ACHIEVED

1 TRANSNATIONAL STRATEGY

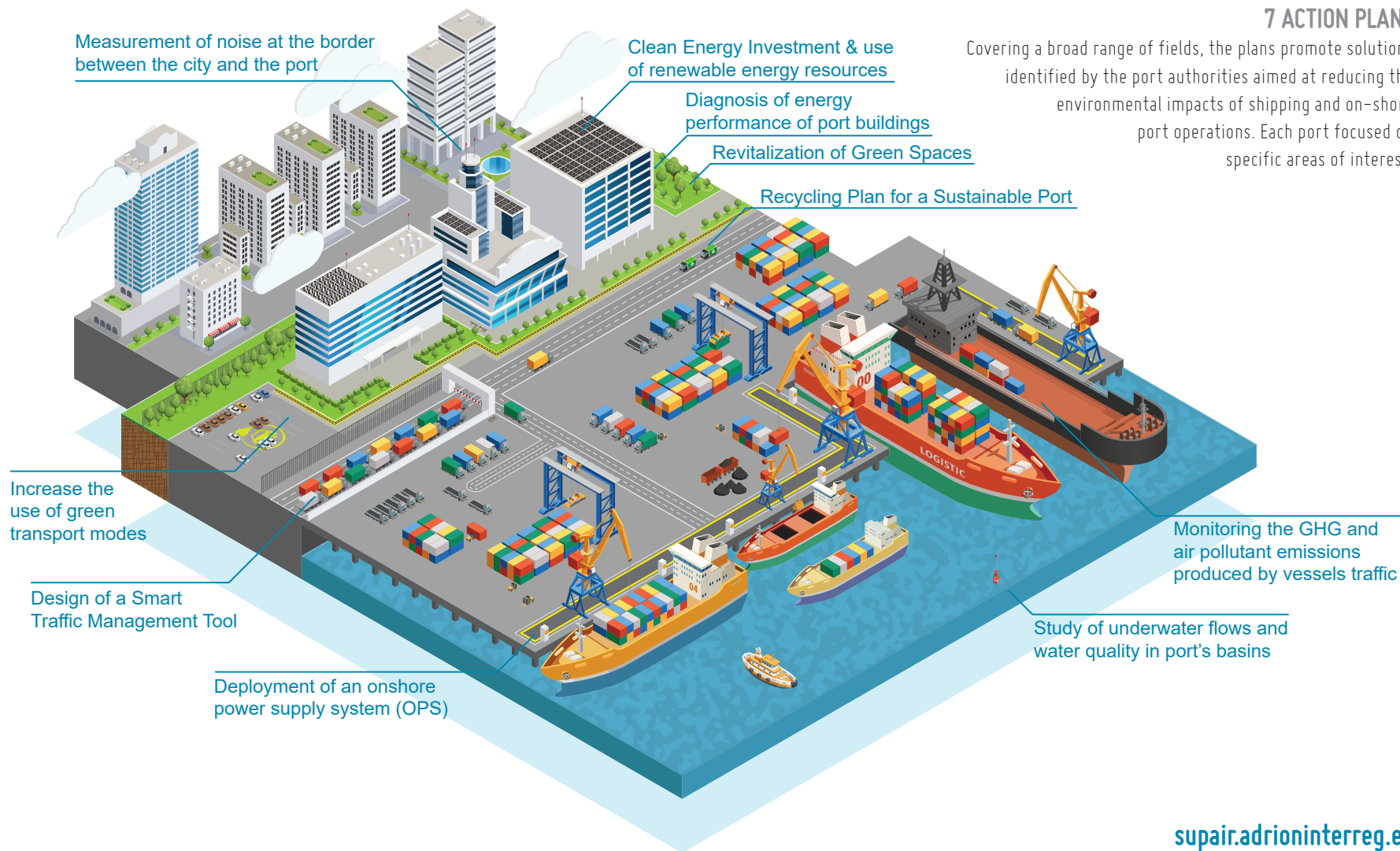
For low carbon transport systems in the Adriatic–Ionian basin. It collects relevant European, national or regional policies and identifies the specific steps and actions that need to be followed in order to shift from a highly emitting transportation system related to port activities into a more sustainable one.

