Interim Status of Pilot Actions

Deliverable Number D.4.2.14

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Contents

Introduction

Within the SUSPORT project, 13 pilot actions are planned to test solutions to enhance cross-border port environmental sustainability and energy efficiency. These activities are carried out in work package 4, task 2. In order to assure a successful implementation of the actions, PP2 – VIU is in charge of monitoring the development of the pilot actions and consolidating the achieved results in an interim report and a final report (D.4.2.14).

To this end, a common template for data collection has been implemented by PP2 – VIU and submitted to the SUSPORT partners in charge of carrying out pilot actions. The information collected has been chosen to monitor the proper development of the pilot actions in accordance with the joint methodology for carrying out pilot actions (D.4.1.1) and to monitor the acquisition of data required by the assessment methodology (D.4.1.3).

The present interim report describes the pilot actions and then identifies their status in terms of common milestones. Furthermore, it defines the indicators to be used for pilot actions' assessment and their baseline values, identified in accordance with the data collected in the port GreenHouse Gases (GHG) inventory reported in the Territorial Needs Assessment (TNA). Finally, the expected performances of the indicators have been defined too. These forecasted values will help the port authorities in validating the performances predicted in the design phase when data collected during pilot actions will be available for comparison. Nevertheless, it shall be noted that baseline values and predictions relate to 2019 data, so to a pre-pandemic scenario. Thus, possible shifting from predictions might be caused also by the effects of COVID-19 pandemic, which had a strong effect on port traffic, especially regarding passengers flows.

Scope of Document

The document aims at the assessment of the status of the pilot actions carried out during SUSPORT project on December 31th 2021. The scope of the interim report is to briefly describe the 13 pilot actions check their scheduling to identify criticalities (e.g. possible delays, lack of data for the pilot action assessment, etc.). Furthermore, this interim report will be the basis for the definition of the final report, which will be issued at the end of the pilot action in order to consolidate the achieved results.

The Pilot Actions

Figure 1 provides an overview of the pilot actions planned within the SUSPORT project area to enhance port environmental sustainability and energy efficiency.

Figure 1 - Ports affected by pilot actions

In Table 1, the list of project partners involved in pilot actions is reported along with the adopted acronyms and ports directly affected by the actions (in Italy, port authorities are in charge of multiple ports). It is worth noticing that in many ports, multiple pilot actions are under implementation. Some of the project partners used an integrating approach to monitor the activities advance. Other partners preferred to split the actions into subtasks to be monitored separately. This choice is reflected in the structure of the present deliverable. In the following, the pilot actions are briefly described.

Table 1 – SUSPORT partners carrying out the pilot actions and port affected

Acronym	Complete Name	Ports affected
LP - AdSP MAO	Autorità di sistema portuale del Mare Adriatico Orientale	Trieste
PP1 - COSEF	Consorzio di sviluppo economico del Friuli	Porto Nogaro
PP2 - AdSP MAS	Autorità di sistema portuale del Mare Adriatico Settentrionale	Venezia
PP5 - AdSP MACS	Autorità di sistema portuale del Mare Adriatico Centro-Settentrionale	Ravenna
PP6 - AdSP MAC	Autorità di sistema portuale del Mare Adriatico Centrale	Ancona
PP7 - ASVI	Agenzia speciale della Camera di commercio Chieti Pescara	Ortona
PP8 - AdSP MAM	Autorità di sistema portuale del Mare Adriatico Meridionale	Brindisi, Barletta
PP9 - LUR	Lučka Uprava Rijeka	Rijeka
PP11 - LUZ	Lučka Uprava Zadar	Zadar
PP12 - LUS	Lučka Uprava Split	Split
PP13 - LUP	Lučka Uprava Ploče	Ploče
PP14 - LUD	Lučka Uprava Dubrovnik	Dubrovnik
PP15 - DNR	Dubrovnik Neretva County	Dubrovnik

LP - AdSP MAO

The LP - AdSP MAO is carrying out a pilot action in the port of Trieste. The action can be divided into four sub-actions as follows:

1. The first sub-action consists in the replacement of about 979 existing lighting systems in the port's public areas with LEDs.
2. Monitoring of the environmental effects resulting from the plan or programme implementation included in the Strategic Environmental Assessment (SEA).
3. This sub-action consists of the pre-investment study for the application of on-shore power supply (OPS) in the Port of Trieste – Pier no. 7.
4. The pilot action consists of the purchase of an electric vehicle for the employees of the Port Authority

PP1 – COSEF

PP1 – COSEF will implement a pilot action in Port Margreth (Porto Nogaro). During the action will be installed about 108 200W LED light bulbs to replace the existing ones. Besides, works will be realised to improve energy efficiency in the port's main building which hosts the Harbour Master's office, Customs, ONG "Stella Maris", etc. To this end the following technologies will be adopted:

- low-emission windows
- insulation coat of the whole building surface,
- condensing boiler,
- solar thermal system for the production of how water and heating,

Furthermore, a photovoltaic system will be installed to reduce electric energy consumption and a pre-investment study assessing the use of geothermal power will be carried out.

