

WORLD PORTS TRACKER SUSTAINABILITY & MARKET TRENDS





Professor Theo Notteboom and Professor Thanos Pallis



DATA SOURCES

Survey data



Digitalization



Climate and Energy



Infrastructure



Market outlook



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Environmental care

Community building

Health, Safety and Security

Strategic decisions

External data

- S&P Global port data
- UNCTAD / MDS Transmodal LSCI data

Survey respondents (Feb-March 2025 survey)







TOTAL PORT THROUGHPUT (BASIS = TONS)

< 1 million tons	7%
1-10 million tons	19%
10-50 million tons	31%
50-200 million tons	33%
> 200 million tons	10%



< 100,000 TEU	20%
0.1-1 million TEU	32%
1-4 million TEU	25%
4-10 million TEU	11%
> 10 million TEU	12%

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Infrastructure + Strategic decisions



Ports where terminal capacity expansion or major upgrades will become operational in 2025 (%, per market)



Infrastructure + Strategic decisions

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Execution of investments in 2024

Investments in the field of alter (terminals and pipelin met	rnative ship fuels nes for ammonia, nanol, LNG, etc.)	3%				82%					1(10% 3%					
Investments in the field	of solar and wind energy	4% 67% 8% 1				4% 67% 8%			67% 8% 17			67% 8%		17%	6	2	
Investments in onshore seagoing and/	power supply for or inland vessels	3%		67% 78%						19%	6	8%	(
Infrastructure investments (r	oads, rail tracks, inland shipping)	4%									11%	7%	2				
Port infrastructure investm terminals/industrial or logi	ents (quay walls, stics sites, locks)	2%	2% 69%			69%					69%		22%		2%	8%	6
		0%	10%	20%	30%	40%	50%	60%	70%	80%	6 9	0%	100%				
	Executed faster than planned	Exe pl	cuted as lanned	ed as Have incurred only Ha ned minor delays ma					ave incurred Hav ajor delays			shelved lled	/				
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Infrastructure + Strategic decisions Major changes in Land Use 2025





Infrastructure to facilitate sustainability



Implementation status of high voltage OPS for the commercial vessel types



Infrastructure to facilitate sustainability

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Implementation status of circular economy in the port





Environmental care

Does regular environmental monitoring take place in your port for the following parameters

Coastal erosion		43%				45	%			12%	
larine bio-invasion / introduction of alien species		34%			4	47%			1	9%	
Marine habitats		47%	, D			37	%			16%	
Terrestrial habitats and biodiversity		47%	, D			369	%		17%		
Sediment quality			56%						15%		
Soil quality		44%				43			13%		
Water consumption			679	%				21%		12%	
Ground water quality		40%				43%			1	7%	
Water quality				80%					11%	9%	
Underwater noise	11%				75%					15%	
Noise			679	%				21%		12%	
Carbon footprint			679	%				21%		12%	
Energy consumption				75%				1	7%	8%	
Air quality				79%					13%	8%	
00	% 10%	20%	30%	40%	50%	60%	70%	80%	9(0% 10	
		Yes			No			Un	sure		



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Calculation and reporting of carbon footprint

Do you regularly calculate your port's carbon footprint?	
Yes, scope 1 emissions only	9%
Yes, scope 1 and 2 emissions	11%
Yes, scope 1, 2, and partially scope 3 emissions	30%
Yes, scope 1, 2 and scope 3 emissions in full	21%
No	29%

Have you publicly communicated targets for your port to reach carbon neutrality before 2050?

Yes, scope 1 emissions only	10%
Yes, scope 1 and 2 emissions	18%
Yes, scope 1, 2, and partially scope 3 emissions	10%
Yes, scope 1, 2 and scope 3 emissions in full	19%
No	42%

Environmental care



Port certification under an environmental management system







Implementation of rules and procedures for the safe bunkering of low- and zero-carbon marine fuels





Implementation process of preparing the port for importing and/or exporting low- and zero-carbon fuels as commodities

LNG	29%		2	0%	12%	4% 4	%		31%	31%					
Methanol	33	%		29%	%		12%	4%3%		19%	, 0				
Liquid hydrogen		39%			32%			16%		7%	3%4%				
Compressed hydrogen		39%		35%				169	%	4%	1% 5%				
Ammonia	329	%			40%			9%	7%	4%	8%				
Biofuels	33	%		28%		9%	6 1%	1%	27%						
0%	10%	20% 30)%	40% 5	50%	60%	70%	80%		90%	100				
	Not applicable	No action ye	•t	Inception stage		Inception stage		Inception stage		esign age	Imp	plementation stage		Operational	



