



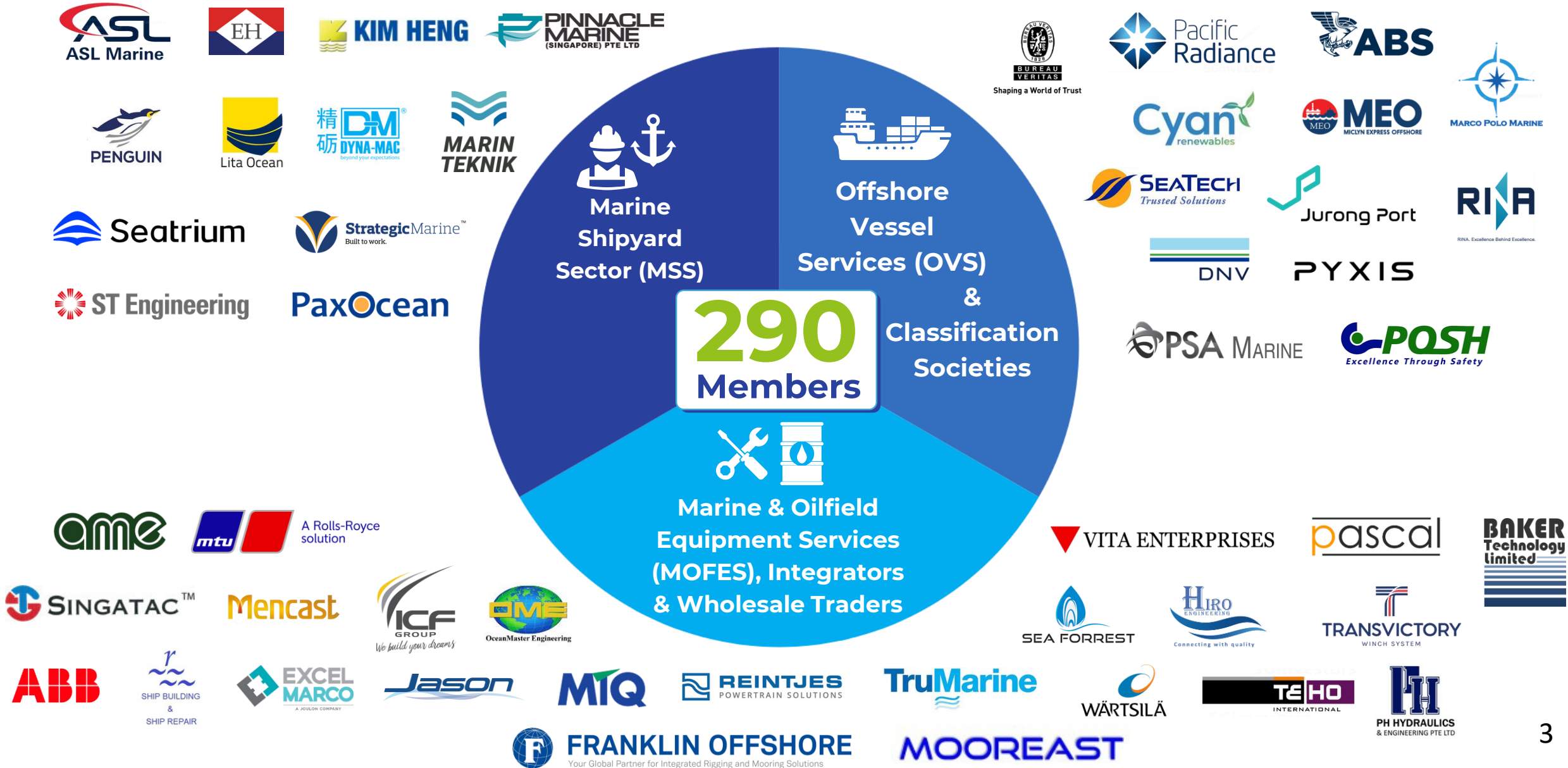
Marine & Offshore Energy (M&OE) Industry Plan



The Association of Singapore Marine & Offshore Energy Industries (ASMI) is a non-profit trade association representing companies in Singapore's marine and offshore energy sector. Since its inception in 1968, ASMI has been a key player in advocating for industry growth, promoting safety standards, and fostering international collaborations to ensure the sector remains competitive in a rapidly evolving global landscape.



