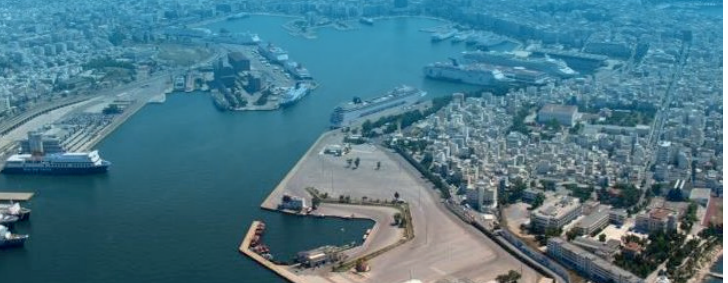
Ports of Piraeus

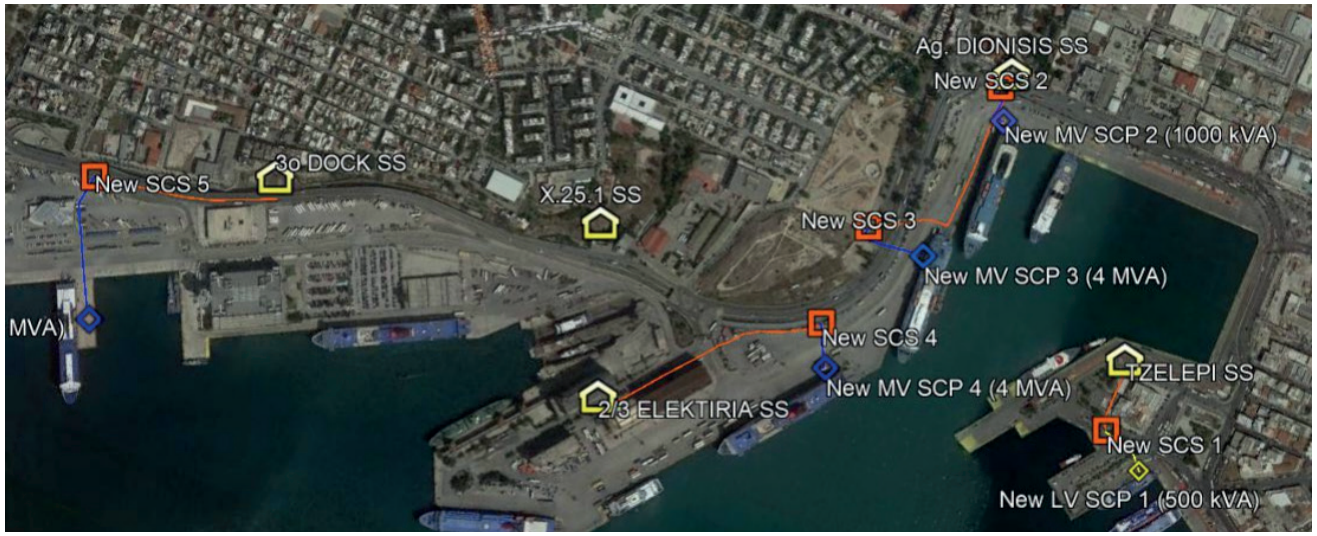
Piraeus, located strategically in the Southeast Mediterranean, has a significant geostrategic position. Not only is it one the largest and busiest ports in Europe and in the Mediterranean, serving a large hinterland (stretching all the way to the Balkan peninsula), but it is also located at the gateway to the routes that connect Europe to the Near and Middle East, to Africa, and through the Suez Canal to the Far East. In that sense, the strategic importance is very high. In terms of traffic only in 2023, Piraeus Port handled more than 16 million passengers, 2.9 million vehicles, 1,5 mil cruise tourists, 762 cruise ships, more than 5.1 million TEU of containers, and 3.17 thousand merchandise vehicles. Furthermore, it has a big ship repair base, where ship repair business provided to smaller, medium, and bigger vessels. During 2023, 270 ships used the ship repair bays while 160 ships used the floating docks.

The port today is particularly in greening its activities and seeking sustainable solutions to address transformation for resilient infrastructure and energy-efficient operations while respecting the local community and the needs of the stakeholders.



Description of the SSE technical studies

FEED studies have been carried out for five installations, all located at the Passenger Terminal of Piraeus Port. These systems will be the first ESS systems deployed in the port.



SSE berthing position	Location	Power (MVA)	Voltage (kV)	Vessel Type
SSE 1	Poseidonos Coast	0.5	0.44/0.4	Ro-Pax
SSE 2	Ag. Dionisiou Coast	1	11	Ro-Pax
SSE 3		4	11	Ro-Pax
SSE 4	Ietionia Coast	4	11	Ro-Pax
SSE 5	Perikleous Coast	4	11	Ro-Pax

For the final definition of the SSE berthing positions, an estimation of the power needs per berth positions was considered, based on the Vessel type, Berthing positions and Energy demands of each vessel. Each shore side installation will include one (1) Shore Connection Substation, the underground MV and LV cables between the substastion and the shore connection points, with all the necessary civil work and one (1) Cable Management System (CMS). For the supply of each vessel, a containerized SSE substation will be constructed, which will be supplied by the existing substations of the port.

