

Cold ironing for all

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European Flagship Action for Cold Ironing in Ports (EALING) is a 36-month-long project, co-funded through the Connecting Europe Facility (CEF), tasked with leading all the necessary technical, environmental, socio-economic, and financial studies to accelerate the preparation works towards setting up onshore power facilities in at least 16 EU ports spread across different European seas. The initiative's goal is also to work on an EU-harmonised and interoperable electrification framework.

The EALING consortium, wanting to contribute to moving the needle on the deployment of shore-side electricity (SSE) solutions in EU seaports, has intensively worked with

shipping and port stakeholders to identify the main obstacles they face when implementing SSE as well as to propose recommendations for a harmonised framework.

To that end, the project partners have carried out a PESTLE analysis: studying how the various political, economic, sociological, technological, legal, and environmental factors slow the uptake of SSE infrastructure in Europe.

Policy & legal

In December 2019, the European Commission (COM) presented the European Green Deal. In its communication, the EU's executive stressed, among other things, the need to accelerate the shift to sustainable and smart mobility, as transport accounts for a quarter of the EU's greenhouse gas (GHG) emissions (and growing), with maritime responsible for 3-4%.

Since then, COM has been working on several strategies and regulations

to reach the goal of climate neutrality by 2050. Regarding the EU strategies and rules related to SSE – such as the 2030 Climate Target Plan, Sustainable and Smart Mobility Strategy, the Fit for 55 Package, and the Efficient & Green Mobility Package – EALING's research leads to the following political & legal recommendations. First, simplify and harmonise the administrative burden at

the national, regional and local levels (resulting from applying the regulations) to build and operate SSE infrastructures. Second, increase the intensity of public funding (e.g., revenues raised via the EU Emission Trading System, EU ETS, could be used to fund SSE installations). Third, include tax exemption for electricity provided to vessels at berth in the revised Energy Taxation Directive.

Technical

From a technical perspective, SSE projects aim to provide a controlled interface between

the power supply (from the utility grid or distributed power/microgeneration) to ships at berth.

Regarding technical recommendations, the views of different stakeholders

– like the shipping and port sectors, the European Maritime Safety Agency (which published two parts of its [Shore-Side Electricity. Guidance to Port Authorities](#) in June 2022), SSE technology solution providers, and energy suppliers – have been considered when putting forth the following recommendations. First, there is a need for standardisation or guidelines

(technical and regulatory harmonisation) regarding the position of the SSE connection on board each vessel type. Second, providing appropriate training for people handling SSE connectors. Third, from a technical perspective for tendering processes, an intervention is recommended that mandating joint ventures in the tender processes may not be

a good approach. Fourth, for the technical assessment of power demand, it is emphasised that load forecasting models and demand assessment studies are required to reduce uncertainty. Lastly, it is also recommended to broaden the scope of the utility connections in port IEC 80005 standard to include shore-side battery charging and shore power banking.

Economic

The first SSE systems in Europe for the merchant marine sector date back to 1985, with the first low-voltage system installed in Stockholm. The first high-voltage systems were deployed in 2000. Since the start of the new millennium, the rapid growth of shore power technology deployment in ports across Europe has been experienced (though the coronavirus pandemic made a dent in the overall upward trajectory in 2020 – as it did for all other maritime sectors, especially those focused on passenger traffic).

Vessel type-wise, and focusing on passenger

and container ships only, most of the current SSE facilities deployed in Europe (until 2022) are for passenger vessels, with 70% of the facilities catering to ferries and ro-ros. That said, total power capacity-wise, cruise ships account for 70%, although ‘only’ one-fifth of the installations were installed explicitly for these power-hungry ‘floating hotels.’

After an extensive literature analysis and considering the outcomes of the EALING stakeholder workshops, several recommendations have been proposed on the economic

scope. First, close cooperation between shipping lines and ports should be encouraged before any investment in SSE facilities is done. Second, carrying out a cost-benefit analysis is highly advisable before implementing any SSE infrastructure. Third, creating additional funding mechanisms (e.g., a maritime fund under the EU ETS) to cover a bigger part of the needed investments. Fourth, existing instruments (CEF, recovery funds) are insufficient and should be extended or supplemented with other facilities.

Environmental

The main national regulations related to environmental impact and noise pollution issues are based on the European Parliament and the Council’s directives. Specifically, the eight EALING-participating EU Member States (Bulgaria, Greece, Ireland, Italy, Portugal, Romania, Slovenia, and Spain) have already integrated into their national legislation the EU Directive 2001/42/EC (on the assessment of the effects of certain plans and programmes on the environment) as well as the EU Directive 2011/92/EU (on the assessment of the effects of certain public and private projects on the environment).

Concerning the environmental aspects of port facilities for electricity production offering SSE to vessels calling at their ports, the EU Directive 2015/2193 (on the limitation of emissions pollutants into the air coming from combustion plants for obtaining environmental titles) must also be taken into consideration. Furthermore, energy efficiency can be achieved by SSE at European ports derived from renewable energy sources and is included (indirectly) in the EU Directive 2012/27/EU (on actions for improving energy efficiency and reduction of GHG emissions, including the use of renewables).

A summary of recommendations focused on the environmental scope proposed by the EALING consortium is the following. First, promote the creation of an eco-certificate addressed to shipping lines, focused on the use of electricity at berth; ports could use this index to reward ships with better environmental performance. Second, encourage the registration of ships in the Clean Shipping Index (CSI); any vessel equipped with the required SSE technology achieving a high CSI score could receive rebates in the participating European ports.

Social

Emission reduction is the main incentive for the implementation of SSE, as air pollution represents a significant environmental & health risk. SSE eliminates harmful elements and the noise generated by auxiliary engines, which is particularly appreciated by the communities living close to harbours. In addition, SSE eliminates the vibrations caused by the operation of auxiliary engines, thus improving the comfort of the crew and passengers on board.

As such, cooperation between port, shipping, and city stakeholders is crucial

to, first, address citizens’ concerns related to the quality of life near ports; second, raise awareness among all actors of the importance of working together for the common benefit of improving the public health; and third, receive the necessary public financial support, not only to develop the SSE facilities but also to invest in the external grid to ensure that no lack of capacity impacts the everyday life of citizens.

In short, here are the interventions in the social scope to contribute to deploying SSE installations in EU ports. First, incentivise

at the COM level interaction and collaboration between all the stakeholders; this could be facilitated by creating at the port level a specific working group involving all operational stakeholders to ensure the proper coordination and management of SSE facilities. In addition, another recommendation could be the development of operational manuals for port operators (especially on safety aspects). Last but not least, working closely with universities, research institutes, and vocational training centres to cover the training profiles needed for SSE operations is highly recommended.



EALING Action number 2019-EU-TM-0234-S is a 36-month-long Connecting Europe Facility project aiming at proposing a common EU harmonised and interoperable framework for the transition to electrification for at least 16 EU maritime ports in different seas. Click ealingproject.eu to discover more.



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