Our Primary Constituencies



ASMI Milestones in 2024

Members Engagement

We welcomed

25

new member companies into our 280-strong Association

Brought the community together through over

25

Talks, Seminars, Workshops & Networking Events this year, engaging more than

2,600

participants

Youth Engagement

Reached over

210

youths, inspiring the next generation of industry leaders



ASMI Milestones in 2024

Internationalisation

Strengthened Singapore's global presence through

9 exhibitions

4 business missions

Talent Attraction

More than

80 companies
340

benefitted from the Career-Conversion Programme

Capability Building

Supported workforce development by training

487

professionals, ensuring readiness for industry demands





0 A Year in Review

A Year In Review

A Stronger Singapore Marine & Offshore Energy Sector

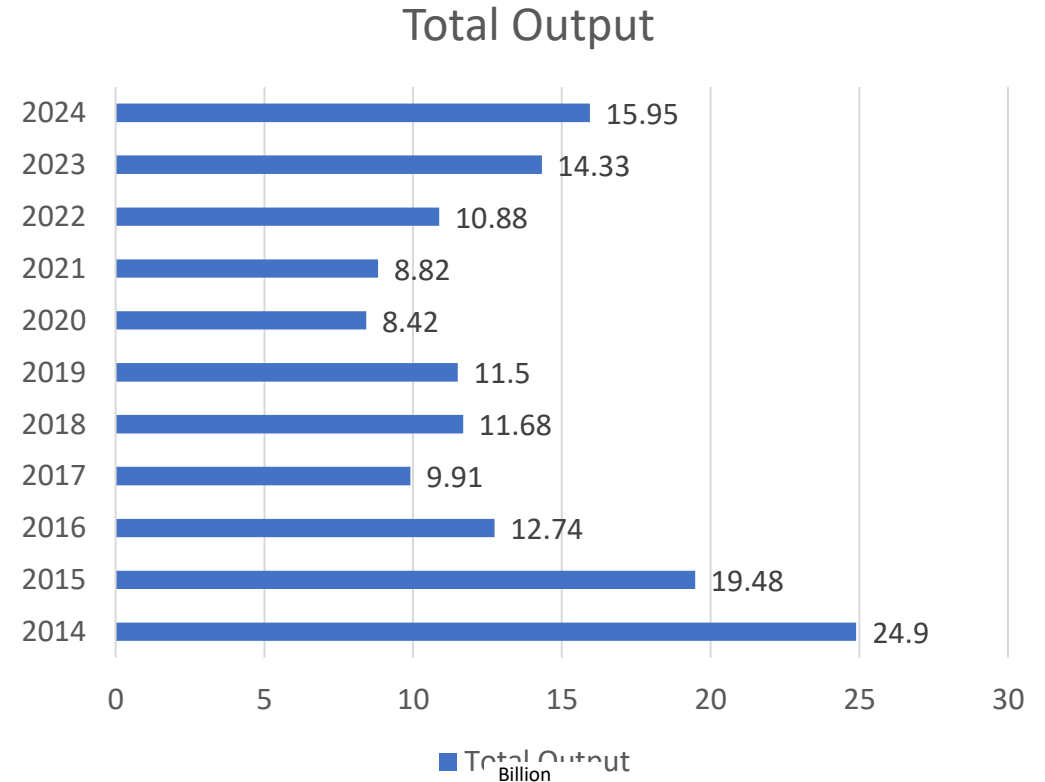
Total Output: S\$15.95 billion

New Orders: S\$16.64 billion

- New orders mostly from Offshore Productions, Gas, Specialised and Sustainability-related projects

Total Order Book: S\$25.02 billion

- S\$4.92 billion higher than the previous year (S\$20.01 billion)



