



European flagship Action for coLd ironING in ports



Co-financed by the Connecting Europe  
Facility of the European Union

# EALING: European flagship Action for coLd ironING in ports

**Enabling the synergies for the transition to greener solutions in  
Mediterranean ports: The “EALING” project**

**10th Mediterranean Ports and Shipping 2023 Exhibition and Conference**

**30<sup>th</sup> March 2023**

- 1** Presentation of the project
- 2** **Activity 1** - Harmonised Framework for the electrification of the participating TEN-T maritime ports
- 3** **Activity 2** – Maritime fleet adaptation
- 4** **Activity 3** - Technical studies for the electrification infrastructure of the participating TEN-T maritime ports
- 5** **Activity 4** - Environmental studies
- 6** **Activity 5** - Clean power supply plans and tender documents
- 7** **Activity 6**- CBA and Financial blending schemes
- 8** Keep informed!

1

Presentation of the action



## Description of the project

The **EALING** Action is a study proposing a concrete approach towards the establishment of a suitable framework for the transition to electrification for at least 16 of the EU maritime ports in different sea basins that decided to adapt to the new regime of alternative fuels utilization in the maritime sector:

- Mediterranean Sea (*Valencia, Barcelona, Ancona, Trieste&Monfalcone, Venice&Chioggia, Piraeus, Rafina and Koper*);
- Black Sea (*Constanta, Varna and Burgas*);
- Atlantic Sea (*Gijon, Huelva, Leixoes, Azores and Dublin/Cork*)

## Main objectives of the project

The main objectives of the **EALING** project are focusing on the following:

- Ensuring that a common harmonised and interoperable framework is brought forward in order to facilitate the implementation phase of SSE infrastructure in the ports of the consortium, in line with the EU technical, legal and regulatory framework;
- Ensuring the port to vessel compatibility in the TEN-T Maritime Network, for vessels calling at the ports of the consortium;
- Leading all the necessary technical, financial, legal and environmental studies to prepare and accelerate the effective launch of cold ironing and electric bunkering equipment in the ports.

**16 EU ports:**

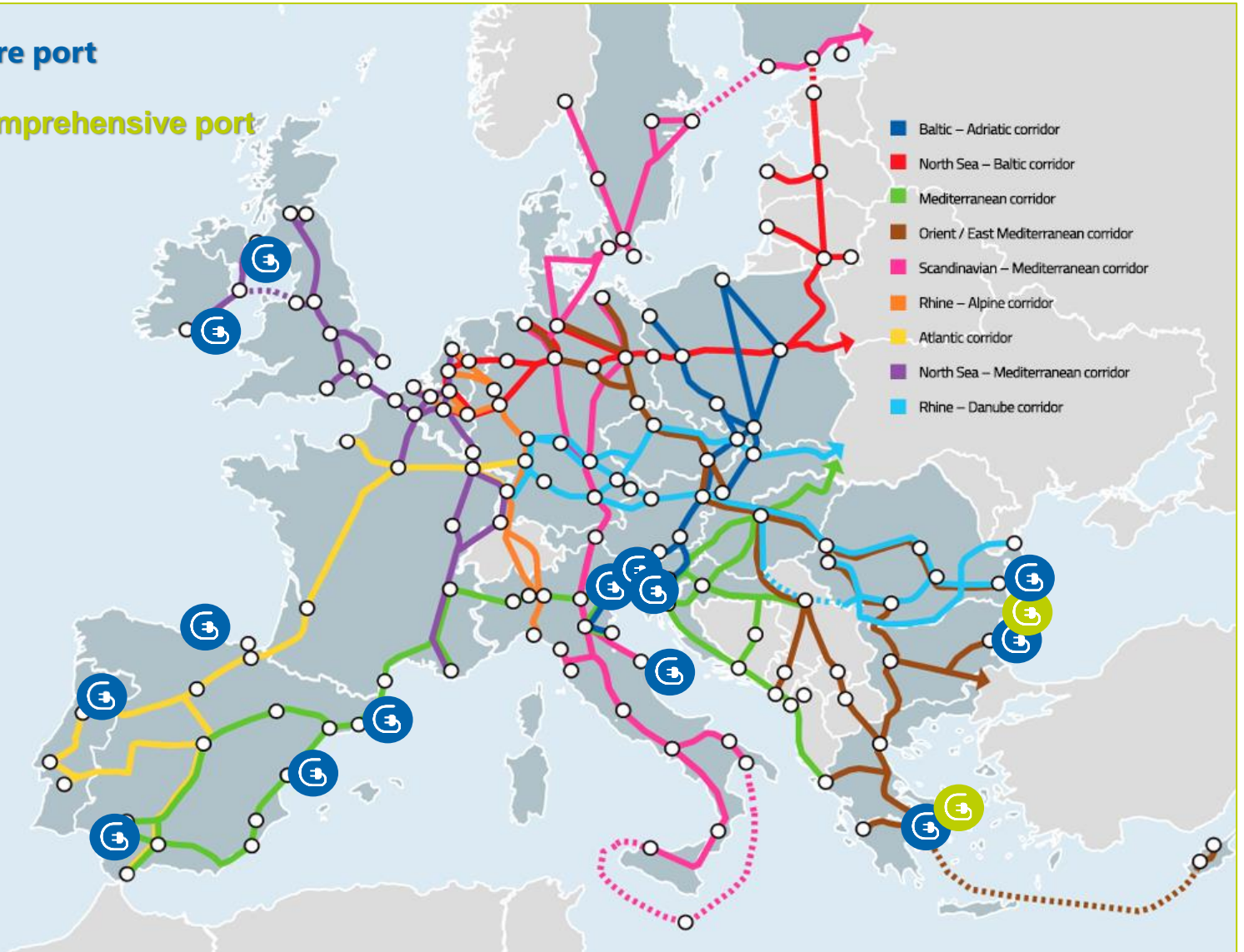
- Port of Valencia (Spain)
- Port of Barcelona (Spain)
- Port of Huelva (Spain)
- Port of Gijon (Spain)
- Port of Venice and Chioggia (Italy)
- Port of Ancona (Italy)
- Port of Trieste & Monfalcone (Italy)
- Port of Burgas (Bulgaria)
- Port of Varna (Bulgaria)
- Port of Constanta (Romania)
- Port of Piraeus (Greece)
- Port of Rafina (Greece)
- Port of Koper (Slovenia)
- Port of Leixoes (Portugal)
- Ports of Açores (Portugal)
- Port of Dublin and / or Cork (Ireland)