PP2 - AdSP MAS

PP2 – AdSP MAS will carry out a pilot action in the port of Venice. The action has been divided in two sub-actions as follows:

1. PP2 – AdSP MAS will purchase two fully electric cars in total respect of the environment. They came into operation to support the operational and institutional activities of the Authority. Fully in line with project SUSPORT objectives, in this way, the ports of Venice and Chioggia mark a turning point in a new way of designing mobility, as the actions taken follow the provisions of the Energy and Environmental Planning Document approved by the Authority.
2. In order to improve the port environmental performance, PP2 – AdSP MAS will replace existing lighting system with LED in the port of Venice public areas. In this context, 84 light bulbs will be installed. The area involved is Sant'Andrea and San Basilio areas, where the lighting is not sufficient and the existing lighting bodies do not meet the parameters against pollution.

PP5 - AdSP MACS

The pilot action carried out by PP5 - AdSP MACS foresees the purchase of two green vehicles (one electric and one hybrid plug-in) that will be used by the Port of Ravenna Authority for its daily activities. Then, a wallbox and an electric column for two vehicles will be installed for recharging the vehicles. These facilities will be powered by a photovoltaic system having 130 KWp nominal power that will be realized in the parking lot of the Port of Ravenna Authority.

PP6 - AdSP MAC

PP6 - AdSP MAC will replace the existing four high mast lights of the commercial dock with LEDs. Furthermore, the PP6 - AdSP MAC will carry out a technical and economic feasibility study to test the application of innovative technologies for the supply of electric power to the ferries while at the port. Finally, 4 electric cars will be purchased as port service vehicles.

PP7 - ASVI

Following an agreement with the PP6 - AdSP MAC, PP7 – ASVI will replace the existing lighting systems in the public areas with LEDs. Priority will be given to the public berths in Port of Ortona. In detail:

- Banchina di Riva e Banchina di Riva Nuova
- Molo Nord, Banchina Commerciale
- Via Cervana.

PP8 - AdSP MAM

PP8 - AdSP MAM will acquire an environmental monitoring application customized according to the needs of the ports administered by the Authority and which can be integrated with the GAIA PCS. Then, sensors will be installed to monitor water quality (turbidity, chlorophyll, ph, temperature, Dissolved oxygen) in the ports of Barletta and Brindisi. For the correct management of this equipment, a new module in the port' PCS GAIA will be developed.

PP9 – LUR

PP9 – LUR will carry out its pilot action in the port of Rijeka. The action will be composed by:

- Replacement of existing lighting and installation of LED lights port public areas
- Purchase of an electric vehicle
- Installation of a charging station for electric vehicles.

PP11 – LUZ

PP11 – LUZ will carry out its pilot action in the port of Zadar. The action will be composed by:

- installation of a photovoltaic system for port lighting including water collection of rain on that system for purpose of watering flowers & green surfaces at the port area.
- installation of energy storage system for night consumption: Energy storage systems are an essential part of the renewable power generation system. Renewable power sources like solar, wind, and hydro are fluctuating resources. To supply smooth output power to the power grid, energy storage systems are installed in the power generation system.
- Purchase of an electric vehicle, including the installation of a charging station

PP12 – LUS

PP12 – LUS will carry out its pilot action in the port of Split. The action will be composed by:

- Acquisition of mobile environmental laboratory (MEL), a display showing the measures and development of an IT platform to support data exchange between measuring equipment, port operational centre and display.
- replacement of existing port lightning
- New pilot action founded with the savings (waiting for a major change)

PP13 – LUP

PP13 – LUP will carry out its pilot action in the port of Ploče. The action will be composed by:

- Replacement of the existing port lightning system with energy-efficient technology. In detail, The existing lighting system has been planned to be replaced. The existing lighting system is located in two locations:
    - The main railway group No.1. The railway group connects the old port (coast 1,2,3) and the port hinterland. There are 28 lighting reflectors in the railway group that has to be replaced (7 lighting poles (18 m), with 4 reflectors each). The existing lighting is technology is based on high-pressure mercury technology with a total installed power of approximately 25 kW. Pilot actions will consider services for the replacement of the existing port lightning system with energy-efficient technology. The energy-efficient technology will consider the LED reflectors with a total installed power of approximately 6.3 kW.
    - The main port road No.1 and No.2 This port are consist of public roads which connect the port entrance with port terminals (bulk, liquid and container terminal) The lighting system consists of approximately 25 lighting poles with two lighting reflectors which have been installed along the road (a total of approximately 50 reflectors).
- Purchase and implementation of environment protection barriers
- Installation of sensors and stations for monitoring noise, air and water quality to measure concentrations and to display measurements with related development of IT platform to support data exchange within subsystems
- Replacement of the existing air condition system in Port of Ploče Authority data centre with energy-efficient technology

PP14 – LUD

Based on the outputs of the previous WP, PP14 – LUD is aiming to replace/renovate the port lighting system leading towards a more energy-efficient port. Current lighting system needed to be replaced with LED light bulbs and the system that controls their energy efficiency.

