



Towards an intelligent legislative framework for Onshore Power Supply (OPS):

Europe's ports fully support more OPS where it makes sense

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*Europe's ports want to be a partner in implementing Europe's ambition to be the first net-zero emission continent by 2050. Lowering emissions and achieving zero pollution over time must be addressed without delay. Greening the shipping sector is in that respect a priority and ports are ready to facilitate this process. **OPS is an important tool and part of the solution for lowering the shipping emissions at berth, but should not be seen as an end in itself. Europe's ports fully support more OPS where it makes sense. An ambitious OPS deployment plan in ports requires adequate funding.***

The European Sea Ports Organisation (ESPO) pleads for an effective and intelligent approach to OPS. For Europe's ports, the only way to ensure a rapid deployment of OPS and avoid a waste of public funds is to focus on deploying OPS where it makes sense in terms of delivering cost-effective reductions of greenhouse gas emissions and air pollution at berth.

1. Europe's ports want to be a partner in delivering the Green Deal ambitions and be part of a green future for Europe: the greening of shipping is a priority for Europe's ports

ESPO is committed to facilitating the greening of shipping as a significant source of pollution in European ports. The ultimate goal is to reduce greenhouse emissions, air pollution, and noise from shipping. Reducing emissions from vessels in navigation, at berth, and in ports will require significant efforts from shipping, port authorities, port terminals, legislators and other stakeholders. Even if emissions at berth are only a small fraction of total maritime transport emissions, they need to be addressed. Over time, the objective of zero emissions at berths is achievable.

2. OPS is an important tool to reduce shipping emissions in ports: European ports fully support more OPS where it makes sense

Many ports in Europe are stepping up their efforts to deploy more OPS in their port. Ports are convinced that OPS can be an important instrument to reach the aim of reducing greenhouse emissions, air pollution and noise.

In their ambition to plan and invest in OPS, it is crucial for ports to prioritise investments in OPS where it makes most sense in terms of cost-effective emission reduction and the reduction of environmental externalities.

The revised Alternative Fuels Infrastructure Directive (AFID) should in that context provide a legislative framework leading to the best available and cost-effective technology to reduce emissions at berth, including the deployment of OPS where viable. Such a framework should allow to assess OPS against other low or zero-emissions technologies, which can be deployed in the timeframe provided in a revised AFID for the deployment of OPS (10-15 years). With technological advancements taking place in the sector, such flexibility is crucial to avoid creating stranded assets.

To ensure greater deployment of OPS, it should be possible to provide OPS through either mobile, fixed, or floating installations. Power from generators should also be allowed (electrical vessels). It is equally important to avoid that emissions are shifted upstream by ensuring that OPS infrastructure in ports will have access to clean or low-emission energy.

Developments of alternative solutions with regard to decarbonising shipping will be important to complement OPS efforts, mainly on locations not suitable for OPS. It is in that perspective important to consider LNG, methanol, and biofuels in the short run. In the longer run (10-15 years), ammonia and hydrogen have to be considered. Some parts of existing port infrastructure can be used for hydrogen through retrofitting. In some parts of the port, for instance at berths that are not frequently used and where power consumption is low, these alternatives would be much more cost-effective than OPS. Overall, OPS solutions will have to be assessed against upcoming and promising zero emissions technologies such as hydrogen, which can be deployed in a comparable timeframe. Ports welcome the Commission's intention to prioritise the access to hydrogen for waterborne transport¹.

3. Public funding is a prerequisite for the further deployment of OPS

Many European port authorities are willing to deploy OPS to facilitate the greening of shipping. The cost for developing OPS in ports varies from port to port, and from location to location in the port, but **overall, the cost is high with almost no return on investment for the investing party. So far there are no cases known where OPS has been deployed on a commercial basis**, not even in countries where renewable electricity is cheaper than the fuel used on board. So far, every OPS facility has been supported by up to 50% of public financing. An ambitious OPS development plan in ports must be accompanied by substantial amounts of public funding to enable deployment of OPS in ports. Next to the already existing funding mechanisms such as the Connecting Europe Facility and the Recovery and Resilience Facility, dedicated funds for OPS investment in ports should be provided in future funding mechanisms such as a maritime fund under the EU ETS.