1 TRANSNATIONAL COOPERATION NETWORK

The SUPAIR partners commits to exchange on good practices regarding soft and hard environmentally friendly solutions for a greener, safer and more efficient transport system. Ports outside the SUPAIR partnership are welcome to **join the Network embracing the SUPAIR approach and methodology!**

7 ACTION PLANS

Covering a broad range of fields, the plans promote solutions identified by the port authorities aimed at reducing the environmental impacts of shipping and on-shore port operations. Each port focused on specific areas of interest.



PROJECT COORDINATOR: Area Science Park

CONSORTIUM: Port Network Authority of the Eastern Adriatic Sea / North Adriatic Sea Port Authority / Venice International University / Luka Koper, port and logistic system, public limited company / Port of Bar Holding Company / Durres Port Authority / Centre for Research and Technology Hellas / Piraeus Port Authority S.A. / Thessaloniki Port Authority SA

supair.adrioninterreg.eu

supair@areasciencepark.it

[SUPAIRproject](https://twitter.com/SUPAIRproject) www.linkedin.com/groups/12104369

This factsheet has been produced with the financial assistance of the European Union. The content of the document is the sole responsibility of the SUPAIR partnership and can under no circumstances be regarded as reflecting the position of the European Union and/or ADRION programme authorities.

Strategies for environmental protection

How to improve energy efficiency in the Port of Venice



BACKGROUND AND OBJECTIVES

Being a Low Carbon Model Port for Venice and Chioggia means that the system shall develop and continue to generate “wealth” while preserving the historical, archaeological, urban and artistic heritage integrated into an UNESCO site, unique and extraordinary. Within SUPAIR project, North Adriatic Sea Port Authority has implemented several actions paving the way to a low carbon model port:

- Design and implementation of a **Smart Traffic Management Tool** to improve the port performances landside, explicitly addressing the reduction of queues and waiting, transit, loading and unloading times of goods and passengers, reduction of consumption and emissions of pollutants
- Creation of a **DATAMART** and a **Road Access Report Form** in the Port Community System called LOGIS
- Analysis of **energy consumption of buildings and port facilities**

THE PORT OF VENICE IN NUMBERS

Port areas: 20 450 000 m²

Length of docks: 15 000 m

Number of berths: 101

Maximum draft: -11,20 m

Length of rail track: 65 000 m

Length of broadband fiber: 7 000 m

Length of road network: 40 000 m



ACTION PLAN



GOALS

- Improve the port accessibility landside, reducing waiting times for gate —in gate out procedures, lowering CO₂ emissions
- Measure the energetic performances of buildings in the state property areas of the port of Venice
- Leveraging results and best practices to enhance the terminal operators and the port community environmental culture and call to action



ACTIONS

Pilot intervention 1 – Design and implementation of a Smart Traffic Management Tool to improve the port performances landside

Pilot intervention 2 – Certification of energy performance of NASPA buildings

Pilot intervention 3 – Development, dissemination and data collection by means of a questionnaire aimed at gathering specific data about each specific terminal set of activities carried out in the Port of Venice



RESULTS / EXPECTED RESULTS

- Creation of a DATAMART and a Road Access Report Form in the Port Community System called LOGIS
- Certification of Energy performance of buildings in the port of Venice according to law in force
- Analysis of best practices in port operations and dissemination of results to port community



FUTURE PROSPECTS

North Adriatic Sea port Authority will continue to implement sustainability strategies and actions, accordingly to the Triennial Operating Plan, which reflect ESPO (European Sea Ports Organization) Top 10 environmental priorities of the port sector, focusing on the following themes:

1. Air quality;
2. Noise;
3. Relationships with local community;
4. Energy consumption and climate change.

CONTACTS

PROJECT MANAGER: JAMES ORLANDI

ADDRESS: Santa Marta Building 13 – 30123 Venice (IT)

PHONE: +39 041 533 4243

JAMES.ORLANDI@PORT.VENICE.IT **WWW.PORTO.TRIESTE.IT**



**NORTH ADRIATIC SEA
PORT AUTHORITY**

Our Journey on the Waves of Sustainability

SUPAIR project: moving forward to drive and align the Port of Trieste' efforts with international and European legislative frameworks



BACKGROUND AND OBJECTIVES

Facing the upcoming stringent environmental standards, Trieste Port Authority has been working over the last years to look for innovative compliant solutions which could promise a good and holistic environmental performance as well as foreseeable economic viability.