**Core port**



**Comprehensive port**



## Activities 1 and 2: EU wider benefit activities

**ACTIVITY 1**  
Harmonised  
Framework for  
the electrification  
of the  
participating TEN-  
T maritime ports

**ACTIVITY 2**  
Maritime fleet  
adaptation

## Activities 3, 4, 5 and 6: linked to the 16 EU ports

**ACTIVITY 3**  
Technical  
studies for the  
electrification  
infrastructure  
at ports

**ACTIVITY 4**  
Environmental  
studies

**ACTIVITY 5**  
Clean power  
supply plans  
and tender  
documents

**ACTIVITY 6**  
Cost-benefit  
analysis and  
Financial  
blending  
schemes

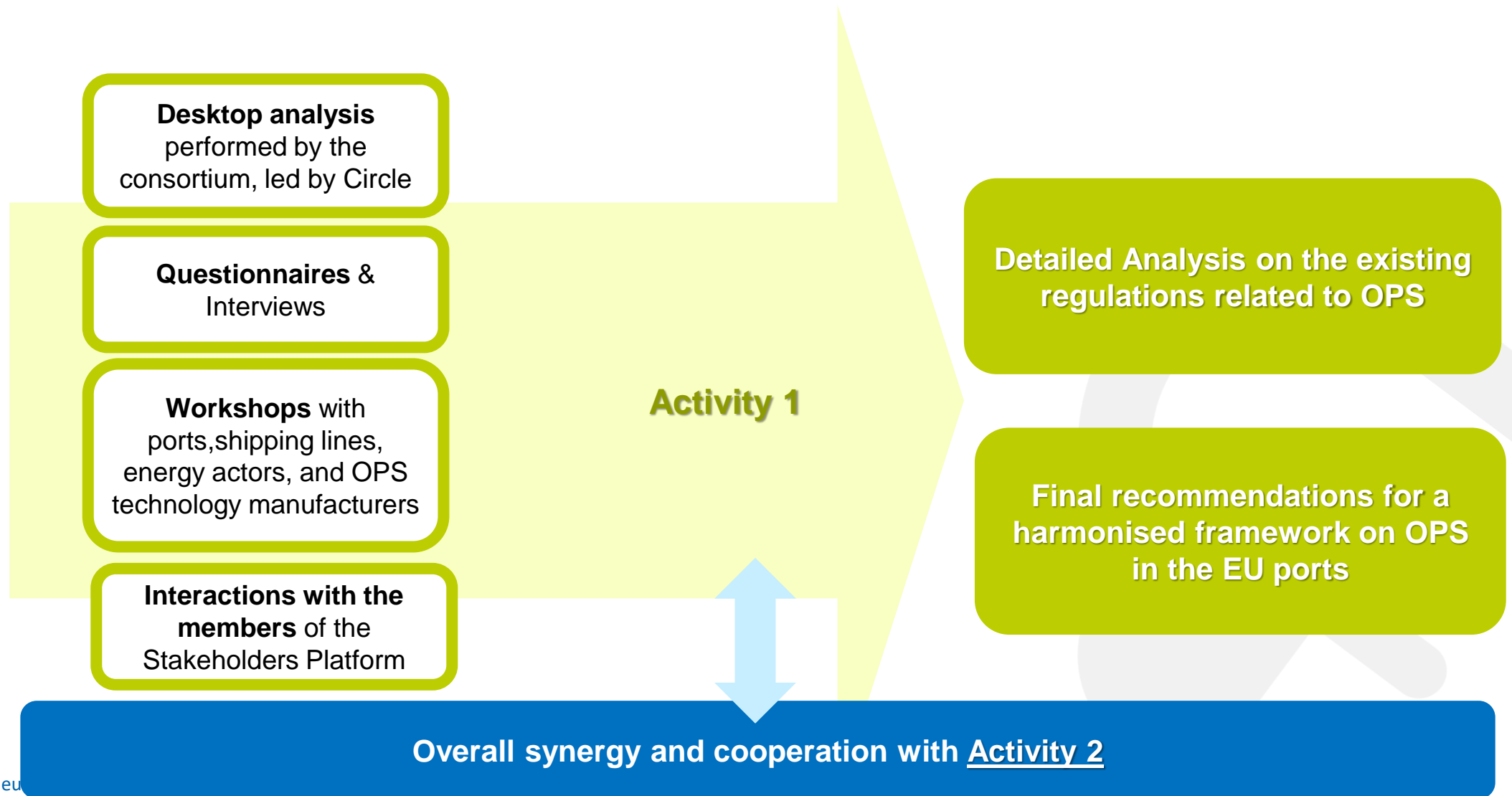
**ACTIVITY 7**  
Communication  
&  
Disseminati  
on