PP14 – LUD area lighting system is currently equipped with a total of 161 lighting bulbs/reflectors placed at 6-16m high poles. In order to achieve environmental sustainability and energy efficiency of the port, the whole lighting system will be replaced with new designed LED bulbs and a system that controls its operations and minimize environmental footprint.

PP15 – DNR

PP15 – DNR will carry out its pilot action in Dubrovnik-Neretva county. The action consists of the purchase of a hybrid vehicle.

Status of the pilot actions on 31th December 2021

In the following, the status of the pilot actions is reported in terms of milestones. Moreover, the already selected indicators for pilot assessment at the end of the actions are reported.

Milestones

In Table 2, the milestones of the pilot actions are reported. On 31th December 2021 only AdSP MAM and DNR concluded all the activities. All the other partners have ongoing tasks. It is worth noticing that the tasks marked with "-" are not planned, whereas for the ones marked with "n.a." No data were available when drafting this interim report. Nevertheless, all the partners are scheduling these last activities and, currently, no criticalities in pilot actions implementation are foreseen. In fact, all the activities will be completed by the end of the project which has been extended to June 2023.

Table 2 – Milestones of the pilot actions (completion rate and consolidated/expected completion date)

PPs	Pilot action	Pilot action planning	Completion date	Procurement	Completion date	Installation	Completion date	Data collection	Completion date	Analysis of the results	Completion date
LP - AdSP MAO	**LED lights**	100.00%	Dec-21	0.00%	Sep-22	0.00%	Dec-22	0.00%	Jun-23	0.00%	Jun-23
LP - AdSP MAO	**Monitoring of the environmental effects**	100.00%	Jul-21	100.00%	Dec-21	-	Dec-22	50.00%	Dec-22	0.00%	Jun-23
LP - AdSP MAO	**Cold ironing (feasibility)**	100.00%	Jul-21	100.00%	Sep-21	-	-	-	-	-	-
LP - AdSP MAO	**e-mobility**	100.00%	Dec-21	0.00%	Mar-22	0.00%	Apr-22	-	-	-	-
PP1 - COSEF	**LED lights + energy efficiency + photovoltaic system**	20.00%	May-22	100.00%	May-22	1.00%	May-22	0.00%	n.a.	0.00%	n.a.
PP2 - AdSP MAS	**e-mobility**	100.00%	Nov-20	100.00%	Mar-21	100.00%	Apr-21	0.00%	n.a.	0.00%	n.a.
PP2 - AdSP MAS	**LED lights**	100.00%	Oct-20	100.00%	Jan-21	60.00%	Apr-22	0.00%	n.a.	0.00%	n.a.
PP5 - AdSP MACS	**Photovoltaic system + e-mobility**	60.00%	Dec-22	70.00%	Apr-22	60.00%	Dec-22	80.00%	Sep-22	50.00%	Oct-22
PP6 - AdSP MAC	**LED lights + e-mobility + cold ironing**	100.00%	n.a.	30.00%	Dec-22	30.00%	Dec-22	n.a.	n.a.	n.a.	n.a.
PP7 - ASVI	**LED lights**	50.00%	n.a.	0.00%	Dec-22	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
PP8 - AdSP MAM	**Energy and environmental monitoring system**	100.00%	Nov-21	100.00%	Nov-21	100.00%	Nov-21	100.00%	Nov-21	100.00%	Nov-21
PP9 - LUR	**LED lights + e-mobility**	70.00%	May-22	66.00%	Jun-22	0.00%	Jul-22	0.00%	Dec-22	0.00%	Jan-23
PP11 - LUZ	**Photovoltaic, solar thermal system and EE storage**	100.00%	n.a.	75.00%	Mar-22	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
PP12 - LUS	**LED lights + Environmental monitoring**	100.00%	n.a.	75.00%	Mar-22	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
PP13 - LUP	**LED lights**	100.00%	Dec-20	100.00%	May-21	100.00%	May-21	60.00%	May-22	60.00%	May-22
PP14 - LUD	**LED lights**	90.00%	Mar-22	80.00%	Jun-22	0.00%	Jul-22	0.00%	Aug-22	0.00%	Nov-22
PP15 - DNR	**e-mobility**	100.00%	n.a.	100.00%	n.a.	100.00%	n.a.	n.a.	n.a.	n.a.	n.a.

Indicators

The SUSPORT partners engaged in the pilot activities selected the indicators to measure the impact of their pilot actions on port sustainability and energy efficiency. Mainly, GHG emissions measured in equivalent tons of CO2 has been adopted as an indicator of performance. Besides, some partners introduced also the electric energy consumption measured in kWh. The pilot actions regarding environmental monitoring are not expected to be assessed through this kind of indicator. Instead, a "yes/no" indicator will be assigned to monitor the installation of the monitoring systems.