Following these efforts on environmental protection, and seeking the most promising bases to further consolidate its leading position at the forefront among Italian Ports hierarchy in terms of total tonnage and railway based traffic, the Port of Trieste joined SUPAIR project with the objective to develop a comprehensive action plan fully dedicated to attentively evaluate the most suitable LC solutions to be implemented in the coming years abiding the Directive 94/2014/EU on the deployment of alternative fuels infrastructure and art. 4bis of the Italian Legislative Decree 169/2016 on the reform of the national port sector.

THE PORT OF TRIESTE IN NUMBERS

Port areas: 2 300 000 m²,
of which about 1 800 000 m²
of free zones

Storage areas: about 925 000 m²
of which about 500 000 m²
under cover

Length of docks: 12 000 m

Number of berths: 58 (for break
bulks, multi-purpose vessels,
container ships, Ro-Ro ferries,
oil tankers, chemical
tankers, passenger ships)

Maximum depth: 18 m

Length of rail track: 70 000 m

ACTION PLAN



GOALS

- **Monitoring the greenhouse gases and pollutants emissions** produced by vessels traffic within the port area and port related traffic
- Reduction in energy consumption of vessels focusing on the **deployment of an onshore power supply system (OPS)** to be implemented on the port's berths



ACTIONS

- Creation of an emissions inventory consisting in a catalogue of the various port-related emissions sources
- Analysis of the available innovative technologies useful to ensure an improvement of port the environmental performance
- Strengthening the cooperation with local, regional, national and international maritime stakeholders to share relevant experiences and evaluate commonly implementation planning strategies



RESULTS / EXPECTED RESULTS

- Inventory document of the actions to be carried out to promote sustainability in the long time perspective
- Identification of strategies for implementing effective policy and financial solutions to support the uptake of OPS technologies



FUTURE PROSPECTS

The Port of Trieste will adopt the most promising solutions identified in the SUPAIR Action Plan to improve the port's environmental sustainability and energy efficiency performance

CONTACTS

PROJECT MANAGER: ALBERTO COZZI

ADDRESS: Special Projects Unit, Via Karl Ludwig Von Bruck n. 3 – 34143 Trieste (Italy)

PHONE: +39 040 673.26.17 **MOBILE:** +39 335 15.15.707

ACOZZI@PORTO.TRIESTE.IT **WWW.PORTO.TRIESTE.IT**



Port Network Authority
of the Eastern Adriatic Sea
Ports of Trieste and Monfalcone

Environmental sustainability in the port of Koper

Living with the green port



BACKGROUND AND OBJECTIVES

The enlargement of the operational area dedicated to the port, as well as the increasing volumes of goods transported through the port area, have raised issues that had not aroused interest until a few years ago. Today, the development of technologies, EU legislation and the awareness of the various logistic operators, have ensured that the environment and the local population are also kept in strict consideration during the creation of port development plans. Luka Koper has been **implementing control and monitoring measures for the surrounding environment for years**, in order to prevent and verify as far as possible the parameters of the environment within the port and in its immediate vicinity – those on which the port may have a direct influence. Measurements and analyzes carried out through the activities of the SUPAIR project have allowed Luka Koper to improve monitoring of the influences of the port in the nearby area, maintaining a high level of operation, respecting the surrounding environment.

