



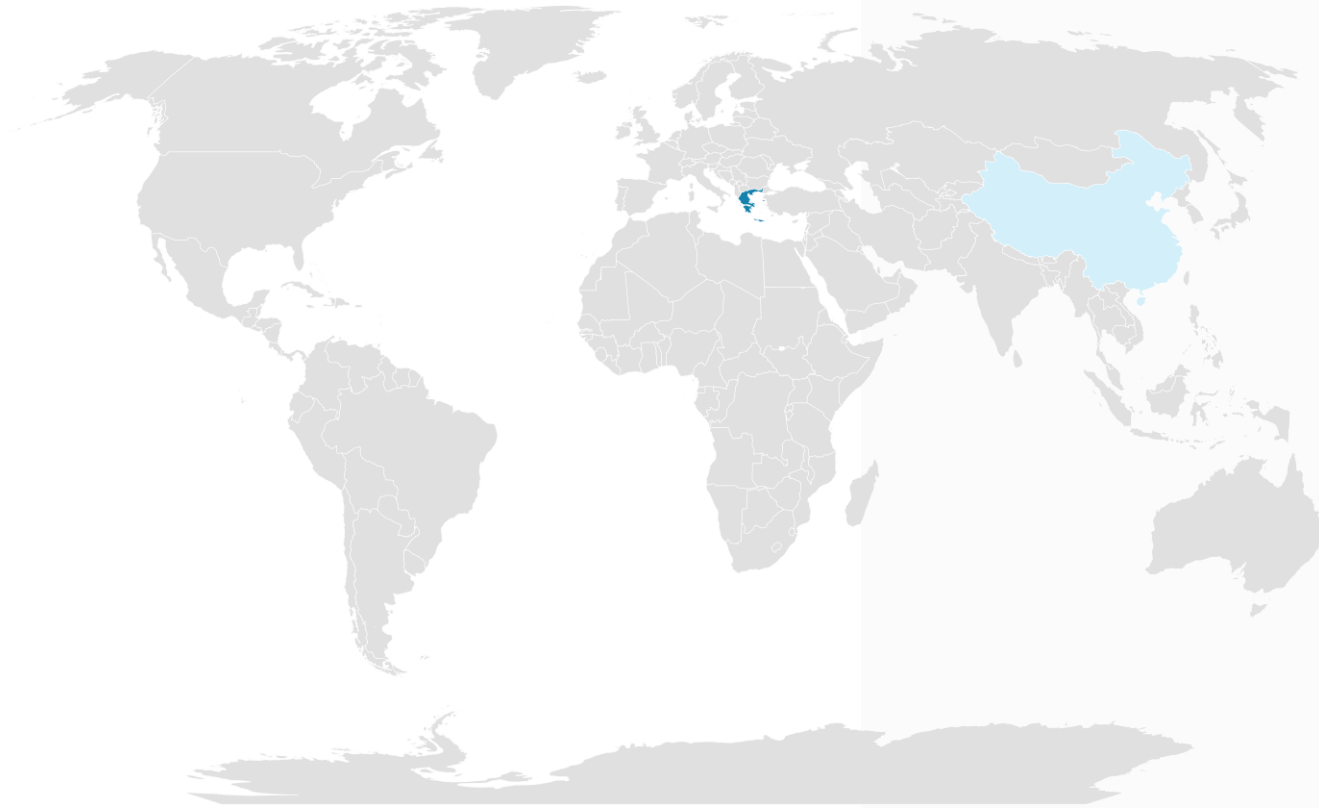
Piraeus Port Authority

STRATEGIC DEVELOPMENT & MARKETING

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MARCH 2023

Piraeus Port Authority Location



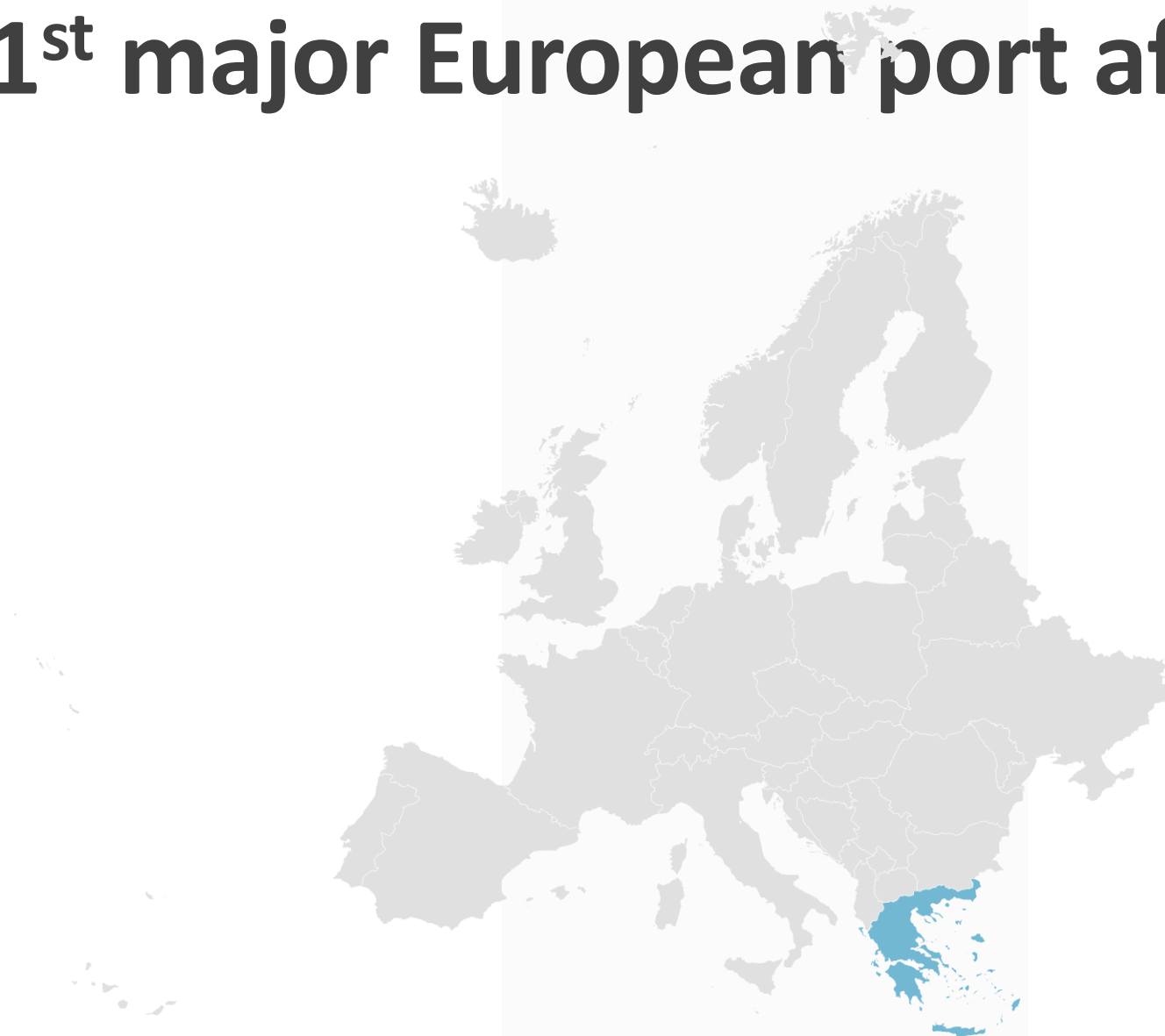
1st major European port after Suez



Main gateway of Athens, Greece



1st major European port after Suez



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Main gateway of Athens, Greece





PPA Facilities

The strategic location of Piraeus

Top 10 ports with the highest betweenness centralities.

Rank	Port name	Country	Standardized value of betweenness centrality
1st	Singapore	Singapore	0.543137
2nd	Shanghai	China	0.326270
3rd	Busan	South Korea	0.238330
4th	Yantian	China	0.229687
5th	Rotterdam	Netherlands	0.194722
6th	Hong Kong	China	0.123834
7th	Tanger Med	Morocco	0.109582
8th	Piraeus	Greece	0.109205
9th	Kelang	Malaysia	0.106295
10th	Yokohama	Japan	0.099732