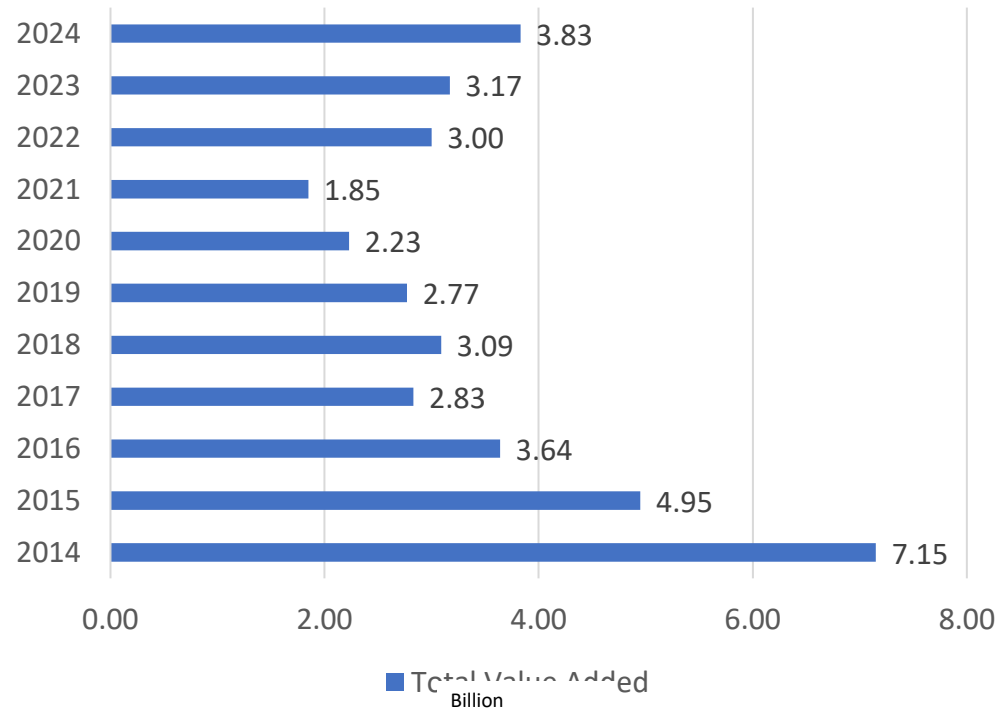
Source: Singapore Department of Statistics



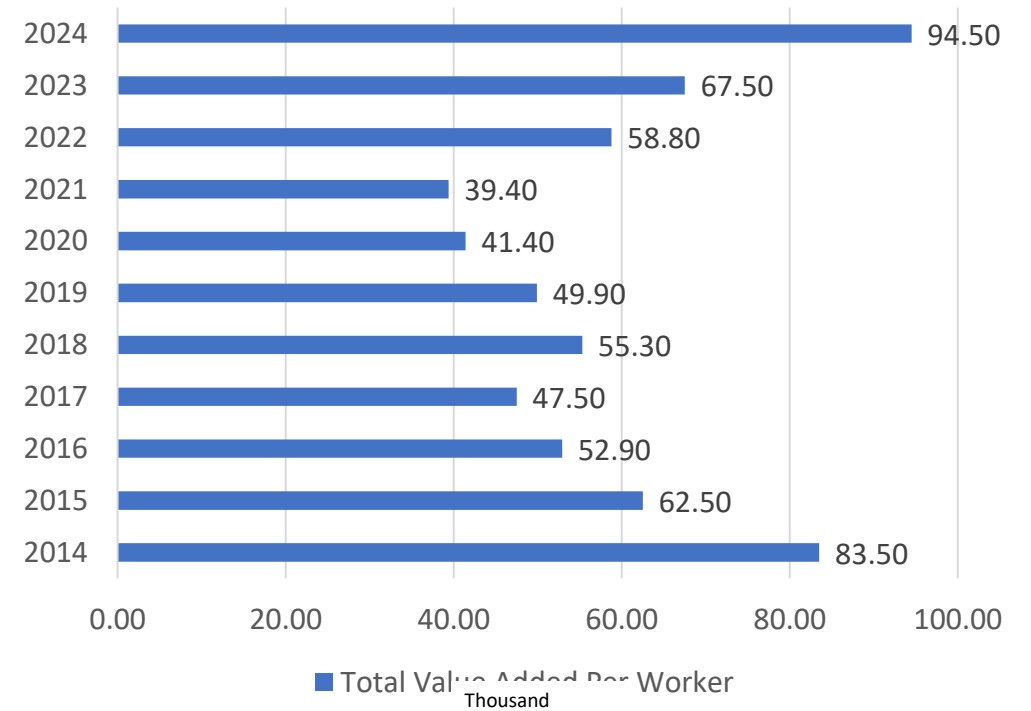
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A Stronger Singapore Marine & Offshore Energy Sector