THE PORT OF KOPER IN NUMBERS

Container throughput
2018: 988 499 TEU

Cras throughput 2018:
754 409 units

Maritime throughput
2018: 24 million tons

Specialized terminals: 12

Number of berths: 26

Operative quays: 3 400 m

Railway tracks: 35 000 m

ACTION PLAN



GOALS

- The port of Koper aims to monitor the port emissions (dust, noise etc.) and consumptions (energy, water etc.)
- The sea protection is one of the crucial activities to keep port's sustainability as a concrete goal
- Living in symbiosis with the city requests also efforts for the inclusion of additional measures in line with the spatial development of the whole area



ACTIONS

- Upgrade of the equipment for monitoring of emissions and consumptions
 - Investment in green technology through the switch to electricity
 - Detection of vessels' pollution
 - Share of measurements information through the portal www.zivetispristaniscem.si
 - Investment in efficient solutions for the Municipality.
- Exchanging best practices with other ports will also allow the development of solutions for port's sustainability in line with citizens' expectations



RESULTS / EXPECTED RESULTS

- Reduction of pollutants in the port's area and especially on the border with the city center
- Development of technical solutions to reduce noise and dust
- Agreements with shipping agents and forwarders for optimal planning of works and use of newer vessels and transport vehicles for goods and freights manipulated in the area in the proximity of the city center
- Higher levels of the systems for alert and interventions in case pollutants or anomalies



FUTURE PROSPECTS

Future actions are linked to the spatial development of both the port and the city.

A concrete help is expected also by policy makers, for example by introducing special taxes or limitations for old vessels or vehicles emitting unsustainable levels of pollutants. These agreements must be defined at EU level or at least for the whole Mediterranean region.

At local level Luka Koper can upgrade the detection systems and invest in newer technology for equipment. The collaboration with stakeholders can also lead to a better planning of the works, scheduling those with lower level of emissions in the area immediately adjacent to the city center.

CONTACTS

PROJECT MANAGER: ROBERTO RICHTER

ADDRESS: Vojkovo nabrežje 38, 6501 Koper, Slovenia

PHONE: +386 5 66 56 644 **MOBILE:** +386 40 66 56 30

ROBERTO.RICHTER@LUKA-KP.SI **WWW.LUKA-KP.SI**



Green port transformation

Improvement of port's efficiency and environmental performance



BACKGROUND AND OBJECTIVES

The Port of Bar is Montenegro's main cargo ports. The Port is also an important employer and is fully aware that ensuring a high level of energy sustainability may help to bring ecological, economic and technological advantages and can be essential for obtaining a leadership position for the port in the long term. In addition, the Port of Bar is fully aware that an insufficient level of energy sustainability could not only have substantial impacts on nature, society and economy as a whole but also on their operations. Against these challenges, as a partner in the SUPAIR project pursues the following vision:

The overall vision of Green Action Plan for the Port of Bar is to take a leadership role when it comes to energy sustainable performance and continually develop, promote and implement actions to achieve ecologically sound but also profitable port operation.

Inspired by this vision, the Port of Bar strives to create the necessary conditions to remain competitive in the long term and establish the conditions for growth.

THE PORT OF BAR IN NUMBERS

Port areas: 841 079 m²

Capacity: 2,7 million tons

Closed storage areas: 12 282 m²

Open storage areas: 123 697 m²

Grain silo: 30 000 t

Length of docks: 1 619m

Number of berths: 13

Maximum draft: 12,8 m

Length of rail track: 11 282 m



ACTION PLAN



GOALS

- **Reduce port-related energy consumption continuously:**
 - Monitor and analyze energy consumption
 - Reduce fossil fuel consumption
 - Deploy renewable energy sources
- **Mitigate GHG emissions and air pollutions in the port area continuously:**
 - Monitor and analyze emissions and air pollutions
 - Reduce fossil fuel consumption
 - Deploy renewable energy sources
- **Avoid or reduce ship GHG & air emissions in the port area:**
 - Provide innovative and sustainable technical solutions
 - Establish environmental pricing system on transparent criteria



ACTIONS

- Strategic planning:**
 - Highlighting the relevance of the plan
 - Understanding of existing conditions, development of stakeholder strategy
 - Establishment of vision and goals
- Operational planning:**
 - Development of evaluation framework
 - Identification of sustainability actions
 - Definition of deployment strategy plan
 - Definition of monitoring program