In Table 2 the baseline value and the expected value at the end of the project are reported regarding the two main measurable indicators. Not-applicable indicators are marked with "-", whereas non-available data are marked with "n.a.". In some cases, the baseline or expected values have been not yet quantified. Nevertheless, all the partners are committed to their assessment from the GHG inventory carried out to define TNAs (data have been already collected).

Table 3 – Indicators to measure the pilot action effectiveness

PPs	Pilot action	Eq. CO2 tons (t)	Expected Eq. CO2 tons (t)	EE consumption (kWh)	Expected EE Consumption (kWh)
LP - AdSP MAO	**LED lights**	400	200	-	-
LP - AdSP MAO	**Monitoring of the environmental effects**	-	-	-	-
LP - AdSP MAO	**Cold ironing (feasibility)**	12232	0	-	-
LP - AdSP MAO	**e-mobility**	11	0	-	-
PP1 - COSEF	**LED lights + energy efficiency + photovoltaic system**	n.a.	-62	n.a.	-160
PP2 - AdSP MAS	**e-mobility**	262	260	-	-
PP2 - AdSP MAS	**LED lights**	733	608	-	-
PP5 - AdSP MACS	**Photovoltaic system + e-mobility**	8	n.a.	-	-
PP6 - AdSP MAC	**LED lights + e-mobility + cold ironing**	n.a.	n.a.	-	-
PP7 - ASVI	**LED lights**	n.a.	n.a.	-	-
PP8 - AdSP MAM	**Energy and environmental monitoring system**	-	-	-	-
PP9 - LUR	**LED lights + e-mobility**	n.a.	n.a.	-	-
PP11 - LUZ	**Photovoltaic, solar thermal system and EE storage**	n.a.	n.a.	n.a.	n.a.
PP12 - LUS	**LED lights + Environmental monitoring**	n.a.	n.a.	n.a.	n.a.
PP13 - LUP	**LED lights**	n.a.	n.a.	-	-
PP14 - LUD	**LED lights**	455	318	1377839	964487
PP15 - DNR	**e-mobility**	n.a.	n.a.	-	-

Conclusions

The present report provided an overview of the status of the pilot actions implemented during SUSPORT project. Most of the partners have already selected the indicators to assess the pilot actions and defined baseline and expected values. Considering the already implemented milestones it can be concluded that the project is in line with the schedule. Furthermore, no critical risks of delay have been detected.

At the moment, available data is limited to most of the baseline values and forecasted preferences based on the pilot action design phase. Thus, extensive data analysis is demanded to the final report that will consolidate the results of the pilot actions comparing the forecasted and actual performances for the selected indicators.

APPENDIX A – Detailed Reports

LP - AdSP MAO

Title
Replacement of the existing lighting system of the public areas
Location
Trieste
Description of the completed activities
The project design has been completed
Stakeholders involved
None
Main milestones
• **Pilot action planning** (Percentage of completion 100%, Completion date: 12 2021) Description: Project design was completed. • **Procurement** (Percentage of completion 0%, Completion date: 09 2022) Description: Tender will be launched in Q2 2022 • **Installation** (Percentage of completion 0%, Completion date: 12 2022) Description: Not started • **Data collection** (Percentage of completion 0%, Completion date: 06 2023) Description: Not started • **Analysis of the results** (Percentage of completion 0 %, Completion date: : 06 2023) Description: Not started
Indicators and expected results
• **Indicator 01**: Eq. tons CO2 – GHG emissions evaluated in equivalent tons of CO2 ○ Current values: 400 t CO2eq ○ Expected results: -50%

Title
Monitoring of the environmental effects
Location
Trieste

Description of the completed activities
The activity is ongoing
Stakeholders involved
None
Main milestones
• **Pilot action planning** (Percentage of completion 100%, Completion date: 07 2021) Description: Completed • **Procurement** (Percentage of completion 100%, Completion date: 12 2021) Description: Completed • **Installation** (Percentage of completion n.a. %, Completion date: 12 2022) Description: there is no installation of equipment, it is an external service • **Data collection** (Percentage of completion 50%, Completion date: 12 2022) Description: Assessment of the baseline values • **Analysis of the results** (Percentage of completion 0 %, Completion date: : 06 2023) Description: Not started
Indicators and expected results
This pilot action does not have an impact on CO2eq, the indicator is implemented yes/no

Title
On-shore Power Supply (OPS)
Location
Trieste
Description of the completed activities
The activity was completed in Dec. 2021
Stakeholders involved
Container terminal
Main milestones
• **Pilot action planning** (Percentage of completion 100%, Completion date: 07 2021) Description: Completed • **Procurement** (Percentage of completion 100%, Completion date: 09 2021) Description: Completed • **Installation** (Percentage of completion n.a.%, Completion date: n.a.) Description: The pilot action does not foresee the installation of equipment

- **Data collection** (Percentage of completion n.a.%, Completion date: n.a.)
  Description: the pilot action does not foresee data collection
- **Analysis of the results** (Percentage of completion n.a. %, Completion date: n.a.)
  Description: the pilot action does not imply the analysis of results

Indicators and expected results

- **Indicator 01**: Eq. tons CO2 – GHG emissions evaluated in equivalent tons of CO2
  - Current values: 12.231,6 t CO2eq
  - Expected results: once the works for the cold ironing are completed, the emission of GHG in Pier no. 7 due to anchored ships will be zero.