# 2

## Activity 1

Harmonised Framework for the electrification  
of the participating TEN-T maritime ports

## ACTIVITY 1: Harmonised Framework for the electrification of the participating TEN-T maritime ports







## EALING West Med Macro Regional Workshop

By Valeria Burlando | July 26, 2021 | No Comments

EALING West Med Macro Regional Workshop will be held on 30th September (4:30 p.m. – 6:30 p.m.) within the SEAFUTURE Convention in La Spezia Navy Base.

[DOWNLOAD HERE THE AGENDA OF EALING SESSION](#)

[REGISTER HERE TO TAKE PART IN THE CONFERENCE](#)

Specifically the Session dedicated to EALING is part of the wider Conference "Driving the change in shipping & logistics: the EU funding opportunities in the programming period 2021-2027" aiming at deepen the three key topics below:

- FUNDING OPPORTUNITIES AND FINANCIAL TOOLS FOR THE MARITIME INDUSTRY
- TOWARDS ZERO EMISSION SHIPPING
- DIGITAL AND TECHNOLOGICAL INNOVATION IN TRANSPORT INDUSTRY

EALING Macro Regional Stakeholder Workshop will be focused on presenting the first results coming from the Technical Workshops and Stakeholders Consultations with Ports, Shipping Lines and Classification Societies carried out in the first part of the Action. After the introduction about the proposed requirements on OPS for ports in the upcoming proposal for AFID revision by DG MOVE and a focus on the Technical Studies on OPS by EMSA, the project contents will be discussed by the representatives of the participating TEN-T maritime ports and Activity 2 "Maritime fleet adaptation"

Then a technological session with OPS providers will anticipate the open discussion about the OPS adoption considering administrative, financial and technical aspects.

[DOWNLOAD HERE THE AGENDA OF EALING SESSION](#)

[REGISTER HERE TO TAKE PART IN THE CONFERENCE](#)

## Four Ports Onshore Power in Baltic Seaports



[www.ealingproject.eu](http://www.ealingproject.eu)

## Best Practices exchange – EALING joins forces with Four Ports

By Valeria Burlando | August 4, 2021 | No Comments

OPS procurement strategy and national legislation that enable or is a barrier for OPS are the key topics that will be addressed during the common workshop on OPS that will be held as hybrid event hosted by the Port of Aarhus on 10th September.

The restricted event is the first joint action for the CEF-Funded projects: EALING | European Flagship Action for Cold Ironing in Ports | Four Ports | ONSHORE POWER IN BALTIC SEAPORTS with the final aim to share best practices and information coming from the studies concerning the adoption of OPS in the respective geographical areas covered.

After a presentation of the state of the art from the Baltic Ports concerning the procurement strategies for OPS and the legislative national frame, an open discussion with the EALING members will follow.

The overall aim of the cooperation is to face the challenge of the electrification of maritime transport to move towards a more competitive and sustainable TEN-T Maritime Network in the future.

Find out more information about the CEF-Funded Project FOUR PORTS here <https://four-ports.eu/>

Coordinating Ops

## The Online Consultation for Ports and Terminals started

By Valeria Burlando | May 15, 2021 | No Comments

As part of the Activity 1 "Harmonised Framework for the Electrification of the participating TEN-T maritime ports", EALING Action is carrying out an Online Consultation dedicated to Ports and Terminals. The questionnaire has the specific objective to collect information from the Port Authorities and Terminals that have planned possible OPS solutions in their ports/terminals, gathering information concerning technical aspects related to OPS: specific regulatory and administrative topics at EU/ national level and other aspects such as financing, barriers at construction level, training needs.



Co-financed by the Connecting Europe Facility of the European Union

## EALING Questionnaire for Ports & Terminals

CONTEXT - In the context of the European Green Deal, the "EALING" Motorways of the Sea Action contributes to the Global Project aiming to accelerate the transition to electrification and deployment of Onshore Power Supply (OPS) solutions in at least 16 EU maritime ports.