RESULTS / EXPECTED RESULTS

- Sound management of negative externalities caused by port and vessel operations
- Assurance that ever more strictly (environmental) conventions and regulations can be met
- Improved port's efficiency and productivity
- High customer and stakeholder reputation
- Increased attraction of employees and investors
- Improved employee morale



FUTURE PROSPECTS

The Port of Bar has recognized the signs of the times early and started its "green port transformation". The overall goal is to **ensure an energy efficient and largely emission-free port operation** to reduce costs, improve the port's overall efficiency and increase its environmental performance. One essential part of the port's overall "energy sustainability strategy" is the Action Plan for sustainable and low-carbon Port of Bar at hand that provides detailed and concrete information on how to reduce environmental impacts of port operation in a cost-efficient manner.

In the centre of the Action Plan, a large number (> 70) of potential energy sustainability measures have been identified and pre-evaluated that are suitable to reduce both, port and vessel-related emissions and energy consumption in the port area. In addition, the 15 most promising measures have been evaluated in detail, considering technical, economic and environmental aspects and a work plan including a recommended timetable for the implementation has been proposed.

CONTACTS

PROJECT MANAGER: DEJAN NOVOVIC

ADDRESS: Obala 13 jula bb, 85000 Bar, Montenegro

MOBILE: +382 67 333 560

DEJAN.NOVOVIC@LUKABAR.ME **WWW.LUKABAR.ME**



PORT OF BAR

Designing a Sustainable Eco- Friendly Port

SUPAIR project: an approaching guide to regenerate the port-city link through a sustainable action plan



BACKGROUND AND OBJECTIVES

The Port of Durres is more than cranes, cargo, terminals, ships and international trade; it is successful in another way. Environmental protection is a core value for the port and for this reason the Environmental Management Sector has several duties:

- **Implement an extensive environmental policy** with a rigorous appraisal procedure for all new projects. Further, to identify any potential risk to the natural environment, the Port conducted a full environmental audit of all marine facilities
- **Working with relevant stakeholders** to share information and coordinate environmental projects and plans
- The participation of stakeholders begins with initial planning. They identify environmental problems in the preliminary designs and begin timely investigative programs to gather environmental data. They also help to design procedures and features into the development plan to mitigate environmental impacts that might result from the construction and/or operation of new facilities

THE PORT OF DURRES IN NUMBERS

Port areas: 793 000 m² (land surface), 674 000 m² (water surface)

Storage areas: 5 343 m²

Length of docks: 2 200 m

Number of berths: 11

Maximum draft: 10,5 m designed to be achieved with the deepening project, 7,5 m currently

Length of rail track: 1 200 m



ACTION PLAN



GOALS

3 main issues and themes:

- **Environment and surrounding areas:**

- Monitoring air quality and CO₂ emissions
- Waste management and recycling activities

- **Port hinterland connections:**

- Shift to low carbon transport modes

- **Energy consumption:**

- Use of renewable resources



ACTIONS

- **Revitalization of Green Spaces** within and outside the port areas

- **A Recycling Plan for a Sustainable Port**, including actions such as: recycling seminars, vessels waste fee reductions and a waste management plan

- **A Mobility Plan for Durres Port staff** to increase the use of green transport modes

- **Clean Energy Investment** (renewable), including conversion of port cranes and vehicles from diesel engine to electrical ones, installation of photovoltaic plant system and deployment of the on-shore power supply



RESULTS / EXPECTED RESULTS

- Increased air quality, improved integration port/urban area and port working conditions and raised tourist related revenues

- Improved waste management system and recycling rate; reduced waste fee for vessels sorting waste on board; creation of an employee's "green mind" through short training sessions

- Green transport modes used by staff commuters raised from 40% to 58%; use of private car reduced from 60% to 42%; walking trips increased up to 22%; cycling trips increased up to 11%; collective transport trips increased up to 21%

- Efficient use of port resources; decreased cost of port operations; noise and air pollution from anchored vessels reduced to almost "zero"



FUTURE PROSPECTS

MEASURES UP TO 2025 (NO ADDITIONAL STUDIES NEEDED)

Mobility Management Soft Measures:

- Divide the port in distinct areas, according to categories of functions
- Provide 2 bus company approving timetable and itinerary
- Establish bike parking lots near

workplace and create the cycle path within the port area

MEASURES UP TO 2030 (WITH ADDITIONAL STUDIES)

Revitalize the existing green areas and create new ones within the port territory to increase the air quality

TARGETS TO BE REACHED WITHIN 2025

- Increase the "green areas" at least by 50%
- At least 65% of the port staff shifted to green transport modes
- Shift 50% of energy consumption to renewable energy sources

CONTACTS

PROJECT MANAGER: SERENA KOVAČI

ADDRESS: L.1, Rruga Tregtare

PHONE: +355 52 2936 427 **MOBILE:** +355 68 80 10 444

S.KOVACI@APDURRES.COM.AL **WWW.APDURRES.COM.AL**

Autoriteti Portual Durrës
DURRES PORT AUTHORITY

Strengthening the environmental and energy management of a port under development

What SUPAIR-ADRION project offered to the Port of Thessaloniki



BACKGROUND AND OBJECTIVES

The Port of Thessaloniki is a mid-size commodity port engaged in diverse trades, in terms of its major commercial activities. However, these activities often give rise to various environmental issues including air quality and Green House Gas Emissions. The Port of Thessaloniki was accredited with the PERS certification from 2003 till 2014 and since October 2015 the Port has been implementing an Environmental Management System for the whole port operations accredited according to the ISO 14001 international standard. The ISO 14001 certification process enabled the port to recognize its main environmental aspects and impacts as well as to set environmental objectives and targets.

The current port environmental policy includes the commitment to prevent pollution from any source, to monitor and minimize adverse environmental impacts, to raise the awareness in environmental management of both business partners as well as visitors and passengers and to comply with the latest national and European legislation related to port operations. In order to meet its commitments, Port of Thessaloniki has set appropriate environmental programs and indicators to improve environmental performance, reduce negative and increase the positive impact from its activities. The participation in SUPAIR-ADRION project gave the opportunity to the Port of Thessaloniki to be part of a network of ports engaged in developing solutions for a sustainable and low-carbon management of their operations and ultimately to develop an integrated, port specific Action Plan with the ultimate goal of reducing Green House Gas Emissions.

THE PORT OF THESSALONIKI IN NUMBERS

Port areas: 1 500 000 m²

Storage areas: 600 000 m²

Length of docks: 6 200 m

Number of berths: 27

Maximum draft: 12 m

Length of rail track: 17 400 m

ACTION PLAN



GOALS

- Track and monitor total energy consumption
- Monitor and minimize Green House Gas Emissions
- Monitor and regulate truck flows



ACTIONS

- Energy Management Plan
- Energy Management Database
- Truck flow management plan



RESULTS / EXPECTED RESULTS

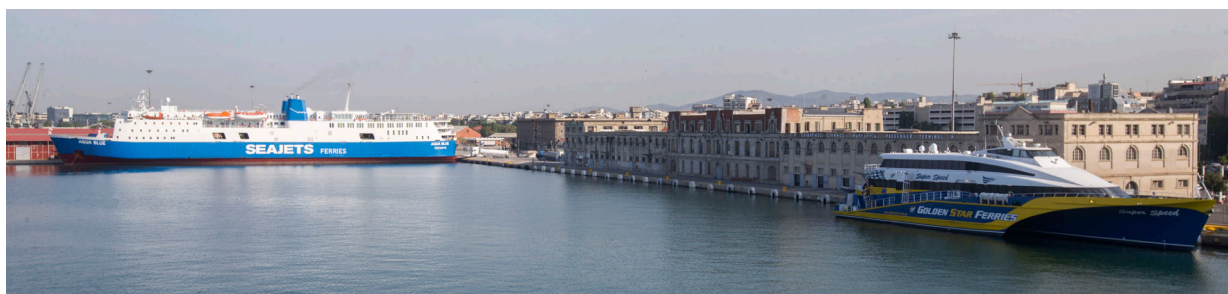
- Reduced truck route length and engine idle time
- Reduced Green House Gas and fugitive dust (PM10 and PM2.5) emissions
- Evaluation of current and future Port energy consumption patterns and needs
- Solutions for increasing the port's energy efficiency
- Advanced IT database for monitoring energy consumption



FUTURE PROSPECTS

ThPA S.A. has a strategic approach which aims to modernize, **develop and transform the Port of Thessaloniki into the major shipping and logistics hub in South-East Europe**. In this strategic approach the commitment of moving forward towards a sustainable future is of paramount importance. All proposed Actions included in the ThPA SA SUPAIR Action Plan are under consideration.

