Milestone 4 - Detailed analysis on the existing national/port regulations directly or indirectly related to shore side electricity supply

Activity	Activity 1: Harmonised Framework for the Electrification of the participating TEN-T maritime ports
Milestone	M4
Authors	Reza Karimpour (Circle S.p.A.), Nikos Moutsios (Ocean Finance), Jorge Lara & Rocío García (Fundación Valenciaport)
Contributors	Team members from: Autoridad Portuaria de Barcelona; Autoridad Portuaria de Huelva; Autoridad Portuaria de Gijón; North Adriatic Sea Port Authority; Bulgarian Ports Infrastructure Company; Autorità di Sistema Portuale del Mare Adriatico Orientale; Protasis S.A.; National Company Maritime Ports Administration SA; Constanta, Autorita' di Sistema Portuale del Mare Adriatico Centrale; Luka Koper, pristaniški in logistični sistem, delniška družba; Hydrus engineering limited; Marine Institute; Administração dos Portos do Douro, Leixões e Viana do Castelo, S.A.; Portos dos Açores
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	Name	Organisation	Date
Peer review 1 (Technical Manager)	Alexio Picco	Circle S.p.A.	15/03/2022
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Authorised by (Steering Committee)	Alexio Picco Lambros Nakos Stefanos Dallas Rocío García Panayotis Zacharioudakis	Circle Hydrus Protasis Fundación Valenciaport Ocean Finance	31/03/2022
Submitted by (Project Coordinator)	Rocío García	Fundación Valenciaport	31/03/2022

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation	Meaning
AFID	Alternative Fuels Infrastructure Directive
ASL	Azienda Sanitaria Locale
CEF	Connecting Europe Facility
CLIA	Cruise Lines International Association
CNG	Compressed Natural Gas
CNMC	Comisión Nacional de los Mercados de Valores
CO_2	Carbon Dioxide
CPR	Construction Products Regulation
dB	Decibel
DEASP	Documento di Pianificazione Energetico Ambientale del Sistemi Portuali
DECA	Domestic Emissions Control Areas
DNV-GL	Det Norske Veritas - Germanischer Lloyd
DOP	Declaration of Performance
DPR	Decreto del Presidente della Repubblica
DSO	Distribution System Operators
EALING	European flagship action for cold ironing in ports
EC	European Commission
EIA	Environmental Impact Assessment
EMSA	European Maritime Safety Agency
EPF	European Ports Forum
ESI	Environmental Ship Index
ESOs	European Standardisation Organisations
ESPO	European Sea Ports Organisation
ESR	Effort Sharing Regulation
ESSF	European Sustainable Shipping Forum
ETD	Energy Taxation Regulation
ETS	Emission Trading System
EU	European Union
EU ETS	European Union Emission Trading Scheme
FPC	Factory Production Control

GHG	Greenhouse Gas
HRADF	Hellenic Republic Asset Development Fund
HTW	Human Element, Training and Watchkeeping
HV	High Voltage
HVSC	High-voltage shore connection
Hz	Hertz
IACS	International Association of Classification Societies
IAPH	International Association of Ports and Harbors
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IMO	International Maritime Organisation
INPEC	Integrated National Plan for Energy and Climate
IPTO	Independent Power Transmission Operator
ISO	International Standard Organisation
ISPS	International Ship and Port Facility Security
ITF	International Transport Workers' Federation
kV	Kilovolt
kW	Kilowatt
LNG	Liquified Natural Gas
LPG	Liquefied Petrol Gas
LV	Low Voltage
LVSC	Low Voltage Shore Connection
MPAC	Maritime Ports Administration Constanta
MV	Medium Voltage
MVA	MegaVolt Ampere
NO_2	Nitrogen Dioxide
OPEX	Operating Expenditures
OPS	Onshore Power Supply
PAA	Port Authorities and Administrations
PDM	Plano Director Municipal
PGOU	Plan General de Ordenación Urbana
PNALE	National Plan for the Allocations of Emission Allowances
PPA	Piraeus Port Authority

PPP	Pliegos de Prescripciones particulares
R&D&i	Research and Development & innovation
RAE	Hellenic Regulatory Authority for Energy
REC	Renewable Energy Community
RES	Renewable Energy Sources
Ro-Ro	Roll-on/roll-off
SBC	Shore side Battery Charging
SEA	Strategic Environmental Assessment
SGB	Sovereign Green Bond
SMS	Safety Management System
SO_2	Sulphur Dioxide
SOLAS	International Convention for the Safety of Life at Sea
SSE	Shore-side Electricity
SSE Group	Ship Systems and Equipment Group
STCW	Standards of Training, Certification and Watchkeeping for Seafarers
TEN-T	Transeuropean Network Transport
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
VAT	Value Added Tax

EXECUTIVE SUMMARY

EALING (European flagship action for cold ironing in ports) is a 36-month Action co-funded by the CEF Programme that aims to develop the technical, environmental, financial, and legal studies necessary to implement onshore power facilities in at least 16 EU ports, and to work on a common EU harmonised and interoperable framework for their transition to electrification.

Within the project, the objective of the first activity is to implement a detailed analysis on the status of the technical, legal, and regulatory framework in the Member States concerned at national level, and on the current status of the EU legislation as well as policy initiatives, standards and guidelines focusing on the implementation of Onshore Power Supply (OPS) in the EU ports participating in the consortium of the Action. It also aims to report with recommendations on how to bring forward and implement a harmonised framework boosting the development of OPS in the ports of the TEN-T Network, considering the technical, legal and regulatory framework in place and under development at EU level. The analysis will notably focus on the technical aspects that may derive in a difficult harmonisation for OPS implementation (e.g., utility grid infrastructure, permitting process, contract procedures, electrical risk assessment process equipment certification, etc.).

This report contains the detailed analysis that the project partners have performed concerning the existing national, regional, local/port regulations directly or indirectly related to OPS, including elements affecting the wider aspects contributing to the electrification of the consortium's ports. It constitutes the first deliverable of Activity 1 as well as the means of verification of ***Milestone 4. Detailed analysis of the existing national/port regulations directly or indirectly related to shore side electricity completed.***

This document is structured in three main parts. First, a general review of the regulatory framework at international is carried out. Second, an overview of the European regulation for OPS is developed. Finally, the document includes an exhaustive compilation and analysis of the regulations that directly or indirectly affect the implementation of OPS in the ports of the consortium at national, regional, and local level, as well as a comparative analysis of the regulations between the countries involved.

1 INTRODUCTION

Maritime transport is essential for the EU as it contributes to around 75% of EU external trade and 31% of EU internal trade volumes[1], making it of great strategic importance for the European economy. This translates into close to 4 billion tonnes of cargo handled in EU ports and 400 million passengers per year on average.

Although the maritime sector brings significant economic and social benefits to the EU by meeting ever-increasing demands, it also has a negative impact on the environment and contributes to global warming while affecting the health of EU citizens and the state of marine and coastal ecosystems.

In total, ships calling at EU and European Economic Area ports generated around 140 million tonnes of CO_2 emissions in 2018 (approximately 18% of all CO_2 emissions generated by maritime transport worldwide that year). In relation to air pollution, sulphur dioxide (SO_2) emissions from ships calling in European ports amounted to around 1.63 million tonnes in 2019, approximately 16% of the global SO_2 emissions from international shipping.

Despite a drop-in shipping activity in 2020 due to the effects of the COVID-19 pandemic, the sector is expected to grow strongly over the coming decades, fuelled by rising demand for primary resources and container shipping. Therefore, emissions from shipping will consequently continue to increase.

In September 2020, the Commission adopted a proposal to cut greenhouse gas emissions by at least 55% by 2030 and put the EU on a responsible path to becoming climate neutral by 2050. To achieve climate neutrality, a 90% reduction in transport emissions is needed by 2050, and all transport modes, including maritime transport, will have to contribute to the reduction efforts.

Within the EU port and maritime sector, one of the solutions to reduce emissions in ports is the installation of Onshore Power Supply (OPS) solutions in ports. However, although the technology is available and fully mature, **European ports currently face difficulties in implementing these facilities due to a lack of harmonisation** concerning regulation and standards both on ship and shore sides.

Figure 1 presents a diagram view of the overall regulatory and standardisation context for OPS projects.

[1] Regulation of the European Parliament and of the Council on the use of renewable and low-carbon fuels in maritime transport and amending Directive 2009/16/EC. Available at : fueleu_maritime_-_green_european_maritime_space.pdf (europa.eu)

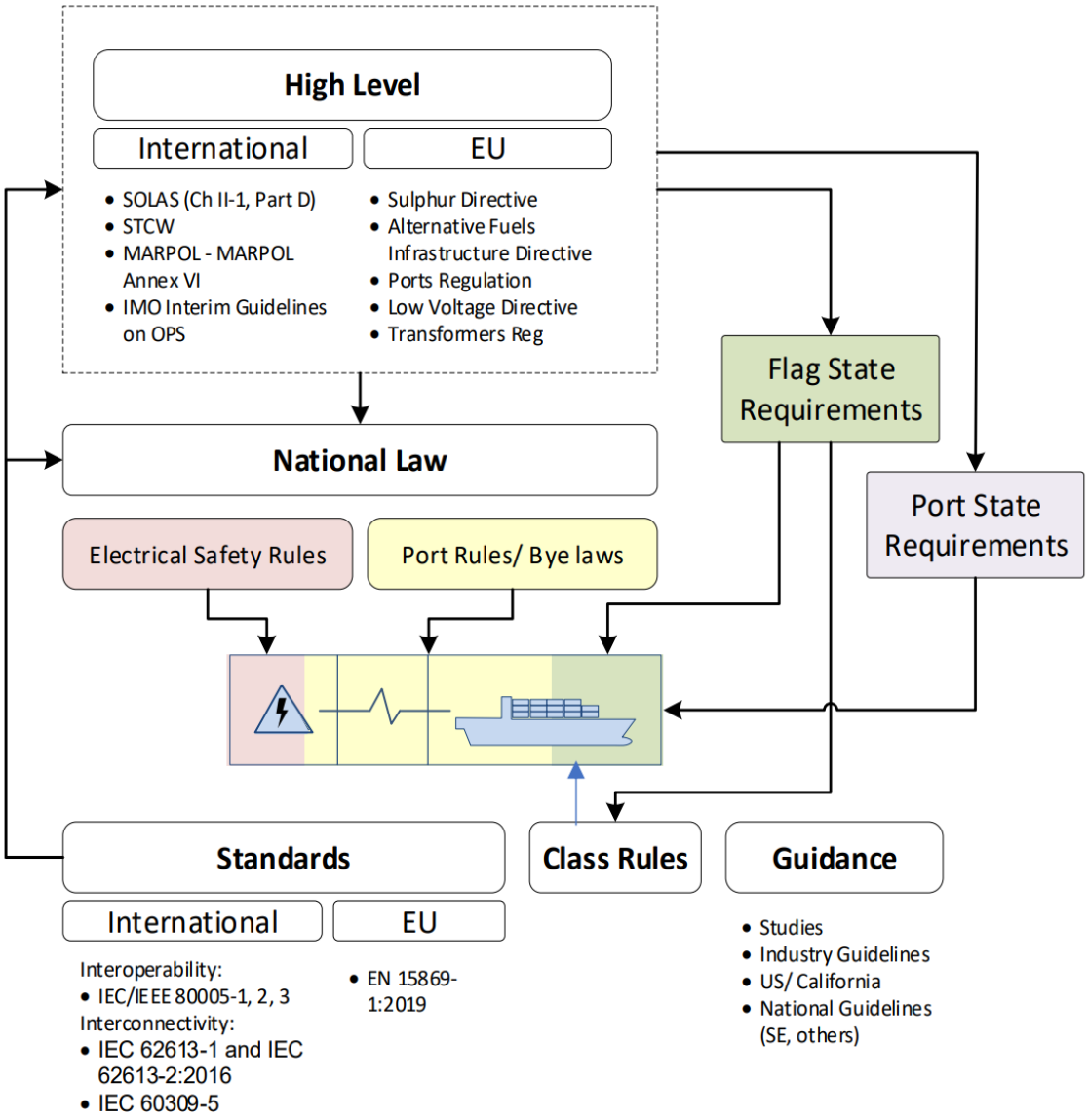


Figure 1. Overall Regulatory and Standardisation context for Shore Side Electricity projects
Source: EMSA

The following sections present an overview of the international and European regulations that may affect, directly or indirectly, the development of OPS solutions, as well as the detailed analysis carried out by the EALING consortium of the national, regional and local regulations they need to comply with when implementing OPS facilities in their ports.

2 INTERNATIONAL REGULATORY FRAMEWORK FOR ONSHORE POWER SUPPLY

2.1 International technical standards

Different electrical technologies and equipment in the maritime and port industry are ruled under different standards, mainly developed by the following standardisation bodies:

- International Electrotechnical Commission (IEC). It is a global, not-for-profit membership organisation, whose work underpins quality infrastructure and international trade in electrical and electronic goods. They prepare and publish international standards for all electrical, electronic, and related technologies - known as "electrotechnology"-. It brings together more than 170 countries and coordinates the work of 20,000 experts globally.[2] Its mission is to achieve worldwide use of IEC International Standards and Conformity Assessment Systems to ensure the safety, efficiency, reliability, and interoperability of electrical, electronic, and information technologies, enhance international trade, facilitate broad electricity access, and enable a more sustainable development world. The IEC publishes around 10,000 IEC International Standards which together with conformity assessment provide the technical framework that allows governments to build national quality infrastructure and companies of all sizes to buy and sell consistently safe and reliable products in most countries of the world.

- International Organisation for Standardization (ISO). It is an independent, non-governmental international organisation with a membership of 167 national standards bodies. Its members bring together experts to share knowledge and develop voluntary, consensus-based, market-relevant International Standards that support innovation and provide solutions to global challenges[3].

- Institute of Electrical and Electronics Engineers (IEEE). It is the largest technical professional organisation (over 400,000 members in more than 160 countries) dedicated to, inter alia, standardisation and development in technical areas. IEEE and its members inspire a global community through its highly cited publications, conferences, technology standards, and professional and educational activities[4].

Within the OPS scope, the three entities have developed different standards, the most relevant of which are detailed below:

[2] International Electrotechnical Commission. Available at : https://www.iec.ch/about-us
[3] International Organisation for Standardization. Available at : https://www.iso.org
[4] Institute of Electrical and Electronics Engineers. Available at : https://www.ieee.org

- **IEC/IEEE International Standard - Utility connections in port**, which establishes the general requirements for OPS installations, is structured in three parts:

➢ Part 1. IEC/IEEE 80005-1 Utility connections in port - Part 1: High Voltage Shore Connection (HVSC) Systems - General requirements[5].

This part of IEC/IEEE 80005-1 describes high-voltage shore connection (HVSC) systems, onboard the ship and on shore, to supply the ship with electrical power from shore. IEC/IEEE 80005-1 is applicable to the design, installation and testing of HVSC systems and addresses the following elements:

- High Voltage (HV) shore distribution systems.
- Shore-to-ship connection and interface equipment.
- Transformers/reactors.
- Semiconductor/ rotating frequency convertors.
- Ship distribution systems.
- Control, monitoring, interlocking and power management systems.

IEC/IEEE 80005-1 does not apply to the electrical power supply during docking periods, for example, dry docking and other out of service maintenance and repair. As stated in the norm, « *additional and/or alternative requirements can be imposed by national administrations or the authorities within whose jurisdiction the ship is intended to operate and/or by the owners or authorities responsible for a shore supply or distribution system. It is expected that HVSC systems will have practicable applications for ships requiring 1 MVA or more or ships with HV main supply. This document does not cover Low-voltage shore connection systems*».

IEC/ISO/IEEE 80005 is the reference standard and the one required by the EC to be followed in the design, installation and testing of OPS systems, as included in *Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure Text with EEA relevance*[6].

➢ Part 2. IEC/IEEE 80005-2 Utility connections in port - Part 2: High and low voltage shore connection systems - Data communication for monitoring and control[7].

As specified in the norm, IEC/IEEE 80005-2 describes the data interfaces of shore and ships and step-by-step procedures for low and high voltage shore connection systems communication for non-emergency functions, where required. This standard specifies the interface descriptions, addresses and data type. This standard also specifies

[5] IEC/IEEE 80005-1 :2019. Technical Committee ISO/TC 8/SC 3 piping and machinery. ICS :47.020.60 Electrical equipment of ships and of marine structures. Available at : https://www.iso.org/standard/64717.html

[6] DIRECTIVE 2014/94/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL - of 22 October 2014 - on the deployment of alternative fuels infrastructure - (europa.eu)

[7] IEC/IEEE 80005-2 :2016. Technical Committee ISO/TC 8/SC 3 piping and machinery. ICS :47.020.60 Electrical equipment of ships and of marine structures. Available at : https://www.iso.org/standard/59133.html

communication requirements on cruise ships, in Annex A. Application of this standard relates to annexes of IEC/ISO/IEEE 80005-1. This standard does not specify communication for emergency functions as described in IEC/ISO/IEEE 80005-1.

- Part 3. IEC/PAS 80005-3 Utility connections in port - Part 3: Low Voltage Shore Connection (LVSC) Systems - General requirements[8].
  IEC/IEEE 80005-3 describes low voltage shore connection (LVSC) systems, on board the ship and on shore, to supply the ship with electrical power from shore. This standard is applicable to the design, installation and testing of LVSC systems and addresses the following points:
  - LV shore distribution systems.
  - Shore-to-ship connection and interface equipment.
  - Transformers/reactors.
  - Semiconductor/rotating convertors.
  - Ship distribution systems.
  - Control, monitoring, interlocking and power management systems.

- **IEC 62613 - Plugs, socket-outlets, and ship couplers for high-voltage shore connection (HVSC) systems** focuses on the OPS connection systems. It addresses the needs of plugs, socket-outlets and ship couplers (ship connectors and inlets) of the IEC/ISO/IEEE 80005-1:2016. This standard specifies requirements for ships to connect to compliant, high voltage power systems through a compatible shore-to-ship connection.

It is structured in two parts:

- IEC 62613-1:2019 Plugs, socket-outlets and ship couplers for high-voltage shore connection 380 systems (HVSC systems) - Part 1: General Requirements[9].

- IEC 62613-2:2016 Plugs, socket-outlets and ship couplers for high-voltage shore connection systems (HVSC-systems) - Part 2: Dimensional compatibility and interchangeability requirements for accessories to be used by various types of ships[10].

- **IEC 60309-1:2021 - Plugs, fixed or portable socket-outlets and appliance inlets for industrial purposes[11]**, is a worldwide standard defined by the International Electrotechnical Commission for plugs, socket, outlets, etc couplers for industrial purpose. It is structured into different parts, being *Part 5: Dimensional compatibility and interchangeability requirements for plugs, socket-outlets, ship connectors and ship inlets for low-voltage shore connection systems*

[8] IEC/PAS 80005-3 :2014. Technical Committee ISO/TC 8/SC 3 piping and machinery. ICS :47.020.60 Electrical equipment of ships and of marine structures. Available at : https://www.iso.org/standard/64718.html
[9] IEC 62613-1 :2019. TC 23/SC 23H. ICS 29.120.30. Available at : https://webstore.iec.ch/publication/59924
[10] IEC 62613-2 :2016. TC 23/SC 23H. ICS 29.120.30. Available at : https://webstore.iec.ch/publication/26149
[11] IEC 60309-1 :2021. TC 23/SC 23H. ICS 29.120.30. Available at : https://webstore.iec.ch/publication/59916

(LVSC) the relevant one for OPS installations. IEC 60309-5:2017 applies to a single type of plug, socket-outlet, ship connector and ship inlet, hereinafter referred to as accessories, intended to connect ships to dedicated shore supply systems.

Detailed information on standards relevant to shipside installation for OPS will be included in the report of *Milestone 10 Analysis of the standards relevant to shipside installation for shore side electricity supply for the vessels operating in the ports of the consortium completed.*

2.2 International verification and certification of OPS installations

The Classification Societies provide classification and statutory services and assistance to the maritime industry and regulatory bodies as regards maritime safety and pollution prevention, based on the accumulation of maritime knowledge and technology. They establish and maintain technical standards for the safe construction and operation of ships and offshore structures. Maritime classification societies certify that the construction of a vessel complies with relevant standards of the IMO, and they carry out regular surveys in service to ensure continuing compliance with the standards. Currently, more than fifty organisations describe their activities as including marine classification, twelve of which are members of the International Association of Classification Societies (IACS), this latter being directly involved in the draft guidelines that IMO are drawing.[12]

An example of IACS members' efforts to standardise the verification and certification of OPS installations is the classification society DNV-GL, which has developed an additional class notation on OPS for ships, which is included in its *Rules For Classification Ships (Part 6 Additional class notations, Chapter 7 Environmental protection and pollution control, Section 5 Electrical Shore Connections* (edition July 2019).[13]

The additional class notation on shore power aims to provide requirements for a transfer of power using an electrical shore connection while in port. The system design comprises the following aspects:

- System functionality of the electrical shore connection as a total system. In addition, requirements for circuit breakers, earthing switches and protective functions are given.
- control systems and control system interface between the shore and the vessel. Requirements are given for necessary functionality. However, the physical installations onshore are not covered by these rules.

[12] Top 100 2012: the top 10 classification societies". Lloyd's List. Retrieved 13 May 2013.
[13] https://rules.dnv.com/docs/pdf/DNV/RU-SHIP/2019-07/DNVGL-RU-SHIP-Pt6Ch7.pdf

- shipside electrical equipment and installations. However, only specific requirements related to electrical shore connections are given. Generally, equipment and installations shall comply with relevant regulations.

It is worth noting that operational characteristics and requirements with respect to power availability during loading and unloading are not within the scope of these rules.

Shoreside electrical equipment and installations, apart from the functional requirements to the installation, are governed by national regulations and are not a part of these rules.

The additional class notation on shore power is not intended for shore connections used during service and maintenance docking. It provides vessels with utilising electrical shore connections while in port and is mandatory for ships with high voltage shore connection and low voltage shore connection with a power rating greater than or equal to 1 MVA (Megavolt ampere). It is applicable for shore power supplying the distribution grid and/or charging electrical energy storage systems onboard the vessel.

2.3 IMO Guidelines – a focus on ship side

The International Maritime Organisation (IMO) is the global standard-setting authority for international shipping safety, security, and environmental performance, whose primary role is to create a regulatory framework for the shipping industry that is fair and effective, universally adopted and implemented[14].

One of its sub-committees, the Ship Systems and Equipment (SSE) Group has developed the *Interim Guidelines on Safe Operation of On-Shore Power Supply (OPS) service in Port for Ships Engaged on International Voyages*[15] to provide an international operational standard for safe operation of OPS service in port on ships.

Considering that OPS system in port for vessels are installed and applicated internationally and recognising that a safe operation of OPS system requires special consideration, the Guidelines have been developed to facilitate both ship and shore-sides without having to deal with diverse detailed requirements for every new terminal.

The Guidelines apply to alternating current of the OPS service in port for ships（except for liquid cargo）engaged on international voyages. They do not apply to the electrical power supply during docking periods, e.g., dry docking and other out of service maintenance and repair.

[14] International Maritime Organisation. Available at : https://www.imo.org/en/About/Pages/Default.aspx
[15] Sub-Committee on Ship Systems and Equipment (SSE), 7th session, 2-6 March 2020. Available at : https://www.imo.org/en/MediaCentre/MeetingSummaries/Pages/SSE-7th-session.aspx

The structure of the Interim OPS guidelines is as per below in short:

1) General: Application, terms and definitions, and communication.
2) Verification and testing: Tests on the first port of calls and repeated calls.
3) Operation: Personal protective equipment (national legislation for Shore/Safety Management System (SMS) for ship; high-voltage and low-voltage operational procedures; disconnection.
4) Safety precautions before maintenance: "Lock out/tag out" and equipment grounding procedures.
5) Documentation: OPS procedures in SMS, plans, diagrams and instructions.
6) Personnel, training, and familiarisation: Minimum competency requirements for the person in charge.

According to the information provided by IMO during the OPS workshop organised by the European Maritime Safety Agency (EMSA) on 26th March 2021, the draft was submitted to the International Association of Classification Societies (IACS) in May 2021. It is expected that work on the familiarisation training provisions will be completed by February 2022 and that the Guidelines will be published by May 2022.

3 EUROPEAN REGULATORY FRAMEWORK FOR ONSHORE POWER SUPPLY

3.1 Overview of the current European context

In December 2019, the European Commission (EC) presented its communication on the **European Green Deal**[16], the new growth strategy of the EU, aiming to set Europe on the path of transformation to a climate-neutral, fair and prosperous society, with a modern, resource-efficient and competitive economy. It reaffirms the EC's ambition to increase its climate targets and make Europe the first climate-neutral continent by 2050, while protecting the health and well-being of citizens from environment-related risks and impacts.

The communication stresses, inter alia, the need to accelerate the shift to sustainable and smart mobility, as transport accounts for a quarter of the EU's greenhouse gas emissions, and still growing, being the maritime transport responsible for 4% of the GHG emissions in the EU, as shown in Figure 2. To achieve climate neutrality, a 90% reduction in transport emissions is needed by 2050.

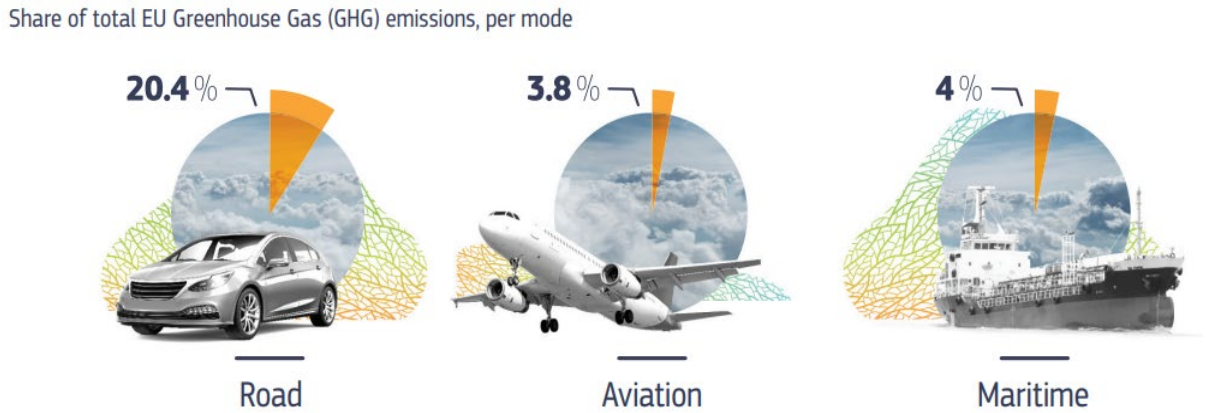


Figure 2. GHG emissions per mode.
Source : European Commission

It is also stated that *"The EU should in parallel ramp-up the production and deployment of sustainable alternative transport fuels. […] The Commission will also review the Alternative Fuels Infrastructure Directive and the TEN-T Regulation to accelerate the deployment of zero- and low-*

[16] Communication from the Commission to the European Parliament, The European Council, The Council, The European Economic and social Committee and the Committee of the Regions. The European Green Deal. COM/2019/640 Final. Available at: EUR-Lex - 52019DC0640 - EN - EUR-Lex (europa.eu)

emission vehicles and vessels". The use of alternative fuels such as green electricity in the transport sector is, therefore, one of the key issues to be addressed to decrease emissions of the transport sector in the EU.

Since then, the EC has been working intensively on several strategies with the ultimate aim of reaching the European Green Pact's goal of climate neutrality by 2050. The most relevant ones for maritime transport and ports are:

- **The 2030 Climate target plan.** In September 2020, the EC published the communication *Stepping up Europe's 2030 climate ambition Investing in a climate-neutral future for the benefit of our people*[17], more commonly known as "*The 2030 Climate target plan*", in which the EC proposed to cut EU GHG emissions by at least 55% in 2030 in order to become climate neutral in 2050. In this plan, it is stated that the use of sustainable alternative fuels needs to increase.

- **Sustainable and Smart Mobility Strategy.** In December 2020, the EC published its Sustainable and Smart Mobility Strategy[18], which lays the foundation for how the EU transport system can achieve its green and digital transformation and become more resilient to future crises and outlines the planned steps to transform the EU transport system. The mobility strategy is complemented with an action plan listing 82 initiatives, distributed in 10 key areas for action ("flagships") to be adopted over the next four years. The Strategy includes many references to stress the relevance of the use of alternative fuels in the transport sector.

- **Fit for 55 package.** In July 2021, the EC proposed the Fit for 55 package, a set of legislative proposals to meet the targets set in the European Green Deal, 2030 Climate Target Plan and the Sustainable and Smart Mobility Strategy and reach the objective of reducing net greenhouse gas emissions by at least 55% by 2030. The proposals included in this legislative tool aim to deliver on the targets agreed in the **European Climate Law**[19] and fundamentally transform its economy and society for a fair, green and prosperous future. This package covers a wide range of policy areas including energy efficiency, renewables, land use, energy taxation, effort sharing and emissions trading, as shown in the following figure.

[17] Communication on Stepping up Europe´s 2030 climate ambition. Investing in a climate-neutral future for the benefit of our people. COM (2020) 562 final. Available at: IMMC.COM%282020%29562%20final.ENG.xhtml.1_EN_ACT_part1_v16.docx (europa.eu)

[18] Sustainable and Smart Mobility Strategy. Available at : Sustainable and Smart Mobility Strategy (europa.eu)

[19] Regulation 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality. Available at: EUR-Lex - 32021R1119 - EN - EUR-Lex (europa.eu)

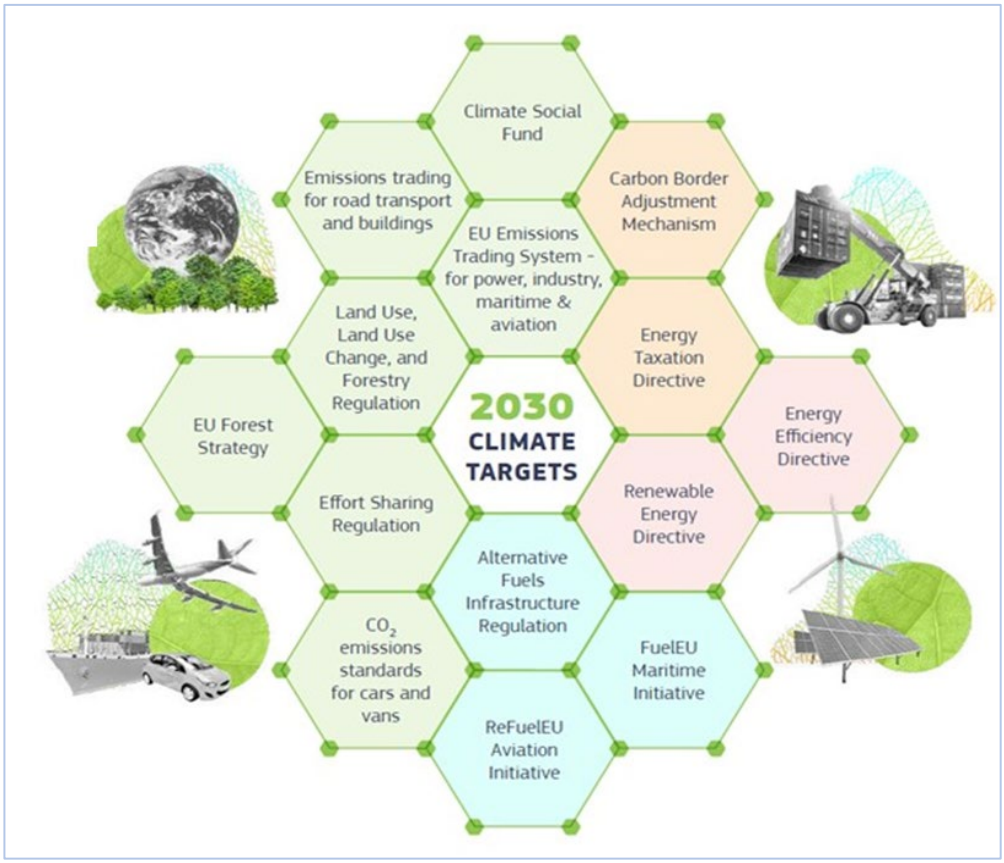


Figure 3. Fit for 55 initiatives.
Source : European Commission

Section 3.2 includes the main forthcoming EU regulations related to Fit for 55 that affect the maritime and port sectors. Special emphasis is given to the initiatives that will influence the implementation of OPS installations.

- **Efficient & Green Mobility package.** In December 2021, the Commission adopted a second package of proposals to support a transition to cleaner, greener transport. It is composed by four proposals that will modernise the EU's transport system, among which the **revision of TEN-T Regulation**[20] is included. The Proposal states that "*the problems addressed by the revision are insufficient and/or incomplete TEN-T infrastructure standards and a lack of integration of standards for alternative fuels infrastructure on the TEN-T with negative impacts on climate and environment*". Additional information on the revision of the TEN-T Regulation is included in the following section.

[20] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Union guidelines for the development of the trans-European transport network, amending Regulation (EU) 2021/1153 and Regulation (EU) No 913/2010 and repealing Regulation (EU) 1315/2013 Available at : EUR-Lex - 52021PC0812 - EN - EUR-Lex (europa.eu)

3.2 Forthcoming EU regulations affecting the maritime and port sectors

The Fit for 55 package consists of thirteen proposals of which eight are revisions of existing regulations, and five are new proposals. The following sections refer only to the initiatives that concern directly or indirectly OPS.

Revision of the Alternative Fuels Infrastructure Regulation[21].

Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure required Member States to install an appropriate number of refuelling points for LNG (Liquefied Natural Gas) at maritime ports, to enable LNG inland waterway vessels or seagoing ships to circulate throughout the TEN-T Core Network by 31 December 2025. In relation to its implementation, the Commission published a report[22] in March 2021 setting out the results, as of the end of 2019, regarding the evaluation of the actions undertaken by Member States implementing this directive. The report suggests that the directive has had a positive impact on the uptake of alternatively fuelled vehicles, and the development of refuelling and recharging infrastructure and markets are maturing in some parts of the EU, but that the overall European market for alternative fuels infrastructure is in an early development phase.

On 14 July 2021, the EC published a proposal for the creation of a *new Regulation for the deployment of alternative fuels infrastructure* (hereafter, also called in this document « the Proposal »*)*, which will repeal Directive 2014/94/EU.

For waterborne transport, this initiative delivers on the clear requirement of the European Green Deal to oblige docked ships to use shore-side electricity. It is fully complementary to Fuel EU maritime initiative by ensuring that sufficient shore-side electricity supply is installed in ports to provide electricity while passenger ships (including Ro-Ro passenger ships, high-speed passenger craft and cruise ships) and container vessels are at berth and accommodating the demand for decarbonised gases (i.e., bio-LNG and synthetic gaseous fuels, i.e., e-gas). For the case of passenger ships, the different ship categories vary in their power demand characteristics while at berth, which leads to different investment needs at port. This needs to be combined with the different operational characteristics of ports, including layouts and terminals. For this reason, a further distinction is made on passenger ships compared to the FuelEU maritime initiative in identifying two categories, that of ro-ro passenger ships and high-speed passenger vessels, and that of other passenger ships, notably cruise ships. Together with the FuelEU maritime initiative it therefore contributes to overcoming the current "chicken-and-

[21] Directive 2014/94/EU on the deployment of alternative fuels infrastructure. 2014. Available at: L 2014307EN.01000101.xml (europa.eu)

[22] Report from the Commission to the European Parliament and the Council on the applications of Directive 2014/94/EC on the deployment of alternative fuels infrastructure COM (2021) 559 final. Available at: EUR-Lex - 52021DC0103 - EN - EUR-Lex (europa.eu)

egg" dilemma, which has meant that the very low demand for ship operators to connect to the electric grid while at berth has made it less attractive for ports to invest in short-side electricity. Limited introduction of OPS in ports risks disturbing the level playing between ports, for early investors, as not OPS equipped vessels could shift their traffic. It is therefore important that minimum requirements be set for maritime ports across the whole TEN-T network.

The following pages include the specific articles of the new proposal Regulation directly affecting the implementation of OPS in EU ports.

- Article 9 Targets for shore-side electricity supply in maritime ports and Article 10 Targets for shore-side electricity supply in inland waterway ports set out provisions for Member States to ensure installation of a minimum shore-side electricity supply for certain seagoing ships in maritime ports and for inland waterway vessels. The articles also define further the criteria for exempting certain ports and set requirements to ensure a minimum shore-side electricity supply. Article 9 addresses the OPS in maritime ports, while Article 10 to inland ports:

  Article 9 Targets for shore-side electricity supply in maritime ports

  1. Member States shall ensure that a minimum shore-side electricity supply for seagoing container and passenger ships is provided in maritime ports. To that end, Member States shall take the necessary measures to ensure that by 1 January 2030:

  (a) TEN-T core and TEN-T comprehensive maritime ports whose average annual number of port calls over the last three years by seagoing container ships above 5,000 gross tonnes, in the previous three years, is above 50 have sufficient shore-side power output to meet at least 90% of that demand.

  (b) TEN-T core and TEN-T comprehensive maritime ports whose average annual number of port calls over the last three years by seagoing ro-ro passenger ships and high-speed passenger craft above 5,000 gross tonnes, in the previous three years, is above 40 have sufficient shore-side power output to satisfy at least 90% of that demand.

  (c) TEN-T core and TEN-T comprehensive maritime ports whose average annual number of port calls over the last three years by passenger ships other than Ro-Ro passenger ships and high-speed passenger craft above 5,000 gross tonnes, in the previous three years, is above 25 have sufficient shore-side power output to meet at least 90% of that demand.

  2. For the determination of the number of port calls the following port calls shall not be taken into account:

(a) port calls that are at berth for less than two hours, calculated on the basis of hour of departure and arrival monitored in accordance with Article 14 of the proposal for a Regulation COM (2021) 562.

(b) port calls by ships that use zero-emission technologies, as specified in Annex III of the proposal for a Regulation COM (2021) 562.

(c) unscheduled port calls for reasons of safety or saving life at sea.

3. Where the maritime port of the TEN-T core network and the TEN-T comprehensive network is located on an island which is not connected directly to the electricity grid, paragraph 1 shall not apply, until such a connection has been completed or there is a sufficient locally generated capacity from clean energy sources.

Article 10 Targets for shore-side electricity supply in inland waterway ports

Member States shall ensure that:

(a) at least one installation providing shore-side electricity supply to inland waterway vessels is deployed at all TEN-T core inland waterway ports by 1 January 2025

(b) at least one installation providing shore-side electricity supply to inland waterway vessels is deployed at all TEN-T comprehensive inland waterway ports by 1 January 2030.

- Article 13 National policy frameworks reformulates provisions for Member States' national policy frameworks. It makes provision for an iterative process between Member States and the Commission to develop concise planning to deploy infrastructure and meet the targets as laid down in the Regulation. It also includes new provisions on formulating a strategy for the deployment of alternative fuels in other modes of transport together with key sectoral and regional/local stakeholders. This would apply where the Regulation does not set mandatory requirements, but where emerging policy needs connected to the development of alternative fuel technologies need consideration.