## EALING Workshop with Shipping Lines – Towards a harmonised onshore power supply development in Europe

By Valeria Burlando | May 10, 2021 | No Comments



The EALING Workshop with Shipping Lines – Towards a harmonised onshore power supply development in Europe represents the beginning of the interaction path between EALING project, Institutions and industry for the definition of a common harmonised and interoperable framework for the development of OPS in Europe. It is the first EALING Workshop dedicated to the interaction with Ports on the same topics.

The workshop with Shipping Lines – that was a restricted event – had 105 registrants and, with the participation of the shipping industry, it was a great opportunity to highlight the stakeholders perspectives.

Indeed the Institutional Session, chaired by Jérôme Glantenoay (INEA Project Manager) with the participation of the representatives of the participating TEN-T maritime ports and Activity 2 "Maritime fleet adaptation" was dedicated to deepen policy priorities and guidelines thanks to the interventions by Prof. Kurt Bodewig (EU Coordinator for Motorways of the Sea), Jorgen Bjerre (DG Maritime Policy) and Ricardo Batista (EMSA, Project Officer).



## Webinar – Shore power in the Baltic and Mediterranean – development & challenges

By Ealing Project | February 17, 2021 | No Comments

The Webinar, organised on 11 February by BPO in cooperation with MEDPorts Association, was a look at the current state and future of shore power development in the Baltic and Mediterranean Sea regions with an analysis of the Baltic Sea Region as a model region for shore power implementation, as well as a close look at the Mediterranean, presenting itself as the logical next step for the development of this technology.

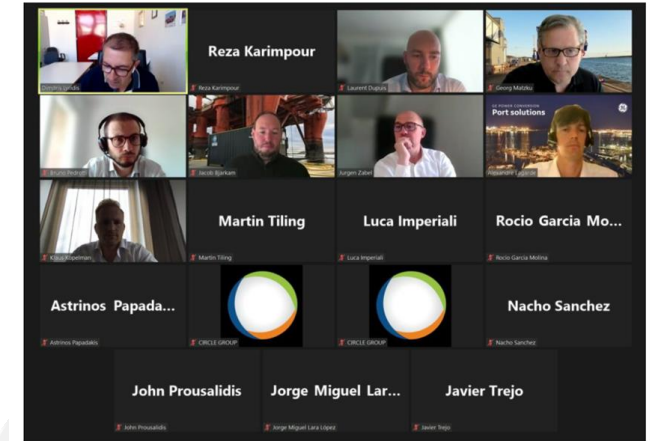
Part of Valencia, Port of Barcelona and Circle Group, that are part of the EALING Consortium, took part into the event. Specifically Alejandro Pico, Technical manager of the project, delivered a presentation of EALING Studies as flagship initiative and Motorways of the Sea wider benefit action for the definition of a harmonised framework for OPS in Europe taking into account operational, environmental, technical, regulatory and socio economic aspects.

The cooperation among Baltic Sea, Mediterranean, Black Sea and Atlantic Sea regions can be the path for a pan European global harmonised approach.

## EALING – OPS Solution Providers Workshop | 12th July 2022

By Valeria Burlando | July 14, 2022 | No Comments

During this OPS Solution Providers Workshop high-profile speakers from the Solution Providers were invited to present their point of view on Onshore Power Supply. Among them: Siemens, ABB, Wärtsilä, Cavotec, GE Power, PowerCon, Danfoss, Iguus, Wabtec, and Shorelink. Together with EALING Project Partners, a lot of useful insights emerged from the discussions during the workshop, and will be included in the Project Reports.



## EALING Workshop with Associations – Towards a harmonised onshore power supply development in Europe

By Valeria Burlando | February 26, 2021 | One Comment

The Workshop with Associations – Towards a harmonised onshore power supply development in Europe was held on 25th February and it represents the beginning of the interaction path between EALING project, Institutions and Associations, in the process of defining a common harmonised and interoperable framework for the development of OPS in Europe.

The workshop – that was a restricted event – had 80 participants and, with 2:30 of fruitful discussion, it was a great opportunity to gather the stakeholders perspectives.

The Institutional Session, chaired by Jérôme Glantenoay (INEA Project Manager) was dedicated to deepen policy priorities and guidelines thanks to the interventions by Prof. Kurt Bodewig (EU Coordinator for Motorways of the Sea), Jorgen Bjerre (DG Maritime Policy) and Ricardo Batista (EMSA, Project Officer).

A short session dedicated to the project overall presentation and Activity 1 details "Harmonised framework for the development of participating TEN-T maritime ports", the workshop was dedicated to deepen the Associations perspectives on OPS as a key element to achieve decarbonisation for shipping and a greener future for maritime transport.

The cooperation among Baltic Sea, Mediterranean, Black Sea and Atlantic Sea regions can be the path for a pan European global harmonised approach.

The OPS solution to reach a greener future in shipping is a concrete opportunity, to be pursued in an ambitious and realistic way.