Their application will improve the environmental performance of the port by **redesigning energy use and improving energy efficiency and by introducing smart methods and tools** on rearranging and reorganizing on-going and future operations.



CONTACTS

PROJECT MANAGER: MR. PANAGIOTIS THEODOSIOU

ADDRESS: Pier A, inside the Port, Postal Code: 54625, Thessaloniki, Greece

PHONE: +30 2310 593 118-121

PTHEODOSIOU@THPA.GR SECRETARIAT@THPA.GR WWW.THPA.GR/EN



This factsheet has been produced with the financial assistance of the European Union. The content of the document is the sole responsibility of the SUPAIR partnership and can under no circumstances be regarded as reflecting the position of the European Union and/or ADRION programme authorities

Transforming the Port of Piraeus into a next generation port with advanced environmental measures



BACKGROUND AND OBJECTIVES

Piraeus Port Authority S.A. (PPA SA), being a **leader in the Mediterranean area** and having a beneficial geographical position in Europe, is in continuous development, according to the principles of sustainability and environmental protection. PPA SA applies Integrated Quality & Environmental Management System in compliance with the requirements of the ISO 9001:2015 and ISO 14001:2015 standards.

However, the port's complexity of activities results in the emergence of environmental issues, related to port-area water body, noise and air quality. PPA SA seeks to **achieve long-term sustainable development** by minimizing emissions, managing effectively generated waste and monitoring noise quality from port operations and ships.

THE PORT OF PIRAEUS IN NUMBERS

Port areas: 5 500 000 m²

Number of berths for cruise: 11

Maximum depth of container
terminal: 19,5 m

Length of rail track: 2 850 m

Port opening: 24 hours

Container volume: 5,70
million TEUs (est 2019)

Number of cranes in
cargo terminal: 35

Vehicle storage capacity: 9 000

Warehouses complex
within PPA: 86 402 m²

Annual cruise calls: 524 Annual
ferry/ro-ro calls: 13 905

Annual Ferry/ro-ro
passengers: 15 657 368

ACTION PLAN



GOALS

Port of Piraeus Action Plan is based on 2 main interventions:

1. **Carbon Footprint:** monitoring and Reduction of emissions from port operations and ships
2. **Energy Management:** monitoring of energy consumption and use of renewable energy resources to cover energy demand



ACTIONS

PPA SA Action Plan includes measures promoting the concept of **sustainability and circular economy** in terms of port infrastructure.

- Air quality real-time monitoring system
- Use of alternative fuels (LNG)
- LED lighting for indoor and outdoor lighting
- Use of electric eco-buses
- Installation of cold ironing
- Energy monitoring consumption system
- Deployment of charging infrastructure for electric vehicles
- Lighting control system
- Use of renewable energy resources
- Electrification of port operations
- Improvement of energy efficiency of buildings



RESULTS / EXPECTED RESULTS

Port of Piraeus acknowledges the need for reducing the carbon footprint in port area, it expects the following results from the adoption of Action Plan measures until 2030.

- Monitoring air pollutants emissions
- Reduction of GHG emissions
- Reduction of shipboard emissions
- Reduction of fossil fuel consumption
- Monitoring energy consumption
- Reduction of energy consumption



FUTURE PROSPECTS



CONTACTS

PROJECT MANAGER: DIMITRIS SPYROU

ADDRESS: Piraeus Port Authority S.A.

PHONE: +30 210 4060833

DSPYROU@OLP.GR **WWW.OLP.GR**



This factsheet has been produced with the financial assistance of the European Union. The content of the document is the sole responsibility of the SUPAIR partnership and can under no circumstances be regarded as reflecting the position of the European Union and/or ADRION programme authorities