When preparing the financial plan for OPS deployment, it is important to take the following aspects into account:

- High investment cost for infrastructure;
- High investment cost onboard vessels;
- High operational costs: the electricity grid tariff structure is based on a peak capacity only reached a few days per year, but the cost is based on use 24/7, 365 days per year. This creates a high fixed cost for grid connectivity, which is difficult to pass on to users;

¹ See Commission's Sustainable and Smart Mobility Strategy, Flagship 1.

- High energy demand peaks: depending on the segment equipped and the numbers of plugs installed in the port, necessary electrical power reserves could reach peaks that will be difficult for ports to plan for in terms of energy storage and adequate supply. Electrical power reserves can, depending on the types of ships, reach very high levels of 15-20 MW;
- Unlevel playing field for taxation of electricity: there are only temporary tax exemptions for OPS on a national basis, which have to compete with permanently tax-exempt oil-based products;
- Split responsibilities: it is necessary to consider the need for grid connectivity investments outside the port area and to define who is responsible for these;
- High risk: as a result of the previous points listed above, private and public investments are made less likely by the high degree of uncertainty and financial risk associated with OPS.

4. Criteria to define where OPS makes most sense in European ports

Based on extensive studies, practical experience with the deployment plans of OPS in many European ports, and a thorough assessment, **ESPO has identified a number of cumulative criteria** which are important in the evaluation of where and when OPS make sense in European ports. These criteria should be considered together as part of a holistic evaluation. The starting point is that OPS can be a viable solution, unless individual port circumstances warrant an alternative equivalent or superior solution.

- **Ship type and OPS readiness of vessels**: certain vessel types and segments are more OPS-ready than others and are already using OPS to some degree. These vessel types and segments should be prioritised, together with vessel types most suited for OPS. Passenger vessels, cruise vessels and certain container segments could be considered at first. There is an added value for vessel types that use OPS for cargo operations at berth such as containers and ro-ro;
- **Vessel minimum time at berth: a necessary criterium**. For OPS to be viable, vessels must spend a minimum amount of time at a particular berth. The time spent by the vessel at berth versus the time required to connect and disconnect OPS is an important factor. The time to connect varies greatly between ship types. It can take between 1-2 hours for a container vessel to connect or disconnect, whereas inland vessels and ro-ro vessels need less time, but spend often only limited time at berth;
- **Frequent and repeat calls by the same vessels**: OPS is more viable for berths serving regular calls and connections by the same ship;
- **Minimum occupancy rate of the berth**: to be worth the investment, a berth should be regularly used over an extended time. Temporary berths should be excluded;
- **New built berths**: new berths could be especially appropriate since the OPS infrastructure can be integrated into the berth planning and construction from the start, thereby limiting the costs.

5. Assessment of shipping segments

It seems to be very difficult to identify certain shipping segments or types which by definition would be viable for OPS in all ports. If a shipping segment would be more relevant for OPS, it cannot be considered as the stand-alone criterium, but has to be considered together with the other criteria provided in point 4. By 2030, average CO₂ emissions from ships at berth and in ports should be significantly reduced across shipping segments.

- **Shipping segments for which the gains in terms of emissions reductions are the biggest.** In that context the berths accommodating ultra large container vessels could be prioritised; ultra large container vessels can be considered as big energy users and this specific segment seems to already have a considerably high level of OPS readiness;
- **The ro-ro/ropax and ferry segment** could also be considered, since they are currently using OPS to a greater degree. This segment often uses the same berths continuously in the same ports, and almost always travels between ports in the European Economic Area. Because of short turnaround times, certain ferries cannot connect at each call;
- **Inland waterway vessels:** inland shipping could be a segment to prioritise since it often requires low voltage OPS due to lower energy needs. However, this is only the case when vessels are docked for a longer period of time: e.g. for IWT vessels staying at berth for at least one hour (e.g. at waiting docks). Connecting to OPS is less viable when an inland vessel makes short calls within the port area for transshipping or other activities. It is important to note that it is technically very difficult to supply seagoing vessels and inland barge at the same berth with the same OPS due to different voltage, power demand, frequency and different plug types;
- **Cruise:** whereas cruise terminals could be identified as appropriate because, in general, they berth near built-up areas and urban agglomerations, the need of extensive grid capacity during a few months (high peaks) remains a problem. Catering for high electricity needs for only a few months is very difficult. In the absence of grid (e.g., on islands), and for smaller ports, reasonable solutions by using mobile stations, barges or other solutions need to be found.