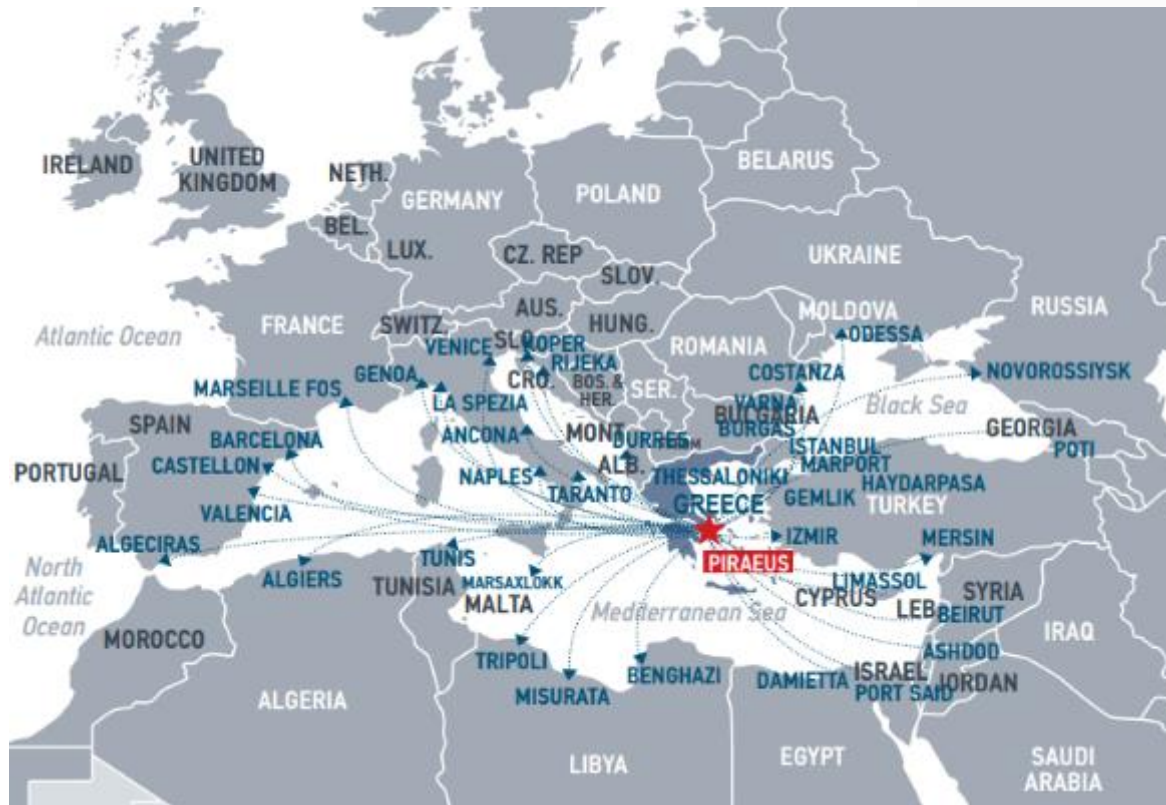
«The structural hole method is more conducive to helping us identify those important transshipment ports at the regional level. Specifically, a lower network constraint, (the important measure for structural holes), a port scores, a higher potential of that port to occupy the position of a structural hole and become the regional hub by connecting its adjacent ports closely»

«Port betweenness centrality actually indicates the port intermediacy. Ports with large scores of betweenness centrality represent high potential of ports that may be used as international transit hubs by providing transshipment services for delivering shipping containers between pairs of ports»

Top 10 ports with the lowest network constraints.

Rank	Port name	Country	The value of network constraint	Rank based on betweenness centralities
1st	Piraeus	Greece	0.095458	8th
2nd	Tanger Med	Morocco	0.098775	7th
3rd	Singapore	Singapore	0.099972	1st
4th	Algeciras	Spain	0.103774	24th
5th	Marsaxlokk	Malta	0.108141	23rd
6th	Sines	Portugal	0.109866	141th
7th	Las Palmas	Spain	0.112848	43rd
8th	Cartagena	Columbia	0.114761	18th
9th	Everglades	U.S.A	0.122898	66th
10th	Mariel	Cuba	0.126385	228th