Total Value Added



Total Value Added Per Worker



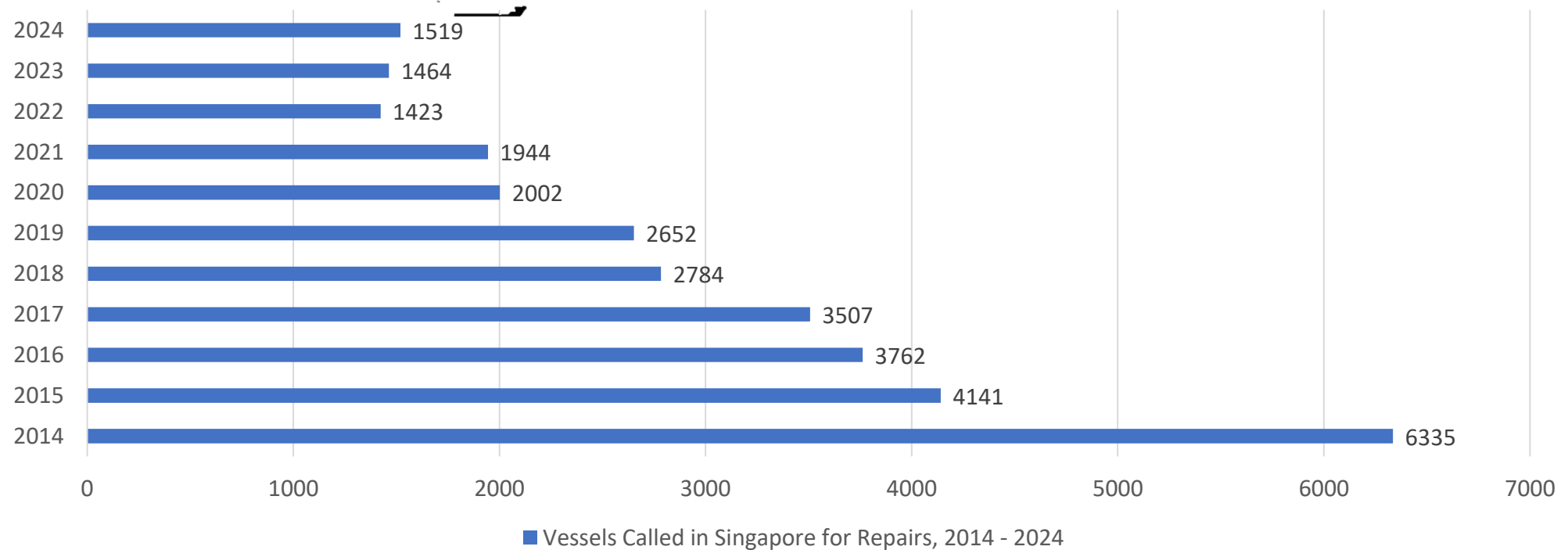
Source: Singapore Department of Statistics



A Year In Review

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Vessels Called in Singapore for Repairs, 2014 - 2024