6. Port-specific considerations to consider alongside the general criteria

Apart from general criteria for when OPS would make sense as described above, port-specific considerations are also at play. When introducing a common requirement on these criteria, there is a real risk of creating an unlevel playing field between ports and carbon leakage.

Overall, it seems difficult to set requirements in function of the TEN-T status (core or comprehensive) of Europe's ports.

Port-specific considerations are:

- Location of berths in ports and location of ports themselves;
- Berth size and matching the layout of OPS charging stations with ships calling at the berth;
- Local and Member State funding, provided that an EU level playing field is ensured for investments/financing by port authorities;
- Sufficient grid capacity and access to renewable energy: sufficient grid capacity is essential for OPS. The needs are often impossible to meet with the in-harbour grid, and sometimes there

is not always sufficient additional grid support available in the surrounding community. This is especially an issue on islands and in outermost regions;

- Urban nodes generally have a high energy demand, with OPS adding additional energy needs. This will only increase with the further electrification of industrial clusters in port areas (in compliance with the Paris Agreement goals). Accordingly, sufficient grid capacity must be available on the European level as well as on the local level, where grids providing clean or low-emission energy is a precondition for real CO₂ reductions over the lifecycle. The seasonal nature of certain traffic (in particular maritime passenger transport) also makes it difficult to prepare a suitable degree of energy storage in ports.
- Space on the berth should be considered: providing the necessary space for OPS infrastructure is not possible for some existing berths, given their particular layout or limited size.

7. OPS investment decisions in ports should be based on a proper cost-benefit analysis

To ensure cost-effective emissions abatement and the proper use and allocation of EU finances, the right prioritisation of berths should be made. Every port and possible operator should make a cost-benefit analysis of where to best deploy OPS and where and when to go for alternative solutions. This would avoid the misallocation of limited resources and ensure the feasibility of the investment. This analysis should also be made in function of the economic model of the port. ESPO would encourage ports to carry out this analysis as part of the individual port roadmap.

8. OPS must be subject to a permanent EU tax exemption

The well-known legislative barriers to the use of OPS also need to be addressed and incentives for their deployment should be introduced. A level playing field must be established with other fuels, including a permanent tax exemption for OPS under the Energy Taxation Directive, which would improve the cost-effectiveness of OPS.

9. Balanced commitments between vessels and ports are a precondition for OPS to be viable

As an overall criterium, there should be corresponding engagements between vessels, energy providers, and ports in order to make OPS a viable instrument in terms of both environmental and cost effectiveness. The criteria for OPS provided in AFID must be combined with compatible emissions-reduction measures in the forthcoming FuelEU Maritime Initiative, where achieving zero emissions at berth requires the use of OPS or alternative equivalent solutions by vessels. This can be achieved through coalitions, stimulation on the user side and financial or non-financial commitments to use the facilities, which would strengthen the economic model of investments.

10. Facilitating OPS deployment through market information and transparency

In line with the Commission's strategy towards reducing GHG emissions from the shipping industry, systematic monitoring and reporting of relevant vessel information should provide transparency and support the deployment of OPS. The monitoring should cover the use of alternative zero-emissions fuels and OPS readiness, energy demand at berth, and technical requirements and could be carried out as part of the EU MRV. Furthermore, European ports call for a mapping of OPS demand in Europe as part of an impact assessment, and a continuously updated equivalent to the European Alternative Fuels Observatory (EAFO) monitoring OPS readiness and use by vessels calling at European ports.



The European Sea Ports Organisation (ESPO) represents the port authorities, port associations and port administrations of the seaports of 22 Member States of the European Union and Norway at political level. ESPO has also observer members in Albania, Iceland, Israel, Ukraine and the United Kingdom. ESPO is the principal interface between the European seaport authorities and the European institutions. In addition to representing the interests of European ports, ESPO is a knowledge network which brings together professionals from the port sector and national port organisations. ESPO was created in 1993.