Title
e-mobility
Location
Trieste
Description of the completed activities
The activity will be completed in April 2022
Stakeholders involved
None
Main milestones

- **Pilot action planning** (Percentage of completion 100%, Completion date: 12 2021)
  Description: The tender preparation has been completed
- **Procurement** (Percentage of completion 0%, Completion date: 03 2022)
  Description: Not started
- **Installation** (Percentage of completion 0%, Completion date: 04 2022)
  Description: Not started
- **Data collection** (Percentage of completion n.a.%, Completion date: n.a.)
  Description: the pilot action does not foresee data collection, just an estimation of the saved CO2eq
- **Analysis of the results** (Percentage of completion n.a. %, Completion date: n.a.)
  Description: the pilot action does not imply the analysis of results

Indicators and expected results

- **Indicator 01**: Eq. tons CO2 – GHG emissions evaluated in equivalent tons of CO2
  - Current values: 11 t CO2eq
  - Expected results: 0 t CO2eq

PP1 – COSEF

Title
Installation of LED light bulbs, realization of works to improve EE in port's main building, installation of photovoltaic system.
Location
Porto Margreth Porto Nogaro – San Giorgio di Nogaro (UD) ITALY
Description of the completed activities
1) replacement of existing 36 lamps with 80W LEDs in the port warehouses . 2) improvement of the energy efficiency of the port's main building which hosts the Harbour Master's office, Customs, ONG "Stella Maris", etc. by the use of: a) low-emission windows for a total of 185.33 sq.m., ensuring that the heat will not filter outside b) insulation coat of the whole building surface, with the application of insulating sheets in expanded natural cork, thermal conductivity not exceeding 0,040 W/mk, for a total of 700 sq.m. c) VRV system installation for winter and summer air conditioning consisting of direct expansion heat pump machines:, d) solar thermal system for the production of how water and heating, surface of 4 sq.m. with accumulation of up to 200 liters; e) photovoltaic system for the production of electricity for a potential of approximately 14.80 kW;
Stakeholders involved
Port operators: Midolini F.lli S.p.A. - Impresa Portuale Porto Nogaro. All pilot actions
Main milestones
• **Pilot action planning** (Percentage of completion 20%, Completion date: 05.2022) Description: 1) Installation of LED light bulbs, 2) realization of works to improve EE in port's main building, installation of photovoltaic system. • **Procurement** (Percentage of completion 100%, Completion date: 05.2022) Description: Work entrusted to the company • **Installation** (Percentage of completion 1%, Completion date: 05.2022) Description: Work in the execution phase • **Data collection** (Percentage of completion 0%, Completion date: n.a.) Description: Not started • **Analysis of the results** (Percentage of completion 0%, Completion date: n.a.) Description: Not started
Indicators and expected results

- **Indicator 01**: Electric energy consumption – reduction of consumption MWh/year:
  - Current values (reductions foreseen in the TNA): 210 MWh/year
  - Expected results: 160 MWh/year
- **Indicator 02**: Eq. CO2 tons – emission reduction CO_{2eq} expected (t/year):
  - Current values (reductions foreseen in the TNA): 93 t/year
  - Expected results: 62 t/anno

PP2 - AdSP MAS

Title
Purchase of two electric vehicles
Location
Port of Venice
Description of the completed activities
Two new electric cars were purchased in April 2021. They are available to support the operational and institutional activities of the ports of Venice, 100 percent electric with zero emissions, from the point of view of environmental pollution. The two cars "Nissan Leaf" were purchased by NASPA with the aim of carrying out concrete actions that improve environmental sustainability and energy saving in the port area. In this context, the purchase of fully electric cars that are available to the employees of the Authority starts the gradual renewal of the vehicle fleet, allowing already significant savings in terms of CO2 and pollutants.
Stakeholders involved
Stakeholder involvement: in order to defining action priorities, project stakeholders have been involved since the Territorial Needs Assessment phase, from public to private stakeholders. NASPA is pursuing actions aimed at promoting and implementing the energy transition to mitigate the environmental impact of the maritime and port sectors, also following the provisions of the Energy and Environmental Planning Document approved by the Authority March 2020. Car fleet replacement with full electric / hybrid cars is one of the listed actions for environmental sustainability and energy efficiency and is line with local, regional, national, European goals.
Main milestones
• **Pilot action planning** (Percentage of completion 100%, Completion date: November 2020) Description (about 50 words): In the planning phase of the pilot, NASPA carried out first market research for the purchase of the electric cars, with the aim of verifying and researching which car models are available on the market in the full electric category. • **Procurement** (Percentage of completion 100% Completion date: March 2021) Description (*about 50 words*): in December 2020 NASPA requested for quotations and in March 2021 the procurement procedures were concluded with the purchase of two cars “Nissan Leaf”. • **Installation** (Percentage of completion 100%, Completion date: April 2021) Description (*about 50 words*): from April 2021 the cars are fully operative • **Data collection** (Percentage of completion 0%, Completion date: n.a.) Description (*about 50 words*): After one year from the utilization of the electric cars, NASPA will collect data on the results of the pilot • **Analysis of the results** (Percentage of completion 0%, Completion date: n.a.) Description (*about 50 words*): After one year from the utilization of the electric cars, NASPA will collect data on the results of the pilot