## Recommendations for a harmonized framework

### ➤ **Policy & Legal Scope**

- *Simplify and harmonise administrative burden at the national, regional, and local levels, facilitate the involvement of port authorities in the development and operation of their electricity distribution system, etc*

### ➤ **Technical Scope**

- *SSE connection at vessels, Tender processes, Regulations and standards, Assessment of power demand*

### ➤ **Economic scope**

- *Develop a Cost-Benefit Analysis before implementing any SSE infrastructure, Create additional funding mechanisms, Increase the percentage of funding in existing mechanisms, etc*

### ➤ **Environmental scope**

- *Promote the creation of an environmental certificate addressed to shipping lines, encourage the registration of ships in the Clean Shipping Index (CSI) for vessels equipped with SSE*

### ➤ **Social Scope**

- *Incentivise, at the European Commission level, interaction, and collaboration between all the stakeholders, enhance public awareness, create at the port level a specific working group involving all the operational stakeholders, etc*

# 3

## Activity 2

### Maritime fleet adaptation

## ACTIVITY 2: Maritime fleet adaptation

### OBJECTIVE 1

Analyse the standards relevant to shipside installation for OPS for the vessels operating in the ports of the consortium.

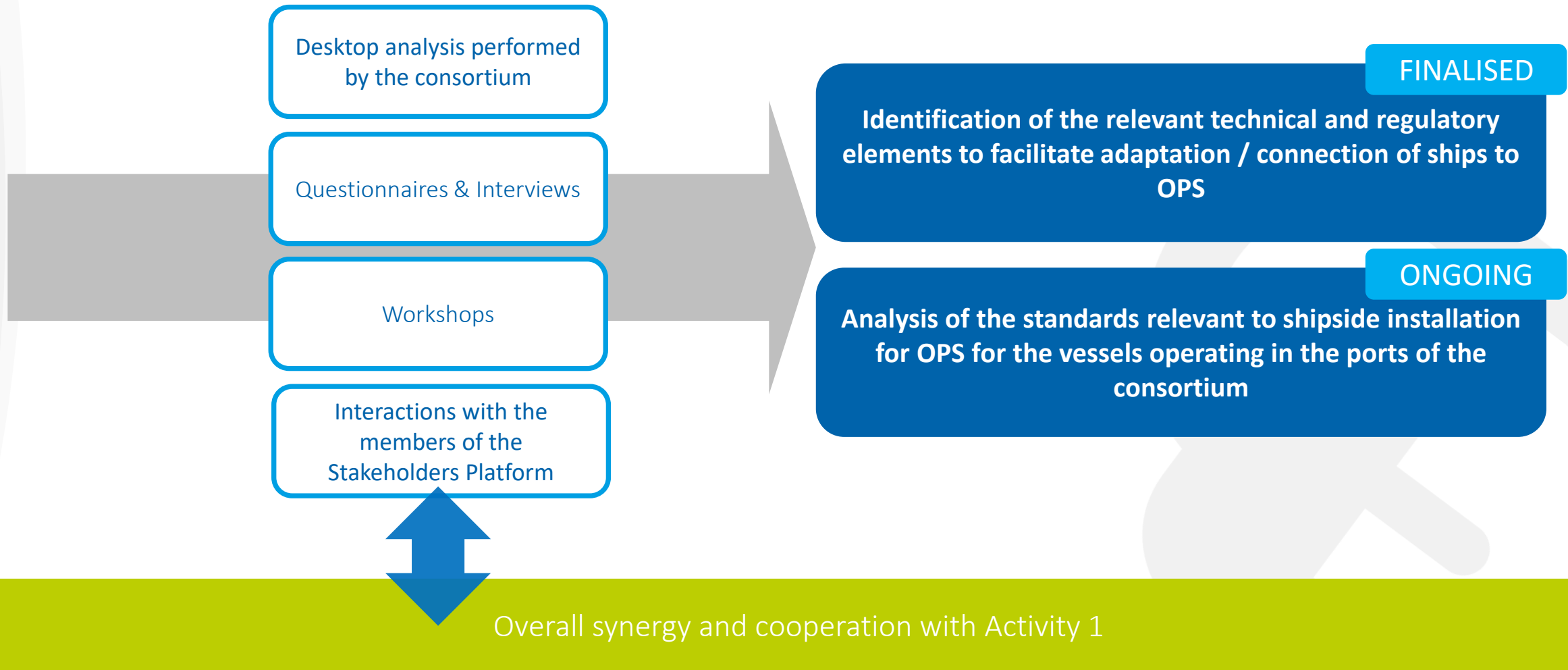
Harmonise the port to vessel compatibility in each of the ports of the consortium. Identify gaps that need to be further analysed and assessed.

### OBJECTIVE 2

Identify technical and regulatory elements to facilitate the connection of ships to OPS. Perform several case studies by assessing specific ship types regarding the onboard required retrofitting.

Determine best retrofitting practices. Provide operational recommendations, taking IMO guidelines as a reference, for a harmonized framework on fleet electrification adaptation, leading to a final proposal to IMO.

**ACTIVITY 2: Maritime fleet adaptation**



## ACTIVITY 2: Maritime fleet adaptation



### Deliverable D2.1

Report on the analysis of the standards relevant to shipside installation for shore side electricity supply

The document reflects only the author's view and the Agency is not responsible for any use that may be made of the information it contains.