By 1 January 2024, each Member State shall prepare and send to the Commission a draft national policy framework for the development of the market as regards alternative fuels in the transport sector and the deployment of the relevant infrastructure.

- Article 14 Reporting, Article 15 Review of national policy frameworks and progress reports and Article 16 Progress tracking set out the governance approach. This includes reporting obligations corresponding to provisions for Member States on national policy frameworks and national progress reports in an interactive process with the Commission.

It also sets requirements for the Commission to report on Member States' national policy frameworks and progress reports.

Article 14 Reporting establishes that each Member State shall submit to the Commission a standalone progress report on the implementation of its national policy framework for the first time by 1 January 2027 and every two years thereafter. The progress reports shall cover the information listed in one of the annexes of the Regulation (Annex I) and shall, where appropriate, include a relevant justification regarding the level of attainment of the national targets and objectives referred to in Article 13.

Article 15 Review of national policy frameworks and progress reports in which it is established that Commission shall assess the national policy framework notified by Member States pursuant to Article 13 of the Regulation and submit to the European Parliament and to the Council a report on the assessment of those national policy frameworks and their coherence at Union level, including a first assessment of the expected level of attainment of the national targets and objectives referred to in Article 13.

In addition, based on national policy frameworks and national progress reports of Member States pursuant to Article 13 and 14, the Commission shall publish and regularly update information on the national targets and the objectives submitted by each Member State regarding, among others, the infrastructure for shore-side electricity supply in maritime and inland ports of the TEN-T core network and the TEN-T comprehensive network.

- Article 19 Common technical specifications determines provisions for common technical specifications, complementing the existing common technical specifications with a set of new areas for which the Commission will be entitled to adopt new delegated acts. These will build, as deemed necessary, on standards developed by the European standardisation organisations (ESOs). In relation to OPS, Article 19 states that the installations for maritime transport and inland navigation, deployed or renewed from the date of entry into force of the Regulation, shall comply with the technical specifications set out in points 4.1 and 4.2 of one of the annexes (Annex II) :

1. OPS for seagoing ships, including the design, installation and testing of the systems, shall comply with the technical specifications of the IEC/IEEE 80005-1:2019 standard, for high-voltage and low-voltage shore connections respectively.
2. OPS for inland waterway vessels shall comply with Commission Delegated Regulation (EU) 2019/1745[23].

[23] Commission Delegated Regulation (EU) 2019/1745 of 13th August 2019 supplementing and amending Directive 2014/94/EU of the European Parliament and of the Council as regards recharging points for L-category motor vehicles, shore-side electricity

3. Technical specifications for shore-side battery recharging points for maritime vessels, featuring interconnectivity and system interoperability for maritime vessels.
4. Technical specifications for shore-side battery recharging points for inland navigation vessels, featuring interconnectivity and system interoperability for inland navigation vessels.
5. Technical specifications for port-to-grid communication interface in automated OPS and battery recharging systems for maritime vessels.
6. Technical specifications for port-to-grid communication interface in automated OPS and battery recharging systems for inland navigation vessels.
7. If feasible, technical specifications for battery swapping and recharging at onshore stations for inland navigation vessels.

The Proposal is currently being discussed by the European Parliament and the European Council. Some of the issues being addressed that are relevant to the OPS are:

- *European Council:*
  - Deletion of the reference "in the previous three years" in relation to the determination of the conditions under which the OPS must be ensured (Article 9).
  - Modification from mandatory to optional of the inclusion of the alternative fuels infrastructure deployment plan in maritime and inland ports, in particular for electricity (and hydrogen), in the National Policy Framework (Article 13).

- *European Parliament:*
  - Inclusion of a reference to the need for an extended electricity grid to ensure that sufficient shore-side power supply can be installed (Recital 32).
  - Reduction of the tonnage limit for ships, from 5,000 to 400, referring to one of the conditions under which the obligation to have OPS facilities in the port applies (Article 9).
  - Advancing the deployment date of OPS facilities in the EU ports from 2030 to 2025 (Article 9).

In addition, the Proposal is also being discussed in different *working groups and associations* (mainly through Position Papers), where the following issues have been raised:

- Scope of the term "ship at berth". Following the definition included in Article 3, point (n) of Regulation EU 2015/757 ("*ship which is securely moored or anchored in a port falling under the jurisdiction of a Member State while it is loading, unloading or hotelling, including the time spent when not engaged in cargo operations*"), the provision of OPS

supply for inland waterway vessel, hydrogen supply for road transport and natural gas supply for road and waterborne transport. Available at : https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2019.268.01.0001.01.ENG&toc=OJ%3AL%3A2019%3A268%3ATOC

shall not only be available to a ship berthed at the port terminal, but also at the anchorage area, which has caused controversy as it is considered unfeasible in most European ports.

- Responsibility for the provision of OPS. There is controversy as to whether the responsibility should be that of the port as Port Authority or, depending on the port model, should be the responsibility of the Terminal.
- Way to determine which ports shall ensure OPS. There are controversies as to whether:
  - the conditions of applicability of the Regulation should be based on the number of port calls by terminal and not by port, as it is now written in the Proposal;
  - the Regulation shall apply to all traffic or only to regular traffic;
  - the Regulation shall apply to all kind of ships and not only to 1) container, 2) ro-ro passenger ships and high-speed passenger craft and 3) passenger ships other than ro-ro passenger ships and high-speed passenger craft, as stated in the Proposal.

FuelEU Maritime[24]

The new FuelEU Maritime proposal to promote sustainable maritime fuels will create new requirements for ships, regardless of their flag, arriving to or departing from EU ports, by imposing a maximum limit on the GHG content of the energy they use and making these limits more stringent over time.

The proposed regulation introduces increasingly stringent limits on carbon intensity of the energy used by vessels from 2025, which should oblige them to use alternative fuels. It applies to commercial vessels of 5,000 gross tonnage and above, regardless of flag (fishing ships are exempted). It covers all energy used on board when the ship is at an EU port, all energy used by the ship on voyages between EU ports and 50% of the energy used on voyages departing from or arriving to an EU port. From January 2030, container ships and passenger ships at EU ports will also have to connect to onshore power supply and use it for all energy needs while at berth, with some exceptions, as indicated in Article 5 of the Proposal:

Article 5 Additional zero-emission requirements of energy used at berth

1. *From 1 January 2030, a ship at berth in a port of call under the jurisdiction of a Member State shall connect to onshore power supply and use it for all energy needs while at berth.*
2. *Paragraph 1 shall apply to:*
   a) *Containerships.*
   b) *passenger ships.*

[24] Regulation on the use of renewable and low-carbon fuels in maritime transport and amending Directive 2009/16/EC COM (2021) 562 Final. Available at : https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0562

3. *Paragraph 1 shall not apply to ships:*
    a) *that are at berth for less than two hours, calculated on the basis of hour of departure and arrival monitored in accordance with Article 14.*
    b) *that use zero-emission technologies, as specified in Annex III*
    c) *that have to make an unscheduled port call for reasons of safety or saving life at sea.*
    d) *that are unable to connect to onshore power supply due to unavailable connection points in a port.*
    e) *that are unable to connect to on-shore power supply because the shore installation at the port is not compatible with the on-board on-shore power equipment.*
    f) *which, for a limited period of time, require the use of on-board energy generation, under emergency situations representing immediate risk to life, the ship, the environment or for other reasons of force majeure.*
4. *The Commission is empowered to adopt delegated acts in accordance with Article 26 to amend Annex III in order to insert references to new technologies in the list of applicable zero-emission technologies or criteria for their use, where these new technologies are found equivalent to the technologies listed in that Annex in the light of scientific and technical progress.*
5. *The managing body of the port of call shall determine whether the exceptions set in paragraph 3 apply and issue or refuse to issue the certificate in accordance with the requirements set out in Annex IV.*
6. *From 1 January 2035, the exceptions listed in paragraph 3, points (d) and (e), may not be applied to a given ship, in total, more than five times during one reporting year. A port call shall not be counted for the purpose of compliance with this provision where the company demonstrates that it could not have reasonably known that the ship will be unable to connect for reasons referred to in paragraph 3, points (d) and (e).*
7. *Emergency situations resulting in the need to use on-board generators, referred to in paragraph 3, point (f), shall be documented and reported by the ship to the managing body of the port.*

This proposal will certainly affect the implementation of OPS facilities in EU ports, as it is closely linked to the revision of the Alternative Fuels Infrastructure Directive, but from the demand side.

Revision to the EU Emission Trading Scheme

The EU Emission Trading Scheme (ETS) is a "cap and trade" system in which a limit (the cap) is set on the right to emit certain pollutants in a geographical area and companies can trade emission allowances within that area. It is the key instrument for reducing emissions of GHG,

such as carbon dioxide (CO_2), from power generation and industry. The EU ETS makes investment in environmentally friendly technology economically beneficial for industry and airlines.

The EU Commission published a proposed Directive to amend the EU Emissions Trading System (ETS) Directive (Directive 2003/87/EC), the Market Stability Reserve (MSR) Decision (Decision (EU) 2015/1814) and the MRV Regulation (Regulation 2015/757). The amendment that affects the shipping sector is that the EU ETS is extended to maritime transport.

The proposal would extend the EU ETS to cover CO_2 emissions from maritime transport, specifically from large ships above 5,000 GT (Gross Tonnage). The extension applies to all emissions from intra-EU voyages and to 50% of emissions from extra-EU voyages and all emissions occurring when ships are at berth at an EU port. The same rules as for the other sectors would apply to maritime emissions. The requirement to surrender allowances would be gradually phased-in during 2023-2025 (20% of verified emissions for 2023, 45% for 2024, 70 % for 2025, and 100% from 2026 onwards). Non-compliance is fined and may eventually lead to a ban from EU waters.

The forthcoming Directive[25] will incentivise the use of alternative fuels while at berth, which include electricity, thus increasing the need of the EU ports to have OPS installations.

Revision of the Energy Taxation Directive

The revision of the Energy Taxation Directive aims is to align the taxation of energy products with EU energy and climate policies, promote clean technologies and remove outdated exemptions and reduced rates that currently encourage the use of fossil fuels.

Fossil fuels used as fuel for intra-EU air transport, maritime transport and fishing should no longer be fully exempt from energy taxation in the EU.

Over a transitional period of ten years, minimum rates of zero shall apply to sustainable biofuels and biogas, low-carbon-fuels, renewable fuels of non-biological origin, advanced sustainable biofuels and biogas and electricity.

Finally, it is stated that in some harbours, a cleaner alternative to the production of electricity on board a vessel exists with the use of shore-side electricity (i.e., connection to the on-shore

[25] Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and REgulation (EU) 2015/757. Available at : https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0551

electricity grid). To set an incentive for its development and use, shore-side electricity provided to vessels while at berth in ports can be exempt.

It is worth noting that Article 19 of the still-current directive, *2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity*[26] states that the Commission may authorise any Member State to introduce further exemptions or reductions than the ones specified in the Directive for specific policy recommendations. Taking this article into consideration, some EU Member States such as Spain[27], Germany[28] or Sweden[29] have been authorised to apply a reduced rate of taxation on electricity directly provided to vessels at berth in a port.

Revision to the Effort Sharing Regulation

Under the current legislation on Effort Sharing Regulation (ESR)[30], EU Member States have binding annual greenhouse gas emission targets for 2021-2030 for those sectors of the economy that fall outside the scope of the EU ETS. These sectors, including transport (except aviation and non-domestic shipping), buildings, agriculture, non-ETS industry and waste, account for almost 60% of total domestic EU emissions.

The ESR legislation was adopted in 2018 to deliver a 30% reduction in emissions covered by 2030 compared to 2005, coherent with an EU economy-wide emission reduction target of at least 40% by 2030 compared to 1990. The ESR establishes binding annual GHG targets for Member States which collectively deliver this reduction. If the legislation remains unchanged, sectors currently covered by the ESR would together achieve a 2030 emission reduction of -32% compared to 2005. Even though this would mean outperforming the contribution of -30% referred to above, this would still be an insufficient contribution to an overall target of at least -55% compared to 1990. Therefore, the general objective of this initiative is to revise the ESR so that it contributes to the 2030 climate ambition to reach at least 55% net greenhouse gas emission reductions by 2030 below 1990 levels in a cost-effective and coherent way while considering the need for a just transition and the need for all sectors to contribute to the EU's climate efforts.

[26] Council Directive 2003/96/EC of 27 october 2003 restructuring the Community framework for the taxation of energy products and electricity. Available at : EUR-Lex - 02003L0096-20180915 - EN - EUR-Lex (europa.eu)

[27] Council Implementing Decision (EU) 2018/1491 of 2 October 2018 authorising Spain to apply a reduced rate of excise duty to electricity directly supplied to vessels at berth in a port, in accordance with Article 19 of Directive 2003/96/EC. Available at : EUR-Lex - 32018D1491 - EN - EUR-Lex (europa.eu)

[28] Proposal for a COUNCIL IMPLEMENTING DECISION authorising Germany to apply a reduced rate of taxation to electricity directly provided to vessels at berth in a port in accordance with Article 19 of Directive 2003/96/EC. COM/2020/435 final.

[29] Proposal for a COUNCIL IMPLEMENTING DECISION authorising Sweden to apply a reduced rate of taxation on electricity directly provided to vessels at berth in a port in accordance with Article 19 of Directive 2003/96/EC. Available at : https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52014PC0497

[30] Regulation amending Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement COM(2021) 555 Final. Available at : https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex:32018R0842

The forthcoming Directive will continue to include domestic shipping in national GHG reduction emissions targets. Therefore, the use of clean fuels while at berth will be incentivised, thus increasing the need of the EU ports to have OPS installations.

Amendment of the Renewable Energy Directive[31]

The amendment of the Renewable Energy Directive sets a new 2030 target of 40% (up from 32%) energy use from renewables by 2030 and strengthening bioenergy sustainability criteria. It also proposes the introduction or enhancement of sectorial sub-targets and measures across sectors, with a particular focus on industries where progress with integrating renewables has been slower to date, in the fields of transport, buildings and industry. While some of those targets and provisions are binding, others remain indicative.

The forthcoming amendment will contribute to facilitate the use of renewable electricity for OPS facilities at berths.

Revision of the TEN-T Regulation

European Commission published on 14 December the *Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Union guidelines for the development of the trans-European transport network, amending Regulation (EU) 2021/1153 and Regulation (EU) No 913/2010 and repealing Regulation (EU) 1315/2013*[32], in which the deployment of alternative fuels is one of the key priorities of the new Regulation, as demonstrated in the following articles related to OPS of the Proposal:

- Article 2. Scope: *This Regulation applies to the trans-European transport network as shown on the maps set out in Annex I. The trans-European transport network comprises transport infrastructure, including infrastructure for the deployment of alternative fuels, […]*
- Article 5. Resource-efficient Network and environmental protection: *The trans-European transport network shall be planned, developed and operated in a resource-efficient way, complying with the applicable Union and national environmental requirements, through: […] (c) the deployment of alternative fuels recharging and refuelling infrastructure; […]*

[31] Directive of the European Parliament and of the council amending Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the European Parliament and of the Council as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0557

[32] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Union guidelines for the development of the trans-European transport network, amending Regulation (EU) 2021/1153 and Regulation (EU) No 913/2010 and repealing Regulation (EU) 1315/2013. Available at : https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM%3A2021%3A812%3AFIN

- Article 12. General priorities for the core, the extended core and the comprehensive network: *[…] 2. In order to complement the measures, set out in paragraph 1, particular consideration shall be given to measures that are necessary for: (a) contributing to transport emission reduction and increased energy security by promoting the use of zero-emission vehicles and vessels and renewable and low-carbon fuels, through the deployment of corresponding alternative fuels infrastructure.*
- Article 24. Infrastructure components: *3. Maritime transport infrastructure referred to in point (a) of paragraph 2 shall comprise, in particular: (i) infrastructure related to facilities for alternative fuels as defined in Regulation (EU) […] [on the deployment of alternative fuels infrastructure].*
- Article 25. Transport infrastructure requirements for the comprehensive network: *1. Member States shall ensure that: (a) alternative fuels infrastructure is deployed in maritime ports of the comprehensive network in full compliance with the requirements of Regulation (EU) […] [on the deployment of alternative fuels infrastructure].*

Therefore, it is expected that CEF Programme will continue to support OPS projects in the next calls, incentivising new investments in EU ports.

3.3 Other EU regulations and recommendations in force affecting OPS implementation

EU Directive 2005/33/EC on the sulphur content of marine fuels

The European Parliament and Council issued the *Directive 2005/33/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 July 2005 amending Directive 1999/32/EC as regards the sulphur content of marine fuels*[33] on 22 July 2005, amending Directive 1999/32/EC. The primary purpose of the Directive is to achieve acceptable levels of air quality in coastal areas by reducing emissions from shipping, such as sulphur dioxide and particulate matter. The Directive regulates the sulphur content of heavy fuel oil and marine fuels to achieve this goal. It encourages the Member States to promote trials and new emission abatement technologies. Among other regulations, Member States are required to control the sulphur content of marine fuels used by inland waterway vessels and ships in the berth in Community ports (2005/33/EC, Art 4b), allowing only a "maximum limit of 0.1 % sulphur by weight for marine fuels" (2005/33/EC, Art. 4b) from 1 January 2010 onwards.

[33] Directive 2005/33/EC of the European Parliament and of the Council of 6th July 2005 amending Directive 1999/32/EC. Available at : https://eur-lex.europa.eu/eli/dir/2005/33/oj

The Directive encourages land-based electricity supply insofar as ships that switch off all engines and use shore-side electricity while at berth in ports are exempt from this sulphur restriction.

Commission Recommendation 2006/339/EC on the promotion of shoreside electricity for use by ships at berth in Community ports[34]

The European Commission issued on 8 May 2006 the Recommendation "*on the promotion of shoreside Electricity for use by ships at berth in Community ports*" (2006/339/EC)[35]. The purpose of this non-binding recommendation is to encourage EU Member States to engage in activities that promote OPS and ultimately improve port air quality beyond existing international regulations set by the IMO. All Member States are encouraged to "require, incentivise or facilitate ships' use of land-based electricity while in port" to improve air quality, and noise nuisance, particularly in ports where pollution limit values are exceeded, or public concern is expressed. The EC also asks the Member States to consider economic incentives to operators to implement OPS, taking advantage of the possibilities set out in Community legislation. The Member States should actively work within the IMO to further develop and harmonise international standards on the electrical connections. They are urged to promote awareness among the main actors from local authorities to port authorities, etc., and industry and encourage authorities and industry to exchange knowledge on practical implementation.

Furthermore, Member States are requested to report to the Commission on their actions to reduce the emissions in the ports that are caused by ships. An Annex provides technical, environmental and economic information on shore-side electricity, especially cost-benefit, and draws preliminary conclusions.

The following paragraphs show the exact recommendations provided by the EC in the Communication:

1. *Member States should consider the installation of shore-side electricity for use by ships at berth in ports; particularly in ports where air quality limit values are exceeded or where public concern is expressed about high levels of noise nuisance, and especially in berths situated near residential areas.*
2. *Member States should take note of the advice, set out in the Annex, on the cost-effectiveness and practicality of using shore-side electricity to reduce emissions for different types of ships, routes and ports. Nevertheless, the environmental benefits and cost-effectiveness should be evaluated on a case-by-case basis.*

[35] Commission Recommendation of 8 May 2006 on the promotion of shore-side electricity for use by ships at berth in Community ports 2006/339/EC. Available at : https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32006H0339

3. *Member States should work within the International Maritime Organisation (IMO), in the context of the ongoing review of the International Convention for the Prevention of Pollution from Ships (MARPOL Convention), to promote the development of harmonised international standards for shore-side electrical connections, taking into account ongoing work.*
4. *Member States should consider offering economic incentives to operators to use shore-side electricity provided to ships, taking advantage of the possibilities set out in Community legislation.*
5. *Member States should promote awareness of shore-side electricity among local authorities whose responsibility includes port areas, maritime authorities, port authorities, classification societies and industry associations.*
6. *Member States should encourage port authorities and industry to exchange best practice concerning shore-side electricity supply and harmonising procedures for this service.*
7. *Member States should report to the Commission on the action they intend to take to reduce ship emissions in ports, particularly where air quality limit values are exceeded.*

All the above recommendations given by the EC in order to promote OPS installations in ports are considered in the EALING project.

Commission Communication (2007) 575 on an integrated maritime policy for the European Union[36]

The Communication, *An Integrated Maritime Policy for the European Union*, issued by the European Commission on 10 October 2007, proposes an Integrated Maritime Policy for the European Union to promote the protection and sustainable use of the Union's maritime resources. The Communication's primary purpose is to define a set of tools and five action areas for a future mainstreaming of EU maritime governance. The first action area, "Maximising the Sustainable Use of the Oceans and Seas" acknowledges the role of European seaports in determining the quality of their surrounding urban and natural environments. In this context, the Commission states that it will "make proposals to reduce the levels of air pollution from ships in ports namely by removing tax disadvantages for shore-side electricity", thus encouraging land-based electricity supply for ships in berth.

[36] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - An Integrated Maritime Policy for the European Union {COM(2007) 574 final) . Available at : https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52007DC0575

EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe

On 21 May 2008, the European Parliament and Council adopted Directive 2008/50/EC [37]. The Directive aims to reduce air pollution levels and harmful impacts, particularly on sensitive populations and the environment. *Article 24 Short term action plans* requires that Member States draw up short-term action plans in given zones or agglomerations where there is a risk that the levels of pollutant will exceed one or more of the alert thresholds. The action plans may include, inter alia, measures about ships at berth, OPS being an example of a measure that succeeds in reducing emissions.

3.4 EMSA Guidelines – a focus on shore side

The European Maritime Safety Agency was established for the purpose of ensuring a high, uniform, and effective level of maritime safety, maritime security as well as prevention of and response to pollution by ships within the EU.

The Agency provides technical, operational, and scientific assistance to the European Commission and Member States in the fields of maritime safety, maritime security, prevention of, and response to, pollution caused by ships as well as response to marine pollution caused by oil and gas installations.

The Agency also contributes to the overall efficiency of maritime traffic and maritime transport and supports European cooperation on coastguard functions.

EMSA's activities can be broadly described as:

- providing technical and scientific assistance to the Member States and the European Commission in the proper development and implementation of EU legislation on maritime safety, security, prevention of pollution by ships and maritime transport administrative simplification;
- monitoring the implementation of EU legislation through visits and inspections;
- improving cooperation with and between Member States;
- building capacity of national competent authorities;
- providing operational assistance, including developing, managing and maintaining maritime services related to ships, ship monitoring and enforcement;
- carrying out operational preparedness, detection and response tasks with respect to pollution caused by ships and marine pollution by oil and gas installations;
- at the request of the European Commission, providing technical operational assistance to non-EU countries around relevant sea basins.

[37] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe . Available at : https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32008L0050

An example of its activity in relation to EMSA's role in supporting the European Commission in the proper development and implementation of EU legislation is the development of the *Guidance on Shore Side Electricity to Port Authorities and Administrations*, which aims to support Port Authorities and Administrations with information and good-practice reference elements to assist with planning, technical and operational decision-making on shore-side electricity, in line with Directive 2014/94/EU and its Revision.

Shore-side electricity encompasses several dimensions of electrification in the ship-shore interface. OPS, the shore-side electricity option where more experience has been gained, is presented in the Guidance as a standardised process where most ship types are covered across a large power demand window. Existing standards broadly cover interoperability and interconnectivity in OPS, and accumulated experience in the operation of such systems allows concluding on technical and operational maturity of OPS as an alternative power option for ships at berth.

In addition to OPS, the present Guidance also covers other uses of electrical energy in the shoreside interface. Battery charging, energy storage applications, such as power banking, and microgeneration are also covered, even if their expression is still reduced compared to OPS.

The publication of IEC/IEEE 80005 *Utility connections in port* series, particularly of Part 1: *High voltage shore connection (HVSC) systems – General requirements*, in March 2019, together with the agreement of a text for the IMO OPS Guidelines in March 2020, can be considered as two essential steps towards the enlightenment of a formal structure for technical and operational requirements for OPS. The standardization of both technical and operational aspects requires that all relevant stakeholders be addressed or, to the very least, given the necessary elements to enable informed participation during the planning, certification, operation, safety assessment, or even emergency response. Ports are, in this context, a fundamental player in all stages of an OPS project.

In close cooperation and consultation with the Sustainable Ports expert subgroup, of the European Ports Forum (EPF), with the European Sustainable Shipping Forum (ESSF), and with early movers on OPS, EMSA proposes in the present document a collection of information intended to support Port Authorities and Administrations (PAA) on shore-side electricity.

No overlapping of existing requirements or industry guidance is intended with the EMSA Guidance but rather a mapping and guidance approach over the current framework for shore-side electricity, with a particular focus on technology, regulatory framework, planning and safety.

An increase in shore-side electricity is foreseen, with more ports offering this alternative option in favour of local air quality and added societal value. Standardised provisions have been developed, experience has been gained in customised/tailor-made solutions, and all that has been globally positive in technology development. However, there is currently the challenge of widening the shore-side electricity option to more ports and, especially, to more ships

regularly calling one port. The experience of those who have dealt with OPS more frequently in the last years is now essential to build a good practice and develop a harmonized framework. The value proposition of the EMSA Guidance is to provide Ports with a toolkit for decision-making for the entire life cycle of shore-side electricity projects, from planning to operation. By mapping existing references and, where available, giving examples of good practice, the Guidance is intended as a document for consultation by all stakeholders involved in the project, implementation, and operation of shore-side electricity in ports.

The Guidance consists of two parts and a quick-reference guide on OPS development.

Part 1 provides an introduction and overview of the equipment and technologies available for OPS infrastructure projects. It is structured in one chapter (Chapter A) with three sections addressing 1) the scope and applicability, 2) shore-side electricity overview and 3) equipment & technology.

Part 2 provides support to project implementation and operation of OPS facilities. It is structured in seven chapters (Chapters B to H) and fourteen sections addressing: 1) shore-side electricity options, 2) regulatory framework, 3) responsibilities, 4) planning of ships, 5) constraints and feasibility,6) compatibility assessment and 7) documents & quality management. From the point of view of operations, it provides 8) operation guidelines for OPS and 9) operation concept for Shore-side Battery Charging (SBC). Finally, 10) safety systems, 11) risk assessment, 12) risk management, 13) competencies, training and 14) certification & testing & commissioning complete the topics included in the guides.

Currently, the document is being prepared and opened for inputs from the main actors of the sector to enrich the contents of the Guidance.

Regarding SSE Options, a series of schemes are presented with potential parts of the facility considered, mainly, power source, reception interface, OPS Central/Port substation, port distribution, berth OPS module, berth distribution, ship-shore interface, receiving ship OPS station and receiving ship network. A classification of different shore-side electricity configurations is detailed with explanatory charts. The combination of alternatives is also described concerning the use of batteries onboard the ship or direct electricity installation to be plugged at berth. OPS solutions, shore-side battery charging, battery swapping, power banking and port generation through ships or pontoons and their configuration are explained.

In relation to the governance, an analysis of the international regulation and standards and the implications of national law regarding electrical safety rules, port rules and the flag state requirements are developed. Of particular relevance is the detailed revision of the standards to be taken into account for the different configurations of OPS. A map of responsibilities in the OPS context is also drawn, distinguishing between transmission system operator,

distribution system operator, port authorities and administrations, ship and port operators, port grid operator, port state control, classification society, etc.

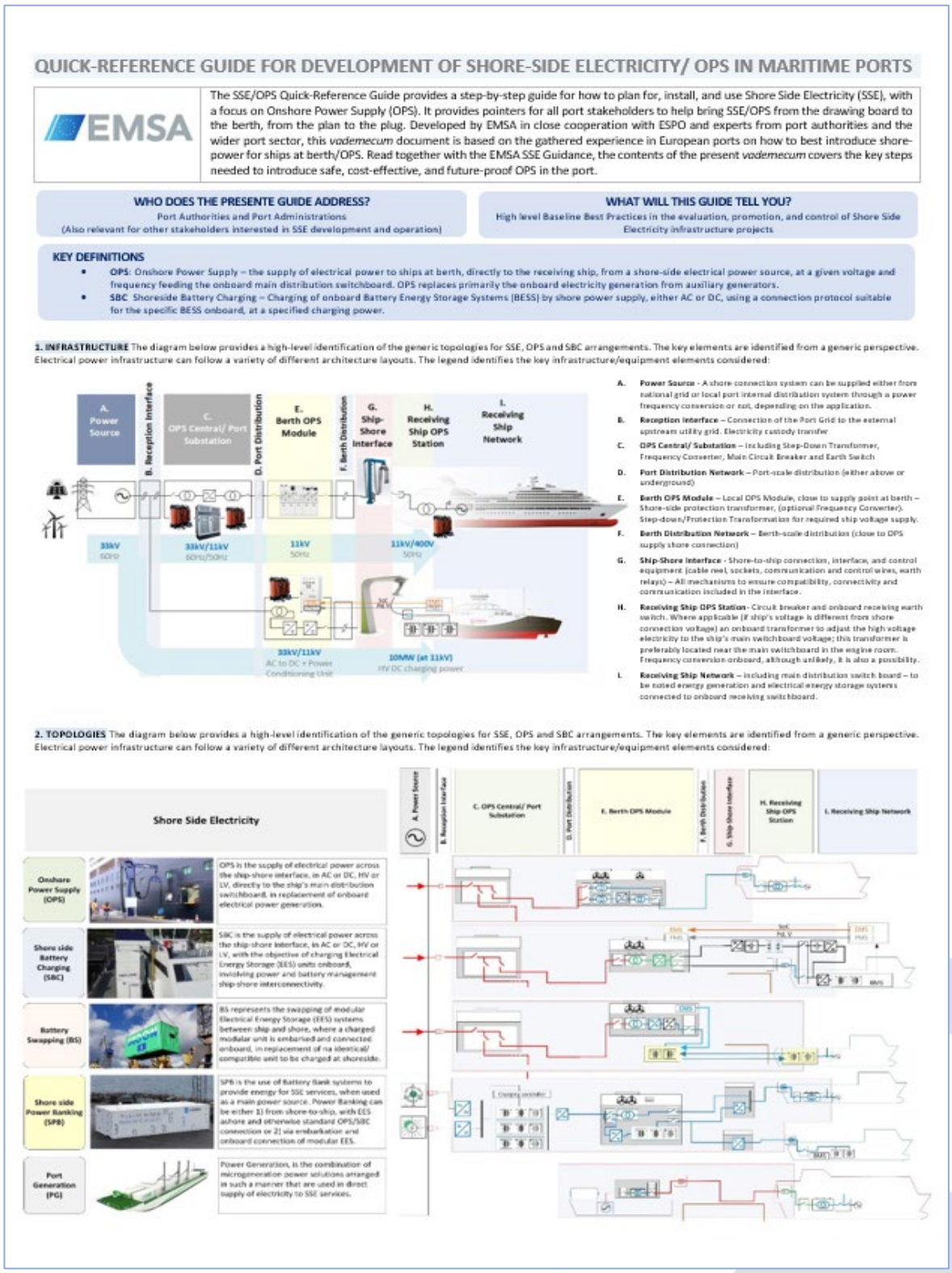


Figure 4. Quick-Reference Guide for the development of Shore-side electricity.
Source: EMSA

The document also includes information on how to estimate the required power by identifying the universe of ships at berth, how to gather data from operating profile at berth, load analysis, the design of the facility in terms of power factor and power management.

In the safety chapter, a detailed identification of hazards and the associated risk management, including risk control, safety procedures and emergencies is also addressed.

It is expected that the final draft will be available in April 2022.

4 NATIONAL, REGIONAL AND LOCAL REGULATORY FRAMEWORK FOR ONSHORE POWER SUPPLY IN EALING PORTS

4.1 Description of the national, regional, and local regulations affecting the ports of the consortium

The consortium performed internal work to collect information on the regulations that affect directly or indirectly the installation/operation of OPS facilities in the EALING ports in order to have a better understanding of the current regulatory framework in these countries, at national, regional and local level:

- **NATIONAL REGULATORY FRAMEWORK.** Information on national regulations to be considered when implementing OPS facilities was collected, which was mainly focused on legislation related to:

  - Port structure and administrative issues, such as contracting power supply and infrastructure works
  - Power supply and electricity sector regulation
  - Environmental impact, noise pollution, etc.
  - Industrial installations, especially electricity transmission and distribution facilities
  - Safety and security measures, including occupational risks prevention

- **REGIONAL REGULATORY FRAMEWORK.** As with national regulation, the review of the regional regulatory framework considered existing legislation related to:

  - Port structure and administrative issues
  - Power supply and electricity distribution
  - Environmental impact, noise pollution, etc.
  - Industrial installations, especially electricity transmission and distribution facilities
  - Safety and security measures, including occupational risks prevention

Figure 5: Fields under study for the comparative analysis at national and regional level

- **LOCAL REGULATORY FRAMEWORK.** Information on local regulation was gathered, mainly in relation to:

- Considerations included in the General Urban Development Plans of each city in which the port is located. These plans are different for each location and deal with aspects related to the classification of land use and all the rules that must be considered when building any facility.
- City Council regulation. Regardless of whether they are built on port land, electrical infrastructures need to follow specific procedures for the approval of the City Council, prior to the construction works.
- Technical specifications related to electrical installations, which are determined by the Distribution System Operators (DSO). The DSOs, in turn, must comply with the national technical regulations that determine the generic requirements for these installations.

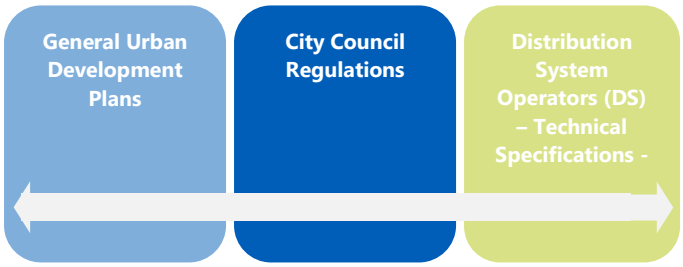


Figure 6: Fields under study for the comparative analysis at local level

The information shown in the following pages has been compiled by the consortium in connection to the ports participating in the Action:

- Spain: Valencia, Barcelona, Gijón and Huelva.
- Greece: Piraeus and Rafina.
- Italy: Venice and Trieste.
- Romania: Constanta.
- Bulgaria: Bourgas and Varna.
- Slovenia: Koper.
- Ireland: Cork and Dublin.
- Portugal: Açores and Leixoes.

4.1.1 Spanish Ports

Description of the **NATIONAL** regulation directly or indirectly affecting the OPS implementation	- National regulation related to **port structure and administrative issues**, such as contracting power supply and infrastructure works. In Spain, the first steps towards implementing OPS started with the publication of **2014/94/EU Directive** on alternative fuels infrastructure, requiring the Member States to develop OPS infrastructure at ports starting in December 2025. In this sense, *Article 4* of the Directive states that: "The Member States shall guarantee that the need for electricity supply in ports for inland waterway vessels and maritime vessels in maritime and inland ports is evaluated in their respective national action frameworks. This electricity supply in the port will be installed as a priority in ports of the basic network of the TEN-T and in other ports no later than 31 December 2025, unless there is no demand and the costs are disproportionate in relation to the benefits, including environmental benefits". *Article 3* also specifies that "each Member State shall adopt a national action framework to develop the market for alternative fuels in the transport sector and the implementation of the corresponding infrastructure. Member States shall communicate their national action frameworks to the Commission no later than 18 November 2016." In view of this, the Spanish Government published on 14 October 2016 the "**National Action Framework for Alternative Energy in Transportation. Market Development and Deployment of Alternative Fuels Infrastructure. In compliance with Directive 2014/94 / EU of the European Parliament and of the Council, of 22 October 2014**". Among the different topics covered by the National Action Framework, the supply of electricity to ships is included, and the following support measures are presented: o Tax Incentives: a. 50% discount on the rate applied to ships docked in ports when they are connected to the electricity grid. b. Creation of a working group to analyse the possible future demand for electricity supplied to ships docked in our ports and the viability of the possible adaptation of applicable taxes to the market conditions. o Promotion of supply infrastructure:

	a. Boosting the participation of Spanish entities in projects to develop the electricity supply infrastructure in ports. b. Monitoring shipping companies' plans to meet their foreseen electricity supply needs in port. ○ Regulatory developments: a. Analysis of the possible adequacy of the regime applicable to the supply of electricity to ships berthed. ○ Promotion of industrialisation and research, development and innovation (R&D&i): a. Carrying out studies on the applicability of smart grids in the electrical connection in port. b. Participation in innovative projects to guarantee the generation of on-site energy from renewable energy sources. ○ Dissemination and awareness: a. Creation of a web page with information on the ports that offer electricity supply to berthed ships. Directive 2014/94 EU was transposed into the national legislation mainly through **Royal Decree 639/2016**, of 9 December 2016, establishing a framework of measures for the implementation of an alternative fuels infrastructure. The main law regulating port operations in Spain is the **Law on Spanish Ports and Merchant Marine**. There are still, however, some actions pending to be taken regarding ports regulation, such as the following: - The adaptation, pending at the current date of writing this report, of the Consolidated Text of the Spanish Law on State Ports and Merchant Marine, to **Regulation (EU) 2017/352**, - with entry into force in March 2019 -, which includes the electricity supply service to ships during docking as a port service, and - The development of the specific specification sheets (***pliegos de prescripciones particulares (PPP)***) of the port service by the Spanish Port Authorities, pending the basic model of the service PPP - under current development by Puertos del Estado (Ports State Agency). *Articles 16 and 24* of the Law on State Ports and Merchant Marine recognise the legal figure and patrimony of the Public State Port Authority and the Port Authorities, as well as their full capacity to act and adjust their activities to the private legal system, even in property acquisitions and contracting. Regarding contracts, the Port Authorities will have to respond, in any case, to the obligations of publicity, concurrence, safeguarding of the interest of the entity and homogenisation of the contracting system in the public sector, as well as

	preserving their full management autonomy to what is established in **Law 30/2007 on public sector contracts (replaced by Law 9/2017)** and **Law on contracting procedures in the water, energy, transport and postal services sectors (Law 31/2007, replaced by Law 3/2020)**, when they enter into contracts within their respective areas. Both laws are addressed in this document. In the *seventeenth additional provision* of the cited law, related to fuel supply facilities, it is said that the Port Authorities, in accordance with the provisions of this law, will award a minimum number of fuel supply facilities within the public port domain, under the terms and in agreement with the criteria that are determined by regulation. These said criteria would take into account, among other circumstances, the intensity of traffic, the volume of commercial operations, the area occupied by each port, its strategic location, the distance to other ports, security conditions, the incidence of provisioning operations of fuels in ship traffic and, in general, those that may affect supply security and the proper development of traffic and port operations. In any case, the fuel supply facilities must meet the technical requirements, as well as the safety conditions for people and objects, and the concession holder must obtain licenses, permits and authorisations in accordance with current legislation. *Article 197* establishes the full fee for access and stay in the Zone I or within the port waters. In this case, in section j), incorporated by the *final provision 17.1* of **Law 36/2014, of 26 December**, it is established that for ships that use natural gas as fuel for their propulsion as well as ships that during their stay in port they use natural gas or electricity supplied from the dock to power their auxiliary motors, a coefficient of 0.5 will be applied (in addition to the rest of the usual coefficients marked in this article). This coefficient will not apply to ships engaged in the transport of natural gas, unless they use electricity supplied from the dock during their stay in port to power their auxiliary engines. Finally, following *Article 226*, related to the full amount in the case of docks or nautical-sports facilities not under concession or authorised located in Zone I or within port waters, it must be taken into account that for availability of services, the full amount of the fee will be the amount resulting from the product of the surface area occupied by the vessel in m^2 by the number of days of stay, by the value of the basic amount and multiplying it by, among others, the coefficient for electrical energy consumption (0.10). The consumption of water and electric energy will be invoiced independently of the liquidation of the affected rate.