Indicators and expected results

• **Indicator 01**: Eq. tons CO2 – GHG emissions evaluated in equivalent tons of CO2
  ○ Current values: 262 tonCO2 - emissions calculated for service vehicles in 2019
  ○ Expected results: The employment of the two electric cars, will have the following results: tons of avoided CO2eq emissions = 1,6 tons/year

Title
Replacement of existing lighting in the public areas with LEDs
Location
Port of Venice
Description of the completed activities
The area of intervention was identified and the technical specifications necessary to replace the existing lighting were drawn up. The tender for the selection of the supplier has been outlined and launched and all the necessary formal steps to award the contract were carried out in order to reach the goal set by the project (October 2020 – January 2021). The contrat for the start of the works was signed on 22 March 2021. Because of the pandemic, the difficulties in procuring raw materials worsened further during the second half of 2021, in such a way as to produce difficulties in finding certain types of products on the market. The project has been fine-tuned and updated with the necessary technical specifications. Thanks to the updated framework, it was possible to start with the pilot action implementation. The construction sites were opened in October 2021 and currently the works for the installation of the LED lighting are in progress. The check of the pilot progress has been put in place and is carried out in the various steps of the implementation. The installation is supposed to be completed within April 2022.
Stakeholders involved
Stakeholder involvement: in order to definying action priorities, project stakeholders have been involved since the Territorial Needs Assessment phase, from public to private stakeholders. E.g. Public administrations (e.g. Harbourmaster, Customs Agency, Border Police, Border Inspection Unit – PIF, Maritime and Air Health Office – USMAF), ship and ground Services, nautical services.
Main milestones
• **Pilot action planning** (Percentage of completion 100%, Completion date: October 2020) Description (*about 50 words*): The area of intervention was identified and the technical specifications necessary to replace the existing lighting were drawn up. • **Procurement** (Percentage of completion 100%, Completion date: January 2021)

Description (*about 50 words*): The tender for the selection of the supplier has been outlined and launched and all the necessary formal steps to award the contract were carried out in order to reach the goal set by the project (October 2020 – January 2021). The contrat for the start of the works was signed on 22 March 2021.

- **Installation** (Percentage of completion 60%, Completion date: April 2022)
  Description (*about 50 words*): The construction sites were opened in October 2021 and currently the works for the installation of the LED lighting are in progress. The check of the pilot progress has been put in place and is carried out in the various steps of the implementation. The installation is supposed to be completed within April 2022.
- **Data collection** (Percentage of completion 0%, Completion date: n.a.)
  Description (*about 50 words*): Pilot action not yet completed.
- **Analysis of the results** (Percentage of completion 0%, Completion date: n.a.)
  Description (*about 50 words*): Pilot action not yet completed.

Indicators and expected results

- **Indicator 01**: Eq. tons CO2 – GHG emissions evaluated in equivalent tons of CO2
  - Current values: 733 tonCO2 - emissions calculated for electric energy in 2019
  - Expected results: tons of avoided CO2eq emissions = 125 tons/year

PP5 - AdSP MACS

Title
Pilot activities at the Ravenna port
Location
Port of Ravenna
Description of the completed activities
Until now (February 2022) the two green vehicles were purchased. Moreover, also the wallbox and the electric colum have been installed and are operative. The design of the photovoltaic system was completed and the tender for its realization was launched.
Stakeholders involved
None
Main milestones
• **Pilot action planning** (Percentage of completion 60%, Completion date: 12/2022) Description: the photovoltaic system is the only remaining facility of the pilot to deliver • **Procurement** (Percentage of completion 70%, Completion date: 04/2022) Description: The only remaining procurement (regarding the installation of the pthotovoltaic system) will be completed in the next few months • **Installation** (Percentage of completion 60%, Completion date: 12/2022) Description: The installation of the photovoltaic system will begin once the procurement procedure will be finalized. • **Data collection** (Percentage of completion 80%, Completion date: 09/2022) Description:Data collection is ongoing. • **Analysis of the results** (Percentage of completion 50%, Completion date: 10/2022) Description: data analysis will be completed in October 2022
Indicators and expected results

• **Indicator 01**: Eq. CO2 tons – the indicators used are the tCO2eq that will be saved. Here below the data referred to the vehicles (previous diesel vehicle and actual electric vehicle).
  ○ Current values: 8,44 tCO2eq
  ○ Expected results: 0,008% of total emissions for vehicles

PP6 - AdSP MAC

Details not available.

