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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

**Executive Summary on Ports Questionnaire** 

March 2022





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## EALING

### **EALING Introduction – Global Project**

EALING Global Project highlights the need to accelerate the effective deployment of OPS solutions in EU maritime ports. It consists of different Actions:





EAUNG Studies Action

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### **EALING Introduction – EALING Studies Action**



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

Detailed analysis on the current status of technical, legal and regulatory framework – at Member States level and at EU level – concerning the implementation of OPS in EU ports and recommendations focused on how to implement a workable and coordinated framework boosting the development of OPS in ports of the TEN-T Network.

#### Maritime fleet adaptation

Study of the maritime electrification standards across the ports of the consortium and the vessels operating in these ports, providing operational recommendations - taking IMO guidelines as a reference - for a harmonised technical, legal and regulatory framework on maritime fleet adaptation for electrification.



**A2** 

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

Technical design studies for the electrification infrastructure necessary for the ports of the consortium: this includes the development of front-end engineering design (FEED) studies and other necessary technical studies that will feed into the tender specifications of the future equipment and infrastructure.



#### **Environmental studies.**

Environmental studies, the scope of which will depend on the needs of each port. They will take into account the provisions stated in the Strategic Environmental Assessment (SEA) Directive (2001/42/EC) and the Environmental Impact Assessment (EIA) Directive (2014/52/EU), contributing, if necessary, to obtain the permits on the projected works for the future OPS infrastructure in the ports of the consortium.

#### Clean power supply plans and tender documents

Clean energy supply plans (preparation or update) of the consortium ports, based on the baseline identified for each port, in order to ensure the integration of OPS in the internal strategies of the Port Authorities; preparation of the tender documents for all proposed investments.



**A5** 

#### Cost-benefit analysis and Financial blending schemes

Cost-benefit analysis (CBA) for each OPS project of the maritime ports involved in the EALING Action and suitable investment schemes design, which will allow the ports to proceed to the Financial Investment Decisions.





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### **Discovering the Port Questionnaire - structure**

This consultation is framed within Activity 1 of the EALING Studies Action.

The objective has been to gather information on the status of OPS infrastructure in EU ports and on the technical, regulatory, administrative and other related aspects that affect its implementation.

The questionnaires were sent through different channels to more than 200 EU ports. They were completed between May and June 2021, although the process was reopened in September to allow additional ports to collaborate.

In total, 54 EU ports participated in this activity.

The analysis presented in this executive summary is based solely and exclusively on the responses of the participating entities. The only intervention made by the EALING team was to correct or disregard some content errors detected during the processing of the data.



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### **Discovering the Port Questionnaire - structure**

### A - GENERAL INFORMATION

**B** - TECHNICAL ASPECTS RELATED TO OPS It provides information to know the type of port or terminal under study (traffic type, governance model, etc.).

It includes technical data regarding the status of OPS implementation in the participating ports.

### C - SPECIFIC REGULATORY AND ADMINISTRATIVE ASPECTS

It collects information on the relevant regulatory aspects at EU / national level and administrative procedures.

 OTHER ASPECTS (SUCH AS FINANCING, BUILDING FACILITIES AND RESOURCES) It provides information on other related aspects, such as financing or incentives schemes, barriers at construction level, and training needs and profiles.

### **E** - ADDITIONAL INFORMATION

It includes additional information freely provided by the respondent.





### **Questionnaire results**

### **A** - **GENERAL INFORMATION**

# **B** - TECHNICAL ASPECTS RELATED TO OPS

# It provides information to know the type of port or terminal under study (traffic type, governance model, etc.).

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### E - ADDITIONAL INFORMATION