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	7
1 INTRODUCTION .....	8
1.1 OBJECTIVES OF THE ACTIVITY .....	8
1.2 OBJECTIVES OF THE DELIVERABLE .....	9
2 REGULATORY FRAMEWORK – SHIPSIDE INSTALLATION AND REQUIREMENTS .....	11
2.1 BREAKDOWN OF THE EXISTING REGULATORY FRAMEWORK RELATED TO SHORE SIDE ELECTRICITY .....	11
2.2 ANALYSIS OF THE EXISTING REGULATORY FRAMEWORK RELATED TO SHORE SIDE ELECTRICITY .....	13
2.2.1 INTERNATIONAL REGULATORY FRAMEWORK .....	14
2.2.2 EUROPEAN REGULATORY FRAMEWORK .....	15
3 TECHNICAL & OPERATIONAL GUIDELINES/ STANDARDS – SHIPSIDE INSTALLATION AND REQUIREMENTS .....	20
3.1 BREAKDOWN OF THE EXISTING TECHNICAL AND OPERATIONAL GUIDELINES/STANDARDS RELATED TO SHORE SIDE ELECTRICITY .....	20
3.1.1 STANDARDS .....	20
3.1.1.1 IEC/ISO/IEEE 80005 .....	20
3.1.1.2 IEC 60092, ELECTRICAL INSTALLATIONS IN SHIPS .....	24
3.1.1.3 IEC 61363-1, ELECTRICAL INSTALLATIONS OF SHIPS AND MOBILE AND FIXED OFFSHORE UNITS .....	25
3.1.1.4 IEC 62613, PLUGS, SOCKET-OUTLETS AND SHIP COUPLERS FOR HIGH-VOLTAGE SHORE CONNECTION SYSTEMS (HVSC-SYSTEMS) .....	25
3.1.2 EUROPEAN & INTERNATIONAL ENTITIES' GUIDELINES .....	26
3.1.2.1 IMO .....	26
3.1.2.2 IEEE – INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS .....	26
3.1.2.3 EMSA .....	27
3.1.2.4 CENELEC .....	27
3.1.2.5 IET .....	28
3.1.3 CLASSIFICATION SOCIETIES .....	29

# 4

## Activity 3

**Technical studies for the electrification infrastructure of the participating TEN-T maritime ports**

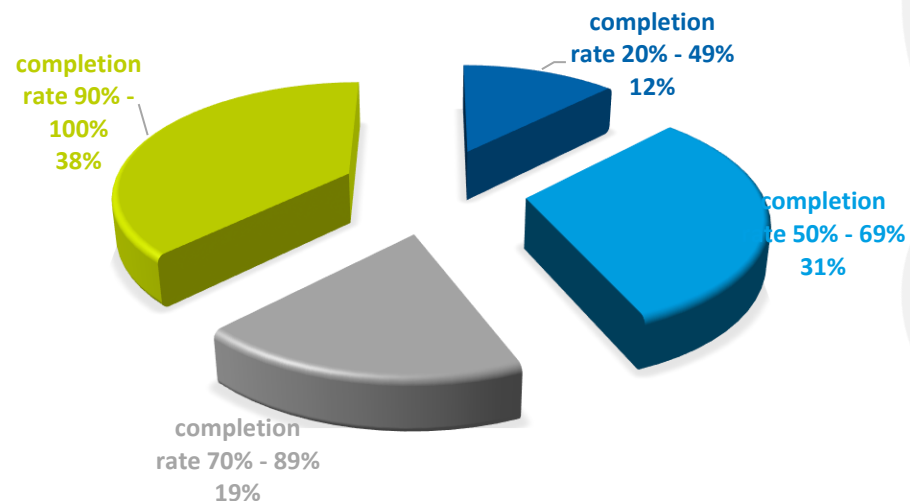
## Objectives

- Execute the detailed technical design studies for the electrification infrastructure necessary for the ports of the consortium.
- The implementation of front-end engineering design (FEED) studies to enable ports launching the works phase right after the end of the Action.
- FEED studies will include:
  - ✓ specifications for main primary and secondary equipment
  - ✓ cost estimation for procurement and erection of the future cold ironing
  - ✓ technical design studies providing planning design, final specifications for equipment and infrastructure, and final budget.



Port	General Description of studies	Status	Estimated completion date
Valencia	FEED studies for SSE implementation at Passenger & Container terminals	60% completed	31/12/23
Barcelona	FEED studies for the implementation of SSE system at the port	100% completed	31/01/23
Gijón	Technical studies for the SSE implementation of the quays of La Osa and Marcelino León	60% completed	31/12/23
Huelva	FEED studies for SSE implementation at General cargo, Ropax & Container terminals	50% completed	31/10/23
Açores	Technical studies for SSE implementation in the ports of Ponta Delgada, Praia da Vitória and Horta	85% completed	30/04/23
Leixoes	FEED studies for the implementation of SSE on the Ro-Ro terminal	20% completed	30/11/23
Piraeus	FEED studies for the implementation of SSE system at the Passenger terminal	100% completed	30/11/22
Rafina	FEED studies for the implementation of SSE system at the Passenger terminal	100% completed	31/01/23