Feeder & Rail network of Piraeus



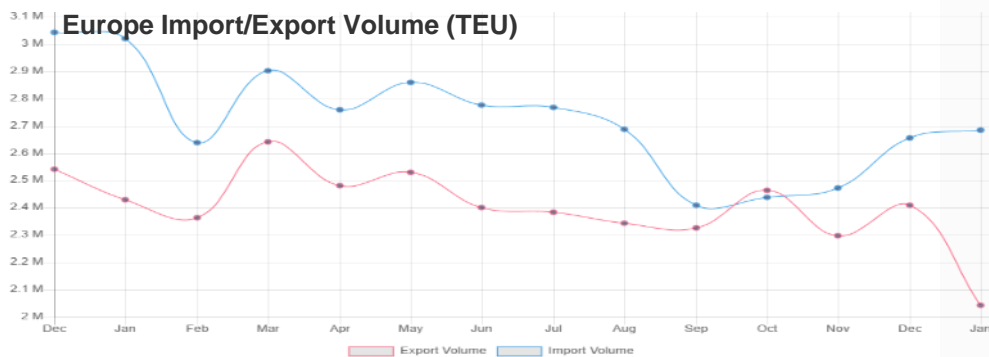
Business (Un)usal 2019-2022

Ports in Mediterranean have never had a period whereby operating environment was stable.

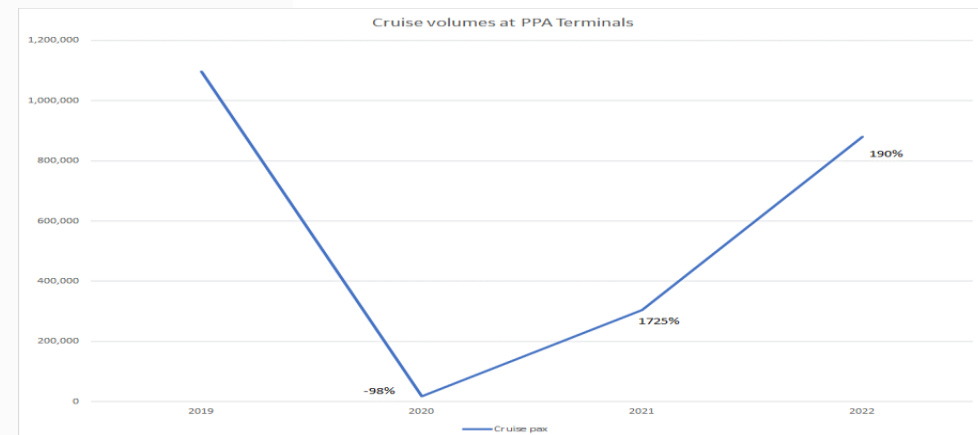
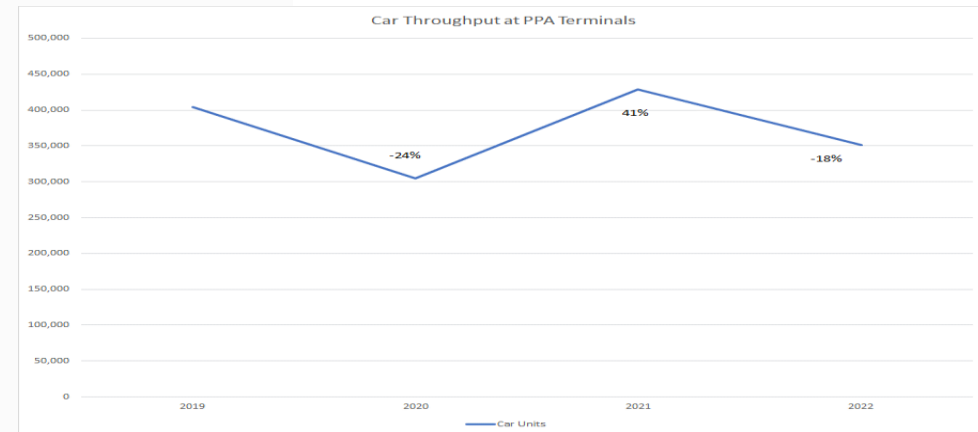
However, instability was usually focused in one or two final destination markets.

Covid19 impacted all destinations as well as source markets. It was a game changer for ports and its impact is still evident with erratic volumes and financial turmoil.