	In the area of procurement, the **Law 9/2017, of 8 November, on Public Sector Contracts**, already mentioned in this text, aims to achieve greater transparency in public procurement as well as to achieve better value for money. To achieve the latter objective for the first time, it establishes the obligation of the contracting bodies to ensure that the design of the award criteria allows obtaining high-quality works, supplies and services, specifically through the inclusion of qualitative, environmental, social and innovative aspects linked to the object of the contract. The Law sets out the procedures applicable to public sector procurement and is applicable to the procurement of energy supplies, as well as other energy-related services. *Article 16* of the Law states that supply contracts are, among others, those whose purpose is the acquisition of primary energy or transformed energy (item d). *Article 145* on requirements and types of contract award criteria states that quality, including technical value, aesthetic and functional characteristics, accessibility, universal design or design for all users, social, environmental and innovative characteristics, and commercialisation and its conditions; regarding environmental characteristics, they may refer, among others, to the reduction of the level of greenhouse gas emissions; the use of energy saving and efficiency measures and the use of energy from renewable sources during the performance of the contract; and the maintenance or improvement of natural resources that may be affected by the performance of the contract. When contracts whose execution may have a significant impact on the environment, measurable environmental conditions, such as the least environmental impact, savings and efficient use of water, energy and materials, environmental life-cycle cost, ecological procedures and production methods, waste generation and management, or the use of recycled or reused materials or ecological materials, will be evaluated in the awarding of the contract. Finally, in its *tenth final provision*, the supplies of goods and services that public sector administrations, bodies, agencies, and entities carry out in the exercise of activities related to the distribution of water, gas, heat, cold, electrical energy, and other types of energy, are subject to VAT (Value Added Tax). **Royal Decree-Law 3/2020** sets new procurement thresholds with respect to previous laws concerning the award procedure for works, supply and service contracts. For supply contracts, which include, among others, energy, an amount equal to or greater than EUR 428,000 is set (*Article 1*).

	Article 10 Electricity specifies the specific activities under which the Royal Decree is applicable. Another law to consider is the **Royal Decree-Law 15/2018**, which includes the following: "Twenty-first additional provision. Electricity supply to vessels, aircraft and railways. Without prejudice to the provisions of this Law, exceptionally, the managers of ports, airports and railway infrastructures, in their capacity as consumers, may provide electricity supply services to vessels, aircraft and railways and services inherent to the provision of the service, respectively". Finally, it should be noted that in October 2018, the EU Council authorised Spain to reduce the tax applied to any electricity consumption for the specific case of electricity supply to ships at berth. In this way, the tax, established in general at 5% of the invoiced amount, is reduced to the minimum and changes its base, i.e., to the 'symbolic' amount of EUR 0.05 -cents per kWh for the case of ships that turn off their auxiliary engines and connect to the general grid when they are berthed. This reduction of the electricity tax has been promoted by Puertos del Estado and is one of the initiatives taken during the execution of the "OPS MASTER PLAN for Spanish ports" project, which is financed by the CEF Programme of the European Commission and coordinated by this public body. Regarding energy transition, the **Law 7/2021, of 20 May, on climate change and energy transition**, includes references to OPS in its *Article 16* on maritime transport: ○ In State Ports, the Government shall adopt measures for the gradual reduction of emissions generated by the consumption of fossil fuels by ships, vessels, naval artefacts, and physical platforms when moored or anchored in ports to achieve the objective of zero direct emissions from these before 2050. ○ Through the competent Public Administrations, the Government shall promote the articulation and consolidation of sustainable logistics chains with origin or destination in ports by means of strategic initiatives aimed at reducing greenhouse gas emissions in ports, as well as in maritime or land transport chains with origin or destination in ports. ○ The initiatives indicated in the previous sections of this article shall be aimed, among others, at improving energy efficiency and air quality in port facilities, the generation or contracting of energy from renewable sources in ports, the promotion of rail transport to and from ports, the promotion of the development of Motorways of the Sea, the improvement of road accesses, and the stimulation of the use of alternative energies in maritime transport, with special attention to the use of this type of energy in moored ships, per the provisions of European Union regulations on state aid.

- In order to achieve the objectives, set out in this article, the Ministry of Transport, Mobility and the Urban Agenda, through State Ports and the Port Authorities, following the agreement with the Regional Communities in their areas of competence:
    a. Will apply economic incentive measures to stimulate electricity supply or the use of alternative fuels in ships at berth, rail transport to and from ports and energy efficiency measures in concessions.
    b. Will promote and implement projects to improve road and rail accesses, and actions to improve the rail network to increase the competitiveness of rail transport to and from ports and logistics platforms, promoting, as far as possible, their location in inland provinces. The improvement of port electricity grids will also be promoted.
    c. Will establish targets for reducing energy consumption in ports in relation to their level of activity.

- National regulation related to **power supply and electricity sector regulation**

Regarding the electricity sector in Spain, apart from **Law 21/1992 of 16 July on Industry**, which refers, among others, to industrial quality and safety issues, the main legislative reference is Law 24/2013 of the Electrical Sector (***Ley 24/2013, de 26 de diciembre, del Sector Eléctrico***). This Law reviews and updates Law 54/1997, which initiated the energy market liberalisation in Spain, and serves as a complete definition of how the electricity supply system is structured, operated and maintained; its division in different activities (generation, transport, distribution and consumption) and the different agents participating, along with their roles.

Directly linked with this Law, another key reference is **Royal Decree 1955/2000**, which regulates the generation, transport, distribution, and commercialisation of electricity in Spain. This Decree establishes the obligations of the different agents (TSOs, DSOs, retailers, etc), and describes important features about the electricity supply system, such as voltage levels, conditions to access and connect to the electricity supply, allowed power levels, and other technical issues. This decree is modified by **Royal Decree 1183/2020, of 29 December, on access and connection to the transmission and distribution of the electricity grid**.

Regarding its *Article 79.3*, which states that «The supply contract is personal, and its holder must be the actual user of the energy, who may not use it in a place other than that for which it was contracted, nor assign it, nor sell it to third parties », the National Energy Commission ruled in a report on 15 April 2010 on the supply of electricity to users within a port. Its

	main conclusion was that, even though the port supplies energy to the different port facilities, it is not in any case acting as a distributor or retailer of electricity but is simply passing on consumption to the persons or entities located in the port facilities, within the framework of the existing contractual relations between them. In this way, the Port is considered the only consumer or end-user of electrical energy, since the supply is contracted with the distribution company in the area for the same and unique installations, the port facilities. In relation to the connection access to the electricity grid, **Order TED/749/2020** states the technical requirements for the connection of generation and demand installations to the electricity grid. This Order is complemented by **Royal Decree 647/2020**, which regulates aspects needed for implementing the grid connection codes by certain electrical installations. It is also worthy of mention **Royal Decree 639/2016,** establishing a framework of measures for the implementation of an infrastructure for alternative fuels, which details aspects related to the transport of power supply. Aligned with how the electricity supply system is deployed, **Decree 1110/2007** defines how, where (and by whom) to measure the electricity being generated and consumed. In this Decree, terms like «frontier» or «boundary» points are described, along with the «measurement» points, and a classification is made, according to the contracted power and/or voltage levels of the installation, in five different measurements and boundary points. **Order TEC/1281/2019, of 19 December**, approves the complementary technical instructions that complement the unified regulation of measurement points of the electric system. Regarding the costs of the infrastructure and operating expenditures (OPEX) and how to reimburse these costs to the transportation and distribution agents, on the one hand, **Decree 148/2021** defines which these charges are, and how to compute them. The charges include different concepts such as, among others, the costs of electricity generation in the Spanish islands; the historical deficit of non-covered costs of the infrastructure; financing the management of nuclear waste; and the imbalances that may be incurred between incomes in past exercises and the real costs. The **TED 371/2021, of 19 April**, establishes the prices for the charges of the electrical system and the payments for capacity (of application since 1 June 2021). On the other hand, **Circular 3/2020** on tariffs or «*peajes*» of the electrical system defines the additional charges for transport and distribution costs for consumers. These charges are reimbursed to the Transmission and Distribution System

	Operators, for the cost of distributing the energy. The values of these costs are described in the **CNMC Resolution of March 2021** and have entered into operation since 1 June 2021. Both documents define a cost structure based on two different terms: contracted power and energy consumed. Besides, different charges are applied as a function of time periods, which can vary by the hour of the day, the day of the week, the season of the year, and the geographical situation. The consumers are classified into five groups based on the voltage level of the electricity supply, from NT0 (equal or below 1kV) to NT4 (equal or higher than 145 kV). Finally, the methodology to compute the retribution received by the DSO, regarding the operation of the distribution electricity grid and procedures to connect new supply points is defined in **Royal Decree 1048/2013, of 27 December**. - National regulation related to **environmental impact, noise pollution, etc.** **Law 37/2003**, of 17 November, **of Noise**, transposing **Directive 2002/49/EC** of the European Parliament and of the Council of 25 June 2002 relating to the **assessment and management of environmental noise.** Ports are defined in the Law (*Article 10*) as acoustic easement zones, so they are not considered acoustic areas, which means that they may exceed the noise quality objectives applicable to the corresponding acoustic areas. Nevertheless, they must comply with noise emission limit values for acoustic easement zones defined in Royal Decree 1367/2007. Royal Decree 1367/2007, of 19 October, which implements Law 37/2003, of 17 November, on Noise, regarding **acoustic zoning, quality objectives and acoustic emissions**. Ports must comply with the limits established by the Royal Decree in relation to: 1.- Noise emission limit values applicable to port infrastructures and activities (*Annex III, table B1*) 2.- Noise limit values transmitted to adjoining premises by activities (*Annex IV, table B2*) **Law 21/2013, of 9 December, on environmental impact evaluation**. This Law is the transposition of two EU Directives: • **Directive 2001/42/EC** of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.

	• **Directive 2011/92/EU** of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment. The Law contains in *Annexes I and II* the list of projects to be made subject to an ordinary or simplified environmental impact assessment, respectively. Annex I include, in Group 3, g) Construction of electricity transmission lines with a voltage of 220 kV or more and a length of more than 15 km, unless they run entirely underground through urbanised land, as well as their associated substations. Therefore, in case the works planned include this type of intervention, the port must perform an ordinary environmental impact assessment. Annex II includes, in Group 4, (b) Construction of power transmission lines (non-Annex I projects) with a voltage equal to or greater than 15 kV, with a length of more than 3 km, unless they run entirely underground through developed land, and their associated substations. In this case, if works planned include this type of intervention, they must perform a simplified environmental impact assessment. **Royal Decree 9/2005, of 14 January**, establishing the list of potential pollutant activities for soil and the criteria and standards for the declaration of contaminated land. In its Annex I, the Royal Decree lists the potentially soil-polluting activities, among which are the electric energy production and distribution. - National regulation related to **industrial installations, especially electricity transmission and distribution facilities** Regarding the norms describing technical aspects of electrical installations, either at low or high voltage, along with the necessary protection and safety measures, the Spanish legislation gathers all the norms and complementary technical instructions in two Regulation documents. These are **Regulation 337/2014 on technical conditions and safety and security measures, on high voltage installations** and **Electrotechnical Regulation on low voltage systems**. These two Regulations are the main guidelines for any electrical installation, including primary and secondary substations, and low voltage installations. In addition, high voltage lines have their own regulation, described in **Regulation 223/2008 on technical conditions and safety and security measures, for high voltage lines**. Specific norms that affect the

	installations (UNE norms) are referenced inside each of these three documents for every specific case or installation/infrastructure type. All the materials used in electrical installations must comply with several certificates and safety measures, as stated in the **Order of 6 June 1989**. The updated list of mandatory norms is updated in the **Resolution of 3 April 2008**. The industrial safety and quality infrastructure is addressed in **Royal Decree 2200/1995**, where the Quality and Safety Infrastructure Regulation is approved. This Regulation has been modified since its entry into force by **Royal Decree 411/1997**, of 21 March; the **Royal Decree 338/2010**, of 19 March; **Royal Decree 1715/2010**, of 17 December; and by **Royal Decree 1072/2015**, of 27 November. - National regulation related to **safety and security measures, including occupational risks prevention** The following regulation can be cited regarding safety and security measures, including occupational risks prevention: - **Royal Decree 513/2017, of 22 May**, that approves the Regulation on Fire protection facilities. - **Law 31/1995. of 8 November**, on prevention of occupational risks. - **Royal Decree 773/1997, of 30 May**, on the minimum health and safety requirements for the use by workers of personal protective equipment. - **Royal Decree 2267/2004, of 3 December**, that approves the Regulation on safety and security against fire casualties at industrial facilities.

Description of **REGIONAL** regulation directly or indirectly affecting the OPS implementation	**VALENCIA:** - Regional regulation related to **port structure and administrative issues** In the case of Valencia, the regulation related to port level permits emanates from the national regulation.

	- Regional regulation related to **power supply and electricity distribution** In relation to electricity distribution, the local requirement of the DSO provides a response to the technical specifications to be taken into account, which in turn derive from national regulation. - Regional regulation related to **environmental impact, noise pollution, etc.** Environmental regulations take into account the rules related to environmental impact as well as noise protection and reduction: - Law 2/1989, of 3 March, on environmental impact - Decree 32/2006 modifies the previous Decree 162/1990 that approved the Regulation to enter into practice the aforementioned Law 2/1989. Decree 32/2006 establishes the conditions under which a project has to be subject to an environmental impact assessment. Regarding electrical installations, an environmental impact assessment will be necessary if the activity falls under the following kind of projects: *2. Energy.* *(g) Transmission and distribution of electricity where the transmission does not leave the territory of the Autonomous Community of Valencia and the use of its distribution does not affect another Autonomous Community, provided that any of the following circumstances apply:* ○ *When the nominal voltage between phases is equal to or greater than 132 kV.* ○ *When the lines are more than 20 kV and cross, in whole or in part, parks or natural sites, or other areas of natural beauty, parks or natural sites, or other natural areas protected by Decree of the Valencian region government.* Law 7/2002, of 3 December, on protection against noise pollution. Decree 266/2004, of 3 December, where norms regarding prevention of noise pollution in activities, services and facilities are described. This Decree is later modified by the Decree 104/2006, of 14 July, on planning and management regarding noise pollution. Law 6/2014, of 25 July, regarding activities' environmental impact prevention, quality and control.

	- Regional regulation related to **industrial installations, especially electricity transmission and distribution facilities** - Decree 88/2005, of 29 April, establishing procedures for permits for electrical production, transmission and distribution facilities. This Decree has been later modified by the Decree Law 14/2020, of 7 August. - Decree 141/2012, of 28 September, simplifying procedures for commissioning new industrial installations. - Order 9/2010, of 7 April, modifying some previous Orders that regulate the minimum content to be included in industrial installation projects. - Regional regulation related to **safety and security measures, including occupational risks prevention** - Decree 7/2004, of 23 January, on regulation and norms on fire prevention at civil works having place in forests or nearby. **BARCELONA:** - Regional regulation related to **port structure and administrative issues** In the case of Barcelona, the regulation related to port level permits emanates from the national regulation. - Regional regulation related to **power supply and electricity distribution** - Law 18/2008, of 23 December, on the guarantee and quality of the electricity supply. - Resolution, of 9 February 2015, approving the Registry of low voltage electrical installations. - Regional regulation related to **environmental impact, noise pollution, etc.** - Law 20/2009, of 4 December, on prevention and environmental control of activities. - Law 16/2002, of 28 June, of Protection against Noise Pollution. - Law 22/1983, of 21 November, of Protection of the Atmospheric Environment.

	- Regional regulation related to **industrial installations, especially electricity transmission and distribution facilities** - Law 18/2008, of 23 December of guarantee and quality of electricity supply. - Decree 328/2001, of 4 December, laying down the procedure applicable to the periodic surveys of electricity production, transformation, transmission and distribution installations. - Instruction 7/2003, of 9 September of the Directorate-General for Energy and Mines on the administrative procedure for applying the Low Voltage Electrotechnical Regulations (guide to the administrative procedure). - Instruction 3/2014, of 20 March, of the Directorate General for Energy, Mines and Industrial Safety, which establishes the conditions and procedure to be followed to carry out modifications to low voltage electrical connection installations. - Regional regulation related to **safety and security measures, including occupational risks prevention** - Law 9/2014, of 31 July, on the industrial safety of establishments, facilities and products. **GIJÓN:** - Regional regulation related to **Port structure and administrative issues** In the case of Gijón, the regulation related to port level permits emanates from the national regulation - Regional regulation related to **power supply and electricity distribution** - Resolution, of 9 February 2015, approving the Registry of low voltage electrical installations. - Regional regulation related to **environmental impact, noise pollution, etc.** - Law 5/1991, of 5 April 5, for the protection of the Natural Areas.

	- Decree 99/1985, of 17 October, approving the Standards on technical conditions for acoustic and vibration insulation projects. - Resolution of 25 April 2021, Technical Instruction for the evaluation and determination of the acoustic impact of industrial facilities. - Regional regulation related to **industrial installations, especially electricity transmission and distribution facilities** No regional regulation related to this topic has been identified. - Regional regulation related to **safety and security measures, including occupational risks prevention** No regional regulation related to this topic has been identified. **HUELVA:** In the case of Huelva, the regulation related to port level permits emanates from the national regulation. - Regional regulation related to **environmental impact, noise pollution, etc.** - Law 7/2007 of 9 July of Integral management of environmental quality. - In addition, the local DSO provides a response to the technical specifications.

Description of **LOCAL** regulation directly or indirectly affecting the OPS implementation	**VALENCIA:** The main local regulation is the city's **Urban Deployment Plan** (*Plan General de Ordenación Urbana de Valencia, PGOU*), which details, at the municipality level, all aspects related to the classification of land uses and the rules that regulate the infrastructures and services associated to each use.

	Regarding the City Council regulations, the one that will affect the implementation of OPS installations is the local **Ordinance that regulates fees on civil works,** which indicates that if the Port Authority has the ownership of the facilities, no fee has to be paid. Moreover, the company that will carry out the installation will have to request permits to start the works. Finally, in relation to the specific technical requirements for electrical installations, the **local DSO (i-DE) technical norms** may apply. **BARCELONA:** In the case of Barcelona, the applicable local regulations are as follow: - **Urban planning regulations of the General Metropolitan Plan of Barcelona** approved on July 14, 1976 → BOPB (Official Journal of Barcelona's Region) of July 19, 1976 and TR (Consolidated Wording) of 8 August 1988. - **Metropolitan building ordinance** approved on 15th June 1978. - **Municipal ordinances** of application regarding noise pollution, firefighting, buildings. Regarding the specific technical requirements for electrical installations, two different zones are differentiated, depending on who the DSO is: 1. South Zone (DSO: *Unión Fenosa Distribución*): a. Technical requirements for connecting High Voltage facilities of Un≤ 36 kV. b. Technical requirements for the construction of substations connected to High Voltage grid of Un> 36 kV. c. Standard project for constructing a transformation station in a prefabricated and non-prefabricated enclosure. d. Standard project for the construction of sectioning stations in prefabricated and non-prefabricated enclosure. e. Standard project for the construction of outdoor transformation stations. f. Specific requirements for connection facilities. Low Voltage connection facilities. g. Standard project for underground Low Voltage power lines. 2. North Zone (DSO: *Endesa Distribución*): a. Private facilities. Generalities. b. Private facilities. High and Medium Voltage consumers.

	c. Particular technical requirements of HV / MV substations. d. Specific requirements for Medium Voltage distribution facilities. e. Standard project for prefabricated Interior CT transformation station. f. Private facilities. Low Voltage consumers. g. Low Voltage lines. **GIJÓN:** In the case of Gijón, the local regulations that can affect the implementation of OPS infrastructures are as follow: - The **Urban Planning Plan** (PGO): the instrument that establishes the comprehensive planning of the municipal territory. The current PGO of Gijón, together with its Strategic Environmental Study, was approved by the municipal Plenary on January 30, 2019. BOPA (Official Journal of Asturias's Region) of February 14, 2019. - Instruction 1/2017 which establishes the criteria to which the processing of **works and activities files** in the Gijón City Council has to be adjusted, with the modification approved by Resolution of the Mayor's Office of May 21, 2019. BOPA (Official Journal of Asturias's Region) of June 14, 2019. - **Municipal ordinances** regarding noise pollution, waste and urban hygiene, and atmospheric environment protection. - **Specific technical requirements** of the local DSO (*E-REDES Distribución Eléctrica*). **HUELVA:** The local regulations that can affect the implementation of OPS infrastructures are: - **Urban Deployment Plan** of the city (*PGOU Ciudad de Huelva*). - **Municipal ordinances** of application (noise pollution, firefighting, building, etc.). The local regulation includes the **specific technical requirements for electrical installations** of the local DSO (*Endesa Distribución*): o Specific Specifications: Private Facilities. Generalities o Specific Specifications: Private Facilities. High and Medium Voltage Consumers o Technical Specifications of HV / MV Substations

	○ Specific specifications for medium voltage distribution facilities ○ Prefabricated Interior CT Transformation Centre Type Project ○ Specific Specifications: Private Facilities. Low voltage consumers. ○ Specific Specifications Low Voltage Lines

4.1.2 Greek Ports

Description of **NATIONAL** regulation directly or indirectly affecting the OPS implementation	- National regulation related to **port structure and administrative issues**, such as contracting power supply and infrastructure works The **National Regulation N.4150/13** «Permit Procedures for Infrastructure projects in Port Authorities» and its amended law **N.4256/2014** (Article 41) stipulates in *Article 46, Paragraph 4* that the main port infrastructure projects is a subject to the Decision of Port Authority's Board of Directors and the required technical studies of any project must be compliant with the Development Plan of Secretariat General of Ports, Port Policy and Maritime Investments that pertain to the Hellenic Ministry of Maritime Affairs and Insular Policy in order to be included in the Ports' Master Plans. The Decision of the Minister of Maritime Affairs and Insular Policy is necessary as the official permit for the construction of any infrastructure at ports. Additionally, the **National Regulation N. 4150/2013 FEK 'A-102/29-4-2013** "Reorganisation of the Ministry of Maritime Affairs and Insular Policy" has initially regulated in *Article 46* the permit procedures for port infrastructure projects that are included in Ports' Master Plans after the decision of the Port Planning and Development Committee in the Ministry of Maritime Affairs and Insular Policy which require except for the above-mentioned official permit for construction and the necessary environmental permits depending on the type of facility. Additionally, the **National Regulation 4368/2016 – FEK 21/A/21-2-2016** «Measures for the acceleration of Government's Work Programme" regulates in *Article 31* the building restrictions and land use issues for facilities or infrastructure plans that are not included in the master plans of ports inside their terrestrial zone. Any update or amendment of ports' master plans including building restrictions and land use issues, it is foreseen that it will be regulated with Presidential Decree issued by the Ministry of Maritime Affairs and Insular Policy. The **National Regulation 4269/2014 FEK 142/A/28.6.2014** "Spatial and Urban Reformation – Sustainable Development" includes the provisions about spatial planning and land use issues for urban infrastructure installations of public service also including electricity transmission and distribution installations in the ports that belong to the urban network, as stated in *Article 24*.

	Regarding the administrative issues, such as contracting power supply and infrastructure works, the **National Regulation 4404/2016 FEK 126/A/8-7-2016** "Concession contract between the Greek State and Piraeus Port Authority" states in *Article 8* that the Piraeus Port Authority (PPA) is assigned to conclude agreements for the implementation of projects in the port area or provided services under the provisions of the current and national laws regarding the public procurement contracts. In *Article* 9, *paragraph 1*, it is stipulated that PPA is enabled to publish calls to tenders for the award of work contracts as private contracts for its port infrastructure projects. In accordance with *paragraphs 2 and 3 of Article 9*, the publication of tenders by PPA for port infrastructure projects must comply with determining technical standards, specifications and safety requirements included in the national regulation for public port infrastructure projects and their final technical studies must be submitted to the Technical Departments of the Decentralised Administration of Attica for Approval. As for the contracting power supply and infrastructure works for Port Authority of Rafina, the **National Regulation N.4597/2019 FEK 35/A/28-2-2019** "Concession contract between the Greek State and Port Authorities" states in the *Article 2, paragraph 2* that this regulation is also in effect for the Port Authority of Rafina. In *Articles 3 and 7*, it is stipulated that all the contract agreements with counterparties concerning port infrastructure works, including concession contracts, can be concluded by the respective port authorities and the Hellenic Republic Asset Development Fund (HRADF). In contrast with the legislative framework for Piraeus Port Authority, the contracting power supply and infrastructure works procedures for Rafina port are regulated in the **National Regulation N.4412/2016 FEK A 147/08.08.2016** "Public Procurement Contracts for Works, Supplies and Services", that includes in the *Articles 1,2 and 3* general principles for publication of calls to tenders by public entities such as port authorities for the award of public contracts for works, supplies and services, while the specific processes for public procurement contracts are analysed in the next articles of the regulation. The definition of port areas and areas for port infrastructure has recently been regulated by the **National Regulation N. 4770/2021 FEK 15/A/29-1-2021** «Integrated Maritime Policy in Greek Islands and Reinforcement of Greek Shipping's Competitiveness in the post-COVID era" **-** *"Ολοκληρωμένη θαλάσσια πολιτική στον νησιωτικό χώρο, διατάξεις για συμμόρφωση με υποχρεώσεις διεθνούς ναυσιπλοΐας και την αναβάθμιση Λ.Σ.-ΕΛ.ΑΚΤ. και ειδικές ρυθμίσεις για την ψηφιοποίηση και εν γένει ενίσχυση της ανταγωνιστικότητας της ελληνικής ναυτιλίας στη μετά-COVID εποχή"* and especially in *Article 23*, in which the definition of boundaries of the respective infrastructure and port areas are stated. In *Article 6*, paragraph 2 of the same regulation it is stated that under the framework of the programme "Nearchos" of the

	Hellenic Ministry of Maritime Affairs and Insular Policy, port infrastructure projects including shore side electricity transmission and distribution facilities will be funded for the attractiveness of such investments. - National regulation related to **power supply and electricity sector regulation** Presently, there are no international requirements that would mandate or facilitate the use of cold ironing. However, the European Union approved the directive 2014/94/EU on the deployment of alternative fuels which obliges member states to implement infrastructures such as shore-side power technology by December 2015 (*Article 4*). Under this directive, by the end of 2025 shore power provision will become a mandatory requirement for all EU ports. Greece adopted the directive in November 2016 when it became state law, under **N.4439/2016** published at the Official Government Gazette of the Hellenic Republic **(FEK 222/A/30-11-2016)**. The law's full title in Greek Language is: «Ενσωμάτωση στην ελληνική νομοθεσία της Οδηγίας 2014/94/ΕΕ του Ευρωπαϊκού Κοινοβουλίου και του Συμβουλίου της 22ας Οκτωβρίου 2014 για την ανάπτυξη υποδομών εναλλακτικών καυσίμων, απλοποίηση διαδικασίας αδειοδότησης και άλλες διατάξεις πρατηρίων παροχής» Regarding onshore power supply, the **National Regulation N.4439/2016** states: • *Article 2, Paragraph 6:* Definition of shore side electrical power and of entities-owners of the relate shore-side infrastructure. • *Article 4, Paragraphs 5 and 6:* Shore side electrical power implementation framework, evaluation, and prioritization. • *Annex II, Paragraph 1.7:* Technical specifications for cold ironing installations – Compliance with IEC/ISO/IEEE 80005-1. Relevant National Regulations constitute the **National Regulation N.4001/11** (**FEK A΄ 179/2011** in the Official Government Gazette of the Hellenic Republic) regarding the supply procedures of electrical power and the **National Code for the Supply of Electricity to Consumers (Ministerial Decision FEK B΄ 832/2013 and its Amendment FEK B΄ 1463/2016),** which regulate the pricing of electrical power per category of consumers, a process supervised by Hellenic Regulatory Authority for Energy (RAE) (**FEK A΄ 179/2011 Article 22**). Under this law, the regulated charges and the fixed fees for the operation and management of the power distribution network, which HEDNO S.A undertakes (Hellenic Electricity Distribution Network Operator S.A) (EUR/MW) or Hellenic IPTO (Independent Power Transmission Operator) are

	defined based on the category of the consumers (ultra-high/high/medium/low voltage consumers). In most cases, Greek Port Authorities could be categorized as medium voltage consumers. In the *Annex 2, Paragraph 1.7* of the National Regulation N.4001/11 (**ΦΕΚ Ά 179/2011**), it is referred that the electricity used for cold ironing and electric bunkering procedures of vessels calling at ports is going to be distributed by infrastructure in compliance with the technical specifications of the standard **JEC/ISO/IEEE 80005-1**. The aforementioned National Regulation N.4001/11 stipulates in *Article 132* that entities also including port authorities that have secured license for electricity production are allowed to perform electricity production activities through power stations above 20 kW or if they have been exempted from this obligation are also allowed to product electricity. *Article 135* states that the Regulation for electricity production permits is issued by the Minister of Environment, Energy and Climate Change after the issuance of opinion by the Hellenic Regulatory Authority of Energy and specifies the necessary documentation and circumstances for obtaining electricity production permit. As regards the permits for electricity supply and trade, *Article 134* of the National Regulation N.4001/11 states that the supply and trade of electricity is allowed to selected or non-selected clients that have secured the relevant electricity supply and trade permits in accordance with the provisions of the Regulation for electricity supply and trade permits. According to the regulation, owners of microgrids are not included in the selected clients, but as non-selected clients could apply for electricity supply and trade permit. Additionally, the recent **National Regulation N. 4710/2020 FEK 142/A/23-07-2020** which is related to the fostering of electrification for means of transportation includes tax incentives (*Articles 6-11*) such as depreciation allowances for the circulation of means of transportation (e.g., electric vessels, electric vehicles for passengers and goods), which will operate as carbon neutral means, contributing to adapt to the impacts of climate change by 2030. **National Strategy for the Development of the Infrastructure of Alternative Fuels in Transportation published at the Official Government Gazette of the Hellenic Republic Common Ministerial Decision No 3824/31-10-2017**. The full title in Greek Language is: «Καθορισμός και εξειδίκευση των απαιτούμενων λεπτομερειών εφαρμογής και των τεχνικών προδιαγραφών του Εθνικού πλαισίου πολιτικής, για την ανάπτυξη της αγοράς υποδομών εναλλακτικών καυσίμων στον τομέα των μεταφορών και για την υλοποίηση των σχετικών υποδομών την ανάπτυξη της αγοράς υποδομών εναλλακτικών καυσίμων στον τομέα των μεταφορών και για την υλοποίηση των σχετικών υποδομών».

	Cold ironing is included and ELEMED is mentioned as the first action in Greece. Based on the experience acquired during the ELEMED project (with special reference to the pilot case study of the port of Kyllini along with the big project of the port of Piraeus), the Strategic Plan sets the foundation stone of deploying OPS's for commercial ships throughout the country, while the perspectives of exploiting battery based electric passenger ferries are also analysed. The **National Regulation N.4277/2014 FEK 'A 156/1.8.2014** "New Master Plan of Athens-Attica" states in *Article 53* that the distribution and trade of electricity is allowed also by non-licensed electricity providers such as local authorities, port authorities or private companies that are owners of related electrification infrastructure. The **National Regulation N. 3468/2006 FEK 129/A'/27.6.2006** "Electricity Production by Renewable Energy Sources and Co-production of Electricity and Thermal Energy" states in *Articles 3,4,5* that for electricity production activities of interested parties such as port authorities through RES, a permit for electricity production and trade through RES is issued by the Ministry of Development after the issuance of opinion by the Hellenic Regulatory Authority of Energy. The initial duration of the relevant permit is 25 years and can be renewed. Also, in *Article 8* the permit procedures for the installation and operation of electricity production stations through RES and in *Article 12* the contracts of sales for electricity production are defined. In *Article 13* of the same National Regulation the pricing of electricity by RES Stations is defined in detail, while in *Article 14A* the installation of photovoltaic stations and wind farm stations for electricity self-production or net metering mechanism is regulated. The revised **National Regulation 4414/2016 FEK 149/A/9-8-2016** «New Support Regime for Electricity Production by Renewable Energy Sources and Co-production of Electricity and Thermal Energy" includes new provisions for the trade of electricity produced by RES and the revised **National Regulation N.4643/2019 (FEK 193 A') "Support of RES market"** states in *Article 20* that the owners of RES stations are allowed to participate in the electricity trade market. - National regulation related to **environmental impact, noise, pollution, etc.** Regarding the approval of environmental permits for infrastructure projects in urban areas also including port areas, the **National Regulation N. 4014/2011 FEK 'A 209** «Environmental permits for projects and activities» regulates in *Articles 2,3,4,8* the procedures for the Environmental Assessment Approval Decision of the projects, depending on the type of the proposed infrastructure. Based on the level of projects' impacts to the environment, the projects are divided into projects of types A1, A2 and B and depending on the type of the project different competent authorities issue the decisions for

	environmental permits. In particular, the Environmental Assessment Approval Decisions for projects of type A1 (very significant impacts on the environment) are issued by the Hellenic Ministry of Environment and Energy, while for projects of type A2 (significant impacts on the environment) or type B (local and not significant impacts on the environment) are issued by the Decentralised Administration of Attica at regional level. Especially, provisions for the defined technical characteristics and the classification of the port infrastructures and electricity and distribution facilities depending on their impacts on the environment are included in the **National Regulation – Common Ministerial Decision N.2471/2016** "Classification of private and public projects into categories and subcategories" and especially in *Annex III* for port infrastructure projects (3rd Group of projects) and in *Annex XI* for electricity transmission facilities (11th Group of projects). - National regulation related to **industrial installations, especially electricity transmission and distribution facilities** As for the national legislation concerning industrial installations, especially electricity transmission and distribution facilities, the **Common Ministerial Decision N.2471/2016** «Classification of private and public projects into categories and subcategories" regulates in *Annex IX* (9th Group of projects), the industrial installations into categories and subcategories and defines their technical specifications based on their impacts on the environment. Regarding the norms describing technical aspects of electrical installations of low voltage, along with necessary protections and safety measures, the Greek legislation gathers all the norms and complementary technical instructions in the **Ministerial Decision 101195/2021 - FEK 4654/B/8-10-2021** "General and special requirements for electrical installations", that states in *Articles 1,2,3* the safety requirements and technical standards that must be followed for electrical installations worth nominal voltage until 1,500V. For medium and high voltage electrical installations the required safety and security measures, and technical specifications are determined by the Hellenic Electricity Distribution Network Operator S.A, as it is stipulated in *Article 5* of the Decision. - National regulation related to **safety and security measures, including occupational risks prevention** Currently, a **new regulatory framework on Safety rules for cold ironing and electric bunkering** is at the consultation stage. It will be released as a Presidential Decree under the auspices of the Ministry of Maritime Affairs and Insular Policy. This a set of high-level guidelines for implementing OPS and electric charging in ports mainly form the safety point of view.

	As regards the current legislative framework for the safety and security measures, including occupational risks prevention for port installations, the **National Regulation N. 3622/2007 FEK 281/A/20-12-2007** "Enhancement of vessels', ports' and port installations' safety" is in effect as well as the **Ministerial Decision 5804/2009 FEK 281/B/17-2-2009** "Operational Procedures for Port Fire Stations" that states the safety and security measures, for fires emerged from port installations.

Description of **REGIONAL** regulation directly or indirectly affecting the OPS implementation	**PIRAEUS & RAFINA** As both Piraeus Port Authority and Rafina Port Authority belong to the Decentralised Administration of Attica, the same regulations affecting directly or indirectly the implementation of the OPS installations are in effect. Based on the current legislation framework in the Greek Member State, there are not regional regulations related to OPS implementation in the ports of Piraeus and Rafina, except for the issuance of opinion by the Decentralised Administration of Attica for the development of respective port infrastructure in the ports of Piraeus and Rafina, which is not binding and not relevant to licensing procedures of the proposed port infrastructure. More specifically: - Regional regulation related to **port structure and administrative issues** In the case of Piraeus and Rafina, the regulations related to port level permits emanate from the national legislation. Regarding the port structure issues, National Regulation 4404/2016 FEK 126/A/8-7-2016 "Concession contract between the Greek State and Piraeus Port Authority" stipulates in the Article 9, Paragraph 3 that the Technical Departments must approve the final technical studies for port infrastructure projects in Piraeus Port of the Decentralised Administration of Attica. - Regional regulation related to **power supply and electricity distribution** In relation to electricity distribution, the local requirement of the DSO provides a response to the technical specifications to be taken into account, which in turn derive from national regulation.

	- Regional regulation related to **environmental impact, noise pollution etc.** In the cases of both Piraeus and Rafina, the regulations related to environmental impact, noise pollution emanate from the national legislation about environmental impact assessment. More specifically, in the National Regulation N.4014/2011 FEK 'A 209 "Environmental permits for projects and activities" stipulates in *Article 19* that the regional council of the administrative region in which is the port, participates in the Advisory Council for the issuance of opinion regarding the development of projects in urban areas including port areas. - Regional regulation related to **industrial installations, especially electricity transmission and distribution facilities.** In relation to industrial installations, the requirements and the defined technical specifications that must be taken into account for both ports of Piraeus and Rafina, derive from national regulation. - Regional regulation related to **safety and security measures, including occupational risks prevention** As regards the regulations related to safety and security measures, including occupational risks prevention in the ports of Piraeus and Rafina, they emanate from the national regulations.

Description of **LOCAL** regulation directly or indirectly affecting the OPS implementation	**PIRAEUS & RAFINA** In relation to local regulation, the following aspects should be taken into account: In the case of Piraeus and Rafina cities in which the ports are located, there are not General Urban Development Plans in effect that directly affect the OPS implementation in these ports. Nevertheless, the development of any port infrastructure or facility in the land development plan of Attica Region (Piraeus and Rafina ports) need to be compliant with the

	requirements of the **New Master Plan of Athens-Attica** including spatial planning and environmental protection provisions under the national regulation N. 4277/2014 FEK 'A 156/1.8.2014. As regards the cities of Piraeus and Rafina in which the ports are located, there are not any City Council regulations in effect, that refer to the approval by the City Council for electrical infrastructure in ports. According to the national legislation, City Councils in the Member State of Greece have no competence for approval of electrical infrastructure in port areas, but their role is limited on the issuance of opinion for the proposed infrastructure which is not binding and not relevant to licensing procedures. The technical specifications related to electrical installation, determined by the national Distribution System Operator in Greece, are subject to the provisions of national legislation. Therefore, in the cases of Piraeus and Rafina, there are not any local regulations and the regulations related to OPS implementation emanate from the national legislation.