Port	General Description of studies	Status	Estimated completion date
Burgas	FEED studies for SSE implementation at Passenger, General cargo, Ropax & Container terminals	90% completed	31/03/23
Varna	FEED studies for SSE implementation at Passenger, General cargo, Ropax & Container terminals	90% completed	31/03/23
Venice	Technical studies for SSE implementation in the ports of Chioggia	50% completed	30/06/23
Ancona	FEED studies for SSE implementation at the port	80% completed	31/03/23
Trieste	Technical studies for SSE implementation at the port	70% completed	31/03/23
Koper	FEED studies for the implementation of SSE on the Ro-Ro terminal	30% completed	30/11/23
Constanta	FEED studies for SSE implementation at Passenger, General cargo, Ropax & Container terminals	100% completed	31/01/23
Cork	Technical studies for SSE implementation at the port	65% completed	31/07/23



## Example of FEED studies: Port of Valencia

Primary Substation 2  
132 / 20 kV, 60 to 90 MVA

**OPS pilot: Passenger terminal TRASMED**  
1 connection for cruise (16 MVA) and  
1 connection for ferry (4 MVA)

**OPS pilot: Passenger terminal Baleària**  
1 connection for cruise (20 MVA) and  
1 connection for ferry (4 MVA)

**OPS pilot: container terminal MSCTV**  
2 connection points, up to 4-5 MVA each  
for simultaneous connection

Primary Substation 1  
132 / 20 kV, 60 to 90 MVA  
*Co-financed by EALING Works*



## Example of FEED studies: Port of Constanta



Serving vessels:  
container, ro-ro, Passenger, bulk, multipurpose, LNG



Name/Description of the technical study	Current status
FEED studies for the Berthing position "PAS" (5 MVA)	Finalised
FEED studies for the Berthing position "Berth 35/36" (1 MVA)	Finalised
FEED studies for the Berthing position "Berth 44" (1 MVA)	Finalised
FEED studies for the Berthing position "Berth CL" (5 MVA)	Finalised
FEED studies for the Berthing position "Berth PL6" (1 MVA)	Finalised
FEED studies for the Berthing position "Berth 114" (1 MVA)	Finalised
FEED studies for the Berthing position "Berth 119" (1 MVA)	Finalised
FEED studies for the Berthing position "Berth 120" (1 MVA)	Finalised
FEED studies for the Berthing position "Berth 121" (5 MVA)	Finalised
FEED studies for the Berthing position "Berth 123" (5 MVA)	Finalised

5

Activity 4

Environmental studies

## Objective: to implement environmental studies

- ▶ The scope of the studies will depend on the final needs of each port
- ▶ They will contribute, if necessary, to obtain permits on the projected OPS works
- ▶ The studies will take into account
  - ▶ Environmental Impact Assessment (EIA) Directive (2014/52/EU)
  - ▶ Strategic Environmental Assessment Directive (2001/42/EC)

# Contents of the environmental studies

Description of the location of the project, design and technical characteristics of the whole project during the stages of construction and operation

Description and evaluation of alternative solutions, particularly as to the location, size and/or technology, including the zero solution, and presentation of the main reasons for the choice of the proposed solution concerning its environmental impacts

Description of the environmental and social baseline

Description of the likely significant effects of the project during the construction phase and the implementation phase, and mitigation measures that should be implemented in order to mitigate those effects

To ensure a harmonized document on the environmental studies a template was sent to all partners

# 6

## Activity 5

# Clean power supply plans and tender documents

## Objectives:

1. Elaborate or update the clean power supply plans of the ports of the consortium depending on the baseline identified for each port.



Each clean power supply plan will focus on integrating the new OPS functionality (Port's Strategy on sustainability, demand and port users operating)

2. Prepare the tender documents for all the proposed investments concerning OPS construction works



# Contents proposed (executive summaries):

## Clean power supply plans:

- Current situation of the energy consumption in the port (Port Authority, Terminals, Ships, Other facilities/services, Summary of the energy consumption in the port)
- Future energy demand
- Planned actions to cover the future energy needs

## Tender documentation:

- Description of the tender process
- Contents of the tender documentation

# 7

## Activity 6

### Cost-benefit analysis and Financial blending schemes

## Objectives

1. Perform **Cost-Benefit Analyses** for each OPS project of the maritime ports involved in the EALING Action including:
  - Quantification of the determined OPS infrastructure based on market data;
  - Investment costs estimations;
  - Expected socio-economic benefits
  - Estimations of cost with and without the implementation of OPS solutions for all categories of vessels calling at ports of the consortium
2. Design **suitable investment schemes** for selected OPS projects of the maritime ports involved in the EALING Action resulting in targeted financial analysis

## Main Outcomes:

- Financial and Economic Assessment of the proposed OPS infrastructure in the under-study ports
- Proposed Financial Blending Schemes for the implementation of the aforementioned investments in ports

Port	Estimated completion date	Port	Estimated completion date
Valencia	May 2023	Burgas	October 2023
Barcelona	May 2023	Varna	October 2023
Gijón	June 2023	Venice	June 2023
Huelva	October 2023	Ancona	June 2023
Koper	April 2023	Trieste	June 2023
Leixoes	October 2023	Constanta	April 2023
Piraeus	April 2023	Cork	June 2023
Rafina	March 2023	Açores	July 2023