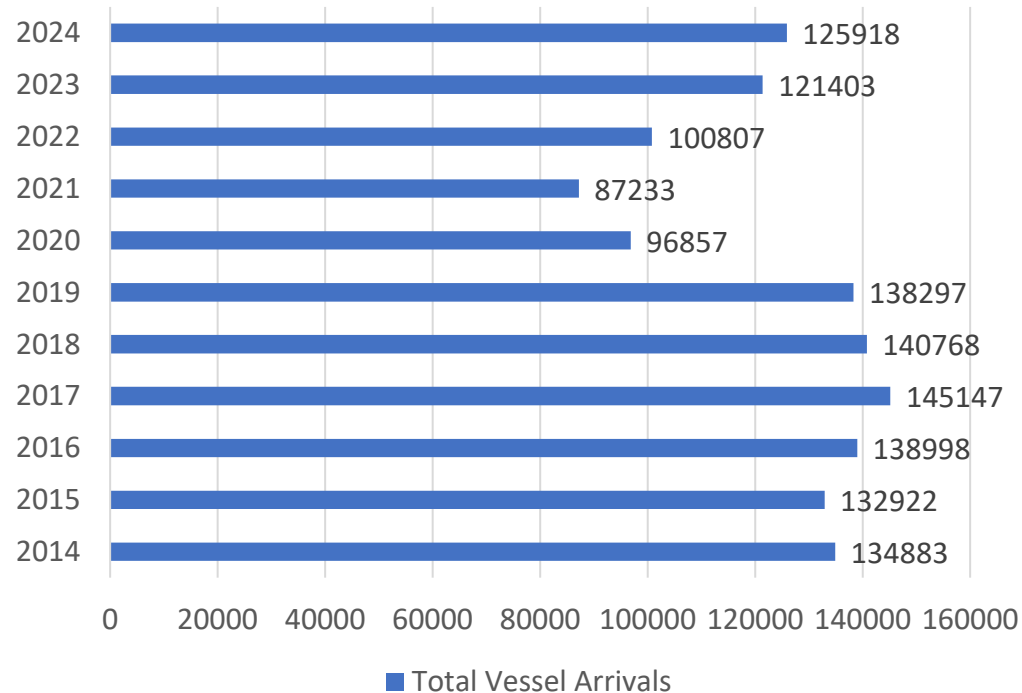
Source: Maritime and Port Authority of Singapore



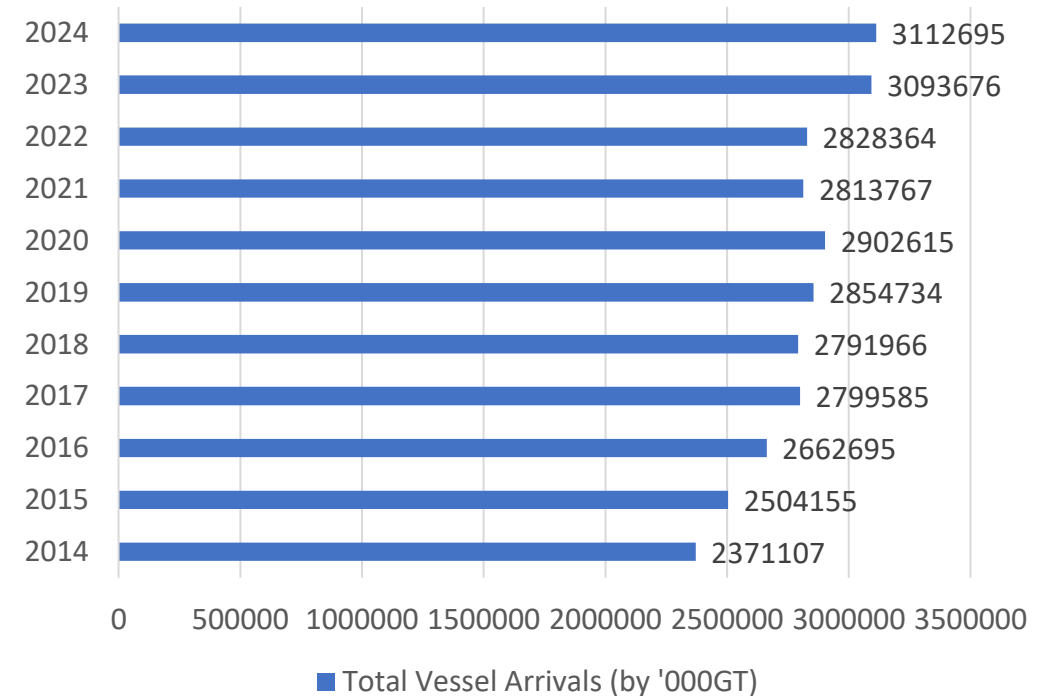
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Total Vessel* Arrivals



Total Vessel Arrivals (by '000GT)



Source: Maritime and Port Authority of Singapore

* Includes containers, freighters, bulk carriers, tankers, passengers, barges, tugs, and miscellaneous



A Year In Review

A Stronger Singapore Marine & Offshore Energy Sector

Maritime Related Completed Projects



Penguin International brought its "Electric Dream" project fully online, comprising three pure electric ferries operating between Pasir Panjang Ferry Terminal and Shell's Energy and Chemicals Park.