4.1.3 Italian Ports

Description of **NATIONAL** regulation directly or indirectly affecting the OPS implementation	- National regulation related to **ports structure and administrative issues**, such as contracting power supply and infrastructure works. **Legislative Decree No. 32/2019 (decreto sblocca cantieri),** containing "Urgent provisions for the relaunch of the public contracts sector, for the acceleration of infrastructure interventions, urban regeneration and reconstruction following seismic events", was converted into law by Law 14/06/2019, no. 55, published in the Official Gazette of 17/06/2019, no. 140 and in force since 18/06/2019. As known, Decree-Law 32/2019 provides for numerous amendments to the Public Contracts Code, under Legislative Decree 50/2016. The Decree-Law also provides provisions on simplifying the discipline of structural interventions in seismic areas through amendments to the T.U. construction referred to in D.P.R. 380/2001 and on extraordinary commissioners for interventions deemed to be a priority and urban regeneration. **Legislative Decree No. 50/2016 (Codice dei Contratti**) regulates the contracts and concessions of contracting authorities and contracting entities regarding the acquisition of services, supplies, and works, as well as public design contests. **Decree D.M. 49/2018 "work execution schedule"** is the document that the executor, consistently with the time schedule prepared by the contracting authority, with the technical offer submitted during the tender and with the contractual obligations, must submit before the start of the works, in which are graphically represented, for each work, the forecasts about the period of execution as well as the estimated amount, partial and progressive, of the progress of the works at the contractually established deadlines for the settlement of payment certificates. **Decree of the President of the Republic No. 380/2001: Consolidated text of laws and regulations on construction.** D.P.R. n. 380/2001 contains the fundamental and general principles and provisions for the regulation of the building

activity. Provisions on the protection of the cultural and environmental heritage contained in the Legislative Decree of 29 October 1999, n. 490, and other sectoral regulations affecting the regulation of the building activity remain valid.

- Regions exercise their concurrent legislative powers in the field of construction in accordance with the fundamental principles of state legislation inferable from the provisions contained in the Consolidated Act.
- The municipal administrations establish an office called one-stop shop for construction, which takes care of all relations between the private individual, the administration and, where necessary, the other administrations required to pronounce on the building intervention subject of the request for permission or declaration of commencement.
- For the purposes of issuing the building permit or the certificate of agility, the office acquires directly, if the applicant has not already enclosed them:
  a) the opinion of the A.S.L. (Azienda Sanitaria Locale) in the event that a self-certification cannot replace it under *Article 20, paragraph 1*.
  b) the opinion of the fire brigade, where necessary, regarding compliance with fire regulations.
- The office also takes care of the necessary steps for the acquisition, also by means of a conference of services in accordance with *Articles 14, 14-bis, 14-ter, 14-quater* of the law of 7 August 1990, no. 241, of the acts of consent, however denominated, necessary for the purposes of the realisation of the building intervention.

- National regulation related to **power supply and electricity sector regulation**

The Republic of Italy has fully endorsed and is committed to the EC's framework for achieving carbon neutrality by 2050. In December 2019, Italy published its « **Integrated National Plan for Energy and Climate » (INPEC**), with which it established national targets for 2030 on energy efficiency, renewable energy, and for reduction of CO_2 emissions. Italy has recognised the need to transform its energy and transport infrastructure and the need for a sustainable investment in existing buildings and industry. The need for large funds is inevitable; this is why Italy has launched its first Italian Sovereign Green Bond (SGB) in 2021, to help provide further momentum in a market that has been mainly fostered by private firms.

In 2020, the **Plan for the Sustainable Energy Transition of Suitable Areas (PSETSA)** has been adopted by the country. It establishes a framework for plain hydrocarbon exploration and research and production activities. The aim consists of

	improving their environmental, social, and economic sustainability. The supply will be controlled to ensure its compliance with **Security Regulation No. 2017/1938**. **Legislative decree of MISE (Italian Ministry of Economic Development)** of 10 September 2010: guidelines for authorisation of infrastructures powered by renewable energies: The authority to produce electricity from renewable sources is part of the general discipline of electricity production and is a free activity, in compliance with public service obligations, pursuant to *Article 1* of Legislative Decree No 79 of 1999. This activity is accessed on equal terms, without discrimination in its exercise terms, conditions, and terms: • Regions and Autonomous Provinces alone may place limitations and prohibitions in programmatic or planning acts for installing specific types of plants powered by renewable sources and exclusively within the scope and in the manner set forth in *paragraph 17*. • Pursuant to Community and national legislation, public procedures of a concessionary nature may not be called for the production of electricity, which is an economic activity not reserved for public entities and not subject to a private regime. This does not affect the competitive procedures for granting water derivation concessions and for the use of geothermal fluids. • The administrative procedures and technical criteria set forth in these guidelines apply to the procedures for the construction and operation of onshore plants to produce electricity from renewable energy sources on land, for the interventions of modification, strengthening, total or partial renovation and reactivation of the same plants as well as for the related works and infrastructures necessary for the construction and operation of such plants. • These guidelines do not apply to offshore installations for which the Ministry of Infrastructure and Transport issues authorisation, having consulted the Ministry of Economic Development and the Ministry for the Environment and the Protection of the Ministry of Economic Development and the Ministry for the Environment and the Protection of Land and Sea. • In order to facilitate coordination in the authorisation of connection plants, grid operators shall inform the individual Regions every four months about the connection solutions elaborated and then accepted by the proposers in the period of interest, with reference only to plants with nominal power not lower than 200 kW.

	The **National strategic framework for the development of the alternative fuels market in the transport sector and the creation of associated infrastructure** (L.Dc No 257, December 16, 2016) involves the promotion of alternative fuels (electricity, natural gas, and hydrogen) and the establishment of charging stations that can satisfy the country's needs. **Communication COM (2002) 595** of the Italian Commission, which expressly «invites port authorities to consider the possibility of [...] encouraging or facilitating the use by ships of electricity produced on land». One of the goals of the Programme is to achieve levels of air quality that do not result in unacceptable impacts and risks to human health and the environment. Currently, emissions of air pollutants from marine vessels result in such impacts and risks. Another goal of the Programme is to stabilise atmospheric concentrations of greenhouse gases at a level that does not cause unnatural alterations to the Earth's climate. The primary greenhouse gas considered in this strategy is carbon dioxide (CO_2). **Legislative Decree No. 324/1997 and Law No 239/04**. Tax credits when purchasing vehicles powered by LPG or methane or electric vehicles; or for the installation of plants powered by methane or LPG. **Ministerial Decree of 23 June 2016.** Incentives for electricity produced by renewable sources other than photovoltaic. **Law No. 208/2015,** *Articles 1 (149) to (151)*. Incentives for energy produced by plants powered by sustainable biomass, biogas and bioliquids. Communication favourably received by the European Parliament with **Resolution A5-400 / 2003** of 10 November 2003 which, as part of a Union strategy to reduce atmospheric emissions from seagoing ships, even considers it necessary to improve and expand the measures recommended by the Commission. **Directive 2014/94/EU** provides partially different, of the "construction of an infrastructure for alternative fuels", and of the "supply of electricity for transport" - that "the Member States shall ensure that the need for electricity supply along the coasts for inland waterway vessels and seagoing ships in seaports and inland ports is assessed in their national strategic frameworks. Such electricity supply along the coasts is installed, by 31 December 2025, as a priority in the ports of the TEN-T core network, and in other ports, unless there is no demand and the costs are out of proportion to the benefits, including the environmental benefits ". In relation to this Directive, **Legislative Decree 257/2016** introduces the so-called "National Strategic Framework" aimed at reducing dependence on oil and reducing environmental impact

	in the transport sector (*Articles 1 and 3*). This National Framework called to evaluate, among other things, "the need to electricity supply to the mooring infrastructures in seaports and inland ports "against the provision, similar to that contained in *Articles 4, paragraph 5* of the Directive, for which the supply of electricity along the coasts "shall be installed as a priority in ports of the TEN-T Core Network, and in other ports, by 31 December 2025, unless there is no demand and the costs are disproportionate to the benefits, including environmental benefits". **National Strategic Plan for Port and Logistics** adopted with D.P.C.M. of 26 August 2015, which expressly refers to the electrification of cold-ironing quays as a suitable measure to reduce greenhouse gas emissions and favour the improvement of environmental performance. Guidelines approved by the Italian Ministry of Infrastructure and Transport in March 2017 for the drafting of the port system regulatory plans, where cold ironing is also indicated as a tool aimed at achieving energy-environmental improvement objectives. In October 2021, the European Commission published a Proposal for a Council implementing decision authorising Italy to apply a reduced rate of taxation to electricity directly supplied to vessels, other than private pleasure craft, at berth in a port; under *Article 19* of Directive 2003/96/EC. "This Decision shall apply from 18 October 2021 until 17 October 2027. However, should the Council, acting on the basis of *Article 113* or any other relevant provision of the Treaty on the Functioning of the European Union, provide for general rules on tax advantages for shore-side electricity, this Decision shall cease to apply on the day on which those general rules become applicable." **A national plan on cold ironing** is expected to be soon published. The company that manages the national electricity grid has conducted numerous studies in more than 35 Italian ports and has concluded that the development interventions completed in recent years make it possible to meet the energy needs required for the electrification of the ports. MIMS (Italian Ministry of Sustainable Infrastructure and Mobility) decided to allocate EUR 2.8 billion for the program of infrastructural interventions in the port area. EUR 326 million have been reserved for interventions in Southern regions and EUR 349 million for those in central-northern regions. An essential share of the funds awarded by MIMS will be used to build new electrical systems at the ports: for example, Palermo (EUR 32 million) and Termini Imerese (EUR 6 million). In Porto Torres the resources will be used to create an electricity supply system for parked ships (EUR 12.7 million) and in Santa Teresa di Gallura (EUR 500,000). Furthermore, Ravenna will build a cold ironing station to serve the cruise terminal in Porto Corsini, while La Spezia collected EUR 12.5 million to build cold ironing infrastructures at the docks at the service of the merchant sector.

	National Recovery and Resilience Plan (PNRR). Italy's Recovery and Resilience Plan is the largest national plan under the unprecedented EU response to the crisis triggered by the coronavirus pandemic. Italy has decided to use its entire national allocation under the Recovery and Resilience Facility (RRF), including its loan component. The provision also implements the reform envisaged by the National Recovery and Resilience Plan (PNRR) on simplifying the authorization procedures for onshore power supply facilities. It allows the Ministry of Sustainable Infrastructures and Mobility to reach another of the three goals in advance of the reforms envisaged in the Plan for the fourth quarter of 2022. The planned investments for the electrification of the quays, equal to 700 million euros, are financed by the Complementary National Plan (NCP). - National regulation related to **environmental impact, noise pollution, etc.** **Decree Law No. 77 of 31 March 2021** (Decree on acceleration and streamlining of procedures) converted with amendments by Law no. 108 of 29 July 2021. For the purposes of this decree and its implementation, the national interest in the prompt and punctual implementation of the interventions included in the plans referred to in *paragraph 1* is of paramount importance, in full compliance with the standards and priorities of the European Union in terms of climate and environment. The provisions contained in the decree, as directly implementing the obligations assumed in execution of Regulation (EU) 2021/241, are adopted in the exercise of exclusive legislative competence in the field of relations between the State and the European Union referred to in *Article 117, second paragraph, letter a*) of the Constitution and define, pursuant to *Article 117, second paragraph, letter m*) of the Constitution, the exclusive competence of the State, essential levels of services concerning civil and social rights that must be guaranteed throughout the national territory. The **National Strategy for Sustainable Development (SNSvS**) was approved on 22 December 2017. It points out the vision and development for the future, focusing on sustainability. The four core principles are integration, transformation, universality, and inclusion. It is split in five areas: people, planet, prosperity, peace and partnership. Furthermore, it lays down the basis for a new circular economic model, characterised by low CO_2 emissions and fight towards climate change.

	The **Action plan for environmental sustainability of consumption in the public administrative sector** (PAN GPP) developed three environmental objectives: reducing greenhouse gas emissions, reducing hazardous chemicals, and recycling and reusing materials. **Legislative Decree 152/2006 (Environmental Code).** This legislative decree regulates, in implementation of Law No. 308 of 15 December 2004, the following matters: • Procedures for strategic environmental assessment (SEA), environmental impact assessment (EIA) and integrated environmental authorisation (IPPC). • Defence of the soil and the fight against desertification, the protection of water from pollution and the management of water resources. • Waste management and reclamation of contaminated sites. • Protection of air and reduction of emissions into the atmosphere. • Protection of compensation for environmental damage. Its primary objective is to promote the quality of human life, to be achieved by safeguarding and improving environmental conditions and the prudent and rational use of natural resources. For these purposes, the decree provides for the reorganisation, coordination and integration of the legislative provisions on the subjects, in conformity with the principles and directive criteria and in respect of international obligations, the Community system and the powers of the regions and local authorities. The provisions of this decree are implemented within the framework of the human, instrumental and financial resources provided for by current legislation and without new or greater burdens on the public finances. The protection of the environment and natural ecosystems and cultural heritage must be guaranteed by all public and private bodies through adequate action that is informed by the principles of precaution, preventive action, correction, as a priority at the source, of the damage caused to the environment, as well as by the "polluter pays" principle that regulate the community policy in environmental matters. Any human activity legally relevant under this Code shall comply with the principle of sustainable development to ensure that the satisfaction of the needs of present generations cannot compromise the quality of life and possibilities of future generations. The activity of the public administration must be finalised to allow the best possible implementation of the

	principle of sustainable development, so that in the comparative choice of public and private interests characterised by discretion, the interests of environmental protection and cultural heritage must be given priority consideration. **Legislative Decree No. 42/2004 (Code of cultural heritage and landscape).** In implementation of *Article 9* of the Constitution, the Republic protects and enhances the cultural heritage in accordance with the powers referred to in Article 117 of the Constitution and according to the provisions of this Code. The protection and enhancement of cultural heritage contribute to preserving the national community's memory and its territory and promoting the development of culture. The State, the regions, the metropolitan cities, the provinces and the municipalities ensure and support the preservation of cultural heritage and promote its public fruition and valorisation. In carrying out their activities, the other public entities ensure the preservation and public enjoyment of their cultural heritage. Private owners, possessors or holders of assets belonging to the cultural heritage, including civilly recognised ecclesiastical bodies, are required to ensure their preservation. **Legislative Decree No. 155/2010 (Implementation of Directive 2008/50/EC on ambient air quality and cleaner air for Europe):** This decree implements Directive 2008/50/EC and replaces the implementing provisions of directive 2004/107/EC, establishing a unitary regulatory framework for the assessment and management of ambient air quality aimed at: ○ Identifying ambient air quality objectives aimed at avoiding, preventing, or reducing harmful effects on human health and the environment. ○ Assessing ambient air quality on the basis of common methods and criteria throughout the national territory. ○ Obtaining information on ambient air quality as a basis for identifying measures to be taken to combat pollution and the harmful effects of pollution on human health and the environment and for monitoring long-term trends and improvements due to measures taken. ○ Maintaining ambient air quality where it is good and improve it in other cases. ○ Providing the public with information on ambient air quality. ○ Achieving better cooperation among the States of the European Union on air pollution.

	This decree establishes: ○ The limit values for concentrations in ambient air of sulphur dioxide, nitrogen dioxide, benzene, carbon monoxide, lead and PM_{10}. ○ Critical levels for concentrations of sulphur dioxide and oxides of nitrogen in ambient air. ○ Alert thresholds for concentrations of sulphur dioxide and nitrogen dioxide in ambient air; and ○ The limit value, target value, exposure concentration obligation, and national exposure reduction target for ambient air concentrations of $PM_{2.5}$. ○ Target values for ambient air concentrations of arsenic, cadmium, nickel, and benzopyrene. - National regulation related to **industrial installations, especially electricity transmission and distribution facilities** **Regulation Construction Products Regulation EU 305/2011 (Harmonised conditions for the marketing of construction products).** The CPR Construction Products Regulation (EU) 305/2011, provides further clarification of the concepts and use of CE marking; it introduces simplified procedures that will reduce the costs incurred by companies, especially Small and Medium Enterprises (SMEs). The Declaration of Performance (DoP) is the key concept of the Construction Products Regulation (CPR). The DoP gives the manufacturer the opportunity to provide information regarding the essential characteristics of the product he wants to place on the market. The manufacturer draws up the DoP when a product: 1. is covered by a harmonised standard (EN) or 2. a European Technical Assessment, issued by a Technical Assessment Body (TAB), and can place the product on the market. As in Directive 89/106/EC, the Regulation foresees the implementation of a Factory Production Control (FPC) System according to the foreseen Attestation System: 1/1+/2+/3/4. The Factory Production Control System (FPC) must be set up in accordance with the EN ISO 9000 standard and sometimes certified by a Notified Body (NoBo). It should be noted that EN ISO 9000 certification of the manufacturer is not mandatory. According to the Regulations, "Factory Production Control" (FPC) means the manufacturer's permanent internal control of production. All elements, requirements and provisions adopted by the manufacturer must be documented systematically in the form of written procedures. This documentation of the Production Control System

	must ensure a common understanding of quality assurance and enable the required characteristics of a product to be obtained as well as monitoring that the production control system is operating effectively. Procedures for assessing conformity of the Manufacturing Control System are set out in harmonised product standards. - National regulation related to **safety and security measures, including occupational risks prevention** **Legislative Decree No. 159/2011 (anti-mafia).** The measures provided for in this chapter shall apply to: a) those who should be considered, on the basis of factual elements, habitually engaged in criminal trafficking. b) those who for their conduct and standard of living must be considered, on the basis of factual elements, to be habitually living, even in part, on the proceeds of criminal activities. c) those who for their behaviour should be considered, on the basis of factual elements, including repeated violations of the compulsory travel warrant referred to in *Article 2*, as well as the prohibitions on frequenting certain places provided by current legislation, who are dedicated to the commission of crimes that offend or endanger the physical or moral integrity of minors, health, safety or public safety. Suppose the persons indicated in *Article 1* are dangerous to public safety and are outside their places of residence. In that case, the police commissioner may send them back by means of a reasoned order and a compulsory travel warrant, prohibiting them from returning, without prior authorisation or for a period not exceeding three years, to the municipality from which they have been removed. **Law No. 2248/1865**, *Attachment F, in the parts not abrogated*. Without a mandate or license from the administration, no one may do any work or deposit, even temporary, on the roads, nor alter their shape or encroach on their soil. It is also forbidden to do anything that may damage the road, the related works, as well as the plantations belonging to the road itself. It is forbidden for anyone to obstruct the free flow of water in the ditches at the side of the road and establish hemp or linen mills in them. It is also forbidden to impede the free flow of water discharging from the streets onto lower land. For branches of other roads from the national or provincial roads, as well as for access from these to lateral lands and buildings, the Provinces, the Municipalities or the owners concerned must build and maintain appropriate bridges over the side ditches, without altering the section of the roads, nor their road surface, and conforming to the rules to be prescribed by the prefect or the provincial deputation, from which a license must be obtained beforehand. It

	is forbidden to discharge into the ditches of the roads and to lead water of any kind into them, except for acquired rights and regular concessions. • Owners and users of artificial canals existing laterally or in contact with the roads are obliged to prevent the expansion of water on the roads and any damage to the road and its appurtenances. • Owners must keep the banks of the funds on the sides of the road in such a state as to prevent the land from sliding down and obstructing the ditches and the road surface. • In the crossroads of the inhabited areas, the ground of the roads cannot be encumbered under any pretext whatsoever, neither during the day nor at night, except for temporary occupation for the exercise of commerce and other public use, with the permission of the competent authority. • For canals, ditches and any excavation carried out in the lateral lands, the distance must be at least equal to their depth, starting from the outermost edge of the road ditch or gutter, where these exist, or from the edge of the earthworks if the road is in a trench, or from the foot of the shoe, if the road is on an embankment. • No one may obstruct or discharge water or carry out any work which may jeopardise the free passage over the neighbouring networks or alter their shape. Violators will be obliged to pay compensation for damages and restore things to their original state. **Legislative Decree No. 81/2008** (Testo unico per la sicurezza). The purpose of the law was to establish rules, procedures, and preventive measures to be taken to make workplaces, whatever they may be, safer. The objective is to avoid or in any case minimise the exposure of workers to risks related to the work activity to avoid injuries or accidents or, worse, contract an occupational disease. Therefore, to summarise "occupational safety is the condition of making all those who work, carry out their work safely, without exposing them to the risk of accidents or occupational diseases". The fundamental text that deals with the regulation of safety at work is the Consolidated Act on health and safety. **Decree of the President of the Republic No. 302/1956**. The rules for the prevention of accidents at work contained in this decree are supplementary to the general rules issued by the **Decree of the President of the Republic of 27 April 1955, No. 547**. Companies that provide for the manufacture, handling, recovery, storage, distribution, transport or use of explosives must apply the rules of this title. The individual operations for the manufacture and handling of explosives must normally be carried out in separate and isolated laboratories in relation to their dangerousness. Workers

	who carry out operations presenting specific risks must be protected by means and equipment designed to safeguard their physical integrity, and in particular: (a) by defending individual workplaces and workers with safety screens and by adopting devices designed to reduce danger. b) by adopting devices of known effectiveness that allow work to be carried out at a safe distance. c) by carrying out blind or remote working, controlled from safety positions, in the case of more dangerous work such as the milling of explosives, the disassembly and cutting of bullets, the mechanical drilling and grinding. **Law No. 1086/1971**. Concrete works are considered those composed of a complex of concrete structures and reinforcements that perform a static function. Pre-stressed reinforced concrete works are considered those composed of concrete structures and reinforcements in which a state of the additional stress of such nature and magnitude as to permanently ensure the desired static effect is artificially imparted. Metal-framed works are considered those in which the static is ensured in whole or in part by structural elements made of steel or other metals. The construction of the works referred to in the preceding paragraphs must take place in such a way as to ensure the perfect stability and safety of the structures and to avoid any danger to public safety. 1. The construction of the works must take place based on an executive project drawn up by an engineer or architect or surveyor or industrial construction expert registered in the relevant register, within the limits of their respective competencies. 2. The execution of the works must take place under the direction of an engineer or architect, or surveyor or industrial construction expert registered in the relevant register, within the limits of their respective competencies. 3. For works carried out on behalf of the State, the registration in the register of the designer, the director of works and the inspector is not required, if these are State engineers or architects. • At construction sites, from the day of commencement of the works referred to in *Article 1* to the day of completion of the works, the acts indicated in the *third and fourth paragraphs* of *Article 4* must be kept, dated and signed also by the builder and the director of works, as well as a special work log. • The construction manager is responsible for preserving and properly keeping these documents. The construction manager is also required to visit the construction logbook periodically, and in particular during the most important phases of execution.

	• Upon completion of the structures, within the term of 60 days, the director of works shall file with the civil engineer a report, in duplicate, on the fulfilment of the obligations under *Article 4*. **Regulation 64/1974: Provisions for constructions with special requirements for seismic zones.** In all the municipalities of the Republic, both public and private constructions must be realised in observance of the technical norms regarding the various constitutive elements that will be fixed by successive decrees of the Minister of Public Works, in concert with the Minister of the Interior, after consultation with the Higher Council of Public Works, which will also avail itself of the collaboration of the National Research Council. These decrees shall be issued within one year of the coming into force of the present law. • These norms will deal with the following topics: a) General technical-constructive criteria for the design, execution and testing of masonry buildings and for their consolidation. b) Loads and overloads and their combinations, also according to the type and method of construction and the destination of the work, general criteria for the verification of safety of constructions. c) Investigations on soils and rocks, stability of natural slopes and escarpments, general criteria and technical specifications for the design, execution and testing of earth support works and foundation works. d) General criteria and technical specifications for the design, execution and testing of special works, such as bridges, dams, reservoirs, pipes, towers, prefabricated buildings in general, aqueducts, sewers. e) Protection of constructions from fire. • If construction systems other than those in masonry or with load-bearing frame in normal and prestressed reinforced concrete, steel or combined systems of the above materials are used, for buildings with four or more floors within and above ground, the suitability of such systems must be demonstrated by a statement issued by the President of the Higher Council of Public Works on the advice of the same Council. **Ministerial Decree of 17 January 2018 on the Update of the Technical Standards for Construction.** Within the scope of application of Legislative Decree of 18 April 2016, No. 50, for public works or public utility works in progress, for public works contracts already entrusted, as well as for final or executive projects already entrusted before the date of entry into force of the technical standards for construction, it is possible to continue to apply the previous technical standards for construction until the completion of works and static testing of the same. With reference to the second

	and third cases of the previous period, this option can be exercised only in the event that the delivery of the works takes place within five years from the date of entry into force of the technical standards for construction. With reference to the third case mentioned above, this option can only be exercised in the case of projects drawn up in accordance with the technical standards referred to in Ministerial Decree of 14 January 2008. **Law of 22 February 2001, No. 36: Framework law on protection from exposure to electric, magnetic and electromagnetic fields** The purpose of this law is to dictate the fundamental principles aimed at: • Ensuring the protection of the health of workers, female workers and the population from the effects of exposure to certain levels of electric, magnetic and electromagnetic fields pursuant to and in accordance with Article 32 of the Constitution. • Promoting scientific research for the assessment of long-term effects and to activate precautionary measures to be adopted in application of the precautionary principle referred to in Article 174, paragraph 2, of the Treaty establishing the European Union. • Ensuring the protection of the environment and the landscape and promote technological innovation and remediation actions aimed at minimising the intensity and effects of electric, magnetic and electromagnetic fields according to the best available technologies. The purpose of this law is to cover installations, systems, and equipment for civil, military and police purposes, which may involve the exposure of workers and the general public to electric, magnetic and electromagnetic fields with frequencies between 0 Hz and 300 GHz. In particular, this law applies to power lines and radioelectric installations, including mobile telephone, radar and broadcasting installations. The competences regarding the safety and health of workers attributed by the provisions in force to the health and technical services set up for the Armed Forces and the Police Force remain valid; the aforesaid services are also competent for the reserved or operative areas and for those with similar needs identified by the decree referred to in *paragraph 3*.

	The State shall exercise the functions relating to: • To the determination of exposure limits, attention values and quality objectives, as field values as defined by Article 3, paragraph 1, letter d), number 2), in view of the pre-eminent national interest in the definition of unitary criteria and homogeneous regulations in relation to the purposes referred to in Article 1. • The promotion of research activities and technical-scientific experimentation, as well as the coordination of the activity of collection, processing and dissemination of data, informing the Parliament annually on this activity; in particular, the Minister of Health promotes, using public and private non-profit institutions, with proven experience in the scientific field, a multi-year program of epidemiological research and experimental carcinogenesis, in order to investigate the risks related to exposure to electromagnetic fields at low and high frequency; • The establishment of the national register of fixed and mobile sources of electric, magnetic and electromagnetic fields and of the territorial areas involved, in order to detect the levels of field present in the environment. • To the determination of the criteria for the elaboration of the plans of recovery of which to Article 9, codicil 2, with particular reference to the priorities of intervention, to the times of realisation and the modalities of coordination of the activities concerning more regions as well as to the best available technologies as it regards the implications of economic character and plant engineering. • The identification of techniques for the measurement and detection of electromagnetic pollution. • The realisation of program agreements with the managers of power lines or with the owners of the same or of the transmission networks or with those who have the availability anyway as well as with the operators of radio and television broadcasting and mobile telephony plants, in order to promote technologies and techniques of construction of the plants that allow to minimise the emissions in the environment and to protect the landscape. • The definition of the routes of power lines with a voltage higher than 150 kV. • The determination of the parameters for the provision of buffer strips for power lines; within these buffer strips is not allowed any use of buildings for residential, educational, health or use that involves a stay of not less than four hours.

Description of **REGIONAL** regulations directly or indirectly affecting the OPS implementation	**ANCONA:** **Environmental Energy Plan (PEAR 2020).** PEAR identifies the planning and policy lines of the environmental energy policy in the region. The 3-priority axis of the strategy are: • Energy-saving and energy efficiency: mainly focused on the building sector. For the transport, agriculture and industrial sectors, the focus is on measures to improve the energy efficiency of the productive processes and of the networks through the support to the companies to start technological and innovative requalification process. • Balanced diversification of energy sources: achieved through incentives in the production of heat energy from biomasses, solar thermal • Energy production balance and distributed generation: the aim here is to insist on cogeneration and district heating; pursuing the balance between production and consumption of electric energy is not considered an objective of the strategy. **Regional Law of 6 June 1988 No. 19 (Regulation on works concerning electrical lines and installations up to 150,000 volts).** It regulates the functions transferred to the Region regarding transportation, transformation, and distribution of electrical energy. These should not exceed 150,000 volts. **Regional Law of 20 April 2015 No. 17 (Reorganisation and simplification of regional legislation on construction).** The Region of Marche regulates the building activity to simplify and accelerate procedures and promote raising the quality level of works and interventions through digitalisation to protect citizens' welfare and the economic and technological development of the involved productive sectors. Marche Region dictates norms to enable homogenisation of contents related to building regulations and for the coordination of the procedures. This allows citizens to access information the activities and guarantees uniform behaviours from the local agencies and effectiveness and rapidity of the controls on the territory's transformations. **Regional Law of 4 January 2018 No. 1 (New standards for construction in seismic areas in the Marche Region).** This regulation aims at safeguarding public safety by providing provisions regarding the reorganisation of functions in seismic matters, the reorganisation of the competent technical structures, the contribution of territorial and urban planning instruments to the reduction of seismic risk, the modalities of exercising vigilance over works and constructions.

	Regional Law of 5 August 1992 No. 34 (Norm on town planning, landscape and land use planning). This law regulates the articulation of administrative functions in urban planning, landscape and land use among the Marche Region, provinces, and municipalities, also determining the relative objectives and instruments. It defines: • Attribution to provinces of functions related to urban planning in accordance with the provisions of paragraph 5 of Article 15 of Law No. 142 of 8 June 1990. • Attribution to municipalities of functions regarding the approval of the implementation plans of the general urban planning instruments. • Delegation to municipalities and provinces of the functions related to the protection of the natural environment, as per law no. 1497 of 29 June 1939 and law no. 431 of 8 August 1985. **Council Resolution No. 116 of 9 December 2014 (Zoning and classification of the regional territory for the purposes of assessing ambient air quality - Legislative Decree no. 155/2010 Articles 3 and 4).** Legislative Decree No. 155 of 13 August 2010 "Implementation of Directive 2008/50/EC on environmental air quality and cleaner air for Europe" establishes that the entire national territory has to divide into zones classified to assess ambient air quality. The Marche Region has approved the project of zoning and classification of the regional territory for the purposes of assessing ambient air quality according to Legislative Decree 155/2010, *Articles 3 and 4*, with Council Resolution No. 116 of 9 December 2014, published in the Official Bulletin No. 118 of 24 December 2014. **Regional Law of 9 May 2019, No. 11 (Provisions on Environmental Impact Assessment (EIA)).** In compliance with European and state regulations, this law: • Regulates the organisation and methods of exercising the administrative functions in the field of Environmental Impact Assessment (EIA) attributed to the Region by Title III of Part Two of Legislative Decree 152/2006. • Confers some functions to the provinces. • Establishes further rules for the simplification of the procedures, for the modalities of consultation of the public and of all the public subjects potentially interested and for the coordination of the measures and authorisations of regional and local competence. • Establishes the destination of the proceeds deriving from the application of administrative pecuniary sanctions.

	Regional Law of 25 May 1999 No. 13 (Regional regulation of soil conservation). The region aims at ensuring the defence of soil, the rehabilitation of water, the use and management of water resources for rational economic and social development and the protection of related environmental aspects. The Region connects the activity of soil defence activity with the programming and territorial planning tools and the sectoral programming tools. Thus, the Region, the Basin Authority, the dependent bodies, and the local bodies carry out the appropriate actions of the cognitive character, programming, and planning of the implementation interventions according to articles 2 and 3 of Law 183/1989. **Regional Law of 12 October 2009 No. 24 (Regional regulations on integrated waste management and reclamation of polluted sites).** This law regulates the integrated management of waste, safety, remediation, and environmental restoration of polluted sites in the region to ensure safeguarding and protection of public health, natural values, environment, and landscape and to: • Prevent waste production and reduce its dangerousness. • Strengthen and facilitate the collection of solid urban waste, of assimilated waste, adopting door-to-door collection systems. • Promote and support activities of reuse, recycling and recovery of urban and special waste, and any other action aimed at obtaining secondary raw materials from them. • Encourage the development of the application of new plant technologies with low environmental impact that enable saving of natural resources. • Reduce the movement of waste through disposal in the appropriate facilities, close to the place of production, using methods and technologies that ensure a high degree of protection of health and the environment • Encourage the reduction of undifferentiated disposal. • Encourage the information and participation of citizens, through appropriate forms of communication. • Encourage the elimination of sources of pollution and the reduction of concentrations of pollutants in the soil, subsoil, and groundwater. • Promote product and packaging design by companies to reduce the creation of non-recyclable waste, intervening through suitable forms of economic and/or fiscal incentives. Region ensures the disposal of non-hazardous urban waste within the regional territory, with progressive self-sufficiency within the optimal territorial ambits (ATO) mentioned in article 200 of Legislative Decree 152/2006. For the remaining

	types of waste, the principle of the proximity of the place of production to that of disposal is applied, taking into account the geographical context, any environmental crisis conditions or the need for specialised plants. **Regional Law of 14 November 2001, No. 28 (Norm for the protection of the outdoor and living environment from noise pollution in the Marche Region.** In implementing the contents and provisions of the law of 26 October 1995, the Marche Region, No. 447 "Framework law on noise pollution" lays down rules for protecting the outdoor and living environment from noise pollution and improving the quality of life. **Decret of the Regional Government No. 1312 of 3 October 2011 (Simplification of administrative action on energy from renewable sources: guidelines for the coordination of the single regional authorisation procedure with the EIA procedures and with the water derivation concession procedure in the case of hydroelectric plants).** The regional council resolves to approve the guidelines for administrative simplification set out in attachment A, to be considered an integral part of this resolution, as a further supplement to the resolution of the regional council of 8 March 2011, No. 255. **VENICE & TRIESTE:** **2030: The Regional Strategy for the sustainable development** **Regional Plan 2007-2013 Priority Axis 2 Energy – Renewable energy production** **Regional Energy Plan – Energy saving – Energy efficiency (P.E.R.F.E.R.)**

Description of **LOCAL** regulations directly or indirectly affecting the OPS implementation	**ANCONA:** **DM LL.PP. (i.e. Decreto del Ministero dei Lavori Pubblici – Decree of the Ministry of Public Works) n. 1604 (1988).** It establishes the structure of the main offshore protection works, as well as port infrastructures, identifying their functions. The plan aims to adapt the port to the flow of goods through the enlargement of the port areas and the

	improvement and accessibility from land and sea, the optimisation of the existing spaces, their development and requalification and specialisation to match with the changing market trends. **Masterplan of Ancona Municipality.** The masterplan of Ancona Municipality is the urban planning tool that locates the services and infrastructures intended for the generality of citizens and divides the municipal territory into homogeneous areas in terms of characteristics and urban planning forecasts. Any physical intervention on the Ancona Municipality must be in line with this planning tool. The document foresees that the realisation of works for the energy saving and transformation of energy are allowed in the territory of Ancona municipality. The document is the planning tool still in force for the realisation of any work related to the quays and to the functions of the areas of the port. However, it does not foresee any requirements concerning the environmental and energy aspects. **Masterplan of the ports 'system**, including the ports of Ancona-Falconara, Pesaro, San Benedetto del Tronto, Ortona and Pescara (under development). The Masterplan of the ports' system will include the DEASP – Documento di Pianificazione energetico ambientale dei sistemi portuali – Document of energy and environmental planning of ports' system. The objective of the DEASP is to define strategic priorities for implementing specific measures aimed at improving energy efficiency and promoting the use of renewables in the port domain. **VENICE & CHIOGGIA:** The Port Authority, the municipality and Veneto Region are ruled by a number of regulations and agreements to maintain and improve the environmental sustainability of port/urban operations. The below-listed regulations are thus indirectly linked to OPS for the case of Venice. • Port Planning Scheme – planned interventions for air quality and energy efficiency • ISO 14001 Managing System and Certification – Integrated Environmental Policy • Blue Flag voluntary Agreement • Port Infrastructures Master Plan (being updated) • Port Master Plan for OPS (potential scenarios to be awarded) • Sustainable Energy Action Plan (PAES - Piano di Azione per l'Energia Sostenibile) • Municipality Master Plan (Piano di assetto del territorio L. 11/2004)

	• Public Lightning Plan to reduce light pollution (Piano dell'illuminazione per il contenimento dell'Inquinamento luminoso L.R. 17/2009 P.I.C.I.L.) **TRIESTE & MONFALCONE:** On 8 April 2016, a report was published in *Informare*, which stated that the Region of Friuli Venezia Giulia decided to provide financial support for the implementation of intermodal rail services in Trieste's port. The government has allocated EUR 2 million to the port administration for this purpose.

4.1.4 Romanian Ports

Description of **NATIONAL** regulation directly or indirectly affecting the OPS implementation	- National regulation related to **ports structure and administrative issues** (such as contracting power supply, infrastructure works etc.) • Order of the President of the National Energy Regulatory Authority no. 213/2020 on amending and supplementing the Regulation to calculate and settle energy imbalances. • Law No. 357/2005 on commodity exchanges establishes the manner of establishment, organisation, and operation of commodity exchanges. • Law No. 126/2018 on the markets of financial instruments. • Law No. 24/2017 on issuers of financial instruments and market operations. • Law No. 98/2016 on public procurement National Authority of Public Acquisitions. • Government Decision No. 395/2016 for the approval of the Methodological Norms for the application of the provisions regarding the award of the public procurement contract / framework agreement from Law no. 98/2016 on public procurement. • Law No. 99/2016 on sectoral procurement. • Government Decision No. 394/2016 for the approval of the Methodological Norms to apply the provisions regarding the award of the sectoral procurement contract / framework agreement from Law No. 99/2016 on sectoral procurement. • Romanian General Master Plan for Transport (Government Decision 666/2016). - National regulation related to **power supply and electricity sector regulation** The regulatory activity of the National Regulatory Authority in the field of Energy (ANRE) is carried out based on Law No. 123/2012 of electricity and natural gas in the field of Energy and transposed into the national legislation the provisions of the legislative package of the European Union regarding the internal energy market.