This situation impacts on port investment plans and puts pressure on infrastructure availability with terminal congestion and/or idle infrastructure at the same time



Source: CTS Statistics



EU Initiatives– Background



- **2019**, the Commission adopted the European Green Deal communication.
- **2020**, the Commission adopts its proposal for a European Climate Law to reduce net emissions of greenhouse gases by at least 55% by 2030 compared to 1990 and to put Europe on a responsible path to becoming climate-neutral by 2050
- **2021**, the European Commission adopted a series of legislative proposals setting out how it intends to achieve climate neutrality in the EU by 2050 including the intermediate target of an at least 55% net reduction in greenhouse gas emissions by 2030 (commonly referred to as “Fit for 55 initiative”)

MARITIME EU ETS - Background

There are several proposals to address maritime transport's climate impact, including:

1. **EU Emissions Trading System (ETS) to maritime transport;**
2. **shore-side electricity** supply at maritime and inland waterway ports;
3. Revising the **Energy Taxation Directive** by removing outdated exemptions, such as those for the **intra-EU maritime transport sector**.
4. Boosting demand for marine renewable and low-carbon fuels, by **setting a maximum limit on the greenhouse gas content of energy used by ships;**
5. A revision of the Renewable Energy Directive, which increases the current EU target of at least 32% of renewable energy sources in the overall energy mix to **at least 40% by 2030**.

MARITIME EU ETS – Background



To achieve the EU's overall greenhouse gas emissions reduction target for 2030 the sectors covered by the EU Emissions Trading System (EU ETS) must reduce their emissions by 43% compared to 2005 levels.

In practice, each ship calling at EU ports will have to pay (purchase) emission allowances equivalent to the tonnes of carbon dioxide (CO2) emitted during the voyage.

Extra EU voyages will require to pay for 50% of the emissions while Intra EU for 100% of the emissions.

The cost from the application of EU ETS for the AEU1, AEU2, AEU7 services of Cosco shipping are estimated between €100K to €200K EURO per trip at 60Euro per ETS allowance.

Risk of trade diversion is high putting in jeopardy port investment projects underway or evaluated

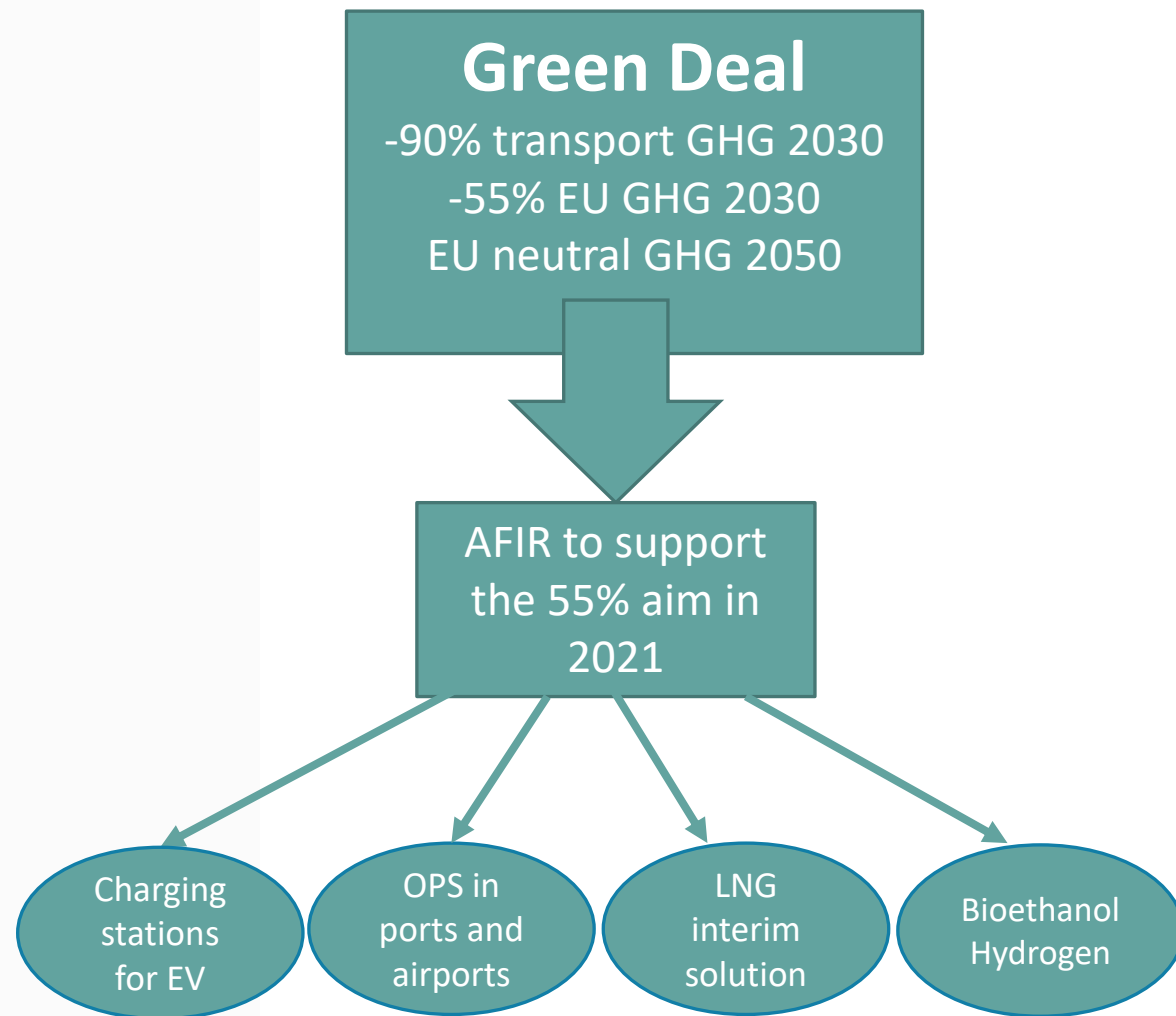
Table 9
Results on the cost-benefit analysis on the transshipment hub relocation problem and the estimation of the EU carbon price turning point for evading the EU ETS — The Piraeus and Izmir case study.