PP7 - ASVI

Title
Installation of LED light bulbs in the port of Ortona
Location
Port of Ortona
Description of the completed activities
The tender procedure preparation is in preliminary state following agreements made with PP6-ASDPMAC and is expected to be launched by the end of March
Stakeholders involved
None
Main milestones
n.a.
Indicators and expected results

• **Indicator 01**: Eq. tons CO2 – GHG emissions evaluated in equivalent tons of CO2
  ○ Current values: n.a.
  ○ Expected results: n.a.

PP8 - AdSP MAM

Title
Implementation of an energy and environmental monitoring system integrated with the GAIA PCS
Location
Brindisi and Barletta
Description of the completed activities
Implementation of an energy and environmental monitoring system integrated with the GAIA PCS- PP8 with decision of the President nr. 250 of 25.06.2020, is achieving the primary objective is to acquire an environmental monitoring application customized according to the needs of the ports administered by the Authority and which can be integrated with the GAIA PCS, capable not only of supporting the Administration in monitoring the main environmental pollution factors, but also able to provide strategic support in terms of energy and environmental policies according to the architecture of DSS systems (Decision Support System).In particular: • Recognition of the technical characteristics of the sensors already installed and to be installed in the future in the Administration ports (sound level meters, air quality control units, meteorological stations, multi-parameter probes, current meters, wave meters and tide gauge) . • Management of various types of field devices, installed within the perimeter port. • Acquisition of the environmental information made available by the installed devices. • Dashboard representation of "real-time" data for all ports of the Administration. • Dashboard representation of historical information for all ports of the Administration.• Consultation of archived data with data analysis, extraction and interpolation tools. • Import of data on ship traffic and vehicles entering and exiting ports, via web service from PCS GAIA.- with decision of the President nr. 127 of 12/04/2021 it is proceeding with the acquisition of the environmental information made available by the installed devices; has commited the procurement of goods and services trough the Consip framework agreement, to la Codevintec Italiana Srl the activity relating to the supply, installation and configuration of no. 2 collection systems and sending data for the monitoring of the physical-chemical parameters of port waters, including 24 months of warranty, aimed at the implementation of the pilot action of the SUSPORT project
Stakeholders involved
In updating the DEASP underway, stakeholders and port operators will also be involved in the process of identifying the energy needs and related sources of emission of the entire port area, as defined by the Port Regulatory Plan in terms of both territorial perimeters and activities, also involving companies operating in port areas: • companies authorized by the AdSP to carry out port operations; • companies authorized by the AdSP to carry out port services; • companies that have received from the AdSP the concession of state-owned areas and docks included in the port area.

Main milestones
• **Pilot action planning** (Percentage of completion 100%, Completion date: 11/21) Description: portal vega and multiparametric probes environmental monitoring application customized according to the needs of the ports administered by the Authority and which can be integrated with the GAIA PCS. • **Procurement** (Percentage of completion 100%, Completion date: 11/21) Description: two tendersone of which for the supply, installation and configuration nr. 2 data collection and sending systems for monitoring the physical-chemical parameters of port waters and one for Development services of the environmental monitoring system integrated with the GAIA PCS, within the framework of the CONSIP Framework Agreement, public connectivity system Lot 3, interoperability services for data and application cooperation. • **Installation** (Percentage of completion 100%, Completion date: 11/21) Description: the two multi-parameter probes were installed in the ports of Brindisi and Barletta. • **Data collection** (Percentage of completion 100%, Completion date: 11/21) Description: turbidity, chlorophyl, ph, temperature, Dissolved oxygen • **Analysis of the results** (Percentage of completion 100%, Completion date: 11/21) Description: use of data in planning and environmental monitoring
Indicators and expected results
This pilot action does not have an impact on CO2eq, the indicator is implemented yes/no

PP9 – LUR

Title
Installation of LED lighting and Purchasing of electric vehicle
Location
Rijeka
Description of the completed activities
The contracts (divided) for installation of LED lighting and for purchasing of an e-car have been signed. The market research and procurement of the charging station for EVs are in progress. After signing of both contracts, press releases were published nad the general public and stakeholders were informed about it.
Stakeholders involved
Transport operatiors, enterprises, transport associations, general public – all mentioned were informed through press releases about contracts and its details.
Main milestones
• **Pilot action planning** (Percentage of completion 70%, Completion date: May 2022) Description: Overall pilot activities have been planned in details, but the procurement of the charging station for EV is planned for June 2022, so the market research will be done in May 2022. • **Procurement** (Percentage of completion 66%, Completion date: June 2022) Description: The third and final part of the pilot activities is planned for June 2022, while two procurements were realized. • **Installation** (Percentage of completion 0%, Completion date: July 2022) Description: In progress • **Data collection** (Percentage of completion 0%, Completion date: December 2022) Description: It will be available after installation. • **Analysis of the results** (Percentage of completion 0%, Completion date: January 2023) Description: It will be available after installation and collection of the necessary data.
Indicators and expected results
• **Indicator 01**: Eq. tons CO2 – GHG emissions evaluated in equivalent tons of CO2 o Current values: n.a. o Expected results: lower emission of CO2 and other pollutants.