	• Order No. 235 of 20 December 2019 for the approval of the Regulation for the supply of electricity to final customers. • Order No. 103/2015 – the CODE for measuring electricity. • Order No. 85 / 30 June 2021 regarding amending and supplementing the Order of the President of the National Energy Regulatory Authority No. 74/2014 for the approval of the framework-content of the technical approvals for connection. • Order No. 83 / 30 June 2021 approving the Performance Standard for the activity of electricity / natural gas supply. • The Romanian Law No. 34/2017 on the deployment of alternative fuel infrastructure, published in the Official Gazette, Part I No. 214 of 29/03/2017* The Law *transposes art. 1 and 2, art. 3 alin. (1) -8), art. 4 alin. (1) – (12), art. 5 alin. (1) and (2), art. 6 alin. (1) – (4) and alin. (6) – (9), art. 7 alin. (1) – (3), art. 10 alin. (1), art. 11 alin. (1), annex I and annex II from* ***EU Directive 2014/94/EC.*** Section 1 of the law (Supply of electricity for transport) provides to *Article 1 (6):* The need for electricity supply from the shore, from seaports and from inland ports, for inland waterway vessels and seagoing vessels, is assessed in the National Policy Framework to develop the alternative fuels market. The shore-side electricity supply shall be installed as a matter of priority in the ports of the trans-European transmission network (TEN-T) and in other ports by 31 December 2025, unless there is no demand or where the costs are disproportionate to the benefits, including environmental benefits. For maritime transport, the power supply installations from the shore, built or renewed starting with 18 November 2017, complies with the technical specifications provided in point 1.7 of *Annex No. 2.* *Point 1.7. Annex No. 2* stipulate that the shore-side power supply for seagoing vessels, including system design, installation, and testing, shall comply with the technical specifications of IEC / ISO / IEEE 80005-1. The **Romanian Government Decision No. 87/2018, *published in The Official Gazette, Part I No. 225 from 13 March 2018**.** The decision transposes art 7 alin. (7) from **EU Directive 2014/94/EC.** The Decision approves **the Strategy on the National Policy Framework** for the development of the market regarding alternative fuels in the transport sector and for the installation of the relevant infrastructure in Romania and the establishment of the Interministerial Coordinating Council for the development of the market for alternative fuels. The purpose of this document is to support the development of alternative fuels infrastructure in Romania so that all relevant modes of transport, methods and technologies can be used indiscriminately under their efficiency, applicability,

	and cost-effectiveness to ensure a transport system with a high degree of continuity and minimal impact on the environment and public health, both in urban areas and along with interurban infrastructure and European road, sea, and air transport networks. - National regulation related to **environmental impact, noise pollution, etc:** **The Romanian Government Decision no. 346/2016 on limiting the sulphur content of liquid fuels, Published in The Official Gazette Part I 369 from 13/05/2016*.** The Decision transposes **EU Directive 2005/33/EC**, amending Directive 1999/32/EC, as regards the sulphur content of marine fuels. *Article 10* of this decision stipulates that: (1) The seagoing ships berthed in the Romanian ports have an obligation to use only marine fuels with a sulphur content not exceeding 0.10% by mass. The provisions of par. (1) do not apply to ships on berth, with their engines stopped and receiving electricity from the shore. **Law No. 104/2011 on ambient air quality,** published in The Official Gazette Part I 452 from 28/06/2011*. The Law transposes **EU Directive 2008/50/EC** (on ambient air quality and cleaner air for Europe) and EU Directive 2004/107/EC (relating to arsenic, cadmium, mercury, nickel, and polycyclic aromatic hydrocarbons in ambient air). This law aims to maintain the ambient air quality through regulation measures in order to protect human health and the environment. Territorial public authorities are obliged to draw up "Air quality plans'' taking into account the emissions released into the air by the means of road, rail, sea and air transport, non - road mobile equipment equipped with internal combustion engines. The **Romanian Government Decision no. 635/2011, amending Decision no 1105/2007 to enforce provisions of IMO MARPOL 73/78 – Annex VI -Regulations for the prevention of air pollution from ships**, published in The Official Gazette, part I no 525 din 26/07/2011*. The Decision approves methodological norms to implement provisions of **Annex VI – Marpol 73/78** – Regulations for prevention of air pollution from ships. The Romanian Naval Authority is the institution responsible for fulfilling the obligations incumbent on the Romanian state according to this convention.

	Romanian Government Decision No. 1076/2004 on establishing the procedure for assessment of the effects of certain plans and programmes on the environment, published in The Official Gazette, part I no 707/ 05.08.2004* The Decision transposes **EU Directive 2001/42/EC.** The Decision sets up the environmental assessment procedure of certain plans and programmes. It: Establishes the regulatory and procedural steps of the environmental assessment for plans and programs. • Provides arrangements for public information and participation in environmental assessment procedure. • Presents the particularities of the procedure for those plans / programs with significant potential environmental impacts in a transboundary context. The government decision also presents the criteria for determining the potentially significant environmental effects (Annex no. 1 of GD 1076/2004) and the framework content of the Environmental Report (Annex no. 2 of the GD 1076/2004). The environmental assessment procedure ends with the issuance of the environmental permit. The Master Plan of Constanta Port was the subject of this environmental assessment. The Environment Protection Agency Constanta leads the procedure to environmental assessment. **Law No. 292/2018 on the assessment of the effects of the certain public and private projects on the *environment, published in the official Gazette, part I no 1043/ 12/08/2018*.** The law transposes **EU Directive 2014/52/EU**, amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. It regulates the environmental impact assessment of **public and private projects,** which are likely to have significant effects on the environment. According to *Article 6* (1), the environmental impact assessment procedure is led by the public central or territorial authorities for environmental protection, with the participation of the central public or local authorities, as applicable, who have specific assignments and responsibilities in the environmental protection field. For the purposes of this law, the terms and expressions below have the following meanings: **Environmental impact assessment is a process that consists of:** 1. Preparing the environmental impact assessment report by the developer, as set out by *Articles 10 and 11*. 2. Carrying out the consultations, as set out by *Articles 6, 15 and 16* and as applicable, *Article 17*.

	3. Examination by the competent authority of information presented in the environmental impact assessment report and any additional information provided, as applicable, by the developer according to *Article 12*, and any relevant information obtained from the consultations set out by point 2. 4. Presentation of the reasoned conclusion by the competent authority regarding the significant impact of the project on the environment, taking into account the examination results set out by point 3 and as applicable, by its own supplementary examination. 5. Inclusion of reasoned conclusion by competent authority in any of the decisions set out by *Article 18 paragraphs (8) and (9)*. **Environmental agreement** is the administrative act issued by the competent authority for environmental protection which establishes the conditions and measures for environmental protection, which must be respected when a project is accomplished. **Environmental impact assessment report** – document which contains the information provided by the developer, according to the provisions of *Article 11 and Article 13 paragraph (2) and (3)*. According to *Article 4 (1),* the environmental impact assessment procedure set out by Annex No. 5 is part of the procedure for issuing **development consent**. *Article 8 (1)* of *Annex 5* stipulates that for the realization of initial assessment stage, the developer requests the issue of the environmental agreement to the competent environmental protection authority, by **submitting a notification** for intention to achieve the project, accompanied by the **urban planning certificate** issued according to the law regarding the authorization of construction works, plans enclosed to it and the proof of payment of the fee for this stage. The framework content of the notification is set out in *Annex No. 5.A*. *Annex 1* of the Law contains the "List of projects subject to environmental impact assessment''. *Annex 1* includes at point 20 the construction of overhead electrical power lines with a voltage of 220 kV and at least 15 km long.

	Annex 2 of the Law includes the "List of projects for which the environmental impact assessment is required''. *Annex 2* includes at *Point 3 (a)* industrial installations for electricity production, steam, and hot water, other than those set out in *Annex No. 1*. The procedure of environment assessment applies to all projects inside port area, accompanied by the **urban planning certificate** and is led by the Environment Protection Agency. The provisions of environmental agreement are compulsory for the developer during the construction works. ***Law 121/2019 regarding the assessment and management of environmental noise, published in The Official Gazette, part I no 604 of 23 July 2019*.*** The Law transposes the provisions of **Directive 2002/49 / EC.** The Law stipulates at *Article 39* that the economic operators that manage port infrastructures performs noise mapping and elaborates strategic noise maps and action plans (according to the provisions of this law) for ports within urban agglomerations. The maps and plans are reviewed every five years. According to this Law, Maritime Ports Administration Constanta (MPAC) elaborated maps and action plans for Port of Constanta. - National regulation related to **industrial installations, especially electricity transmission and distribution facilities** • Order No. 84 of 30 June 2021 regarding the amending and completion of the Order of the President of National Energy Regulatory Authority no. 96/2017 for the approval of the Regulation on the organisation of maintenance activity. • Order No. 109 of 20 October 2021 on amending and supplementing the Methodology for establishing tariffs for the electricity service, approved by order of the President of the National Energy Regulatory Authority No. 171/2019.

	• Order of the Ministry of Environment and Sustainable Development No. 1798 / 2007 for the approval of the Procedure for issuing the environmental permit, published in the official Gazette, part I no. 808 of 27 November 2019*. ▪ The order approves the procedure for issuing the environmental permit. ▪ *Annex 1* to the procedure contains the list of activities that require an environmental permit. Among the activities included in the list are transport of electricity for high and medium voltage lines. The Environment Protection Agency Constanta issues environmental permit. - National regulation related to **safety and security measures, including occupational risks prevention** Law No. 481/2004 on civil protection. Law No. 319 of 2006 - Law on safety and health at work.

Description of **REGIONAL** regulation directly or indirectly affecting the OPS implementation	- Regional regulation related to **ports structure and administrative issues (such as contracting power supply, infrastructure works etc.)** • Order of the President of the National Energy Regulatory Authority No. 213/2020 on amending and supplementing the Regulation to calculate and settle energy imbalances. • Law No. 357/2005 on commodity exchanges, establishes the manner of establishment, organisation, and operation of commodity exchanges. • Law No. 126/2018 on the markets of financial instruments. • Law No. 24/2017 on issuers of financial instruments and market operations. • Law No. 98/2016 on public procurement National Authority of Public Acquisitions. • Government Decision no. 395/2016 for the approval of the Methodological Norms for the application of the provisions regarding the award of the public procurement contract / framework agreement from Law no. 98/2016 on public procurement. • Law No. 99/2016 on sectoral procurement.

	• Government Decision No. 394/2016 for the approval of the Methodological Norms for the application of the provisions regarding the award of the sectoral procurement contract / framework agreement from Law No. 99/2016 on sectoral procurement. - Regional regulation related to **power supply and electricity sector regulation** The regulatory activity of the National Regulatory Authority in the field of Energy (ANRE) is carried out based on Law no. 123/2012 of electricity and natural gas in the field of Energy and transposed into the national legislation the provisions of legislative package of the European Union regarding the internal energy market. • Order No. 235 from 20 December 2019 for the approval of the Regulation for the supply of electricity to final customers. • Order No. 103/2015 – the CODE for measuring electricity. • Order No. 85 / 30.06.2021 regarding amending and supplementing the Order of the President of the National Energy Regulatory Authority No. 74/2014 for the approval of the framework-content of the technical approvals for connection. • Order No. 83 / 30.06.2021 approving the Performance Standard for the activity of electricity / natural gas supply. - Regional regulation related to **environmental impact, noise pollution, etc:** There are no regional regulations affecting the environmental impact, noise, pollution, only the national legislation. - Regional regulation related to **industrial installations, especially electricity transmission and distribution facilities** • Order No. 84 / 30.06.2021 regarding the amending and completion of the Order of the President of National Energy Regulatory Authority No. 96/2017 for the approval of the Regulation on the organisation of maintenance activity. • Order No. 109 of 20 October 2021 on amending and supplementing the Methodology for establishing tariffs for the electricity transmission service, approved by the Order of the President of the National Energy Regulatory Authority No. 171/2019.

	- Regional regulation related to **port operation and safety rules** • THE PORT REGULATIONS of the Romanian seaports under the administration of the National Company "Administration of Maritime Ports" S.A. Constanta – updated in December 2020 • Decision No. 517/1998 regarding the establishment of the National Company "Maritime Ports Administration of Constanta" – S.A., supplemented and amended by the Rectification 1998 (published in M. Of. Nr. 14.09. 1998) and Act No 342/2004. • Law No. 342/2004 regarding the passing of the "Administration of Free Zone Constanta South and Basarabi" to the National Company "Maritime Ports Administration" - S.A. Constanta, amended by Law No. 582/2004 of 14 December 2004 (for the amendment of Annexes Nos 1 and 2 to Law No. 342/2004). • Ordinance of the Minister No. 206/2003, regarding the establishment of the Commission for the coordination of the movement of maritime and inland waterway vessels in the seaports of Constanta, Mangalia and Midia. • International Convention on tonnage measurement of ships established at London on 23 June 1969. • ISPS Code. • Directive 2005/65/EC of the European Parliament and of the Council of 26 October 2005 on enhancing port security. • Order No. 290/2007 for the introduction of measures to strengthen port security. • Internal working instructions regarding the activity regarding port safety. - Regional regulation related to **safety and security measures, including occupational risks prevention** • Law No. 481/2004 on civil protection. • Law No. 319 of 2006 - Law on safety and health at work.

Description of **LOCAL** regulation directly or indirectly affecting the OPS implementation	- Local regulation related to **ports structure and administrative issues (such as contracting power supply, infrastructure works etc.)** • Order of the President of the National Energy Regulatory Authority No. 213/2020 on amending and supplementing the Regulation to calculate and settle energy imbalances. • Law No. 357/2005 on commodity exchanges establishes the manner of establishment, organisation, and operation of commodity exchanges. • Law No. 126/2018 on the markets of financial instruments. • Law No. 24/2017 on issuers of financial instruments and market operations. • Law No. 98/2016 on public procurement National Authority of Public Acquisitions. • Government Decision No. 395/2016 for the approval of the Methodological Norms for the application of the provisions regarding the award of the public procurement contract / framework agreement from Law No. 98/2016 on public procurement. • Law No. 99/2016 on sectoral procurement. • Government Decision No. 394/2016 for the approval of the Methodological Norms for the application of the provisions regarding the award of the sectoral procurement contract / framework agreement from Law No. 99/2016 on sectoral procurement. • Constanta Port Master Plan (annex to the Romanian General Master Plan for Transport) - revision – undergoing document. The project will be finalised by mid-2022, and it will contain Clean Power Supply report related to cold ironing future implementation in the Port of Constanta. - Local regulation related to **power supply and electricity sector regulation** The regulatory activity of the National Regulatory Authority in the field of Energy (ANRE) is carried out based on Law No. 123/2012 of electricity and natural gas in the field of Energy and transposed into the national legislation the provisions of legislative package of the European Union regarding the internal energy market. • Order No. 235 from 20 December 2019 for the approval of the Regulation for the supply of electricity to final customers. • Ordre No. 103/2015 – the CODE for measuring electricity.

	• Order No. 85 / 30 June 2021 regarding amending and supplementing the Order of the President of the National Energy Regulatory Authority no. 74/2014 for the approval of the framework-content of the technical approvals for connection. • Order No. 83 / 30 June 2021 approving the Performance Standard for electricity / natural gas supply activity. - Local regulation related to **environmental impact, noise pollution**, etc: **Air quality plan in Constanta, for nitrogen dioxide and oxides nitrogen (NO2 / NOx), period 2021– 2025** According to provision of **Law No. 104/2011 on ambient air quality, City Hall** Constanta has developed the Air quality plan in Constanta, for nitrogen dioxide and oxides nitrogen (NO_2 / NOx), period 2021– 2025. The Plan has elaborated, taking into account all pollution sources, including naval transport. **Environment Permit No. 263/2013, revised in 2019 for the activities of Maritime Ports Administration Constanta (MPAC).** According to the provisions of the Ordinance Government No. 195/2005 -Environment Protection and Order of the Minister of Environment and Sustainable Development No. 1798/2007 (for the approval of the Procedure for issuing the environmental permit), Environment Protection Agency Constanta issued for MPAC the Environment Permit No. 263/2013, revised in 2019 for activities related to maritime transport. These activities also include the activity of ”electricity supply'' in Port of Constanta. **Noise maps and action plans for port of Constanta** According to provisions of **Law 121/2019 regarding the assessment and management of environmental noise,** Maritime Ports Administration Constanta developed the noise maps and action plans. Noise maps and action plans are in effect and need to be reviewed in 2022. The assessment of noise considered loading/unloading the ships. - Local regulation related to **industrial installations, especially electricity transmission and distribution facilities** • Order: 84 / 30.06.2021 regarding the amending and completion of the Order of the President of National Energy Regulatory Authority no. 96/2017 for the approval of the Regulation on the organisation of maintenance activity.

	• Order No. 109 of 20 October 2021 on amending and supplementing the Methodology for establishing tariffs for the electricity transmission service, approved by the Order of the President of the National Energy Regulatory Authority No. 171/2019. - Local regulation related to **port operation and safety rules** • THE PORT REGULATIONS of the Romanian seaports under the administration of the National Company "Administration of Maritime Ports" S.A. Constanta – updated in December 2020. • Decision No. 517/1998 regarding the establishment of the National Company "Maritime Ports Administration of Constanta" – S.A., supplemented and amended by the Rectification 1998 (published in M. Of. Nr. 14.09. 1998) and Act No 342/2004. • Law No. 342/2004 regarding the passing of the "Administration of Free Zone Constanta South and Basarabi" to the National Company "Maritime Ports Administration" - S.A. Constanta, amended by Law No. 582/2004 of 14 December 2004 (for the amendment of Annexes Nos 1 and 2 to Law No. 342/2004). • Ordinance of the Minister No. 206/2003, regarding the establishment of the Commission for the coordination of the movement of maritime and inland waterway vessels in the seaports of Constanta, Mangalia and Midia. • International Convention on tonnage measurement of ships established at London on 23 June 1969. • ISPS Code. • Directive 2005/65/EC of the European Parliament and of the Council of 26 October 2005 on enhancing port-security. • Order No. 290/2007 for the introduction of measures to strengthen port-security. • Internal working instructions regarding the activity regarding port safety. - Local regulation regarding **safety and security measures, including occupational risks prevention** • Law No. 481/2004 on civil protection. • Law No. 319 of 2006 - Law on safety and health at work. - Local regulation **Port Zonal Urban Plan – undergoing document**

4.1.5 Bulgarian Ports

Description of **NATIONAL** regulation directly or indirectly affecting the OPS implementation	- National regulation related to **ports structure and services** Regarding the OPS implementation in Bulgaria, the first consideration is the **2014/94/EU Directive**[38], on alternative fuels infrastructure, requiring the Member States to develop OPS infrastructure at ports starting in December 2025. In this sense, *Article 4* of the Directive states that: "The Member States shall guarantee that the need for electricity supply in ports for inland waterway vessels and maritime vessels in maritime and inland ports is evaluated in their respective national action frameworks. This electricity supply in the port will be installed as a priority in ports of the basic network of the TEN-T and in other ports no later than 31 December 2025, unless there is no demand and the costs are disproportionate in relation to the benefits, including environmental benefits". *Article 3* also specifies that "each Member State shall adopt a national action framework for the development of the market for alternative fuels in the transport sector and the implementation of the corresponding infrastructure. Member States shall communicate their national action frameworks to the Commission no later than 18 November 2016". It is also very important to consider the Proposal for Regulation of the European Parliament and of the Council on the deployment of alternative fuels infrastructure, which will repeal Directive 2014/94/EU (COM (2021) 559 final). The proposal sets requirements for OPS until 2030, with another revision in 2026 to discuss alternative fuels and adds a new definition for those types of fuels and for passenger ships. On the basis of this distinction, different requirements are placed on ports in terms of the supply of OPS. The targets for electric recharging infrastructure dedicated to heavy-duty vehicles are in *Article 4* of the proposal. More requirements regarding the electricity recharging infrastructure are stipulated in *Article 5*. The 2014/94/EU Directive was implemented in several national legal acts: Energy Act, Energy Efficiency Act, Ordinance No. 9 on the requirements for operational suitability of ports and specialised port objects. In addition, Bulgaria adopted a

[38] Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure Text with EEA relevance

	National Policy Framework for alternative fuel infrastructure (NPF), which addresses only part of the requirements of the Directive. For OPS it focuses on plans for modernising the existing infrastructure which is very old. The main act that regulates the port structure and services is the *Maritime Space, Inland Waterways and Ports of the Republic of Bulgaria Act*. The Act includes the onshore electricity supply to ships as a port service. The service is provided by the port terminal operators (concessionaires and state-owned operators), which circumstances are entered in the port terminal's certificate of operational suitability. Furthermore, *Ordinance № 9* stipulates the requirement of OPS installations, deployed, or renewed after 18 November 2017 to meet the technical specifications pursue *Art. 4 (6) and p. 1.7* of *Annex II* to Directive 2014/94/EU. - National regulation related to **power supply and electricity sector, as well as administrative issues** Acc. to *Art. 64, para. 1, p. 4* of the *Bulgarian Spatial Development Act (SDA)* the distribution lines and distribution devices and the facilities thereto appertaining (transformer stations, electricity-supply substations, etc.) are physical-infrastructure elements. As such they shall be projected by spatial-development plans. The diagrammatic layouts of the physical-infrastructure elements shall constitute an integral part of the master plans and detailed plans. Physical-infrastructure works shall be designed and constructed according to the standard procedure established by the above-mentioned Act. Where, in connection with new construction, it shall be necessary to relocate or restructure any existing construction works: underground and overhead physical-infrastructure networks and facilities, the relevant works shall be performed by the contracting entity of the new construction for the account thereof upon approval of the requisite designs, cleared with the utility companies whereof the networks and facilities are affected, and upon the issuance of a building permit (*Art. 64, para. 2, 4, 5)*. The requirements to the Spatial-Development plans are in Chapter Six of the *SDA*. Construction of off-site power-supply networks shall be performed according to *Article 74* of the *SDA* and under an approved construction file, as follows: The developer of the facilities shall be under an obligation:

	1. prior to the commencement of construction, to take all measures as shall be necessary to ensure safety, by placing barricades and crossings, warning signs, traffic detour directions and other such. 2. to take all measures as shall be necessary to prevent any damage to, or displacement of, pre-existing underground or overhead networks or facilities, survey monuments, green spaces, ornamental trees and other such. 3. to notify the municipal administration of any overhead or underground networks or facilities, unindicated on the relevant selective maps and registers, as have been uncovered during the course of execution of the work. 4. to give immediate notice to the municipal administration and the nearest museum of history upon uncovering any archaeological finds. 5. to notify immediately the fire safety and protection of the community and the road traffic authorities regarding the commencement and the time limit for construction along the relevant streets obstructed by earth work. 6. to give immediate notice to the competent services and utility companies of any possible damage to networks or facilities resulting from the work and, where water mains, heating mains or gas mains have been damaged, to give immediate notice to the hygiene and epidemiological authorities and the fire safety and protection of the community. 7. to give at least three days' advance notice to the competent municipal administration, as well as to the services and utility companies stewarding and operating the networks and facilities, of a forthcoming backfilling of any newly constructed or remodelled underground networks or facilities. Any such backfilling shall be permitted according to Paragraph (2). 8. to perform, for the account thereof, the recovery works as shall be necessary within such time limits as shall be set by the municipal administration. 9. to eliminate any damage caused, as ascertained by the municipal administration, and as recorded in a memorandum of ascertainment, within such time limits as shall be set by the municipal administration. The municipal administration shall permit the backfilling of any networks or facilities after satisfying itself that the building-development line as marked and the other conditions and requirements as to the execution of construction have been complied with, and that the networks or facilities have been surveyed and plotted on the appropriate selective maps and registers. A memorandum shall be drawn up on the results of any such verification. The **Energy Act (EA)** creates the necessary legal framework for operators of publicly available electric charging points vehicles. It regulates the requirements regarding the operator of a publicly available charging point and users of charging

	services for electric vehicles. It provides also steps for the connection of the charging point to the electricity distribution network. Further requirements, especially as regards the building and ownership rights are stipulated in the *Art. 62 - 69.* *Article 62*. Where site energy works, ground or underground hydro-technological electricity generation facilities or parts thereof, as well as production related equipment and sites for disposal of production waste are constructed or expanded on a corporeal immovable constituting state property, the competent state authorities shall create an onerous building right to the land tract without an auction or tender in favour of the person to build and operate the energy works under the procedure established by the State Property Act. Where the works referred to in *Paragraph (1)* are constructed or expanded on a corporeal immovable constituting municipal property, the competent municipal authorities shall create an onerous building right to the land tract without an auction or tender in favour of the person to build and operate the energy works under the procedure established by the Municipal Property Act. Where site works, as well as ground and underground hydro-technological electricity generation facilities or parts thereof have to be constructed or expanded on an immovable property constituting private property, the person under *paragraph 1* must acquire in advance and onerously a right of ownership or a building right to the land tract required for construction of the works. In the cases of the previous paragraph a right of ownership may be acquired also on parts of a property with size less than 3 decares for fields, 2 decares for meadows, 1 decare for perennial crops and 1 decare for forest with the owner's consent. The person under *paragraph 1* shall submit a proposal in writing to the holder of real rights and shall state the legal and factual grounds to substantiate the proposal, including the property, type of energy works and/or facilities and manner in which they reflect on the use of the property, type of real right, which is necessary to be acquired, the area and the proposed compensation, and it shall give a suitable period not less than one month for response to the proposal. That period may be changed by mutual agreement of the persons.

	When creating limited real rights under Paragraph 1 on property with public ownership, in relation to national projects and projects of national significance, the procedure for private state ownership or private municipal ownership shall apply respectively, to the extent it is not otherwise provided for by law. The persons under *paragraph 1* shall be employers in relation to the construction of these projects within the meaning of *Article 161, Paragraph 1* of the Spatial Development Act, as well as interested parties within the meaning of *Article 124a,* paragraph 5 of the Spatial Development Act. In case of refusal or of impossibility to implement the activities under *Article 62 (4)* herein for reasons beyond the control of the person under *Article 62, paragraph 1,* the property shall be alienated in favour of the state. A refusal shall be understood to be the explicit refusal, as well as failure to accept the proposal or to achieve agreement under *Article 62, paragraph 6*. *Article 63a*. *(1)* An energy enterprise which is a concessionaire within the meaning of the Subsurface Resources Act and undertakes activities related to the extraction of natural resources may propose to the owners and the holders of other real rights to sign an agreement, by virtue of which the energy enterprise acquires the ownership of or another type of real right to the real estate included in the area under concession. (2) In the event that a concessionaire cannot establish or find the holders of rights over the land or their addresses, he shall be entitled to request co-operation from the Minister of Energy. If such co-operation is requested, the Minister of Energy shall require that the competent state or municipal authorities provide the information necessary, which shall not have the right to refuse to provide it. *Article 63b*. (1) Where the extraction of energy resources is for satisfying a need of the state, in the event that no agreement has been reached with the owners of the real estate or part thereof or the holders of other real rights to it, the energy enterprise shall be entitled to request the Minister of Energy to undertake actions for the alienation of the property according to the procedure described in the State Property Act. (2) In the request referred to in paragraph 1 the nature, type, location, and size of the property shall be identified and information about the owners, respectively the holders of other real rights shall be provided. The following shall be enclosed with the request:

	1. evidence that: a) the property is included within the boundaries of the area under concession and is necessary for or is a hindrance to the activities included in the overall design project for extraction of the energy resource. b) the concessionaire has offered the owner, respectively the holder of a right, to purchase the real estate at a price, not lower that the price which would have been determined in accordance with the procedure of Chapter Three of the State Property Act in the event of alienation of the property for the needs of the state. c) within one month of receiving the offer the owner, respectively the holder of a right, has tacitly or explicitly refused it. 2. effective detailed development plan. (3) Within one month of receiving the request referred to in paragraph 1 the Minister of Energy shall undertake actions for alienation of the property for satisfying the needs of the state in accordance with the procedure described in Chapter Three of the State Property Act. (4) Where a property falling within the boundaries of the area under concession is public municipal property, only the evidence listed in paragraph 2, sub-paragraph 1 shall be enclosed with the request referred to in paragraph 1. (5) The cost of the alienation shall be borne by the concessionaire. *Article 63c. (1)* The alienated properties as well as other properties - state property, falling within the boundaries of the area under concession, shall be granted to the concessionaire by a Decision of the Council of Ministers as a belonging in the meaning of the Concessions Act. (2) Upon termination of the concession agreement, the properties granted to the concessionaire as a belonging shall be returned to the state in the condition and under the terms and procedure specified in the concession agreement. *Article 64. (1)* In the case of existing extension and in the construction of new, linear energy works, easements will arise in favour of the persons who will construct and operate the energy project.

	The type and location of the energy works and of the surface areas of the land properties concerned, incorporated within the easement boundaries under this Act, shall be determined in master plans and detailed plans (Art. 66 of the EA). According to *Article 83* of EA, *the* power grid shall be structured and operated according to standards provided for in: 1. An ordinance on the structure of electric fixtures and electricity transmission lines, which shall regulate the technical standards for design and construction of electric fixtures and electricity transmission lines. 2. An ordinance on the operation of electric power plants and networks, which shall regulate the terms and procedure for organisation and operation of electric power plants and networks, of power plants for generation of electricity and/or heat, of heat transmission networks, of the hydro-engineering facilities of power plants and the mechanical parts thereof (and the management and operation of electric power plants and networks). 3. An ordinance on the operation of power equipment, which shall regulate the rules for maintenance of the serviceability and the rules for the safe operation of the electric fixtures and facilities of the companies connected to the electricity transmission and/or electricity distribution networks. 4. Rules for operation of the electric power grid, which shall regulate the rights and obligations of the electricity transmission network operator, and the persons connected to the electricity transmission network in relation to planning of the development of the electricity transmission network, the planning and management of the mode of operation of the electric power grid, the procedures for mandatory data exchange, the procedure for early warning and exchange of information, the development and implementation of a protection plan and a recovery plan for the electric power grid, terms and procedure for conduct of system-wide tests and for provision of additional services; for the conditions and procedure of access to the electricity transmission network, for transmission of electricity through the electricity transmission network, including the access and dispatch priorities, for applying the standards of security and quality of electricity supply transmitted through the electricity transmission network and of provided services; 5. Rules for the management of electricity distribution networks, which regulate the rights and obligations of the electricity distribution network operator, closed electricity distribution network operator and the persons connected to the relevant network in connection with the planning of the development of the network, planning and management of the mode of

	operation of the electricity distribution network, the procedures for mandatory data exchange, the procedure for early warning and exchange of information, the development and implementation of a local protection plan and for provision of additional services; for the conditions and procedure of access to the electricity transmission network, for transmission of electricity through the electricity transmission networks, including the access and dispatch priorities, for applying the standards of security and quality of electricity supply transmitted through the electricity transmission network and of provided services; 6. Rules for measuring the electricity amount stipulating the principles of measurement, the methods and points of measurement, including the procedure and methods for re-calculation of the quantity of electricity in case of finding electricity which has not been measured, which has been measured incorrectly and/or inaccurately or regarding which there are readings in a non-visualised register of the commercial measuring device, as well as creation, maintenance and access to the databases registered by these devices. *Article 86. (1)* The transmission of electricity shall be implemented by the electricity transmission network operator which has been licensed for transmission of electricity and certified in accordance with the procedure under Chapter Eight "a", Section I. (2) Transmission and transformation of electricity shall be a service of public interest, which the electricity transmission network shall dispatch. (3) The activity concerning electricity transmission shall also include: 1. representation of the electricity transmission network operator and contacts with third parties, with the regulators of other Member States of the European Union, as well as representation within the framework of the European Network of Transmission System Operators for electricity (ENTSO for electricity). 2. Collection of all receivables related to transmission, including access, equalising payments for additional services, such as purchasing of services (balancing costs, energy for covering of losses), as well as for overloading under the mechanism for compensation between the transmission system operators in accordance with Article 13 of Regulation (EC) No. 714/2009.

	3. Operation, maintenance, and development of secure, efficient, and economical electricity transmission network aiming at ensuring an open market compliant with the requirements for environmental protection, energy efficiency, and effective use of energy. 4. Investment planning, which should ensure the long-term capacity of the network to cover reasonable demand, and to ensure security of deliveries. 5. Establishing of suitable joint ventures, including with one or more electricity transmission network operators, energy exchanges, and other respective participants, aiming at the development of regional markets or facilitation of the liberalisation process, and 6. All corporate services, including legal services, accounting, and IT related services. (4) At all times an electricity transmission operator shall act in such a way to ensure the availability of necessary resources for implementation of the transmission activity suitably and effectively and for the development and maintenance of effective, secure, and economical transmission network. *Article 87* of *EA* states that the electricity transmission network operator shall ensure: 1. Integrated management of the electric power grid and reliable functioning of the electricity transmission network, including availability of all necessary additional services. 2. Transmission of electricity through the electricity transmission network; granting and management of the access of third parties on non-discriminatory basis between the network users or groups of network users. 3. Maintenance of the facilities and installations of the electricity transmission network in accordance with technical requirements and with safe operation requirements.

	4. Coordinated development and operating compatibility of the electricity transmission network with interconnected electricity transmission networks. 5. Maintenance and development of auxiliary networks. 6. Electricity metering in the electricity transmission network. For preparation of the national electric energy balance, the electricity transmission network operator shall: 1. Elaborate short-term and long-term forecasts of changes in consumption of electricity in Bulgaria. 2. Organise the conduct of assessments of the feasibility of expansion and modernisation of the electricity transmission network with a view to commissioning of new generating capacities, decommissioning of existing generating capacities, connecting new customers to the electricity transmission network, the expected increase in the quantity of electricity transmitted, implementation of new technologies ensuring better quality and security of the services provided and efficiency of the operation; the said assessments shall be accompanied by a feasibility study and an environmental impact analysis. 3. Prepare short-term, medium-term, and long-term forecasts and plans for expansion and modernisation of the electricity transmission network and for development of auxiliary networks, including with the aim to improve the security of deliveries. 4. Prepare shot-term and long-term plans for development of the electric power grid to ensure the electric energy balance. 5. On the basis of the assessments, forecasts and plans, prepare a draft national electric energy balance and a draft list of the sources, including new generating capacities and intersystem electric power lines, required to meet national demand, and submit the said draft to the Minister of Energy. *Article 86(1)* of the EA provides that 'the transport of electricity shall be undertaken by the electricity transport system operator to which a licence for the transport of electricity has been issued and that has been certified …'.

	6. Under Article 88(1) of the EA, 'electricity shall be distributed, and electricity distribution systems shall be operated by distribution system operators that own those systems in a specific area and hold an electricity distribution licence for that area'. 7. *Article 1* of the supplementary provisions to the EA contains the following definitions: 20. "electricity transmission system" means all the power lines and installations used for the transport, transformation from high to medium voltage and redistribution of electricity. 22. "electricity distribution system" means all high-, medium- and low-voltage power lines and installations used for the distribution of electricity. 44. "transmission of electricity …" means the transport of electricity … via the transmission network". 49. "distribution" means the transport of electricity … via the distribution networks. In effect, transmission systems are used to transport electricity over long distances, from production power plants to the locations where the electricity is used. These are necessarily large-scale systems, on which electricity is transported at extra-high or high voltage so as to reduce losses as much as possible during transport. Conversely, distribution systems perform different functions. They are used to bring electricity to customers in general for their own consumption. These systems are generally smaller, typically developed locally and on a widespread basis to reach users and final customers, including port terminals. Transmission and distribution systems are interconnected at electrical substations, in which the electricity entering at extra-high or high voltage from the transmission system is converted into medium voltage so that it can be distributed via the distribution system. These electrical substations represent interconnection points between the systems and generally contain high-voltage components, called the primary system, and medium- and low-voltage components, called the secondary system. It is particularly important to make a precise distinction between electricity transmission activity (and system) and distribution activity (and system) because the legislation establishes different legal regimes for transmission and distribution and different responsibilities for the operators of the corresponding systems.

	Ordinance of 6 February 2014 on the accession of manufacturers and clients of energy to the electricity transmission and distribution networks regulates the conditions for connection (changes in the connections) of sites of customers, electricity producers, and network operators to the transmission or to the distribution networks. The Ordinance also stipulates the conditions for concluding accession agreements; suspension of the connection of customer sites and of power plants, as well as the boundaries of ownership between the electrical facilities of the customers / producers and the electrical facilities, elements of the transmission / distribution network. The State Energy and Water Regulatory Commission (Commission) has adopted Rules for measuring the amount of electricity, which determine the principles, methods, and places of measuring the quantities of active and reactive electricity and power; the requirements for the accuracy of measurement, the verification of the technical and metrological characteristics of the measuring instruments / systems and the related communication links. The terms and conditions for participation in the electricity market and the rules for conclusion of transactions for electricity at regulated and freely negotiated prices through bilateral contracts and other relevant provisions concerning electricity market are in the Electricity Market Rules, issued by the Commission As of 2020 the State Energy and Water Regulatory Commission approved a standard contract, which regulates the rights and obligations of the parties and the conditions for electricity supply by the suppliers. The contract with the electricity supplier is concluded on the basis of submitted offers and free negotiation or when applicable, under the terms and conditions of the Public Procurement Act, which is also the case in the Bulgarian ports. - National regulation related to **industrial installations, especially electricity transmission and distribution facilities** A network that serves for distribution of electricity on the territory of industrial park where the activities or the manufacturing process of the users of the network are integrated due to specific technical reasons or safety related reasons or in the case where the distribution of electricity is performed mainly for the owner, the network operator or related enterprises on the territory of the industrial park, is considered a *closed electricity distribution network*. Acc. to Art. 43, para. 13 of the *EA* for the territory of an industrial park or geographically separate industrial site, in the cases where the activities or the manufacturing process of the users of the network are integrated due to specific technical reasons or safety related reasons or in the case where the distribution of electricity or natural gas is performed mainly for the owner, the network operator or related to them enterprises, a license shall be issued for:

	1. distribution of electricity in closed electricity distribution network; 2. distribution of natural gas in closed gas distribution network. For the activity distribution of electricity in closed electricity or gas distribution network in geographically separate industrial site commissioned into operation until the year 2000, may be issued a licence under Article 39, para 1, p. 8 of the *EA* under special conditions and procedure, determined by the Energy and Water Regulatory Commission in the Ordinance 3 on licensing of energy activities. - National regulation related to **environmental impact, noise pollution, etc.** The **Environmental Protection Act** which transposes Directive 2011/92/EU, contains in *Annexes I and II* the list of projects/ project proposals to be made subject to an ordinary or simplified environmental impact assessment, respectively. Pursue *Art. 92, para. 1* of the Act, a mandatory environmental assessment shall be conducted for project proposals included in *Annex I*, which are related to: p.8.2. Commercial ports, terminals for loading and unloading connected to land and public-transport ports (excluding ferry terminals) which can take vessels over 1,350 GT (both Bourgas and Varna fall within the scope). p. 20. Construction of electricity transmission lines with a voltage of 220 kV or more and a length of more than 15 km, unless they run entirely underground. The Ordinance regulates the specific requirements, the procedure and the scope of the assessment on the conditions and procedure for performing the assessment of the compatibility of plans, programs, projects and investment proposals with the subject and objectives of conservation. The need for an environmental impact assessment shall be assessed by the Ministry of Environment and Water or by the Director of the relevant Regional Inspection on the Environment and Waters on a case-by-case basis and according to the criteria specified in the EPA, which shall pronounce with a motivated decision. According to **The Protection From Environmental Noise Act** which transposes Directive 2002/49/EC, a strategic map of environmental noise is not necessary to be made for the ports. However, within the strategic maps for agglomerations a separate strategic noise map for noise emitted by water transport shall be prepared where such noise sources are present in the respective agglomeration.