Service	Origin	Transit	Destination	$d_{x-1,x}$	$v_{x-1,x}$	$FC_{x-1,x}^V$	$CO_{2x-1,x}^V$	$R_{x-1,x}^V$	$ETS_{x-1,x}^V (C_p = 60)$	$ETS_x^B (C_p = 60)$	C_p^0
AEU1	Zeebrugge	Piraeus		2759	18.4	929.18	2893.45	100%	173607.25	6072.00	15.73
		Piraeus	Singapore	5573	19.0	1960.89	6106.22	50%	183186.50	3503.00	
	Zeebrugge	Izmir		2910	24.3	1058.51	3296.22	50%	98886.46	2569.05	
		Izmir	Singapore	5572	19.0	1960.03	6103.54	0%	0.00	0.00	
AEU3	Singapore	Piraeus		5573	17.0	1530.94	4767.36	50%	143020.75	3736.80	22.25
		Piraeus	Rotterdam	2817	20.6	1021.88	3182.13	100%	190927.89	10976.80	
	Singapore	Izmir		5612	17.1	1557.28	4849.37	0%	0.00	0.00	
		Izmir	Rotterdam	2969	21.7	1162.04	3618.59	50%	108557.72	7240.05	
AEU7	Singapore	Piraeus		5573	16.8	1789.58	5572.73	50%	16781.89	124.56	18.09
		Piraeus	Hamburg	3061	17.0	871.61	2546.03	100%	152761.91	6103.44	
	Singapore	Izmir		5612	17.3	1820.36	5668.60	0%	0.00	0.00	
		Izmir	Hamburg	3214	17.6	1101.36	3429.65	50%	102889.47	5605.20	

¹ Lagouvardou, S. and Psaraftis, H.N., 2022. Implications of the EU Emissions Trading System (ETS) on European container routes: A carbon leakage case study. Maritime Transport Research, 3, p.100059.

AFIR Regulation

- The Alternative Fuel Infrastructure Regulation (proposal) was adopted by Commission in July 2021 and is part of the overall set of interlinked policy initiatives under the 'Fit for 55' package.
- Although a Directive exists since 1994 on AFIR the Commission propose a Regulation that will substitute the existing Directive aiming to accommodate the aim of 2030.