Climate and Energy

Climate and Energy

Renewable electricity produced on site in the port area





Health, Safety and Security

Evaluation of risk factors for the port area

Geopolitical considerations	3	1%	4	3%		26	%	
Oil spills	3	32%	339	6		36%		
Collisions, groundings		41%		40%			19%	
Port city relation / license to operate		39%		29%		32%		
Corruption		51%		3	33% 16%			
Lack of resources	41% 37				7% 22%			
Dredging and dredging disposal		33%	3	29%	6			
Environmental externalities	26	5%			18%			
Hazards related to new fuels (e.g. ammonia) and electrification (e.g. batteries)	46% 32%				% 22%		2%	
Terrorism		49%		22%			6	
Illicit trade and organized crime		38%	2	29%	33%			
High utilisation of facilities and infrastructure	22%	6	48%			30%	6	
Social unrest		57%)		33%	6	10%	
Cyber-attacks	8%	30%			62%			
Pandemics	27	7%	47	7%		26	%	
Natural disasters (e.g. earthquake)	26	%	30%		4	4%		
Climate Change (sea level rise, extreme weather events)	230	%	38%			38%		
0'	% 10%	20% 30%	6 40% 50	% 60%	70%	80%	90% 10	
		Low	Mod	erate		High	I	
. xbx								



Health, Safety and Security

Status of initiatives in the area of health, safety and security

	I						
Do you regularly undertake emergency drills and exercises in your port involving all relevant stakeholders?		77%		19% 3%			
Has the port authority established procedures for coordination, collaboration, and resource sharing with relevant parties		81%		14% 4%			
Has the port authority implemented a business continuity plan to cope with potential disruptions associated with its priority risks?		68%	20	% 5%7%			
Has the port authority developed an emergency management response and coordination framework to address its priority		77%		15% 4% 4%			
Has your port undertaken a threat / hazard identification and risk assessment to identify its main risk factors?		72%		20% 4% 4%			
	0% 10% 20	% 30% 40% 50%	60% 70% 8	80% 90% 100%			
	Yes	Partly	No	Unsure			
xix							





The adoption of emerging technologies (share of responding ports)









Implementation status of major maritime and port-related digital solutions

Implementation of initiatives enabling Just- In-Time (JIT) arrival and Port Call Optimization in your port		27%			21%		11% 13%		28%		
Status of implementing a Port Community System at your port		23%		13%	7%	11%			47%		
Status of implementing a National Maritime Single Window in your country	16	16% 13%		5%	13%		53%				
	0%	10%	20%	30%	40%	50%	60%	6 70%	80%	90%	100
	No actio app	on yet / no licable	ot	Inception stage		Desigr stage	1	Implementa stage	ation	Operational	
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Arrangements to deal with cybersecurity





Community building

Status of community building initiatives

	I				
Has your port been investing in supporting vulnerable local communities, reducing poverty, and addressing inequalities?	5	1%	18%	22%	10%
Has your port been investing in educational and training programs targeting skills required for current and future port workforce and attracting talent to the industry?		60%	11%	22%	7%
Does your port regularly organize events open to the general public as part of its community outreach program?		73%		5% 18%	4%
Are there established procedures/structures in place for systematically consulting with the community stakeholders in the port's decision making process?		70%		4% 22%	4%
09	i % 10% 20%	30% 40% 50	0% 60% 7	'0% 80% 90 ⁰	% 1009
	Yes	No	Partly	Unsur	Э
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Community building



Share of women working at different levels of the port authority organisation

	% of women at port supervisory board or similar		44%			399	6		13%	4%
								_		
	% of women at management / executive positions	33	3%	45%				5%	7%	
	% of women across all levels of the organization	16%		36% 42		42%	42%		5%	
	0'	% 10%	20% 30%	40%	50%	60%	70%	80%	90%	100%
		0-10%		11-30%		31-50	%		>50%	
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Evolution (year-on-year) of container port activities (index-based / Q4 2024 vs Q4 2023

Region	Number of Vessel Calls	Call Size	% of Containerships of > 8.500 TEU	Port Moves Per Hour
Africa	3%	2%	3%	29%
Latin America	-11%	13%	-3%	-9%
Mediterranean	-11%	8%	-15%	-2%
Middle East & India	-11%	2%	-36%	-8%
North America	-7%	1	-5%	-4%
North East Asia	4%	10%	-8%	-1%
Northern Europe	-5%	12%	-3%	3%
Oceania	10%	8%	1%	23%
South East Asia	1%	7%	-11%	-3%

Data Source: S&P Global



Long-term evolution of container port activities (Indexed based / Q4 2024 vs Q4 2019)