	- National regulation related to **safety and security measures, and risks prevention.** The national regulatory framework foresees several legal acts regarding safety and security measures, and risks prevention: • Technical Requirements Towards Products Act. • Ordinance on the minimum requirements for signs and signals for safety and / or health at work. • Ordinance No. 3 on the basic provisions for the design of the structures of the constructions and on the impacts on them. • Ordinance on the construction and technical rules for ensuring fire safety. In addition to the above, the following national acts contain provisions that could directly or indirectly concern the OPS: • Ordinance No. 9 on the requirements for operational suitability of ports and specialised port objects. • Ordinance No. 4 on the scope and content of the investment projects. • Ordinance No. 3 on the design of electrical installations and power lines. • Ordinance No. 8 on the rules for placement of technical lines and facilities in settlements. • Ordinance No. 16 on easements of energy sites.

Description of **REGIONAL** regulation directly or indirectly affecting the OPS implementation	Regarding the regional regulations directly or indirectly affecting the OPS implementation, there are no such requirements neither for the port of Varna nor for the port of Bourgas. The legal framework that directly or indirectly regulates the OPS implementation is applicable at the national level. Thus, all requirements (incl. permissions, technical and environmental requirements etc.) during the preparation and the execution of the OPS project are stipulated in the national legal acts and shall be followed in relation to both Bulgarian ports – Varna and Bourgas. Port of Varna and port of Bourgas are considered as one region, whereas the national legislation is applicable. The territory and the port infrastructure of both ports are declared public state property. The management of the port infrastructure and the other fixed assets of port Varna and port Bourgas has been granted to the Bulgarian Ports Infrastructure Company under the law and with decisions of the Council of Ministers i.e., the Bulgarian Ports Infrastructure Company (BPI Co) is a Managing body of maritime ports in Bulgaria. **There are no regional legal requirements applicable.**

Description of **LOCAL** regulation directly or indirectly affecting the OPS implementation	Regarding the local regulations directly or indirectly affecting the OPS implementation, there are no such requirements neither for port of Varna nor for port of Bourgas. The legal framework that directly or indirectly regulates the OPS implementation is applicable at the national level. Thus, all necessary requirements (incl. permissions, technical and environmental requirements, etc.) during the preparation and the execution of the OPS project are stipulated in the national legal acts and shall be followed in relation to both Bulgarian ports – Varna and Bourgas. Port of Varna and port of Bourgas are considered as one region, whereas the national legislation is applicable. The territory and the port infrastructure of both ports are declared public state property. The management of the port infrastructure and the other fixed assets of port Varna and port Bourgas has been granted to the Bulgarian Ports Infrastructure Company under the law and with decisions of the Council of Ministers i.e., the Bulgarian Ports Infrastructure Company (BPI Co) is a Managing body of maritime ports in Bulgaria. **There are no local legal requirements applicable.**

4.1.6 Slovenian Ports

Description of **NATIONAL** regulation directly or indirectly affecting the OPS implementation	- National regulation related to **ports structure and administrative issues**, such as contracting power supply and infrastructure works. In Slovenia, the first steps towards implementing OPS started with the publication of **2014/94/EU Directive**[39], on alternative fuels infrastructure, requiring the Member States to develop OPS infrastructure at ports starting in December 2025. In this sense, *Article 4* of the Directive states that: "The Member States shall guarantee that the need for electricity supply in ports for inland waterway vessels and maritime vessels in maritime and inland ports is evaluated in their respective national action frameworks. This electricity supply in the port will be installed as a priority in ports of the basic network of the TEN-T and in other ports no later than 31 December 2025, unless there is no demand and the costs are disproportionate in relation to the benefits, including environmental benefits". Article 3 also specifies that "each Member State shall adopt a national action framework to develop the market for alternative fuels in the transport sector and the implementation of the corresponding infrastructure. Member States shall communicate their national action frameworks to the Commission no later than 18 November 2016. In view of this, the Slovenian Government published on 12 October 2017 the **"Strategy in the field of market development for the establishment of appropriate infrastructure related to alternative fuels in the transport sector in the Republic of Slovenia."** Among the different topics covered by the National Action Framework, the supply of electricity to ships is included. • **Public Procurement Act** (Official Gazette of the Republic of Slovenia, No. 91/15 and No.14/18). • **Action program for alternative fuels in transport.** • **Decree establishing the infrastructure for alternative transport** fuels (Official Gazette of the Republic of Slovenia No. 41/17 and 121/21 – ZSROVE). • **Integrated National Energy and Climate Plan.**

[39] Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure Text with EEA relevance

	• **Decree on the national spatial plan for the comprehensive spatial planning of the port for international transport in Koper** (Official Gazette of the Republic of Slovenia No. 48/11). - National regulation related to **power supply and electricity sector regulation** • **Energy law** (Official Gazette of the Republic of Slovenia No. 60/19, 65/20, 158/20 –ZURE, 121/21 –ZSROVE and 172/21 – ZOEE). • **Electricity Supply Act** (Official Gazette of the Republic of Slovenia, No. 172/21). • **Rules for the operation of the electricity market** (Official Gazette of the Republic of Slovenia, No. 74/18, 62/19 and 159/21). - National regulation related to **environmental impact, noise pollution, etc.** • **Environmental Protection Act (Official Gazette of the Republic of Slovenia**) (39/06 , 49/06 – ZMetD, 66/06 – odl. US, 33/07 – ZPNačrt, 57/08 – ZFO-1A, 70/08, 108/09, 108/09 – ZPNačrt-A, 48/12, 57/12, 92/13, 56/15, 102/15, 30/16, 61/17 – GZ, 21/18 – ZNOrg, 84/18 – ZIURKOE in 158/20). • **Decree on limit values for environmental noise indicators** (Official Gazette of the Republic of Slovenia no. 43/18 and 59/19). ▪ Ports have to comply with the limits established by the Decree in relation to: ▪ Noise emission limit values applicable to port infrastructures and activities (*Annex I, table 3 and 5*). • **Regulation on limit values for environmental noise indicators** (Official Gazette of the Republic of Slovenia No. 121/04 in 59/19). • **Rules on the first assessment and operational monitoring for noise sources and on the conditions for its implementation** (Official Gazette of the Republic of Slovenia No. 105/08) - National regulation related to **industrial installations, especially electricity transmission and distribution facilities** • **Decree on energy infrastructure (Official Gazette of the Republic of Slovenia**, No. 22/16 and 173/21).

	• **Rules on technical conditions for the construction of underground power lines of alternating nominal voltage above 1 kV to 400 kV.** (Official Gazette of the RS, No. 56/16) • **Rules on the operation of power facilities** (Official Gazette of the Republic of Slovenia, No. 56/16). • **Rules on the maintenance of power facilities** (Official Gazette of the Republic of Slovenia, No. 98/15). • **Rules on requirements for low-voltage electrical installations in buildings** (Official Gazette of the Republic of Slovenia, No. 140/21). • **Rules on minimum technical requirements for the construction, operation, and maintenance of low-voltage power lines** (Official Gazette of the Republic of Slovenia, No. 21/2020). • **Rules on the first measurements and operational monitoring for sources of electromagnetic radiation and on the conditions for its implementation** (Official Gazette of the Republic of Slovenia, No. 70/96, 41/04 - ZVO-1 and 17/11 - ZTZPUS-1). • **Rules on the first measurements and operational monitoring for sources of electromagnetic radiation and on the conditions for its implementation** (Official Gazette of the Republic of Slovenia, No. 70/96, 41/04 – ZVO-1 and 17/11 – ZTZPUS-1). - National regulation related to **safety and security measures, including occupational risks prevention** • **Health and Safety at Work Act (ZVZD-1)** (Official Gazette of the Republic of Slovenia No. 43/11), on prevention of occupational risks. • **Rules on requirements for ensuring the safety and health of workers at work** on the minimum health and safety requirements for the use by workers of personal protective equipment **(**Official Gazette of the Republic of Slovenia No. 3 89/99, 39/05 in 43/11 – ZVZD-1) • **Fire Protection Act** (Official Gazette of the Republic of Slovenia No. 3/07, 9/11, 83/12, 61/17 – GZ and 189/20 – ZFRO) approves the Regulation on Fire protection facilities. • **Rules on protection at work against the danger of electric current** (Official Gazette of the Republic of Slovenia, No. 29/92, 56/99 - ZVZD and 43/11 - ZVZD-1.
Additional comment	This Regulation transposes into the legal framework of the Republic of Slovenia Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure.

Description of **REGIONAL** and **LOCAL** regulation directly or indirectly affecting the OPS implementation	No regional nor local regulations affecting the implementation of OPS solutions have been identified.

4.1.7 Irish Ports

Description of **NATIONAL, REGIONAL AND LOCAL** regulation directly or indirectly affecting the OPS implementation	There are no specific regulations related to OPS in Irish ports. Relevant sections of the general planning regulations in Ireland that may relate to the installation of OPS is summarised below. The most specific regulation that currently applies to the deployment of OPS in Irish ports is **Directive 2014/94/EU of the European Parliament** and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure. *Article 4.5* of Directive 2014/94 requires the EU Member States to ensure that the need for shore-side electricity supply for inland waterway vessels and seagoing ships in maritime and inland ports is assessed in their national policy frameworks. The same article states that such shore-side electricity supply shall be installed as a priority in ports of the TEN-T Core Network, and in other ports, by 31 December 2025, unless there is no demand, and the costs are disproportionate to the including environmental benefits. **A study undertaken by the IMDO in 2019 on behalf of the Department of Transport, titled "The Development of Alternative Fuel Infrastructure in Irish Ports - A Feasibility Study**, found that there was currently a lack of demand in Ireland for these facilities and the costs were disproportionate to the benefits. The report found that many of the characteristics evident at current alternative fuel infrastructure (AFI) locations are not present at Irish ports. Ireland does not gain from geographic conditions favourable to local natural gas production or to renewable energy production on the scale outlined in, for example, Norway and Canada. Therefore, Ireland's price competitiveness is relatively low in alternative and renewable energy markets. In addition, Ireland currently falls outside the Emission Control Areas, wherein the most stringent regulatory standards are applied. Lastly, the scale of operations in Irish ports and the number of ships calling to them do not generate sufficient demand to justify AFI's capital investment. As a result, the forecasted demand for alternative fuelling facilities or SSE in Irish ports is low. In reaching these findings, the IMDO undertook an assessment of market demand for AFI in Irish ports and an analysis of the financial viability of potential investments in such infrastructure.

	In addition to this quantitative research, the IMDO engaged extensively with industry stakeholders to clarify the barriers they see to investing in AFI. The findings from these consultations follow the pattern of assessment outlined above. Many industry leaders highlight their concerns that the forecasted demand does not justify large scale capital investment in AFI. However, the Irish regulatory environment is not a barrier to current methods of operation. Irish ports expressed the view that because the debate in relation to the future usage of alternative fuels remains unsettled, prudence demands that large scale capital investment should be avoided until stable demand conditions are established. The legislation and regulations that are likely to impact the deployment of OPS in Irish ports indirectly are: • S.I. No. 600/2001 - Planning and Development Regulations, 2001 • The Electricity Regulation Act, 1999 • Climate Action and Low Carbon Development (Amendment) Act 2021 • S.I. No. 600/2001 - Planning and Development Regulations, 2001. Concerning national planning regulations that are likely to apply to OPS. Relevant sections of the general planning regulations in Ireland that may relate to the installation of OPS are summarised below. The provisions of Class 21, Part 1 of Schedule 2 of the Planning and Development Regulations 2001 (as amended) provide exemptions from planning permission for deploying new machinery (see extract below). These exempted development provisions are subject to the limitation / condition that the development shall not materially alter the external appearance of the premises, and a limit on the height of any plant or machinery. In addition, the provisions of *Article 9* of the Planning Regulations provide restrictions on exempted development listed in Schedule 2. If assessing whether a proposal was exempted development, the proposal would be assessed against each of the Article 9 restrictions. Most are easily addressed but the restriction that can be an issue in the context of a Port is Appropriate Assessment (impact on Natura sites). If in doubt it would be advisable to undertake an Appropriate Assessment Screening of what is proposed – this would address the environmental / noise issues.

	There are separate classes within the PD Regulations that provide for exempted development for electrical services / apparatus – Classes 26 to 29 are relevant, and the relevant extract from the regulations is attached as *Appendix 2*. The exempted development provisions within these classes are also subject to the Article 9 restrictions. **Schedule 2, Part 1, Class 21: *Development for industrial purposes*** CLASS 21 a) Development of the following descriptions, carried out by an industrial undertaker on land occupied and used by such undertaker for the carrying on, and for the purposes of, any industrial process, or on land used as a dock, harbour or quay for the purposes of any industrial undertaking. (i) the provision, rearrangement, replacement or maintenance of private ways or private railways, sidings or conveyors, (ii) the provision, rearrangement, replacement or maintenance of sewers, mains, pipes, cables or other apparatus, (iii) the installation or erection by adding or replacing plant or machinery, or structures of the nature of plant or machinery. b) Any works for the provision within the curtilage of an industrial building of a hard surface to be used for the purposes of or in connection with the industrial process carried on in the building. 1. Any such development shall not materially alter the external appearance of the premises of the undertaking. 2. The height of any plant or machinery, or any structure in the nature of plant or machinery, shall not exceed 15 metres above ground level or the height of the plant, machinery or structure replaced, whichever is the greater. **The Electricity Regulation Act, 1999** An act to enable effect to be given to directive No. 96/92/EC of the European Parliament and of the council of 19 December 1996(1), to establish a body known as the Commission for Electricity Regulation, to give power to that commission to grant licences to generate and supply electricity and to grant authorisations to construct generating stations, to provide for access to the transmission or distribution system by holders of licences. The deployment of OPS in Irish ports may entail the ports generating and/or supplying electricity to customers and the ports would require a licence from the Commission for Electricity Regulation for these activities as shown in the relevant section below.

	Electricity Regulation Act, 1999. PART III *Licences and Authorisations* *Licences to generate and supply electricity.* *14.—(1) The Commission may grant or may refuse to grant a licence to any person— (a) to generate electricity, (b) to supply electricity to eligible customers, (c) subject to section 28, to supply electricity to final customers which in an aggregate does not exceed the amount of electricity which is available to the supplier and which is produced using renewable, sustainable or alternative forms of energy or electricity purchased, in place of such electricity, in accordance with the trading arrangements provided for in regulations to be made by the Commission under section 9(1)(d),…* **Climate Action and Low Carbon Development (Amendment) Act 2021** This legislation will support Ireland's transition to Net Zero and achieve a climate-neutral economy by no later than 2050. It will establish a legally binding framework with clear targets and commitments set in law, and ensure the necessary structures and processes are embedded on a statutory basis to ensure we achieve our national, EU and international climate goals and obligations in the near and long term. It includes the following key elements: • Places on a statutory basis a 'national climate objective', which commits to pursue and achieve no later than 2050, the transition to a climate-resilient, biodiversity-rich, environmentally sustainable, and climate-neutral economy. • Embeds the process of carbon budgeting into law, Governments are required to adopt a series of economy-wide five-year carbon budgets, including sectoral targets for each relevant sector, on 15-year basis, starting in 2021. • Actions for each sector will be presented in detail in the Climate Action Plan, updated annually. • A National Long Term Climate Action Strategy will be prepared every five years. Government Ministers will be responsible for achieving the legally binding targets for their own sectoral area with each Minister accounting for their performance towards sectoral targets and actions before an Oireachtas Committee each year.

Description of **REGIONAL** and **LOCAL** regulation directly or indirectly affecting the OPS implementation	No regional nor local regulations affecting the implementation of OPS solutions have been identified.

4.1.8 Portuguese Ports

Description of **NATIONAL** regulation directly or indirectly affecting the OPS implementation	- National regulation related to **environmental impact, noise pollution, etc.** **Prevention and control of emissions** *Decree-Law no. 39/2018 of the Portuguese Government related to the prevention and control of pollutants emissions into the air (REAR), transposing Directive (EU) No. 2015/2193, of the European Parliament and of the Council, of 25 November 2015, on the limitation of emissions pollutants into the air coming from combustion power plants.* Decree-Law No. 39/2018 has filled a gap in European Union law, regulating polluting emissions from the combustion of fuels in power plants. In this context, the Directive being transposed provides a set of rules on controlling emissions into the air from these plants, which cut across transversal to several economic sectors activity, determining that the exercise of their activity is subject to the obtaining a permit, based on information transmitted by the operator, in addition to the creation of a system for monitoring and verifying compliance with the requirements imposed on it. The Decree-Law came into force on 1 July 2018 and provided in a single piece of legislation the following rules: • Obtaining an Air Emissions Title (TEAR), a license now integrated in the Single Environmental Title (TUA), for the facilities or activities covered by its scope. • Combustion installations with a thermal capacity of up to 1 MWh are exempt from the application of this law (this option aims to reduce the imposition of disproportionate burdens on small companies). • Possibility of reducing the frequency of monitoring. Creation of a single register for the polluting emissions into the air, through the use of an electronic platform, which analyses the results to be reported.

	Monitoring, reporting and verification of CO_2 emissions from maritime transport **Decree-Law No. 87/2020 of 15 October ensures the implementation, in national legal order, of Regulation (EU) No. 2015/757, on the monitoring, reporting, and verification of CO_2 emissions from maritime transport.** The decree-law aims to ensure the execution and ensure compliance with Regulation (EU) 757/2015 of the European Parliament and of the Council, of 29 April 2015. This EU regulation determines precisely the way of monitoring, reporting and verification of carbon dioxide emissions from maritime transport and also requires Member States to set up a system of penalties to be applied in the event of non-compliance with the obligations imposed by it and by the following related regulations: • Commission Implementing Regulation (EU) 2016/1927 of 4 November 2016 on templates for monitoring plans, emission reports and compliance documents. • Commission Delegated Regulation (EU) 2016/2072 of 22 September 2016 on verification activities and accreditation of verifiers. This Decree-law applies to maritime operators operating ships of more than 5,000 gross tonnage in respect of CO_2 emissions generated during their voyages between the last port of call and a port of call under the jurisdiction of a Member State and between a port of call under the jurisdiction of a Member State and the next port of call, as well as within ports of call subject to the jurisdiction of a Member State. However, this Decree-Law does not apply to ships operated by the Navy, its auxiliary units or maritime operators operating fishing or fish-processing vessels, wooden ships of primitive build, ships not propelled by mechanical means, or State ships engaged in non-commercial services. Energy efficiency on final uses and energy systems **Decree-Law No. 319/2009 was published on 3 November, which transposes Directive No. 2006/32 / EC, of the European Parliament and of the Council, of 5 April, on efficiency in the final use of energy and energy services. In article 42/1 was revoked by DL 68-A/2015.** The Decree-Law No. 319/2009 establishes the need to create conditions for the promotion and development of the energy systems market and the development of measures to improve energy efficiency for final consumers. It sets out objectives and tools to be used to increase the cost-effectiveness of energy end-use efficiency improvements. In addition,

	it contemplates the pursuit of an energy saving target of 9% for 2016, as well as the promotion of mechanisms, incentives and institutional, financial and legal frameworks necessary to overcome the current market constraints and gaps that prevent better efficiency at the end use of energy, through the penetration of low consumption equipment and energy consumption rationalisation measures to be adopted by final consumers. This Decree was revoked by DL 68-A/2015, in *Article 42/1*. *Paragraphs 1, 4 and 5* of *Article 4 and Annexes I, III and IV* of Decree-Law No. 319/2009, of 3 November, shall remain in force at the end of the period fixed for compliance with the 9% target, as referred to in paragraph g) of No. 4 of *Article 4* of this Decree-Law. Energy efficiency and reduction of greenhouse gas emissions - non-SMEs **Decree-Law 68-A/2015 of 30 April, transposed European Directive 2012/27/EU of the European Parliament and Council of 25 October 2012 and a set of provisions and actions on energy efficiency and reduction of greenhouse gas emissions into national law.** The Decree-Law 68-A/2015 imposed to the non-SMEs companies the execution of mandatory energy audits with the identification of consumption profiles. With this purpose, they should identify and study measures to improve energy consumption in order to reduce greenhouse gas emissions by about 20%, increase by the same percentage the proportion of renewable energy shares and achieve half of 20% in energy efficiency. Within the scope of *Articles 12 and 13* (energy audits and consumption register for non-SME companies) of Decree-Law 68-A/2015, a set of answers from frequent questions about the application of provisions contained in those articles, an informative circular concerning the deadline for the delivery of energy audits and the order of the Lord Secretary of State for Energy, determining the minimum criteria for the performance of the audits, are made available. Energy consumption The provisions of the SGCIE - Intensive Energy Consumption Management System, provided for in Decree-Law No. 71/2008, of 15 April, with its rectifications, apply to intensive energy consuming installations (CIE), by means of a proven record of energy consumption exceeding 500 tonnes of oil equivalent per year [tep/year], in the immediately preceding calendar year. The Decree-Law defines which installations are considered energy-intensive, extending its application to a more comprehensive set of companies and installations. The objective is to increase their energy efficiency, bearing in

	mind the need to safeguard the respective competitive base within the framework of the global economy, while establishing at the same time a diversified and administratively more simplified scheme for companies that are already bound by commitments to reduce CO_2 emissions defined in the PNALE (National Plan for the Allocation of Emission Allowances), as well as allowing both categories of installations to have access to exemptions and other stimuli and incentives for the promotion of energy efficiency. Legal framework concerning energy consumption **Decree-Law 71/2008 of 15 April was complemented by Decree-Law 319/2009 of 3 November, Ordinance 519/2008 of 25 June and the more recent Decree-Law 68-A/2015 about Management System for Intensive Energy Consumption (SGCIE**). SGCIE establishes that energy-intensive facilities must make periodic energy audits that focus on energy use conditions and promote the increase of energy efficiency, including the use of renewable energy sources. The SGCIE facility operator must promote the carrying out of energy audits, which will be made every eight years (facilities with energy consumption exceeding 1,000 tep/year (1 tep equals to 11.63 MWh). As a complement to the energy audit, the Energy Consumption Rationalisation Plan (PREn) must be prepared, based on the audit reports, to identify the measures to be implemented to reduce energy consumption and establish goals to be achieved. National Framework of Action for the creation of alternative fuels infrastructure **Resolução do Conselho de Ministros No. 88/2017.** The National Framework of Action (NFA) is the transposition of the Directive 2014/94/EU. The main motivations for this initiative include minimising the European Union's dependence on oil and reducing the environmental impact of transport, particularly with regards to reducing pollutant emissions and the objective of decarbonisation, and its contribution to mitigating one of the main obstacles to the growth of the market for road vehicles and maritime means of transport with less environmental impact, which is the insufficient supply network for alternative fuels. The national objectives and targets set in the NFA that is hereby approved focus on the creation of electricity infrastructure, compressed natural gas (CNG) and liquefied natural gas (LNG), referring to the years 2020 or 2025. With electricity recharging points for electric mobility and CNG refuelling points in urban agglomerations, or CNG refuelling points along the trans-European transport network and LNG refuelling points.

	Roadmap for carbon neutrality 2050 (RNC 2050) **Decree-Law no. 85/2019 of 1 July, Resolution of the Council of Ministers No. 107/2019 - Approves the Roadmap for Carbon Neutrality 2050,** The RNC 2050 establishes the Long-Term Strategy for Carbon Neutrality of the Portuguese Economy by 2050, according to the requirements of the Paris Agreement. Portugal has presented excellent results in terms of climate policy in the last decades, having exceeded the objectives defined in the framework of the Kyoto Protocol and being in line with the targets set for 2020 to reduce GHG emissions, energy efficiency and the promotion of sources of renewable energy. The Government of Portugal took on the commitment to achieve carbon neutrality by 2050, providing a clear picture of the decarbonisation of the national economy and contributing to the more ambitious objectives of the Paris Agreement. The Annex approves the Long-Term Strategy for the Carbon Neutrality of the Portuguese Economy in 2050. In order to achieve this, the Carbon Neutrality Roadmap 2050 (RNC 2050) was developed to identify the main decarbonisation vectors in all sectors of the economy, the policy and measures options, and the path to reduce emissions to achieve this goal in different socio-economic development scenarios. Self-consumption of renewable energy **Decree-Law no. 162/2019 of 25 October. Approves the legal regime applicable to self-consumption of renewable energy, partially transposing Directive 2018/2001** Decree-Law No. 162/2019 establishes all the rights and duties of citizens and entities wishing to invest in small installations. The new regime also partially transposes Directive 2018/2001 and its main objective is to simplify and make life easier for new producers. The new Decree Law, which comes into effect on 1 January 2020, establishes the legal regime applicable to self-consumption of renewable energy, on an individual, collective, and renewable energy community (REC) level, meaning that those who produce solar energy will be able now to share it with their neighbours. Until now, only individual self-consumption was allowed, which means that anyone could install photovoltaic solar panels and consume their own energy. However, the approval of the new legal framework will allow consumers to group together (collective

	self-consumption), sharing the same energy production unit. It will also allow consumers and other participants in renewable energy projects to set up legal entities (the Energy Communities) for the production, consumption, sharing, storage, and sale of renewable energy. Recovery and Resilience Plan *Recovery Portugal 2021-2026* The Recovery and Resilience Plan (RRP) is designed in the context of a triple challenge: controlling the pandemic, recovering from the economic and social crisis that COVID-19 generated and ensuring the construction of a more robust future, with less inequality, more prosperous, more cohesive, and more sustainable. The RRP is part of a coherent strategy to recover the country and lay the foundations for an economy of the future, which also includes the Multiannual Financial Framework 2021-2027, the other funds of the NextGenerationEU, such as REACT EU or the Just Transition Fund, other European mechanisms such as SURE, the different centrally managed European funding programmes (such as Horizon Europe, the Connecting Europe Facility, or EIB/EIF financing), the different national budget exercises and structuring private investments. The Recovery and Resilience Plan simultaneously responds to two distinct but complementary priorities: Strengthening the health system's resources and improving the quality of services provided by the Public Administration, and Supporting workers, families, and businesses to overcome the difficulties caused by the pandemic. All the instruments designed seek to respond to the new challenges and trends in the transformation of economies and societies, namely the demographic challenge, inequalities, digitalisation, and climate change. National Energy and Climate Plan 2030 **Resolution of the Ministers Council No. 53/2020 of 10 July 2020, approves the National Energy and Climate Plan 2030 (PNEC 2030).** The PNEC 2030 establishes the objectives of the national climate and energy policy and sets new national targets to reduce greenhouse gas emissions, including sectoral targets as incorporating energy from renewable sources and energy efficiency, as well as the lines of action and measures to be adopted for the society decarbonisation and for energy transition, along with the Roadmap for Carbon Neutrality 2050. With 58 action lines and 206 measures to achieve the targets set, the PNEC 2030 also includes measures relating to the internal energy market and energy security. The PNEC

	includes the end of electricity production from coal in Pego (2021) and Sines (2023); the investment in renewable source energy, with the doubling of solar capacity, promoted through capacity auctions; the investment, in the next decade, in the production and incorporation of renewable gases, such as hydrogen. Also noteworthy is the focus on sustainable and electric mobility. Assessment and management of ambient air quality **Decree-Law No. 102/2010 of 23 September - Sets objectives for ambient air quality.** Decree-Law no. 102/2010 establishes ambient air quality objectives taking into account the standards, guidelines and programmes of the World Health Organisation, in order to avoid, prevent or reduce the emissions of atmospheric pollutants and its harmful effects on human health and the environment and establishes the conditions for assessment and management of air quality and public information throughout the national territory. Decree-Law No. 102/2010 also defines the procedures for the assessment of air quality in the management and assessment units established for this purpose (zones and agglomerations), also paying special attention to control measures and quality assurance of measurements. It also establishes the adoption of the necessary measures to ensure that the concentrations of air pollutants meet the air quality objectives set for each pollutant throughout the national territory. Infrastructure for alternative fuels **Decree-Law no. 60/2017 of 9 June, Resolution of the Council of Ministers n. 112/2017 - Establishes the framework for the deployment of an infrastructure for alternative fuels.** This Decree-Law establishes the framework for the deployment of an infrastructure for alternative fuels, transposing Directive 2014/94/EU, from 24th October 2014. It includes the recommendation of minimum quantitative requirements to be met for the supply of electricity and natural gas to transport and also of the utmost importance from the point of view of improving the environmental impact of transport and reducing greenhouse gas emissions, which must be ensured in the context of combating climate change, along with a wide range of other measures to be taken in the field of energy efficiency in transport and mobility.

	- National regulation related to **power supply and electricity distribution** Organisation and Functioning of the National Electrical System **Decree-Law No. 15/2022 of 14 of January, establishing the organisation and functioning of the National Electrical System (Sistema Eletrico Nacional – SEN).** This legislative piece was approved in order to transpose Directives (UE) 2019/944 and Directive (UE) 2018/2001.The changes brought by this decree within the national paradigm are fivefold: • *Ex*-ante control of SEN activities. • Electric grid planning. • The introduction of competitive mechanisms for SEN activities. • Active involvement of consumers. • The legal densification and framework of new realities such as retrofit, hybrids, hybridisation, and storage.

Description of **REGIONAL** regulation directly or indirectly affecting the OPS implementation	Portugal does not have a regional form of Administrative Power, except the one applicable to the autonomous regions of Azores and Madeira. As concerns OPS, regional level regulations and legislation differ mainly from national law with regards to: - Regional regulation related to **port structure and administrative issues.** **1. Regional Legislative Decree No. 24/2011/A -** Port system of the Azores: This diploma accrues to the strategy to restructure and reorganise the regional port management model, extinguishing the autonomous port boards, and creating a new model of the port sector, based on the idea of a regional port system and its coordinated operation within the development strategies of each port. Portos dos Açores - Sociedade Gestora de Participações Sociais (SGPS), S. A. (PA), having the Autonomous Region of the Azores as the sole shareholder, which held, through it, the entire share capital of the three Regional Port Administrations (Administração dos Administração dos Portos das Ilhas de São Miguel e Santa Maria, S. A., Administração dos Portos da Terceira e Graciosa, S. A., and Administração dos Portos do Triângulo e do

	Grupo Ocidental, S. A.) then incorporated the three Regional Port Administrations, merged by incorporation into PA since 2011. - Regional regulation related to **power supply and electricity distribution** and regional regulation related to **safety and security measures, including occupational risks prevention**. **2. Licensing of electric supply facilities and safety and security measures, applicable:** • **Regional Decree Law No. 29/2019/A** Summary: Establishes the legal licensing regime to which private-service electrical installations are subject in the Autonomous Region of the Azores. • **Ministerial Order No. 115/2020, of August 18 - Regulates Regional Decree Law No. 29/2019/A**, of 27 November, which establishes the legal licensing system to which private electric installations are subject in the Autonomous Region of the Azores. • **Decree 42895/60, of 31 March, amended by Regulatory Decree No. 14/77, of 18 February and by Regulatory Decree No. 56/85, of 6 September - Safety Regulations for Substations and Transformer Stations**. Notice that the Order with the technical specifications, referred to in *paragraphs 12 and 13* of *Article 4* of Decree-Law No. 60/2017, of 9 June, for the supply of electricity to maritime transport carried out from infrastructures of the Public Service Electricity System Network located on land, is not published. It is further informed that, based on the Communication "Competences of the DGEG in the supply of electricity to ships" of the Directorate-General for Energy and Geology (DGEG), of 24 June 2020, in response to the Audit Report on Air Quality, prepared by the Court of Auditors, the DGEG understands that the order referred to above "should only be produced (...) before a concrete reality and at the request of the territorially competent port authority".

Description of **LOCAL** regulation directly or indirectly affecting the OPS implementation	In relation to the structure of Administrative power, Portugal is a unitary and decentralised State. The Portuguese Constitution establishes two autonomous regions (*Açores* and *Madeira*) and divides Continental Portugal into three tiers of government: Civil Parishes (*freguesias*), Municipalities (*Municípios)* and Administrative Regions. For the purpose of this section, the analysis would fall on legislation issued by the Municipality of Matosinhos, specifically it's *Plano Diretor Municipal* (PDM), which is a key legal instrument, issued by each Municipality, with the aim of defining the strategy of territorial development. Matosinhos' PDM is not applicable to APDL in its entirety, insofar as the Portuary Administration has some autonomy regarding the construction of its infrastuctures. However, concerning subject matters like noise polution and environmental obligations, APDL must comply with the local PDM. **Plano Director Municipal:** Approved by the Municipality's Assembly on the 21 June 2019.

4.2 Analysis and Comparison

Based on the aforementioned information collected from the port authorities and technical partners of EALING Action in each involved Member State regarding the regulations that directly or indirectly affect the installation/operation of OPS facilities in EALING ports, a detailed analysis has been performed for depicting the level of maturity and complexity of each Member State's regulatory framework.

The legislative framework analysis related to OPS development at the local, regional, and national level of each Member State participating in EALING Action has focused mainly on the following aspects: i) the transposition of the EU Directive 2014/94/EU on Alternative Fuels Infrastructure into their national legislations, ii) the adoption of the international electro-technical standards for shore-side electricity infrastructure in ports, iii) the organisation of the environmental impact assessment and safety requirements for electrical installations, and iv) the adoption of national climate and energy plans with incentives for promoting shore-side electricity supply to vessels as port services.

In addition, aspects such as the framework for the public procurement processes for OPS facilities development, the organisation and operation of the electricity grid, electric power plants and networks, the generation of electricity, and the formulation mechanisms for electricity prices have been considered.

In relation to local and regional regulations, urban development plans for the realisation of OPS installations in ports, and city council regulations (for either the approval of construction works for OPS to vessels calling at ports, or the environmental impact assessment approval for the installations and technical norms of the local Distribution System Operators for the ports' shore-side electricity infrastructure) have been studied.

4.2.1 Overall status of the EALING countries

A brief overview of the regulatory structure affecting directly or indirectly the implementation of OPS facilities per participating Member State in the EALING Action at national, regional, and local level is presented below.

Spain

In line with the request of the European Commission, Spain transposed Directive 2014/94/EU on Alternative Fuels Infrastructure (AFID) in its national legislation in December 2016, and published its National Action Framework, which included different measures planned to promote the implementation of alternative fuels infrastructures, one of the most relevant being

the 50% discount on the rate applied to ships docked in ports when connected to the electricity grid.

As explained in a previous section, it is worth noting that the EU Council authorised Spain in October 2018 to reduce the tax applied to any electricity consumption for the specific case of electricity supply to ships at berth. In this way, the tax, established in general at 5% of the invoiced amount, is reduced to the minimum and changes its base, i.e., to the 'symbolic' amount of EUR 0.05 cents per kWh for the case of ships that turn off their auxiliary engines and connect to the general grid when they are berthed.

Spain is currently working from the legislative point of view on the inclusion of OPS/electric bunkering services to the docked ships as port service (Law amending the Law on Spanish Ports and Merchant Marine, dated 2011), allowing the establishment of a framework for its provision and adopting common rules on financial transparency in ports.

This commitment towards the use of OPS in ports has been also included in the Spanish Law on climate change and energy transition, dated 2021, in which, inter alia, it is stated that the Ministry of Transport, Mobility and Urban Agenda through the State Port Agency and with the agreement of the regional communities, will: 1) apply economic incentive measures to stimulate electricity supply for ships, 2) promote and implement projects to improve port electricity grids and 3) establish targets for reducing energy consumption in ports in relation to their level of activity.

In addition to these regulations, which are focused on ports, many other national regulations apply when implementing OPS infrastructures, such as public procurement processes, distribution and commercialisation of the electricity, environmental impact assessment, noise pollution, technical conditions in electrical installations, fire protection, prevention of occupational risks, personal protective equipment, etc.
At regional level, it is worth noting that some of the national regulations are adapted to regional regulations (e.g., Environmental Impact Assessment), in contrast with many of the rest of the countries under study.

Finally, it should be noted that in Spain, local regulations are of great importance when implementing OPS infrastructures. Issues such as the regulation of fees and permits for construction works, and the DSO's technical norms of the participating Spanish ports depend on the cities in which they are located.

Greece

Greece has legislated national regulations referring to administrative issues and port structure which stipulate that port infrastructure development is subject to the Decision of Port Authority's Board of Directors, whilst the required technical studies of any port infrastructure, including OPS facilities, must be compliant with the Development Plan of Secretariat General of Ports Policy and Maritime Investments that pertain to the Hellenic Ministry of Maritime Affairs and Insular Policy in order to be included in the Port's Master Plans. Any update or amendment of these port masterplans (including electricity transmission and distribution installations) is foreseen to be regulated with a Presidential Decree issued by the Ministry of Maritime Affairs and Insular Policy. Public procurement processes for OPS facilities development have also been defined in the Greek national legislation, and port authorities are enabled to publish calls to tenders for the award of work contracts as private contracts for their port infrastructure projects in compliance with the determined technical standards, specifications and safety requirements that are included in the national regulation for public port infrastructure projects.

As for the power supply and electricity distribution, upon transposition of Directive 2014/94/EU on Alternative Fuels Infrastructure into national legislation of Greece it has been defined that the electricity for OPS and electric bunkering of vessels calling at Greek ports is going to be distributed by the infrastructure which must be in compliance with the technical specifications of the JEC/ISO/IEEE 80005-1 standard. Concerning the environmental impact of the national regulations, the Environmental Assessment Approval Decisions for port infrastructure, including OPS facilities, are issued depending on their type either by the Hellenic Ministry of Environment and Energy or by the Decentralised Administration of Attica at regional level. The mandatory general and special requirements for the electrical installations, including the safety requirements and technical standards, have been defined by the Greek Government.

Since there are no local regulations related directly or indirectly to OPS infrastructure implementation in Greece, all the regulations emanate from the national legislative framework of the country and the obligation for the compliance of any infrastructure development with the New Master Plan of Athens-Attica, including spatial planning and environmental protection provisions. The competence of the City Council is limited to the issuance of opinions for this type of works. The regional regulations related to shore-side electricity include provisions for the issuance of an opinion by the Decentralised Administration of Attica for the development of respective port infrastructure, including also OPS facilities in the ports of Piraeus and Rafina, which is not binding and not relevant to the licensing procedures of the proposed port infrastructure.
Furthermore, the regional regulations for port administrative issues in the port of Piraeus state that the final technical studies for port infrastructure projects, including OPS facilities or

substations in Piraeus Port, must be approved by the Technical Departments of the Decentralised Administration of Attica.
Regarding environmental impact issues, regional regulations stipulate that the Regional Council of Attica (the ports of Piraeus and Rafina) participates in the Advisory Council to issue an opinion regarding the required environmental permittance for the development of projects in urban and port areas.