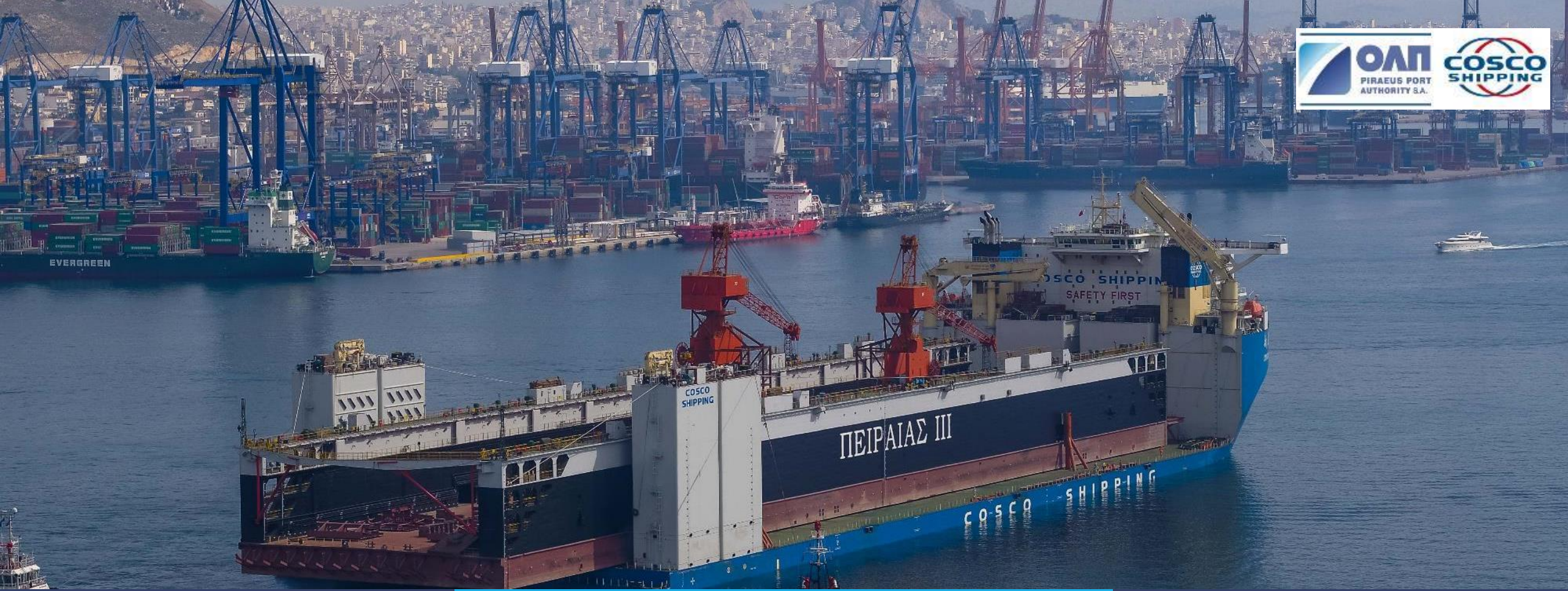


AFIR Regulation – key points

- Article 3 introduces requirements for **charging stations of light duty vehicles and private cars** in public areas. - Puts pressure on land availability in public port areas.
- Article 4 introduces requirements for **charging stations of heavy duty vehicles** in public areas. -Puts pressure on space availability in terminals and logistics areas.
- Article 9 introduces requirements for alternative fuels infrastructure for various transport modes, including requirements for **onshore power supply** (OPS, Article 9) - Significant investments in infrastructure within a financially strained period.
- Article 11 introduces requirements for **liquefied natural gas** (LNG, Article 11) in ports. - Puts pressure on land availability and changes modus operandi in terminals. Significant investments required.
- Article 6 introduces obligation for **hydrogen refuelling stations for vehicles**. (? Experimental not clear requirements)

Results - Overview

- Ports in Europe are still facing operational and financial challenges as Covid19 impact on supply chains and volumes is still evident.
- This environment creates challenges for port investments and expansion of infrastructure. Congestion and idle infrastructure co-exist due to supply chain disturbances.
- EU policy “Fit for 55” creates significant challenges with risks for transshipment volumes as well as need for significant infrastructure investments to address the requirements of the policy initiative.
- All above create a unique environment for ports that can only be addressed with significant financial aid in order to tackle both policy requirements and market imperatives.
 - State aid should be dedicated to port needs
 - State aid should go beyond the current limits of co-financing due to the limited time span for implementing infrastructure projects



Thank YOU!

Feel free to contact me with any questions!

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