PP11 – LUZ

Details not available.

PP12 – LUS

Details not available.

PP13 – LUP

Title
Replacement of the existing port lightning system with energy-efficient technology (A4.2)
Location
The existing lighting system has been planned to be replaced. The existing lighting system is located in two locations in port of Ploče: • The main railway group No.1. • The main port road No.1 and No.2
Description of the completed activities
Replacement of the existing port lightning system with energy-efficient technology (A4.2) The existing lighting system has been planned to be replaced. The existing lighting system is located in two locations: • The main railway group No.1. The railway group connects the old port (coast 1,2,3) and the port hinterland. There are 28 lighting reflectors in the railway group that has to be replaced (7 lighting poles (18 m), with 4 reflectors each). The existing lighting is technology is based on high-pressure mercury technology with a total installed power of approximately 25 kW. Pilot actions will consider services for replacement of the existing port lightning system with energy-efficient technology. The energy-efficient technology will consider the LED reflectors with a total installed power of approximately 6.3 kW. • The main port road No.1 and No.2 This port are consist of public roads which connect the port entrance with port terminals (bulk, liquid and container terminal) The lighting system consist of approximately 25 lighting poles with two lighting reflectors which have been installed along the road (a total of approximately 50 reflectors). Technology used for the existing lighting system is based on high-pressure Sodium with a total installed capacity of approximately 15 kW. The new built-in lighting would consist of LED reflectors with a total installed power of approx. 4-5 KW. With the installation of new The LED reflectors Port of Ploče Authority will achieve significant savings, increase the level of illumination and safety in these locations. These areas are public areas managed by Port of Ploče Authority.
Stakeholders involved
• Port of Ploče Authority • Port of Ploče • Adriatic Tank Terminal • PPD Transport railway company • Naftni terminali federacije • Freight forwarders • Agencies

• Port security • Truckers • Customs • … Piot action has been implemented on locations in port of Ploče which are public locations and which are used by many port opertors in daily cargo manipulations and operations.
Main milestones
• **Pilot action planning** (Percentage of completion 100%, Completion date: 2020.) • **Procurement** (Percentage of completion 100%, Completion date: 05/2021) • **Installation** (Percentage of completion 100%, Completion date: 04-05/2021) • **Data collection** (Percentage of completion 60%, Completion date: 05/2022) • **Analysis of the results** (Percentage of completion 60%, Completion date: 05/2022)
Indicators and expected results
Will be provided by the end of the project

PP14 – LUD

Title
Replacement/renovation of the port lightening system
Location
Dubrovnik, Croatia
Description of the completed activities
During the pilot action implementation period, DPA started with preparation of public procurement documentation. Several actions are taken in order to complete the task: market research of the potential suppliers, time needed to complete the action, and other basic elements of the procurement documentation. At first DPA had prepares the Master project of the lighting reconstruction in line with law requirements, but we soon realized that it needed to be reviewed. DPA conduct the formal market research with the Master project of the lighting reconstruction and get insights for the next steps. The results indicates that the technical solutions are outdated and there are new, energy efficient solutions on the market; the solution described could be purchased but at the higher cost. At the moment, DPA plan to thoroughly review the Master project and technical solution proposed. Next, we will conduct additional market research and launch the public procurement. The workflow of described activities didn't go as we initially planned due to COVID19 effects, and other health issues of the key team members.
Stakeholders involved
- DPA SUSPORT team members – preparing and implementing the activities - DPA (other) employees – assisting SUSPORT team - Supliers – providing the insight to market conditions and offers - Technicians – reviewing the proposed technical sollution
Main milestones
• **Pilot action planning** (Percentage of completion 90%, Completion date: 03/2022) Description: Planning is in its final phase and will end up witht the public procurement launch. • **Procurement** (Percentage of completion 80%, Completion date: 06/2022) Description: Public procurement documentation is in its fial phase of preparation waitng for the technical elements to be incorporate, and to be launch) • **Installation** (Percentage of completion 0%, Completion date: 07/2022) Description: It is expected that the installation will be completeted by the end of 07/2022 • **Data collection** (Percentage of completion 0% Completion date: 08/2022) Description: Right after the installation starts the data collection. • **Analysis of the results** (Percentage of completion 0%, Completion date: 11/2022) Description: With data collection starts the analysis of the pilot results.

Indicators and expected results

• **Indicator 01**: Electric energy consumption – value of the consumption of electricity in terrestrial operations of the port
  ○ Current values: 1.377.839 kWh/y
  ○ Expected results: N/A (targeting 30% reduction)
• **Inidicator 02**: GHG reduction – the amount of greenhouse gasses that DPA generates
  ○ Current values: 454,7 tCO2 EQV, (90% of total DPA)
  ○ Expected results: N/A (targeting 30% reduction)

PP15 – DNR

Details not available.