Italy

At national level, Italy transposed Directive 2014/94/EU on Alternative Fuels Infrastructure (AFID) in its national legislation in March 2017. Apart from this, Italy has regulations referring to contracts and concessions of contracting authorities and entities regarding the acquisition of services, supplies, and works concerning the contracts awarded for port infrastructure development, including OPS facilities. As for the national regulations for power supply and electricity distribution issues, Italy has issued the «Integrated National Plan for Energy and Climate» (INPEC) in full compliance with the EU's legislative framework for alternative fuels infrastructure, thus establishing national targets for 2030 on energy efficiency as well as renewable energy for facilitating the radical transformation of its energy and transport infrastructure. It has adapted its regulatory plans for the ports system of the country, where cold ironing is also indicated as a tool aimed at achieving energy and environmental improvement objectives. National regulations related to environmental sustainability directly implement the obligations assumed in the execution of EU Regulations to achieve low CO_2 emissions in the transport industry, including the maritime sector. Regarding the national regulations related to security, safety measures, and the prevention of occupational risks, Italy has legislated many legal acts regarding human health, air quality, and safety zones during the port infrastructure development, including OPS facilities.

In relation to regional regulations, they include safety prerequisites for technical structure development and define the approval procedures of the implementation plans of the general urban planning instruments, aiming to protect the natural environment and air quality. In compliance with European and state regulations, Italy has transposed in its regional legislative framework regulations related to the organisation and methods of exercising the administrative functions in the field of Environmental Impact Assessment (EIA).

Finally, from the point of view of local regulations affecting OPS installations, they are mainly related to the full compliance with urban development plans and masterplans of the municipalities in which the ports are located, focusing on infrastructure development for energy efficiency and transformation of energy, including port infrastructure and ports environmental impact planning. Regional regulations of Italy are complementary to the national ones and focus on the environmental energy policy of infrastructure projects in the

transportation and industrial sectors in the region through diversification of energy sources, energy production balance, limitations on the transportation, and transformation and distribution of electrical energy.

Romania

Apart from the transposition of Directive 2014/94/EU on Alternative Fuels Infrastructure in early 2017, Romania has legislated regulations at national level related to the establishment of tariffs for the electricity transmission services and has adopted the international technical specifications determined (e.g., IEC/ ISO /IEEE 80005-1) for built or renewed power supply installations from the shore for seagoing vessels of the maritime transport. As concerns national regulations for ports structure and administrative issues, the Romanian General Master Plan for Transport, including the maritime sector, has been issued and formulated the Strategy on the National Policy Framework for the development of the market regarding alternative fuels in the transport sector of Romania, also targeting at a minimal impact on the environment and the upgrade of sea network.

In full compliance with the EU Directives concerning the environmental impact issues, Romania has issued national regulations related to Air quality plans taking into account the emissions released into the air using sea transport and the quantification of sulphur content of marine fuels in Romanian ports to promote shore-side electricity services for vessels calling at their ports as an alternative environmentally friendly solution. Furthermore, environmental assessment procedures resulting in the issuance of the environmental permittance and urban planning certificates for private and public projects, including industrial electricity production infrastructure or electrical power lines with a voltage of 220 kV, have also been legislated at national level in Romania. In addition, national regulations include provisions for port infrastructure holders that are obliged to perform noise mapping and elaborate strategic noise maps and action-plans, for safety and security issues in the context of the port's infrastructure development and for environmental permittance procedures for the transportation of electricity through high and medium voltage lines.

In relation to local regulations in effect affecting OPS installations, they mainly focus on urban development plans and city regulations, which provisions for the settlement of energy imbalances, the organisation of electricity market operations, the award of public procurement contracts as well as the development of port masters' plans that will include future cold ironing implementation plans for the Port of Constanta until 2022.

In compliance with the European Union's legislative framework, Romania's local and regional regulations include provisions for the internal energy market operation, electricity supply procedures, and technical approvals for connection. Regarding environmental impacts, such as

Constanta's air quality plan by the City Council, local regulations in Romania also apply to maritime transport emissions. For activities related to maritime transport, environmental permittance for electricity supply procedures in ports as well as noise maps and action plans are included in local regulations. Local regulations that are in effect in Romania are related to Administration regulations of Free Zone Constanta, port regulations of Romanian seaports, and both local and regional regulations concerning the port safety and security rules for facilities development in full compliance with EU Directives, while Constanta Port Zonal Urban Plan arrangement is under consultation.

Regional regulations concerning safety regulations and port operations are in effect and related to the movement of maritime and inland waterway vessels in the seaports of Constanta for all bunkering procedures, such as shore-side electricity at ports.

Bulgaria

Bulgaria has transposed Directive 2014/94/EU on Alternative Fuels Infrastructure (AFID) in its national legislation through several national acts such as Energy Act, Energy Efficiency Act and Ordinance No. 9 on the requirements for operational suitability of ports and specialised port objects.

Bulgaria has legislated regulations at the national legislative level, such as adopting its National Policy Framework referring to alternative fuels infrastructure development and modernisation, including shore-side electricity facilities. Concerning the national regulations referring to ports structure and administrative issues, the Maritime Space, Inland Waterways and Ports of the Republic of Bulgaria Act has been issued, which includes the onshore electricity supply to ships as port service in Bulgarian ports, also adopting the technical specifications for OPS installations in ports specified in the EU's Alternative Fuels Infrastructure Directive. Regarding the power supply and electricity distribution, all physical-infrastructure works, including OPS facilities in ports, must be designed, constructed, and approved by taking all the necessary safety and security measures, in full accordance with the Bulgarian Spatial Development Act. The requirements for connecting charging points to the electricity distribution network and the administrative requirements for their operators and end-users are regulated by the Energy Act issued by the Bulgarian Member State. The building rights for OPS installations constructed on corporeal immovable constituting municipal property are given by the competent municipal authorities under the national regulations and the ownership issues of infrastructure on municipal land areas, while all the procedures for concessionaires regarding energy works have also been regulated.

National regulations in Bulgaria concerning the organisation and operation of the electricity grid, electric power plants and networks, of power plants for generation of electricity as well

as regulations for the terms and conditions for participation in the electricity market and the formulation of electricity prices in compliance with EU Directives, are already in effect.

In compliance with the EU's Directives, national regulations are in effect concerning the environmental impact assessment, such as the Environmental Protection Act in Bulgaria, which states the obligation to conduct the appropriate environmental impact assessment for projects related to the construction of electricity transmission lines with a voltage of 220 kV or more and a length of more than 15 km for commercial ports infrastructure. In addition, national regulations regarding safety and security measures, for the development of electrification infrastructure have been issued related to the design of electrical installations and power lines and the technical rules that must be followed to ensure safety and security during the port infrastructure development procedures.

Concerning the applicable local and regional legal requirements, there are neither local nor regional regulations related directly or indirectly to OPS infrastructure implementation in Bulgaria that are in effect because all the regulations emanate from its national legislative framework. Therefore, all necessary requirements (including permissions, technical and environmental requirements, etc.) during the preparation and the execution of the OPS project are stipulated in the national legal acts and shall be followed concerning the Bulgarian ports that appertain to the same region in which the national legislation is applicable. The territory and the port infrastructure of ports are declared as public property under the national legislation.

Slovenia

Slovenia transposed the EU Directive 2014/94/EU on Alternative Fuels Infrastructure (AFID) in its national legislation in July 2017 and published in October of the same year the "Strategy in the field of market development for the establishment of appropriate infrastructure related to alternative fuels in the transport sector in the Republic of Slovenia", in which the supply of electricity to ships is included.

Slovenia has legislated regulations at national level related to the port structure and administrative issues, such as public procurement national laws for the award of works concerning the port infrastructure development, including shore-side electricity facilities and national spatial plans for this kind of private or public projects.
In relation to national regulations related to the power supply and electricity distribution, Slovenia has issued the Electricity Supply Act Energy containing provisions for the organisation and operation of the electricity market and the respective local electricity distribution networks in urban regions, also including port areas.

Regarding the environmental impact and noise pollution, national laws are in effect in Slovenia, such as the Environmental Protection Act and national regulations defining noise emission limit values applicable to port infrastructures and activities.
As for the industrial installations national regulations, Slovenia has legislated many rules referring to the technical conditions for the construction of underground power lines of alternating nominal voltage above 1 kV to 400 kV and the applied technical standards for the operation of power facilities or low voltage power lines and electrical installations. In the field of safety and security measures, including occupational risks prevention, Slovenian national laws related to protection at work in port infrastructure projects against the danger of electric current and fire protection measures are in effect.

Concerning the applicable local and regional legal requirements, in Slovenia, there are neither local nor regional regulations related directly or indirectly to OPS infrastructure implementation that is in effect because all the regulations emanate from its national legislative framework.

Ireland

Ireland has transposed the EU Directive 2014/94/EU on Alternative Fuels Infrastructure (AFID) in its national legislation with some delay compared to the other EALING project partners, as it did so in 2018.

Ireland has legislated at national level laws related to administrative and port structure issues such as national planning and development regulations, including exemptions from planning permission and technical restrictions for deploying new facilities, while exempted development for electrical services/ apparatus is also included in the provisions. Concerning the environmental impact and noise pollution issues, Irish national laws state that Appropriate Assessment Screening (impact on Natura sites) is foreseen in specific cases of port infrastructure development, also including dedicated infrastructure for shore-side electricity supply in ports when there are not any exemptions regarding the development of electrical installations.
Additionally, in industrial installations, the national legislative framework in effect regulates the development of industrial plants in ports and their technical requirements and restrictions. National regulations related to the power supply and electricity distribution have been legislated, such as the electricity regulation act in Ireland, which is in full compliance with the EU Directives that have been issued on the prerequisites for obtaining licences to generate and supply electricity, authorisations for the construction of generating stations, and requirements for access to the transmission or distribution system by the licensees. The law mentioned above is directly linked to developing OPS installations in ports. It regulates how ports will generate

and/or supply electricity to customers and how the ports would require a licence from the Commission for Electricity Regulation for these types of activities.

Furthermore, national regulations are in effect regarding the licensing procedures for electricity generation and supply by renewable energy sources and the development of this port infrastructure. At national level, Ireland has issued the Climate Action and Low Carbon Development Act for creating a climate-neutral economy by no later than 2050 and adopted a National Long Term Climate Action Strategy targeting the energy transformation of the maritime sector in Ireland through a Climate Action Plan and carbon budgeting.

Concerning the applicable local and regional legal requirements, in Ireland, there are neither local nor regional regulations related directly or indirectly to the implementation of OPS infrastructure that is in effect because all the rules emanate from its national legislative framework. Therefore, all requirements (incl. administrative and port structure issues, permissions, technical and environmental requirements, connection to power supply distribution issues, etc.) during the preparation and the execution of the OPS project are stipulated in the national legal acts of the country.

Portugal

Portugal transposed Directive 2014/94/EU on Alternative Fuels Infrastructure (AFID) in its national legislation in August 2016.

Portugal has legislated at the national level regulations related to environmental impact issues such as the prevention and control of pollutants emissions into the air from various facilities, including the OPS facilities, in full compliance with the provisions of the respective EU Directives.

A plethora of national laws has been issued in Portugal concerning the development of the energy systems market and the development of measures to improve energy efficiency for final consumers and achieve a radical reduction of greenhouse gas emissions in conformity with EU directives. Portugal has legislated an Energy and Climate Act promoting electricity production by renewable energy sources and the organisation of all the trade procedures concerning the consumed energy as well as the national laws referring to ambient air quality prerequisites. Concerning the power supply and electricity distribution, national laws in effect regulate the organisation and functioning of the National Electrical System and electric grid planning laws.

Concerning regional regulations of Portugal in effect, regulations related to port structure and administrative issues, a regional port management model including the infrastructure

development strategy and the contractual procedures are followed by the port of Açores in compliance with the regional strategy. Regional regulations related to the power supply and electricity distribution issues are in effect in Portugal, such as legal acts for licensing private-service electrical installations in ports subject to the Autonomous Region of the Azores. In the field of safety and security measures, including occupational risks prevention, regional laws are in effect determining the safety and security measures, for the development of electrical installations, while the technical specifications for the supply of electricity to maritime transport carried out from infrastructures of the Public Service Electricity System Network have not yet been published.

From the point of view of local regulations, they are related to the construction of any type of infrastructures including the maritime ones, as well as noise pollution and environmental regulations, which are known as "Municipal Directive Plans" and are in effect for both continental Portugal and the autonomous regions of Açores and Madeira.

4.2.2 Comparative analysis between EALING countries

After the presentation of the regulatory structure per each EALING country, a matrix analysis has been drawn in order to provide a clear picture of the regulatory framework at EALING level through the comparison of the national, regional, and local regulations affecting the installation/operation of OPS facilities in ports.

Table 1. Comparative analysis matrix for the regulations which are directly or indirectly related to OPS at EALING ports

	SPAIN	GREECE	ITALY	ROMANIA	BULGARIA	SLOVENIA	IRELAND	PORTUGAL
LOCAL REGULATIONS								
Urban Development Plans & City Regulations	✓	✓	✓	✓				✓
Technical specifications related to electrical installations	✓		✓					
REGIONAL REGULATIONS								
Port structure and administrative issues, such as contracting power supply and infrastructure works		✓	✓	✓				✓
Power supply and electricity distribution	✓		✓	✓				✓
Environmental impact, noise pollution, etc.	✓	✓	✓					
Industrial installations, especially electricity transmission and distribution facilities	✓			✓				
Safety and security measures, including occupational risks prevention	✓		✓	✓				✓
NATIONAL REGULATIONS								
Port structure and administrative issues, such as contracting power supply and infrastructure works	✓	✓	✓	✓	✓	✓	✓	
Power supply and electricity distribution	✓	✓	✓	✓	✓	✓	✓	✓
Environmental impact, noise pollution, etc.	✓	✓	✓	✓	✓	✓	✓	✓
Industrial installations, especially electricity transmission and distribution facilities	✓	✓	✓	✓	✓	✓	✓	
Safety and security measures, including occupational risks prevention	✓	✓	✓	✓	✓	✓		

At **national level**, the situation regarding the national regulations that must be considered when implementing OPS facilities is as it follows:

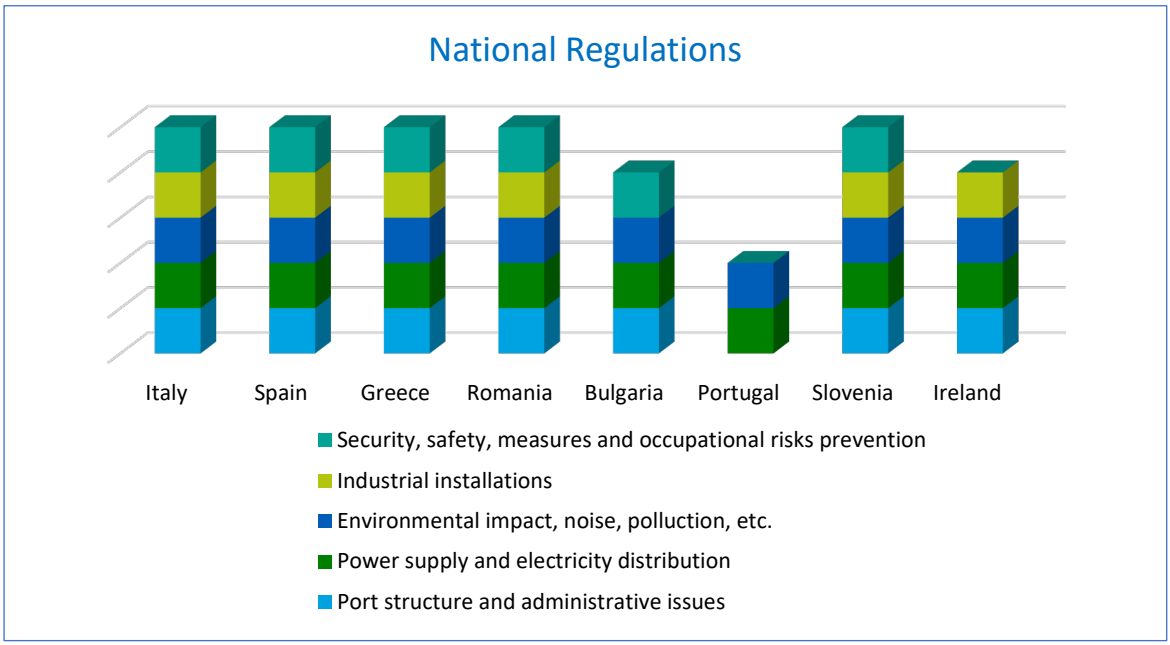


Figure 7. National Regulations related directly or indirectly to OPS in each under-study field and per EALING Member State

- 87.5% of the EALING Member States (all except Portugal) have national regulations in place related to port structure and administrative issues, such as contracting power supply and infrastructure works.
- All the EALING Member States must respect the existing regulations related to power supply and electricity distribution, as well as those related to environmental impact, noise pollution, etc.
- 75% of the EALING Member States (all except Bulgaria and Portugal) must comply national regulation related to industrial installations, especially electricity transmission and distribution facilities.
- 75% of the EALING Member States (all except Portugal and Ireland) have national regulations on safety and security measures, including occupational risks prevention.

In addition, it is worth noting that:

- 62.5% (all except for Spain, Greece, and Italy) of the EALING Member States have not issued national regulations including provisions for tax incentives (tax exemptions or reduced tax rates). In contrast, 37.5% have already given tax incentives, as shown in the figure below:

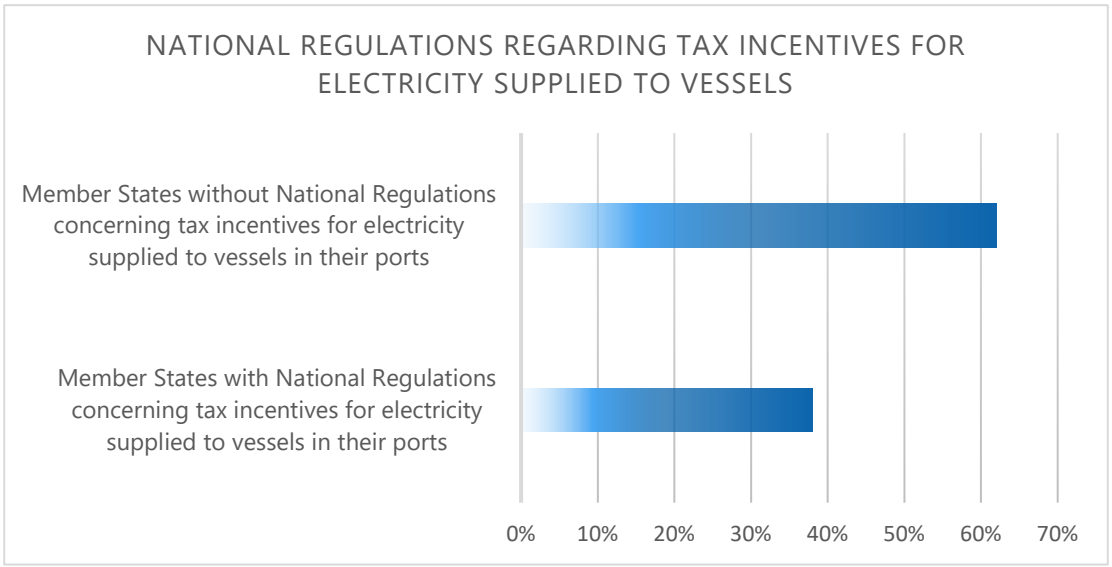


Figure 8. National Regulations related to tax incentives for electricity supplied to vessels in their ports

- 37.5% of the EALING Member States (Italy, Greece and Spain) have issued national regulations for the development of electricity production facilities based on RES or of microgrids development:

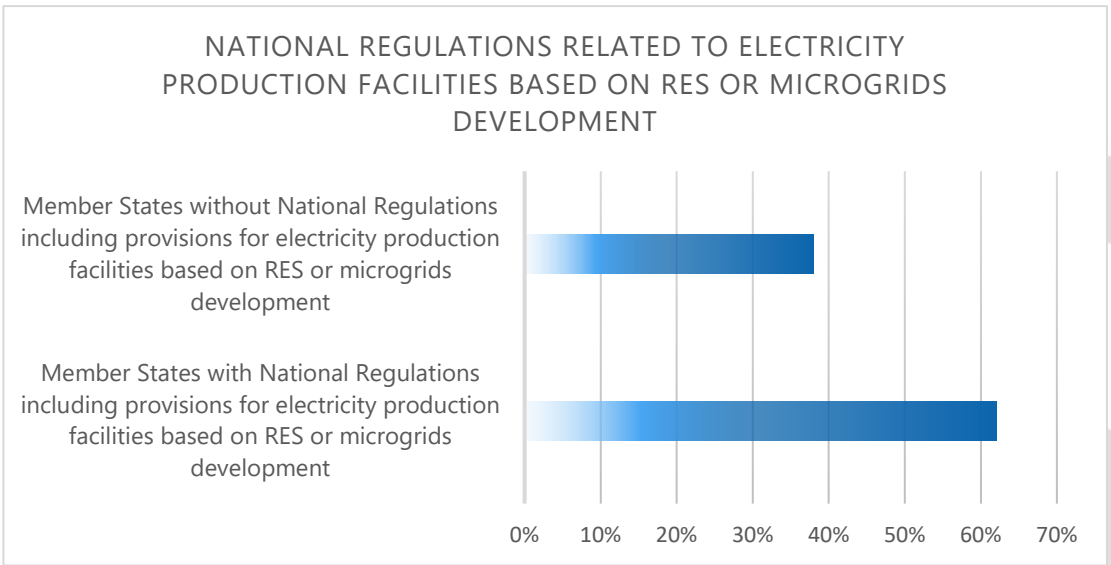


Figure 9. National Regulations related to electricity production facilities based on RES or microgrids development affecting the implementation of OPS facilities

- 50% of the participating Member States (Spain, Italy, Greece and Romania) already have national regulations that include technical rules for OPS facilities development in full compliance with international electrotechnical standards, as depicted in the below figure:

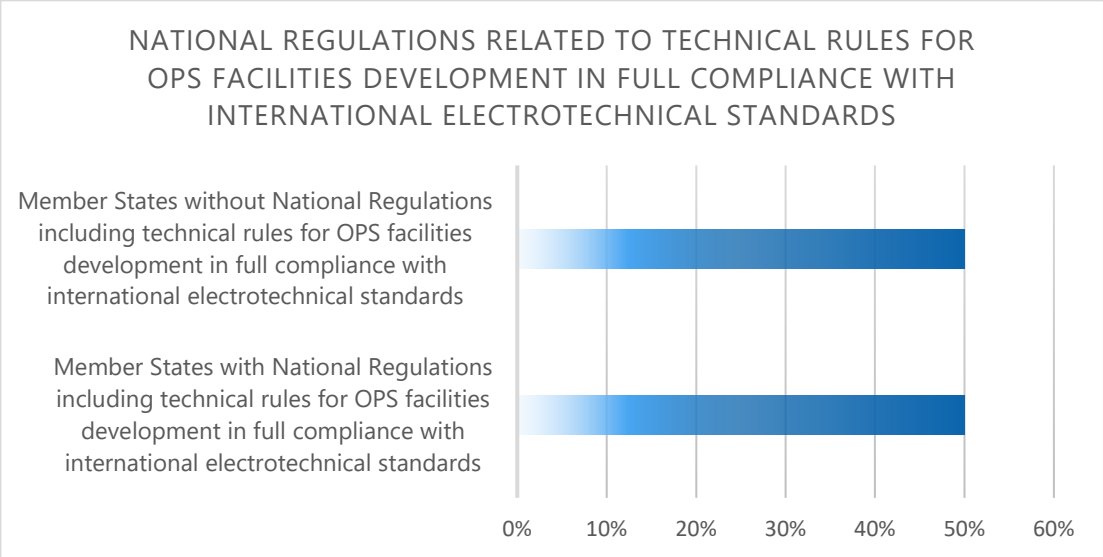


Figure 10. National Regulations related to technical rules for OPS facilities development in full compliance with International Electrotechnical Standards

- 50% of the EALING Member States (Spain, Italy, Slovenia and Bulgaria) have issued national regulations that include safety and security protocols for OPS facilities works and operation:

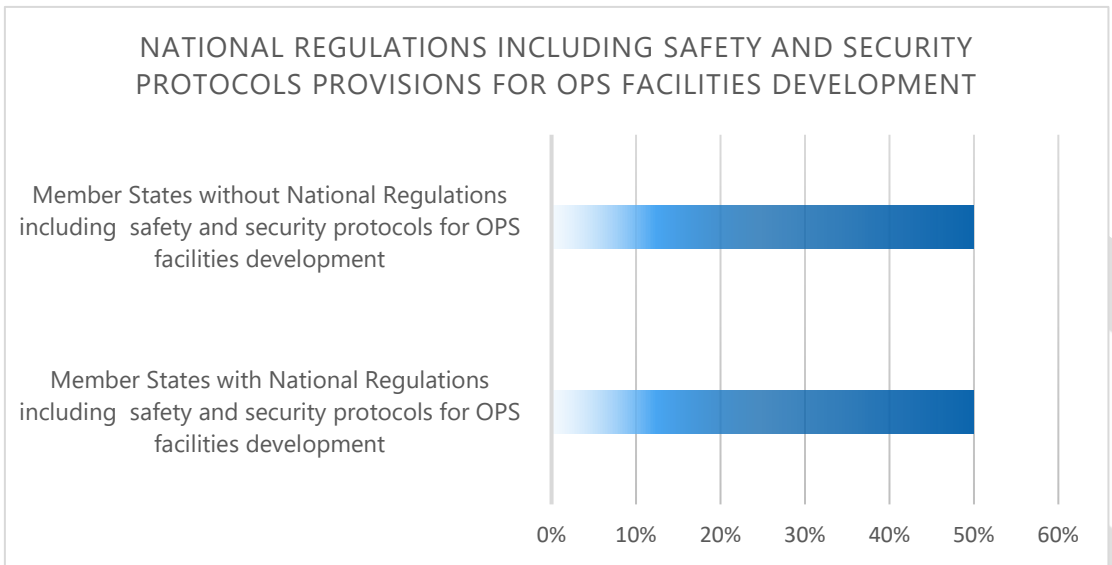


Figure 11. National Regulations related to safety and security protocols for OPS Facilities

- 75% of the EALING Member States (all except for Bulgaria and Portugal) have issued national regulations that include technical norms and requirements for developing industrial installations in ports dedicated for OPS:

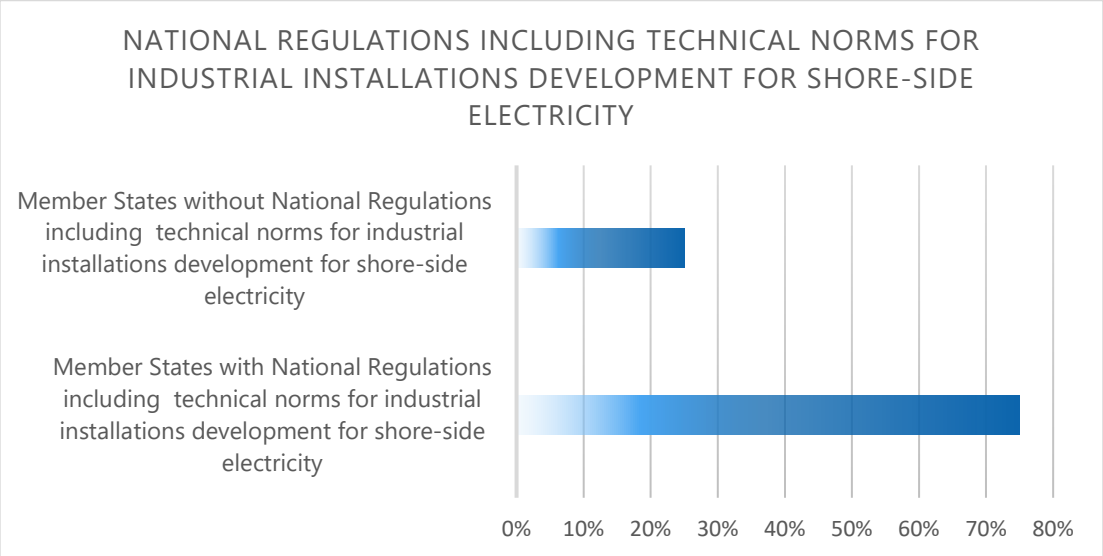


Figure 12. National Regulations for industrial installations including technical norms for industrial installations development for shore-side electricity

- 87.5% of the EALING countries (all except for Ireland) have already issued National Energy & Climate Plans that include provisions for the promotion of shore-side electricity as port service in their ports.

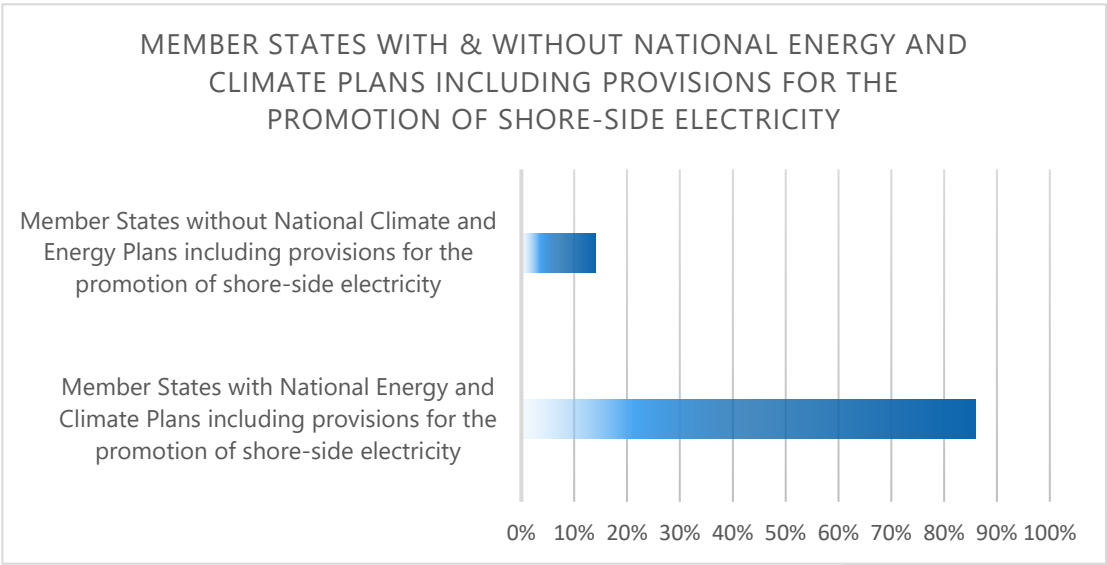


Figure 13. National Energy and Climate Plans, including provisions for promoting shoreside electricity

At **regional level**, the result of the analysis with regards to the regulation affecting the implementation of OPS facilities is the following:

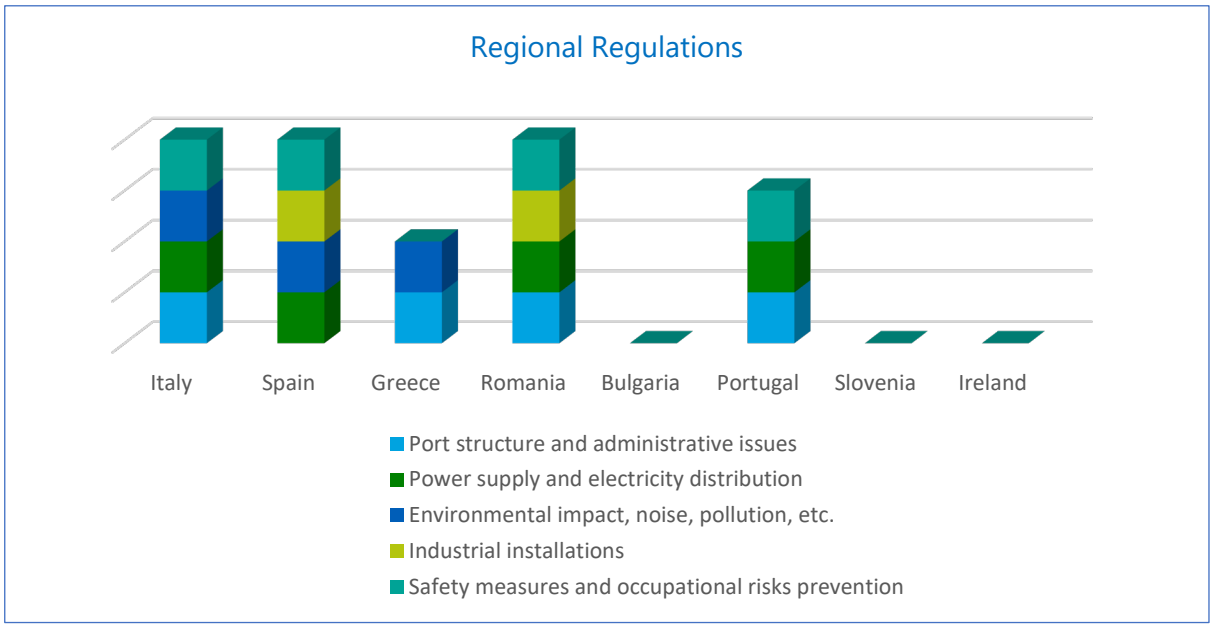


Figure 14. Regional Regulations related directly or indirectly to OPS in each under-study field and per EALING Member State

- 50% of the EALING Member States (Greece, Romania, and Bulgaria) have in place regional regulations related to port structure and administrative issues, such as contracting power supply and infrastructure works.
- 50% of the EALING Member States (Italy, Spain, Romania, and Portugal) have regulations related to power supply and electricity distribution.
- 37.5% of the EALING Member States (Italy, Spain, and Greece) have in place regulations related to the environmental impact, noise pollutions, etc.
- 25% of the EALING Member States (Spain and Romania) have in place regulations related to industrial installations.
- 50% of the EALING Member States (Italy, Spain, Romania, and Portugal) have in place regulation on safety and security measures, including occupational risks prevention.

Finally, at **local level**, the situation related to the local regulations affecting directly or indirectly the implementation of OPS installations is shown below:

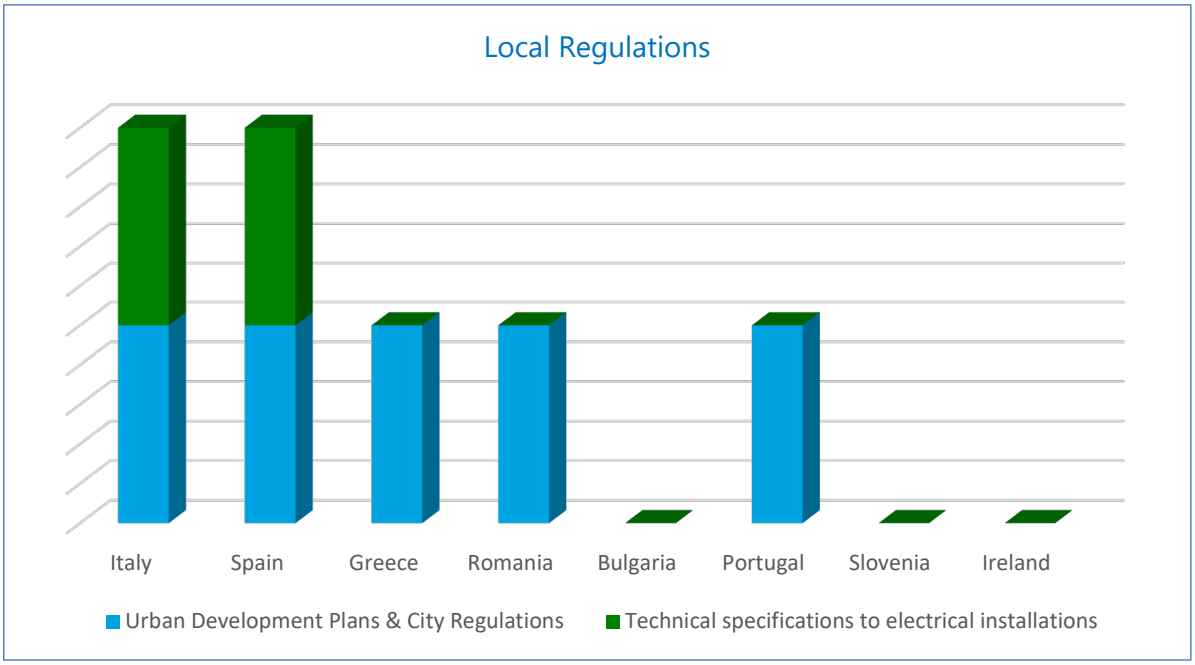


Figure 15. Local Regulations related directly or indirectly to OPS in each under-study field and per EALING Member State

- 62.5% of the EALING Member States (Italy, Spain, Greece, Romania, and Portugal) have in effect Local Development Plans & City Regulations that must be considered when implementing OPS installations. On the contrary, Bulgaria, Slovenia and Ireland are not affected by them.
- Only 25 % of the EALING Member States (Italy and Spain) are affected by technical specifications related to electrical installations. On the contrary, Greece, Romania, Bulgaria, Portugal, Slovenia, and Ireland do not have to follow any local regulation on technical specifications related to electrical installations.