Region	Number of Vessel Calls	Call Size	% of Containerships of > 8.500 TEU	Port Moves Per Hour
Africa	7%	9%	-19%	3%
Latin America	-8%	27%	9%	-21%
Mediterranean	-11%	12%	-6%	-8%
Middle East & India	-10%	-2%	-29%	-10%
North America	-21%	21%	36%	-11%
North East Asia	-13%	31%	11%	19%
Northern Europe	-18%	11%	-8%	-1%
Oceania	-13%	27%		-14%
South East Asia	-9%	24%	-1%	7%



Moves per hour (index-based evolution / Q1 2019=100)





Moves per hour (index-based evolution / Q1 2019=100)



Trends in Container Ports - Liner Shipping Connectivity



Evolution (year-on-year) of Liner Shipping Connectivity Top 5 locations per region (index-based / Q4 2024 vs Q4 2023)

North An	nerica North Europe		e	Middle East and India			North-East Asia		
	_		- L						
U.S.A.	2%	UK	1%	India	5%		China	6%	
Canada -4%		Netherlands -5%		UAE	1%		South Korea	0%	
		Belgium -19	%	Saudi Arabia	-19%		Japan	-1%	
		Germany -4%		Sri Lanka	8%		Hong Kong SAR	-3%	
		Poland	0%	Pakistan	6%		Chinese Taipei	-1%	
			•						
Latin Am	erica	Mediterranean	Af	rica	Southeast	Asia	Oc	ceania	
Panama	3%	Spain 3%	Ghana	10%	Singapore -3%		Australia	-2%	
Colombia	6%	Italy -4%	Côte d'Ivoire	3%	Malaysia -1%		New Zealand	-21%	
Mexico	2%	Turkey -3%	South Africa	-12%	Vietnam	0%	Papua NG	0%	
Brazil	15%	France -1%	Nigeria	17%	Thailand	1%	New Caledonia	1%	
Peru -2%		Egypt -5%	Тодо	-1%	Indonesia	3%	Fiji	2%	
				-					
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Trends in Container Ports - Liner Shipping Connectivity



Evolution of Liner Shipping Connectivity since 2019 Top 5 locations per region (index-based / Q4 2024 vs Q1 2019)

North	America	North Europe		Middle East and India			ia	North-East Asia			
U.S.A.	6%		UK -5%		India	45%			China		25%
Canada	-4%	Netherla	nds -11%		UAE	11%		So	uth Korea		<mark>15%</mark>
		Belg	ium -7%		Saudi Arabia	9%			Japan	-2	%
		Germ	any -14%		Sri Lanka	24%		Hong K	Kong SAR	-14%	
		Pol	and	0%	Pakistan	42%		Chine	ese Taipei	-8%	
Latin A	America	Mediter	ranean		Africa		Southeast	t Asia		Ocear	nia
Panama	10%	Spain	17%	Ghana	19%		Singapore	4%	A	ustralia	0%
Colombia	11%	Italy	2%	Côte d'Ivoire	45%		Malaysia	8%	New Z	ealand ·	-7%
Mexico	5%	Turkey	19%	South Africa	-14%		Vietnam	34%	Pap	oua NG	14%
Brazil	30%	France -10%	b	Nigeria	23%		Thailand	23%	New Cal	ledonia	15%
Peru	9%	Egypt	16%	Togo	169	%	Indonesia	3%		Fiji	12%
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Trends in Container Ports - Liner Shipping Connectivity



Evolution of connectivity since 2019 10 Best-connected countries and/or territories in the world

Region	Country and/or Territory	LSCI Q4 2024	Q4 2024 vs Q4 2023	Change in Global Rankings Q4 2024 vs Q4 2023	Q4 2024 vs Q4 2019			
Northeast Asia	China	1,258.4	5.6%	-	25.3%			
Northeast Asia	South Korea	640.5	0.2%	-	14.5%			
Southeast Asia	Singapore	582.7	-3.0%	-	4.3%			
North America	United States	515.4	2.2%	↑ +1	5.8%			
Southeast Asia	Malaysia	499.1	-1.0%	↓ -1	7.6%			
Mediterranean	Spain	426.1	3.3%	↑ +2	17.1%			
Southeast Asia	Vietnam	415.7	0.3%		33.6%			
Northeast Asia	Japan	412.9	-0.5%	↓ -2	-1.9%			
North Europe	United Kingdom	379.9	1.4%	↑ +2	-5.2%			
Northeast Asia	Hong Kong SAR	376.2	-3.0%		-13.7%			
iaph [®] By: Theo Notteboom - Thanos Pallis Source of Data: MDS Transmodal & UNCTAD								

Market Outlook – Survey data



In the next 12 months, do you expect the cargo throughput (pax) at your port to increase or decline?





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