8

**Keep informed!**

## EALING deliverables, newsletter, video

- **EALING DELIVERABLES:** [Dissemination – Ealing Project](#)
- **EALING BULLETIN** is the periodic project newsletter: 3 issues sent out and [available for download on the website](#). Dissemination to a database of 5,000 targeted stakeholders, social media community and project partners
- **EALING PROJECT VIDEO:** [European Flagship Action For Cold Ironing in ports - EALING Project - YouTube](#)



European flagship Action for cold ironING in ports



## EALING future dissemination activities

- **Black Sea Regional Stakeholder Workshop**

WHEN and WHERE - June 2023 in Burgas

- **Local Stakeholder Workshops**

Organisation of 16 local public demonstrations in the participant ports in 2023

WHEN and WHERE – From June to December 2023

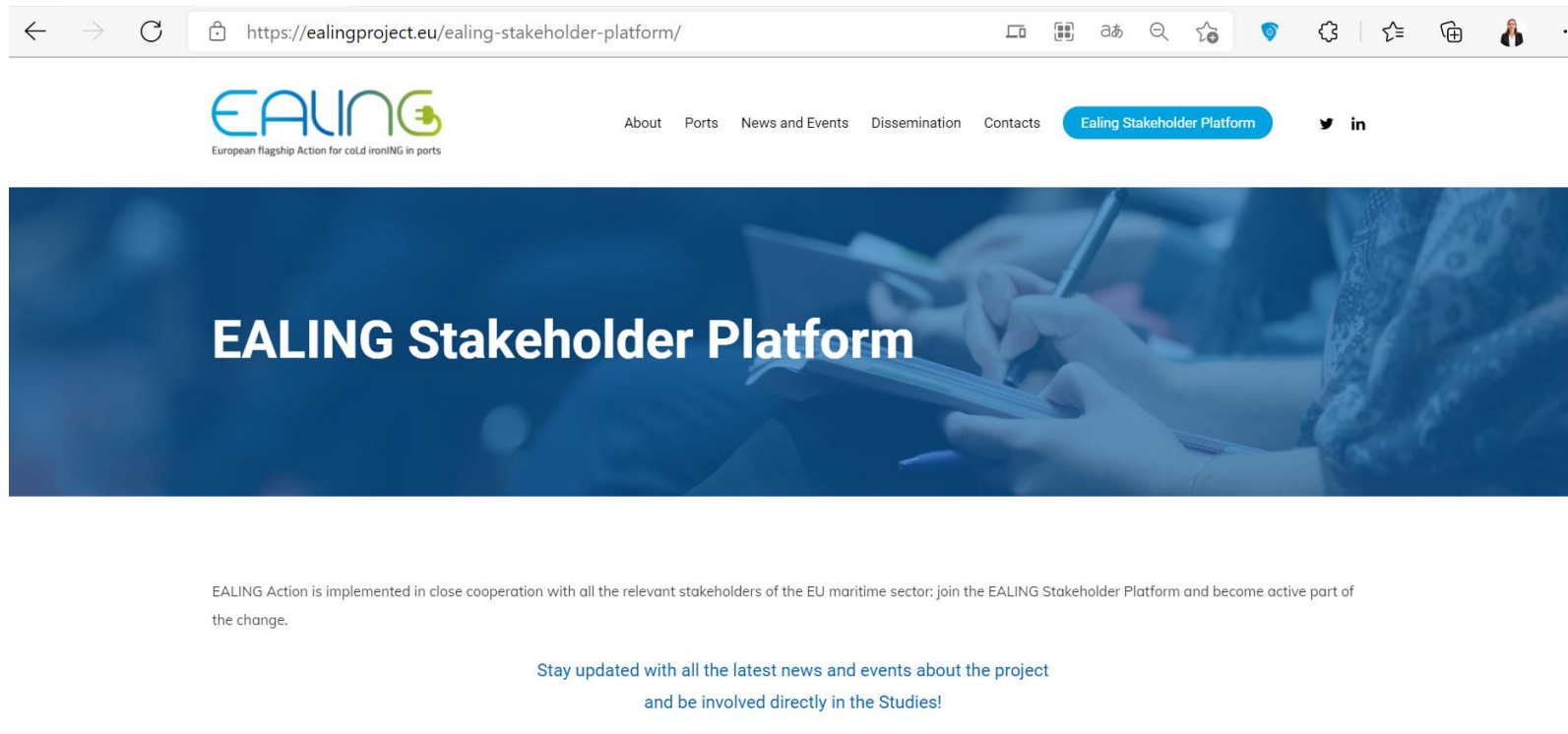
- **Final event**

WHEN and WHERE - Autumn 2023 in Valencia





## EALING Stakeholders Platform - Stay updated!



## Ealing Stakeholder Platform – Ealing Project





# Thanks!



European flagship Action for coLd ironING in ports

**Dr. Stefanos Dallas**  
*EU Program Manager*

[sdallas@protasis.net.gr](mailto:sdallas@protasis.net.gr)

**Discover more at**

[www.ealingproject.eu](http://www.ealingproject.eu)



**Co-financed by the Connecting Europe  
Facility of the European Union**