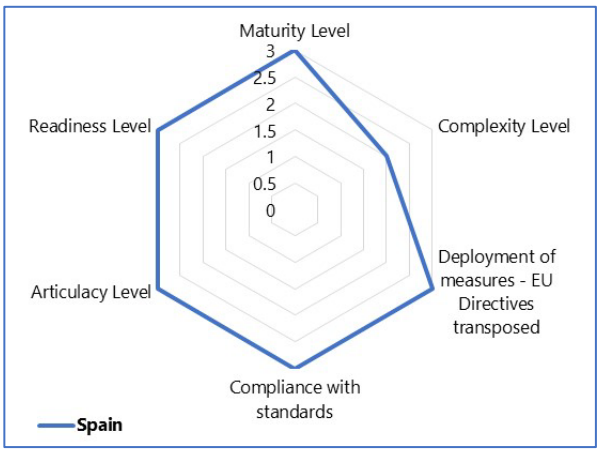
4.2.3 Qualitative analysis between EALING countries

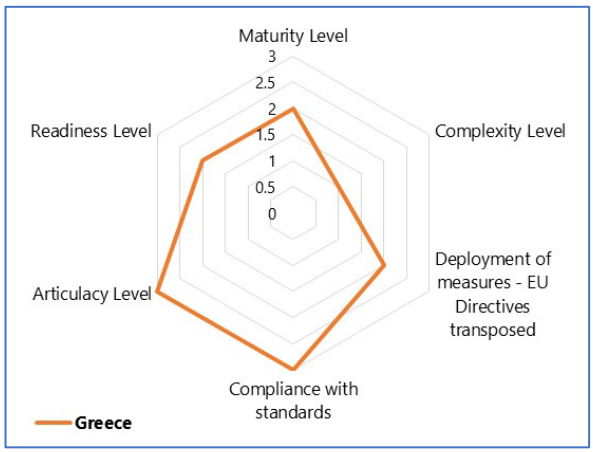
Based on the results of the comparative analysis, the following qualitative matrix and graphs have been designed to show the differences between EALING countries:

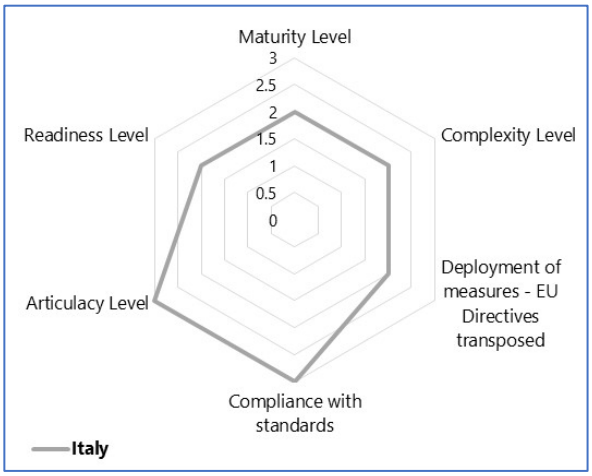
Table 2. Qualitative analysis concerning the main characteristics of national regulations related to OPS

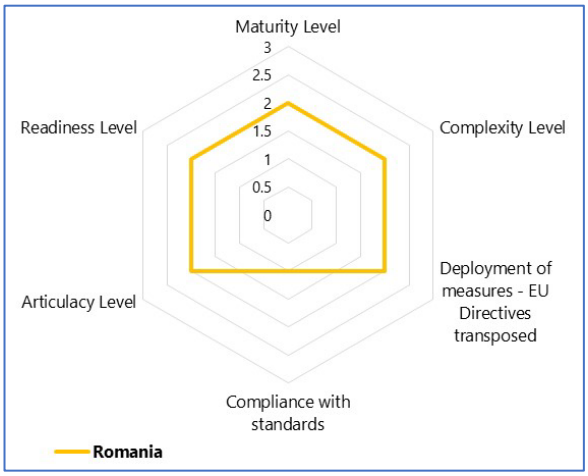
MAIN CHARACTERISTICS OF NATIONAL REGULATIONS RELATED TO OPS	SPAIN	GREECE	ITALY	ROMANIA	BULGARIA	SLOVENIA	IRELAND	PORTUGAL
Maturity Level (by covering all regulation aspects)	High	Medium	Medium	Medium	Medium	Medium	Low	Medium
Complexity Level (also including Regional & Local Regulations)	Medium	Low	Medium	Medium	Low	Low	Low	High
Deployment of measures carried out in relation to the EU Directives transposed	High	Medium	Medium	Medium	Medium	Medium	Low	Medium
Compliance with International Electro-technical Standards	High	High	High	Low	Low	High	Low	Low
Articulacy Level (ease of understanding and level of clarity)	High	High	High	Medium	High	High	Medium	Medium
Readiness Level (concerning regulations that have not been issued and are planned to be legislated)	High	Medium	Medium	Medium	Medium	Medium	Medium	Medium

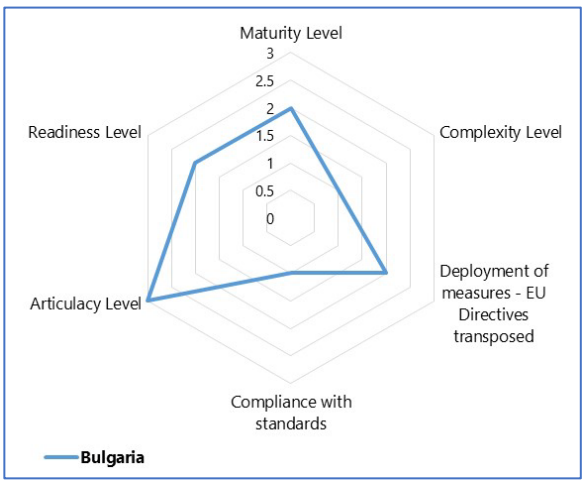
The following graphs have been constructed in order to give a clear overview of the status of each country in relation to the regulatory framework to be taken into account when implementing an OPS solution, with 1 being the lowest level and 3 the highest.

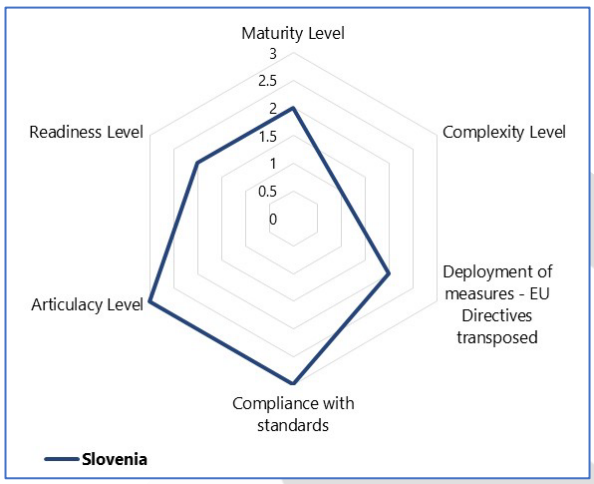












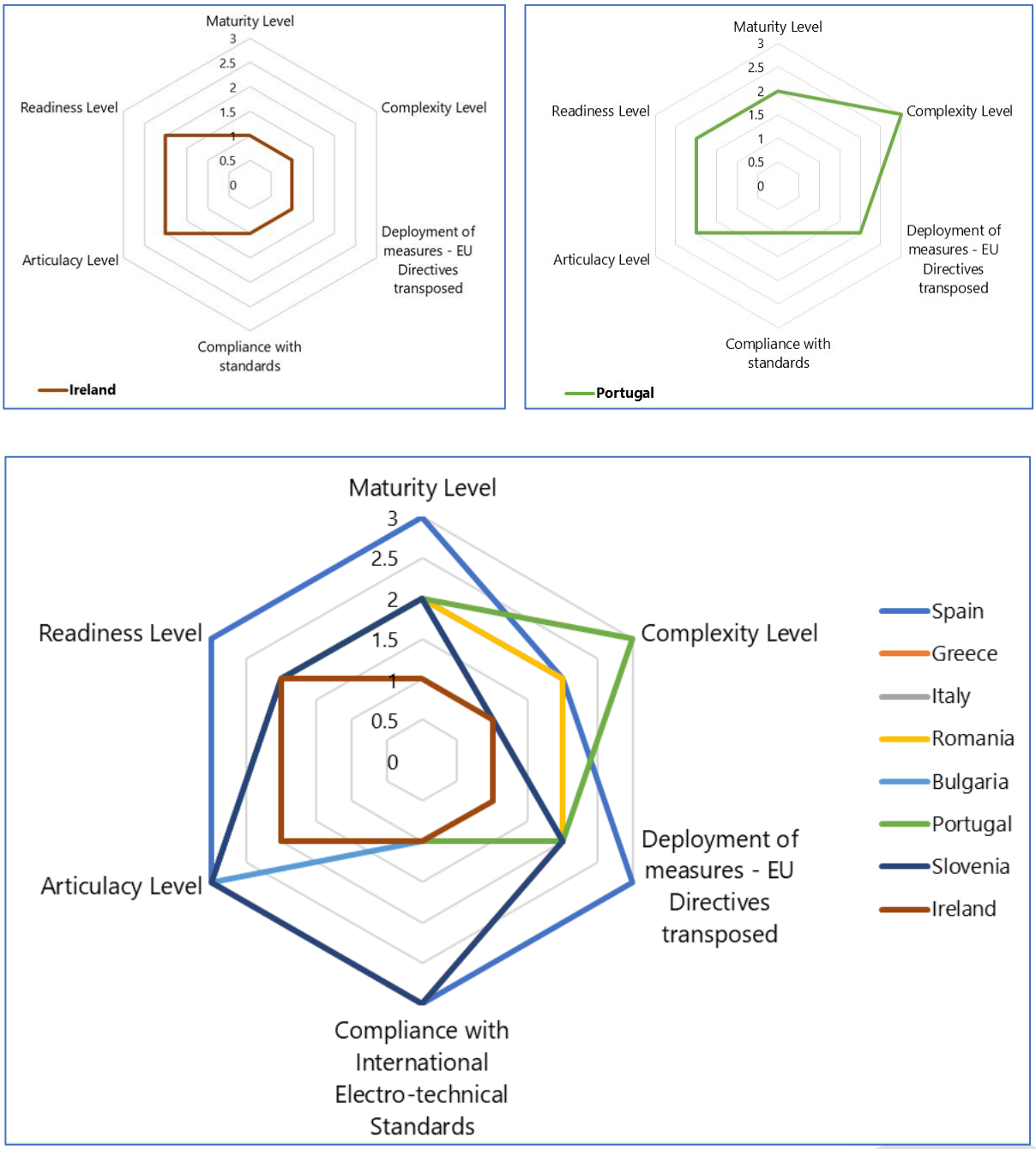


Figure 16. Overview of OPS Regulatory Framework in the EALING countries

As it has been shown in the previous graphs, the advanced maturity and readiness level of the regulatory framework related to OPS facilities development in **Spain** compared to the other under-study national legislative frameworks is proven by the fact that their National Action Framework includes provisions for tax incentives, such as the 50% discount rate for the connection of the docked ships to the electricity port grids, provisions for the development of smart grids for the electrical connection of the required ports installations, and provisions regarding the development of installations for onsite energy generation via renewable energy

sources. Indeed, this commitment of the Spanish Government in the recently approved Law on climate change and energy transition.

Concerning the maturity level and readiness status of the national regulatory framework of **Greece** related to shoreside electricity services for vessels calling at Greek ports, they seem to be at an adequate level with some minor shortcomings regarding the applicable safety rules for cold ironing and electric bunkering procedures that are going to be issued in a short-term perspective and are at the consultation stage. The adequate maturity level is proven by National Regulations of Greece stating that port authorities are allowed to perform electricity production activities through power stations above 20 kW or that owners of microgrids could apply for electricity supply and trade permittance and tax incentives such as depreciation allowances for the circulation of means of transportation, also using shore-side electricity. In addition, permittance for electricity production and trade through RES by private entities, including port authorities, has been defined to be issued by the Ministry of Development after the issuance of an opinion by the Hellenic Regulatory Authority of Energy. Greece has also issued the National Strategy for the Development of the Infrastructure of Alternative Fuels in Transportation (i.e., commercial vessels, etc.).

Based on the above-mentioned findings, the adequate maturity and readiness level of the regulatory framework related to OPS facilities development in **Italy** is proven by the fact that it has adopted a National Strategic framework for the development of the alternative fuels market in the transport sector and the creation of associated infrastructure for promoting the production of electricity via renewable energy sources. Additionally, Italy has legislated incentives for electricity produced by renewable sources other than photovoltaic and is enabled to apply a reduced rate of taxation to electricity directly supplied to vessels. From a short-term perspective, Italy will adopt a national plan on OPS to boost shore-side electricity infrastructure development in Italian ports. As for the national legislative framework related to industrial installations, harmonised EN ISO standards must be followed for all the processes of ports infrastructure development.

Regarding the maturity level and readiness status of the national legislative framework of **Romania** related to shore-side electricity services in ports, this seems to be at an adequate level but a lower maturity level in comparison with the legislative frameworks of Spain, Italy, and Greece. Nevertheless, the Romanian Member State has already transposed into its national legislation the provisions of the legislative package of the European Union regarding the internal energy market organisation and the alternative fuel infrastructure development with the applied technical specifications. It has developed the framework for the establishment of tariffs for the electricity transmission services in ports regulated by new amendment national laws issued in 2021. Shortcomings in the national legislation of Romania are depicted in the field of safety and security regulations related to shore-side electricity facilities and in the pillar of administrative issues such as tax exemptions or reduced rates of taxation to electricity

directly supplied to vessels calling at Romanian ports and other incentives for promoting the development of microgrids or electricity production facilities by renewable energy sources.

Based on the above findings of the conducted analysis, the quite adequate maturity and readiness level of the regulatory framework related to OPS installations development in **Bulgaria** is proven by the fact that it has adopted a National Framework Policy for the modernisation of OPS facilities in its ports and has already implemented EU policies for the operation of electricity markets and the formulation of electricity providers by the respective energy suppliers. Additionally, Bulgarian Member State has legislated national regulation for the effective development and operation of electricity distribution systems for serving end-users such as port terminals. Legislative gaps could be found in the regulatory framework of Bulgaria in the field of noise pollution regulations as a separate strategic noise map for noise emitted by water transport in ports has not yet been prepared because this was not compulsory for ports. It should be mentioned that the legislative framework is not mature enough in the field of electricity production by renewable energy sources or microgrids. Furthermore, there are national regulations for tax exemptions or reduced taxes to electricity directly supplied to vessels calling at Bulgarian ports.

As regards the maturity level and readiness status of the national legislative framework of **Slovenia** related to shore-side electricity services in ports, it seems to be at an adequate level, but at a lower maturity level in comparison with the legislative frameworks of Spain, Italy, and Greece. Nevertheless, Slovenian Member State has already transposed into its national legislation the provisions of the legislative package of the European Union regarding the internal energy market organisation and the alternative fuel infrastructure development with the applied technical specifications in compliance with both EU Directives and international electrotechnical standards. Based on the above-mentioned findings of the analysis, legislative gaps regarding the complete compatibility of the environmental impact assessment procedures for electricity production facilities development, incentives such as tax exemptions to electricity directly supplied to vessels calling at Slovenian ports and national laws regulating electricity production facilities by renewable energy sources or microgrids development, are obvious.

Based on the above findings of the conducted analysis, the adequate maturity and readiness level of the regulatory framework related to OPS facilities development in **Portugal** is proven by the fact that it has adopted a national framework policy for the alternative fuels infrastructure development, including facilities for shore-side electricity in ports and has transposed a plethora of EU Directives concerning the environmental impact issues that apply to installations dedicated to serving the shipping sector. In order to achieve carbon neutrality by 2050, the Member State has adopted a national strategy focusing on the energy efficiency of transport sectors, the promotion of electricity production by renewable energy sources (RES self-consumption and RES energy communities), and the implementation of environmental-

friendly port services such as shore electricity supply. Legislative gaps could be identified in the field of financial incentives of tax exemptions or tax reductions to electricity directly supplied to vessels calling at Portuguese ports and in the area of the applied technical norms applied to electrical installations or microgrids and their conformity with the international technical standards. Also, some minor shortcomings could be found in the field of safety and security protocols concerning the development of OPS installations in ports.

As concerns the maturity level and the readiness status of the national legislative framework of Ireland related to OPS facilities development in **Ireland**, this seems to be a lower level of maturity compared to the national regulatory frameworks of the other participating Member States. Irish Member State has already transposed into its national legislation the provisions of the legislative package of the European Union regarding the internal energy market organisation and the alternative fuel infrastructure development with the applied technical specifications in compliance with both EU Directives and has also adopted a Climate Action and Low Carbon Development Act for the decarbonisation and energy transformation of the maritime transportation. Legislative gaps could be found in the regulatory framework of Ireland in the field of safety and security, including occupational risks prevention national laws concerning the port infrastructure development, also including OPS facilities and in the field of financial incentives for OPS development such as tax exemptions or tax reductions to electricity directly supplied to vessels calling at Irish ports. Shortcomings could be identified in the field of the applied technical norms applied to electrical installations or microgrids and their conformity with the international technical standards and in noise pollution regulations.

5 CONCLUSION

This report is the result of a detailed compilation and analysis of the existing national, regional, local/port regulations directly or indirectly related to OPS, based on the search performed by the project partners.

In conclusion, the comparative and qualitative analysis results revealed that the Member States of Spain and Greece seem to have a more mature regulatory framework at a national level. In particular, these Member States have successfully transposed a plethora of EU Directives concerning the Alternative Fuels Infrastructure and the Environmental Impact Assessment procedures into their national legislations, have issued national regulations related to the majority of under-study regulatory fields and present minor gaps in their legislative framework.

Italy, Bulgaria, Romania, Slovenia and Portugal are characterised as the Member States with an adequate level of maturity because they have also transposed the main EU Directives on Alternative Fuels Infrastructure and the Environmental Impact Assessment procedures for electrical installations development into their national legislation and they have adopted national policy frameworks including shore-side electricity in ports as a priority, but they present gaps in the fields of electricity production by renewable energy sources, microgrids development, the existence of safety and security protocols for shore-side electricity infrastructure in ports, the application of international technical standards for electrical installations and the presence of financial incentives such as tax exemptions or tax reductions to the electricity supplied to vessels.

Similarly, Ireland, which presents several gaps in the majority of the fields above of national regulations, seems to be at a lower level of maturity even though it has already transposed into its national legislation the EU Directives on Alternative Fuels Infrastructure and Environmental Impact Assessment procedures for electrical facilities development.

In general, for implementing a harmonised framework boosting the development of OPS in ports of the TEN-T Network, the initiatives should focus on eliminating the gaps of national legislations in these under-study fields and facilitating the participation of port authorities in the development and operation of their electricity distribution system that will provide the required quantities of electricity to their own end users through the issuance of regulations applied to all EU ports, and incentivising them with tax exemptions or reduced tax rates to the consumed electricity for vessels calling at them.

Based on the information and analysis of this document, the next step will be providing *Final recommendations for a harmonised framework on OPS in EU ports,* in EALING Milestone 6.

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  Available at: *https://dait.interno.gov.it/territorio-e-autonomie-locali/legittimita-costituzionale/legge-regionale-marche-del-20-aprile-2015*
- Regional Law of 4 January 2018 No.1 (New standards for construction in seismic areas in the Marche Region)
  Available at: *https://www.indicenormativa.it/norma/urn:nir:regione.marche:legge:2018-01-04;1*
- Regional Law of 5 August 1992 No.34 (Norm on town planning, landscape and land use planning)
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- Regional Law of 9 May 2019, No.11 (Provisions on Environmental Impact Assessment (EIA))
  Available at: *https://www.consiglio.marche.it/banche_dati_e_documentazione/leggi/dettaglio.php?arc=vig&idl=2093*
- Regional Law of 25 May 1999 No. 13 (Regional regulation of soil conservation)
  Available at: *https://www.consiglio.marche.it/banche_dati_e_documentazione/leggirm/leggi/visualizza/vig/1279?arc=vig&idl=1279*
- Regional Law of 12 October 2009 No. 24 (Regional regulations on integrated waste management and reclamation of polluted sites)
  Available at: *https://www.federalismi.it/nv14/articolo-documento.cfm?artid=14252*
- Regional Law of 14 November 2001, No. 28 (Norm for the protection of the outdoor and living environment from noise pollution in the Marche Region
  Available at: *https://www.consiglio.marche.it/banche_dati_e_documentazione/leggirm/leggi/visualizza/vig/304?arc=vig&idl=304*
- Decret of the Regional Government No. 1312 of 3 October 2011
  Available at: *https://www.gse.it/normativa_site/GSE%20Documenti%20normativa/MARCHE_DGR_n1312__03_10_2011.pdf*
- Council Resolution No. 116 of 9 December 2014 (Zoning and classification of the regional territory for the purposes of assessing ambient air quality - Legislative Decree no. 155/2010 Articles 3 and 4)
  Available at: *http://www.norme.marche.it/Delibere/2019/DGR1088_19.pdf*

References related to LOCAL regulations directly or indirectly affecting the OPS implementation

VENICE

- Port Planning Scheme – planned interventions for air quality and energy efficiency,
  Available at: *https://www.port.venice.it/en/node/10734*

- ISO 14001 Managing System and Certification – Integrated Environmental Policy
  Available at: https://www.port.venice.it/en/environmental-integrated-policy-iso-14001-environmental-management-system-and-certification.html
- Blue Flag voluntary Agreement
  Available at: https://www.comune.venezia.it/it/content/venice-blue-flag
- Port Infrastructures Master Plan (being updated)
  Available at: https://www.rina.org/en/media/news/2016/03/03/venice-port-master-plan
- Sustainable Energy Action Plan (PAES - Piano di Azione per l'Energia Sostenibile)
  Available at: https://www.comune.venezia.it/it/content/paes-piano-azione-lenergia-sostenibile
- Municipality Master Plan (Piano di assetto del territorio L. 11/2004)
  Available at: https://www.comune.venezia.it/it/content/pat-piano-assetto-territorio
- Public Lightning Plan to reduce light pollution (Piano dell'illuminazione per il contenimento dell'Inquinamento luminoso L.R. 17/2009 P.I.C.I.L.)
  Available at: https://www.picil.it/portfolio/efficienza-energetica/attachment/7/

ANCONA

- Masterplan of Ancona Municipality
  Available at:
  https://www.comuneancona.it/ankonline/urbanistica/category/pianificazioneurbanistica/
  and https://www.comune.ancona.gov.it/ankonline/urbanistica/wp-
- Masterplan of the ports 'system, DEASP – Documento di Pianificazione energetico ambientale dei sistemi portuali
  Available at: https://porto.ancona.it/en/news/1689-adsp-affidata-redazione-piano-regolatore-e-documento-di-pianificazione-energetico-ambientale-del-sistema-portuale
  and *https://www.comune.ancona.gov.it/ankonline/urbanistica/wp-content/uploads/sites/14/2021/01/LO_Aggiornamento-NTA_Gennaio-2021.pdf*

ROMANIAN PORTS

References related to NATIONAL regulations directly or indirectly affecting the OPS implementation

National regulation related to power supply and electricity distribution:

- Law No 123/2012 electricity and gas, and Electricity Law 2007 Law 13/2007. MO 51/ 23.01.2008 Abrogated by the Law for Electricity and Gas -No. 123 /2012, except art. 7 -11. MO nr. 485 / 16.07.2012 Repealed by Law 123/2012
  Available at: https://www.anre.ro/en/1385652740/primary-legislation1387198683

National regulation related to port structure and administrative issues:

- DECISION no. 666 of September 14, 2016 for the approval of the strategic document General Transport Plan of Romania
  Available at: https://legislatie.just.ro/Public/DetaliiDocumentAfis/182251
- Master Plan General deTransport al României

Available at:
http://mt.gov.ro/web14/documente/strategie/mpgt/23072015/Master%20Planul%20General%20de%20Transport_iulie_2015_vol%20I.pdf &
https://onedrive.live.com/View.aspx?resid=849D1C715B5A454D!48381&wdEmbedFS=1&authkey=!AOjuwNKkTJv54Ns

National regulation related to environmental impact, noise pollution, etc:

- LAW no. 346 of July 14, 2004 on stimulating the establishment and development of small and medium-sized enterprises
  Available at: https://legislatie.just.ro/Public/DetaliiDocument/53946
- LAW no. 104 of June 15, 2011 on ambient air quality
  Available at: https://legislatie.just.ro/Public/DetaliiDocument/129642
- DECISION no. 635 of June 16, 011, regarding the modification of the annex to the Government Decision no. 1,105 / 2007 for the approval of the Methodological Rules for the implementation of the provisions of Annex VI "Rules on the prevention of air pollution by ships" to the International Convention for the Prevention of Pollution from Ships, 1973, as amended by the Protocol of 1978 relating thereto (MARPOL 73/78)
  Available at: https://legislatie.just.ro/Public/DetaliiDocumentAfis/130312
- DECISION no. 1,076 of 8 July 2004 (* updated *) on establishing the procedure for carrying out the environmental assessment for plans and programs (updated to October 29, 2012*)
  Available at: https://legislatie.just.ro/Public/DetaliiDocument/54164
- LAW no. 292 of December 3, 2018 on assessing the impact of certain public and private projects on the environment, *https://legislatie.just.ro/Public/DetaliiDocumentAfis/208590*
- LAW no. 121 of July 3, 2019 on the assessment and management of ambient noise
  Available at: https://legislatie.just.ro/Public/DetaliiDocument/216510

References related to REGIONAL regulations directly or indirectly affecting the OPS implementation

Regional regulation related to port operation:

- Regulamentul portuar al porturilor maritime romanesti aflate in administrarea Companiei Nationale Administratia Porturilor Maritime S.A.Constanta– 2022
  Available at: https://www.portofconstantza.com/pn/page/np_regulament_portuar
- Legislatie
  Available at: https://www.portofconstantza.com/pn/page/np_legislatie
- Securitate portuara
  Available at: https://www.portofconstantza.com/pn/page/np_certificari

References related to LOCAL regulations directly or indirectly affecting the OPS implementation

Local regulation related to port operation:

- Regulamentul portuar al porturilor maritime romanesti aflate in administrarea Companiei Nationale Administratia Porturilor Maritime S.A. Constanta – 2022
  Available at: https://www.portofconstantza.com/pn/page/np_regulament_portuar

- Legislatia este disponibila in format electronic pe portalul
  Available at: http://legislatie.just.ro and
  https://www.portofconstantza.com/pn/page/np_legislatie
- CDEP
  Available at: https://www.portofconstantza.com/pn/page/np_certificari

Local regulation related to environmental impact, noise pollution, etc:

- Plan De Calitate A Aerului În Municipiul Constanța, Pentru Dioxid De Azot Și Oxizi De Azot (NO2/NOX), PERIOADA 2021 – 2025
  Available at: http://www.primaria-constanta.ro/docs/default-source/documente-pwpmc/documente-mediu/plan-calitate-aer/pca_constanta_-final.pdf?sfvrsn=4
- EMERGENCY ORDINANCE no. 195 of December 22, 2005 on environmental protection
  Available at: https://legislatie.just.ro/Public/DetaliiDocument/67634
- ORDER no. 1,798 of November 19, 2007 for the approval of the Procedure for issuing the environmental permit
  Available at: https://legislatie.just.ro/Public/DetaliiDocument/87375
- Protectia mediului / Hartile de zgomot
  Available at: https://www.portofconstantza.com/pn/page/np_harti_zgomot

Other local regulation:

- Propuneri de intervenție,
  Available at: http://www.primaria-constanta.ro/docs/default-source/documente-pwpmc/librarie-urbanism/regenerare-urbana/3_propuneri-de-interventie_peninsula.pdf?sfvrsn=4 and http://www.primaria-constanta.ro/docs/default-source/documente-pwpmc/librarie-urbanism/regenerare-urbana/1_ghid-regenerare-urbana_peninsula.pdf?sfvrsn=4

BULGARIAN PORTS

References related to NATIONAL regulations directly or indirectly affecting the OPS implementation

National regulation related to ports structure and services

- Maritime Space, Inland Waterways and Ports of the Republic of Bulgaria Act.
  Available at: http://www.bgports.bg/en/page/45

National regulation related to power supply and electricity sector, as well as administrative issues

- Spatial Development Act.
  Available at: http://www.bgports.bg/en/page/45
- Energy Act.
  Available at: https://www.me.government.bg/en/library/zakon-za-energetikata-256-c25-m0-1.html
- National Policy Framework for alternative fuel infrastructure.
  Available at:

https://www.mtc.government.bg/en/category/280/national-policy-framework-development-market-regards-alternative-fuels-transport-sector-and-deployment-relevant-infrastructure

- Energy Market Rules.
  Available at: https://www.dker.bg/uploads/normative_docs/PTEE_05052020.pdf

National regulation related to environmental impact, noise pollution, etc.

- The Environmental Protection Act.
  Available at:
  https://www.moew.government.bg/static/media/ups/tiny/filebase/Nature/Legislation/Zakoni/English_versions/EPA_2021.pdf
- The Protection from Environmental Noise Act.
  Available at:
  https://www.moew.government.bg/en/protection-from-environmental-noise-act-in-force-from-1st-of-january-2006-prom-sg-74-13-sep-2005-last-amend-and-suppl-sg-60-30-jul-2019/

National regulation related to safety and security measures, and risks prevention

Ordinances included in 4.1:

- Ordinance No. 9 on the requirements for operational suitability of ports and specialised port objects.
  Available at:
  https://www.mtc.government.bg/sites/default/files/nar9_17102013_za_iziskv_za_exploat_godnost_na_prist_i_spec_012018.pdf
- Ordinance No. 4 on the scope and content of the investment projects.
  Available at: https://lex.bg/bg/laws/ldoc/-549165055
- Ordinance No. 3 on the design of electrical installations and power lines.
  Available at: https://lex.bg/en/laws/ldoc/2135493680
- Ordinance No. 8 on the rules for placement of technical lines and facilities in settlements.
  Available at: https://www.lex.bg/laws/ldoc/-549678590
- Ordinance No. 16 on easements of energy sites.
  Available at: https://lex.bg/laws/ldoc/2135493130
- Ordinance 3 on licensing of energy activities.
  Available at:
  https://www.dker.bg/uploads/normative_docs/naredbi/naredba_3_06082021.pdf

SLOVENIAN PORTS

References related to NATIONAL regulations directly or indirectly affecting the OPS implementation

Specific regulation related to Port structure and administrative issues

- DIRECTIVE National Action Framework OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 October 2014 on the deployment of alternative fuels infrastructure.
  Available at: http://data.europa.eu/eli/dir/2014/94/2020-05-24

- Zakon o javnem naročanju (Uradni list RS, št. 91/15 in 14/18)
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO7086
- Strategija na področju razvoja trga za vzpostavitev ustrezne infrastrukture v zvezi z alternativnimi gorivi v prometnem sektorju v Republiki Sloveniji
  Available at: https://www.energetika-portal.si/fileadmin/dokumenti/publikacije/alternativna_goriva/strategija_alternativna_goriva_final.pdf
- Akcijski program za alternativna goriva v prometu
  Available at: https://www.energetika-portal.si/fileadmin/dokumenti/publikacije/alternativna_goriva/an_alt_gor_2019.pdf
- Uredba o vzpostavitvi infrastrukture za alternativna goriva v prometu
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=STRA76
- Celoviti nacionalni energetski in podnebni načrt (NEPN)
  Available at: https://www.energetika-portal.si/fileadmin/dokumenti/publikacije/nepn/dokumenti/nepn_5.0_final_feb-2020.pdf
- Uredba o državnem prostorskem načrtu za celovito prostorsko ureditev pristanišča za mednarodni promet v Kopru (Uradni list RS, t. 48/11)
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED5830

Legislation related to power supply and electricity sector regulation:

- DIRECTIVE (EU) 2019/944 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, OF JUNE 5, 2019, on common rules for the internal electricity market and which amends the Directive 2012/27/EU.
  Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0944
- Energetski zakon (Uradni list RS, št. 60/19 – uradno prečiščeno besedilo, 65/20, 158/20 – ZURE, 121/21 – ZSROVE in 172/21 – ZOEE)
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO6665
- Zakon o oskrbi z električno energijo (Uradni list RS, št. 172/21)
  Available at: http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO8141
- Pravila za delovanje trga z elektriko (Uradni list RS, št. 74/18, 62/19 in 159/21 – popr.)
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=AKT_1062

Legislation related to environmental impact, noise pollution, etc.:

- Zakon o varstvu okolja (Uradni list RS, št. 39/06 – uradno prečiščeno besedilo, 49/06 – ZMetD, 66/06 – odl. US, 33/07 – ZPNačrt, 57/08 – ZFO-1A, 70/08, 108/09, 108/09 – ZPNačrt-A, 48/12, 57/12, 92/13, 56/15, 102/15, 30/16, 61/17 – GZ, 21/18 – ZNOrg, 84/18 – ZIURKOE in 158/20)
  Available at: http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO1545
- Uredba o mejnih vrednostih kazalcev hrupa v okolju (Uradni list RS, št. 43/18 in 59/19)
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED7531
- Uredba o ocenjevanju in urejanju hrupa v okolju (Uradni list RS, št. 121/04 in 59/19)
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED2682
- Pravilnik o prvem ocenjevanju in obratovalnem monitoringu za vire hrupa ter o pogojih za njegovo izvajanje (Uradni list RS, št. 105/08)
  Available at: http://pisrs.si/Pis.web/pregledPredpisa?id=PRAV8901

Legislation related to industrial installations, especially electricity transmission and distribution facilities:

- Uredba o energetski infrastrukturi (Uradni list RS, št. *22/16* in *173/21)*
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED6905
- Pravilnik o tehničnih pogojih za graditev podzemnih elektroenergetskih vodov izmenične nazivne napetosti nad 1 kV do 400 kV. (Uradni list RS, št. *56/16*)
  Available at: https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/2021-01-0853?sop=2021-01-0853
- Pravilnik o obratovanju elektroenegetskih postrojev (Uradni list RS, št. *56/16)*
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV12859
- Pravilnik o vzdrževanju elektroenergetskih postrojev (Uradni list RS, št. *98/15*)
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV12422
- Pravilnik o zahtevah za nizkonapetostne električne inštalacije v stavbah (Uradni list RS, št. 140/21)
  Available at: https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/2021-01-2818/
- Pravilnik o minimalnih tehničnih zahtevah za gradnjo, obratovanje in vzdrževanje elektroenergetskih nizkonapetostnih vodov (Uradni list RS, št. 21/2020)
  Available at: https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/2020-01-0536?sop=2020-01-0536
- Pravilnik o prvih meritvah in obratovalnem monitoringu za vire elektromagnetnega sevanja ter o pogojih za njegovo izvajanje (Uradni list RS, št. *70/96, 41/04 –* ZVO-1 in *17/11 –* ZTZPUS-1)
  Available at: Pravilnik o prvih meritvah in obratovalnem monitoringu za vire elektromagnetnega sevanja ter o pogojih za njegovo izvajanje (pisrs.si)

Legislation related to safety and security measures, including occupational risks prevention:

- Zakon o varnosti in zdravju pri delu (Uradni list RS, št. *43/11)*
  Available at: http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO5537
- Zakon o varstvu pred požarom (Uradni list RS, št. *3/07* – uradno prečiščeno besedilo, *9/11, 83/12, 61/17* – GZ in *189/20* – ZFRO)
  Available at: http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO302
- Pravilnik o zahtevah za zagotavljanje varnosti in zdravja delavcev na delovnih mestih (Uradni list RS, št. *89/99, 39/05* in *43/11 –* ZVZD-1)
  Available at: http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV418
  Pravilnik o varstvu pri delu pred nevarnostjo električnega toka (Uradni list RS, št. *29/92, 56/99* – ZVZD in *43/11* – ZVZD-1)

IRISH PORTS

References related to NATIONAL regulations directly or indirectly affecting the OPS implementation

- Planning and Development Regulations , *S.I. No. 600/2001 - Planning and Development Regulations, 2001 (irishstatutebook.ie)*

- The Development of Alternative Fuel Infrastructure in Irish Ports, https://www.imdo.ie/Home/sites/default/files/IMDOFiles/13774%20IMDO%20Development%20of%20Alternative%20Fuel%20V6%20HR.PDF

PORTUGUESE PORTS

References related to NATIONAL regulations directly or indirectly affecting the OPS implementation

- Decreto-Lei n.º 39/2018, de 11 de junho , estabelece o regime da prevenção e controlo das emissões de poluentes para o ar
- *Available at: https://dre.pt/application/file/a/115488134*
- Decreto-Lei n.º 87/2020, de 15 de outubro, assegura a execução, na ordem jurídica nacional, do Regulamento (UE) n.º 2015/757, relativo à monitorização, comunicação e verificação das emissões de CO(índice 2) provenientes do transporte marítimo.
- *Available at: https://dre.pt/home/-/dre/145440390/details/maximized*
- Decreto-Lei n.º 319/2009, de 3 de Novembro, transpõe para a ordem jurídica interna a Directiva n.º 2006/32/CE, do Parlamento Europeu e do Conselho, de 5 de Abril, relativa à eficiência na utilização final de energia e aos serviços energéticos e que revoga a Directiva n.º 93/76/CE, do Conselho.
- *Available at: https://dre.pt/application/conteudo/483381*
- Decreto-Lei n.º 68-A/2015 de 30 de abril, que estabelece disposições em matéria de eficiência energética e cogeração, transpondo para a ordem jurídica interna a Diretiva n.º 2012/27/UE, do Parlamento Europeu e do Conselho, de 25 de outubro de 2012.
- *Available at: https://dre.pt/application/conteudo/67123272*
- Decreto-Lei n.º 71/2008 de 15 de Abril, regula o sistema de gestão dos consumos intensivos de energia, abreviadamente designado por SGCIE, instituído com o objectivo de promover a eficiência energética e monitorizar os consumos energéticos de instalações consumidoras intensivas de energia.
- *Available at: https://dre.pt/application/conteudo/249821*
- Decreto-Lei n.º 71/2008 de 15 de Abril, regula o sistema de gestão dos consumos intensivos de energia, abreviadamente designado por SGCIE, instituído com o objectivo de promover a eficiência energética e monitorizar os consumos energéticos de instalações consumidoras intensivas de energia.
- *Available at: https://dre.pt/application/conteudo/249821*
- Resolução do Conselho de Ministros n.º 88/2017, de 26 de junho, que aprova o «Quadro de Ação Nacional para a criação de uma infraestrutura para combustíveis alternativos». *Available at: https://dre.pt/application/conteudo/107567058*
- ROADMAP FOR CARBON NEUTRALITY 2050, long-term strategy for carbon neutrality of the portuguese economy by 2050, *Available at: https://unfccc.int/sites/default/files/resource/RNC2050_EN_PT%20Lng%20Term%20Strategy.pdf*
- Decreto-Lei n.º 162/2019, de 25 de outubro, estabelece o regime jurídico aplicável ao autoconsumo de energia renovável, estabelecendo a disciplina da atividade de produção

associada às instalações de utilização do autoconsumidor de energia renovável. *Available at: https://dre.pt/application/conteudo/125692189*

- PLANO RECUPERAÇÃO E RESILIÊNCIA, 15 de Outubro de 2020
  Available at: https://www.portugal.gov.pt/download-ficheiros/ficheiro.aspx?v=%3d%3dBQAAAB%2bLCAAAAAAABAAzNDAzNgMAAfd%2fsQUAAAA%3d
- Resolução do Conselho de Ministros n.º 53/2020, 10 de julho, que aprova o Plano Nacional Energia e Clima 2030 (PNEC 2030).
  Available at: https://dre.pt/application/conteudo/137618093
- Decreto-Lei n.º 102/2010 de 23 de Setembro, fixa os objectivos para a qualidade do ar ambiente tendo em conta as normas, as orientações e os programas da Organização Mundial da Saúde, destinados a evitar, prevenir ou reduzir as emissões de poluentes atmosféricos.
  Available at: https://dre.pt/application/file/a/342199
- Decreto-Lei n.º 60/2017 de 9 de junho, estabelece o enquadramento para a implantação de uma infraestrutura para combustíveis alternativos, a fim de minimizar a dependência em relação ao petróleo e de atenuar o impacto ambiental dos transportes.
  Available at: https://dre.pt/application/conteudo/107495707
  Decreto-Lei n.º 15/2022 de 14 de janeiro, estabelece a organização e o funcionamento do Sistema Elétrico Nacional (SEN).
  Available at : https://files.dre.pt/1s/2022/01/01000/0000300185.pdf

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- PLANO DIRETOR MUNICIPAL DE MATOSINHOS, aprovado pela Assembleia Municipal a 21 de junho de 2019
  Available at: https://www.cm-matosinhos.pt/urbanismo/planeamento-urbanistico-e-territorial/plano-diretor-municipal