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A - GENERAL INFORMATION

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### EAUNG

### **Classification of the ports surveyed by type of port**





## EAUNS

#### List of the surveyed ports

NAME OF THE PORTS	COUNTRY	TOTAL SURVEYED PORTS
ALGECIRAS, BARCELONA, CEUTA, FERROL, GIJÓN, HUELVA, LAS PALMAS DE GRAN CANARIA, MÁLAGA, MOTRIL, PALMA, SANTANDER, VALENCIA	SPAIN	12
ANCONA, BARI, BRINDISI, CHIOGGIA, LA SPEZIA, LIVORNO, MONFALCONE, NOGARO, ORTONA, PESARO, TRIESTE	ITALY	11
ALEXANDROUPOULIS, CHANIA, IGOUMENITSA, MYKONOS, PATRAS, PIRAEUS, RAFINA	GREECE	7
AVEIRO, CANIÇAL E PORT SANTO, FIGUEIRA DA FOZ, FUNCHAL, LEIXOES, LISBON, PORTOS DOS AÇORES	PORTUGAL	7
CONSTANTZA, MANGALIA, MIDIA	ROMANIA	3
BOURGAS, VARNA	BULGARIA	2
AARHUS, RONNE	DENMARK	2
SETE, TOULON	FRANCE	2
DUBLIN, GALWAY	IRELAND	2
ANTWERPEN	BELGIUM	1
PLOCE	CROATIA	1
MALTA FREEPORT	MALTA	1
AMSTERDAM	THE NETHERLANDS	1
KOPER	SLOVENIA	1
KAPELLSSKAR, NORVIK, NYNASHAMN, STOCKHOLM	SWEDEN	1





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#### **Classification of the ports surveyed by TEN-T corridor**

TEN-T CORRIDOR	No. of PORTS
<ul> <li>ATLANTIC</li> </ul>	7
SCANDINAVIAN - MEDITERRANEAN	5
BALTIC – ADRIATIC & MEDITERRANEAN	4
<ul> <li>ORIENT - EAST MED</li> </ul>	4
MEDITERRANEAN	3
• • NORTH SEA - BALTIC & RHINE - ALPINE	2
• • SCANDINAVIAN – MEDITERRANEAN & BALTIC - ADRIATIC	1
• ATLANTIC & MEDITERRANEAN	1
RHINE - DANUBE	1
• • SCANDINAVIAN – MEDITERRANEAN & MEDITERRANEAN	1
TOTAL	29



Source: European Commission

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A - GENERAL INFORMATION



### EAUNS

#### **Classification of the ports surveyed by type of traffic**



Note: Question addressed to all the participating ports. 54 replies, multiple choice.

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### EAUNs

#### **Classification of the ports surveyed by number of terminals and calls per year**

No. OF TERMINALS	
1-5 (48.1%)	
6-10 (24.1%)	
11-20 (9.3 %)	
MORE THAN 20 (18.5%)	

No. OF SHIP CALLS PER YEAR	No. OF PORTS
LESS THAN 500	6 (11.1%)
500 - 1,000	8 (14.8%)
1,001 - 2,500	16 (29.6%)
2,501 – 5,000	10 (18.5%)
5,001 – 7,500	4 (7.5%)
MORE THAN 7,500	10 (18.5%)



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## EAUNS

#### Classification of the ports surveyed by type of ownership and governance model





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#### A - GENERAL INFORMATION

It provides information to know the type of port or terminal under study (traffic type, governance model, etc.).

### **B** - TECHNICAL ASPECTS RELATED TO OPS

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# EAUNG

#### Maturity level of implementation in terms of OPS according to port ownership





### EAUNG

#### Type of terminal where OPS is planned/expected to be installed



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Note: Question addressed to all the participating ports. 51 replies, multiple choice.



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TECHNICAL ASPECTS RELATED TO OPS

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### EAUNS

#### Number of TERMINALS where OPS is available





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TECHNICAL ASPECTS RELATED TO OPS

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### EAUNS

#### Number of VESSELS that can be simultaneously supplied in the ports where OPS is available



Note: Question addressed to ports with OPS. 12 replies, multiple choice.



### EAUNS

#### Number of TERMINALS where OPS will be available in the next 5 years





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#### Potential number of VESSELS simultaneously supplied thanks to the OPS planned in the next 5 years





### EAUNG





Note: Question addressed to ports with OPS. 13 replies, multiple choice.