Environmental studies

The environmental dimension is the project's primary objective, addressing the requirements to transform Piraeus Port into a zero-emission port through the quantity of infrastructure, quality of services and adoption of modern technologies and practices focusing on energy efficien-

cy of harbour activities. In this respect, the project will allow the improvement of the environmental performance of the port transforming it into a greener, technologically advanced pillar of the maritime industry and will upgrade the future energy profile of the port, providing also the shipping industry with access to more sustainable and greener sources of energy.

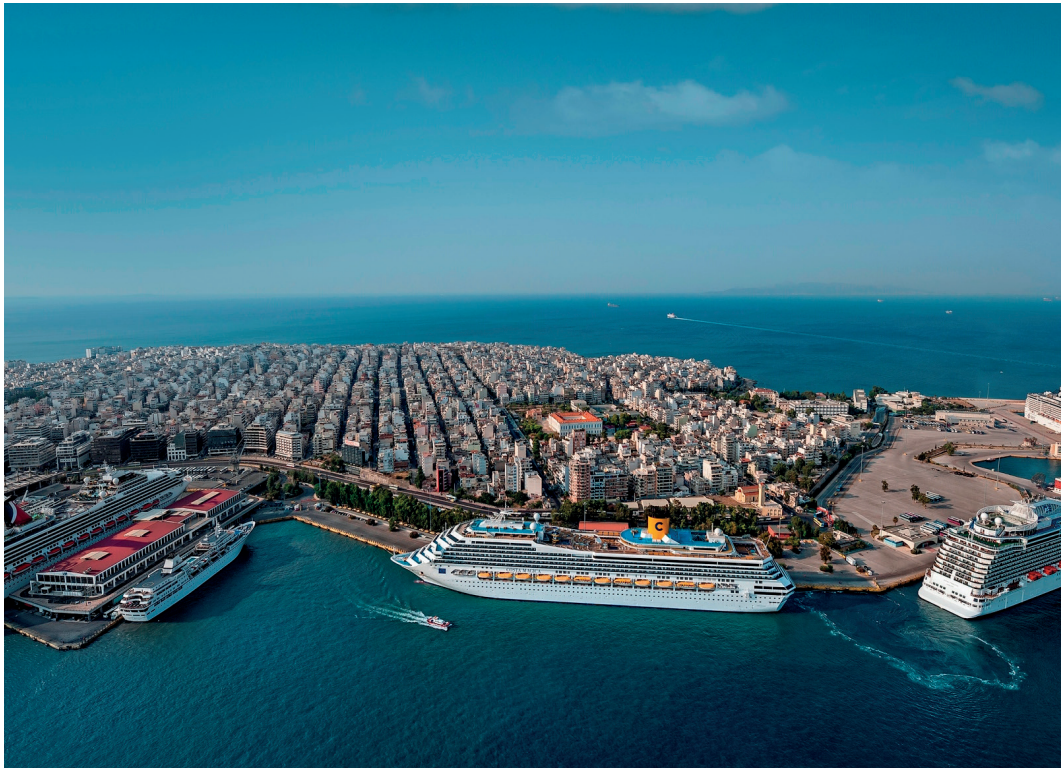
In accordance to Article 6/Par.1a of National Law 4014/2011 on the environmental licensing of works and activities and other provisions falling under the competence of the Ministry of Environment as applied at present, an Environmental Compliance Report was prepared and submitted to the competent authority, General Directorate of Environmental Policy / Ministry of Environment and Energy. The Report assessed the impacts of the work interventions to the environment and to the climate with the following conclusions:

- The interventions comply with the European and National environmental regulations and do not require an Environmental Impact Assessment;
- The interventions concern small-scale construction of an environmentally approved project;
- The shore-side electricity supply system will be placed in a substation minimising negative visual impact and volume;
- The interventions are expected to reduce NOx, SO2, PM and CO2 emissions and improve the overall environment footprint;
- The interventions are expected to reduce the emitted sound level and vibrations/vibrations caused by ships in the port zone and surrounding area.

Clean Power Supply Plan

Over the last years, the Port Authority of Piraeus has been working to pave the sustainability roadmap towards complete carbon neutrality via a set of energy transformation short and mid-term measures comprising implementation of shore side electricity in all its terminals (ro-pax ferries, fast passenger ferries, cruise ships, containerships), smart energy saving (building management systems, LED lighting), installation of alternative fuel infrastructure, deployment of electric vehicle chargers, smart traffic management systems within the port etc.

The successful materialization of this target will relief the surrounding urban area of Piraeus from the atmospheric pollution and improve the life quality of the citizens of Piraeus as suggested by the European Green Deal (EGD).



Cost-Benefit Analysis and Blending Schemes

Main results	5 SSE positions at Piraeus Passenger Terminal
Total Investments (€)	14,102,767
Timeline (years)	2023-2047
Nº of calls requesting SSE for the full period studied	1,076,133
Financial Net Present Value (FNPV) (€)	11,835,319
Payback	-
Total CO2 emissions saved (tonnes)	3,884
Total NOx emissions saved (tonnes)	10,610
Total SOx emissions saved (tonnes)	26,572
Total PMx emissions saved (tonnes)	1,989

The future installations in the port of Piraeus are planned to be financed through a combination of EU funds and own resources.