## EAUNG

#### Type of OPS interface per type of terminal





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TECHNICAL ASPECTS RELATED TO OPS

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### EAUNS

#### Average Voltage per type of terminal with OPS





### EAUNG

#### **Frequency used per type of terminal with OPS**



Note: Question addressed to ports with OPS. 13 replies, multiple choice.



### EALING

#### Type of Standard followed in the existing OPS facilities





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### EAUNS

#### **Voltage/Frequency/Power combinations used in OPS facilities**





### EAUNS

#### **Voltage used in the existing OPS facilities**



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### EAUNS

### **Renewable energy use for OPS**



YES (GUARANTEE OF ORIGIN) 33%

DOES THE ELECTRICITY USED FOR OPS COME FROM RENEWABLE ENERGY SOURCES?	TOTAL
PARTIALLY	7
YES (GUARANTEE OF ORIGIN)	5
UNKNOWN	3

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## EAUNG

### Integration of OPS in the port energy grid per type of port ownership





TECHNICAL ASPECTS RELATED TO OPS 8

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# EALING

Ports with OPS: The ports participating in the questionnaire were asked whether they had to upgrade and/or invest in the electricity network to meet the expected demand.



Ports with planned OPS: The ports participating in the questionnaire were asked whether they will have to upgrade and/or invest in the electricity network to meet the expected demand.



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# EALING

### Main technical/operational/financial difficulties in planning and implementing OPS solutions

Cost of installations compared with cost of operation, cost of electrical power and economic viability of the service, lack of pricing and taxing framework

Status and capacity of the port electricity grid (power constraints, etc.)

Lack of technical and operational expertise about shore side electricity for ports (implementation). Estimation of the power demands in the ports, in particular per hours for different size of ships (different technical solutions and standards ,i.e., 50 Hz or 60 Hz, 11 kV or 6.6 kV, for different types of berths/ships)

Defining role / responsibility / expectations of stakeholders, and split incentives

Lack of legislative drivers for OPS installation and operation (regulation of the service)

Selection of the service operator

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TECHNICAL ASPECTS RELATED



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#### A - GENERAL INFORMATION

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### EAUNS

#### Level at which difficulties are encountered in relation to regulation



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SPECIFIC REGULATORY AND ADMINISTRATIVE ASPECTS

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### EAUNS

#### Management of the service in the ports with existing OPS facilities





### EAUNS

#### Management of the service in the ports with expected OPS facilities



SPECIFIC REGULATORY AND ADMINISTRATIVE ASPECTS

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### EAUNS

#### **Need for an Environmental Impact Assessment**



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### EAUNS

#### Sources of funding used to carry out the investments in the ports with OPS facilities



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**D** - OTHER ASPECTS (SUCH AS FINANCING, BUILDING FACILITIES AND RESOURCES)

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**D** - OTHER ASPECTS (SUCH AS FINANCING, BUILDING FACILITIES AND RESOURCES)

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### EAUNG

#### Sources of funding that will be used to carry out future OPS investments





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### EAUNG

### Skills profile of the staff operating the OPS facilities





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#### Main training needs for OPS operations

### For Port Authorities (management)

- Financing of the installation
- Regulatory standards
- Safety and security
- Other aspects related to OPS systems and connections onboard the ship

### For the operator of the OPS facilities (operations)

- Safety and security
- Electrical knowledge (including risk assessment, electrical loading)
- Synchronization between shore and ship [plug-in/plug-out]
- Maintenance and efficient use of OPS facilities

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#### Quotes

OPS in use only covers inland vessels and tugboats and should be extended to seagoing vessels A good demand analysis is key with the involvement of the shipowner

The experience of specific OPS facilities for a certain type of ship does not provide experience for other type of traffics

The real impact of OPS in the GHG emission reductions comes if the energy is from renewable energy. It requires storage of the energy to cover the demand when arise. The combination of different energy sources is the key

LNG ships should be exempted of the obligation to connect There is an increasing demand of cruise lines but is not feasible for small ports because of its high cost. It is not sustainable

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