Yinson GreenTech unveiled Hydroglyder, Singapore's first fully electric hydrofoil crew-transfer vessel, marking a key milestone in decarbonising offshore personnel movements.



Kuok Maritime Group-led Coastal Sustainability Alliance (CSA) has announced the start of construction of the first fully electric PXO tug and supply boat by PaxOcean Group.



Pyxis debuts fully electric workboat named X Tron for port and ship workers. X Tron is the first in a series of electric port passenger vessels made by Pyxis called Pyxis One.



Fortescue Green Pioneer sailed on ammonia and diesel dual-fuel at a world-first marine trial in Singapore. Complete conversion of two of the vessel's four engines occurred at Seatrium's shipyard.



ASL Shipyard recently delivered the Ping Yun, a 5500 m³/5000 DWT product oil and IMO 2 chemical tanker.

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Offshore Renewable / Sustainability Related Completed Projects



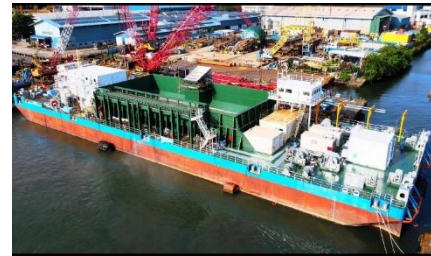
Seatrium completed the world's first full-scale, turnkey CCS retrofit on Solvang's ethylene carrier, Clipper Eris, which is set to capture up to 70% of CO₂ emissions using amine cleaning technology



ASL Shipyard delivered the Ping Yun, a 5,500 m³/5,000 DWT product oil and IMO 2 chemical tanker. Equipped with a frequency-controlled shaft generator, it aims to reduce fuel consumption.



Penguin International completed first I-Class Crew Transfer Vessel (CTV) for Northern Offshore Services (NOS).



Kim Heng delivered Hwang Chang No. 99, a subsea rock installation barge. This collaboration Taiwan highlights a commitment to advancing marine engineering and the offshore wind industry.



PaxOcean completed the world's first methanol dual-fuel engine retrofit for a containership.



The Sofia Offshore Wind Farm's Offshore Converter Platform (OCP) was built and transported from the Seatrium.

A Year In Review

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Traditional offshore energy related completed projects



Seatrium successfully delivered its fourth jackup rig, named "Vali", to Borr Drilling, about a year ahead of its planned delivery.



Seatrium delivered a FPSO Bacalhau, a topsides integration project for MODEC Offshore Production Systems (Singapore)



PaxOcean Group delivers Indonesia's 1st FPSO vessel conversion.



PaxOcean Group delivers Compact Semi-Submersible Vessel FATEH to the Adinin Group of Companies.



ASL Shipyard launched the Al Jarraf, a sea-going heavy-duty cutter dredger owned by the Middle East Dredging Company (MEDCO).



Strategic Marine Delivers Cutting-Edge AMARCO S1 For Bruneian offshore operator Amarco Sdn Bhd (AMARCO).

A Year In Review

A Stronger Singapore Marine & Offshore Energy Sector

Range of new projects secured in 2024



Strategic Marine is pleased to announce a new contract with OEG Renewables, part of the OEG Energy Group, for a next-generation Crew Transfer Vessel (CTV) for Taiwan.



Seatrium signed Letter of Intent with Penta-Ocean Construction to carry out early engineering works for a 5,000-tonne fully-revolving Heavy Lift Vessel.



Seatrium has won an international tender from Petrobras, acting as operator of Atapu1 and Sepia2 consortiums, for the newbuild supply of FPSO platforms P-84 and P-85.



Kongsberg Maritime secures significant contract for Golar Mk2 FLNG vessel.



ST Engineering Marine secured a contract with the Singapore Ministry of Defence for the mid-life upgrade of the Formidable-class frigates.

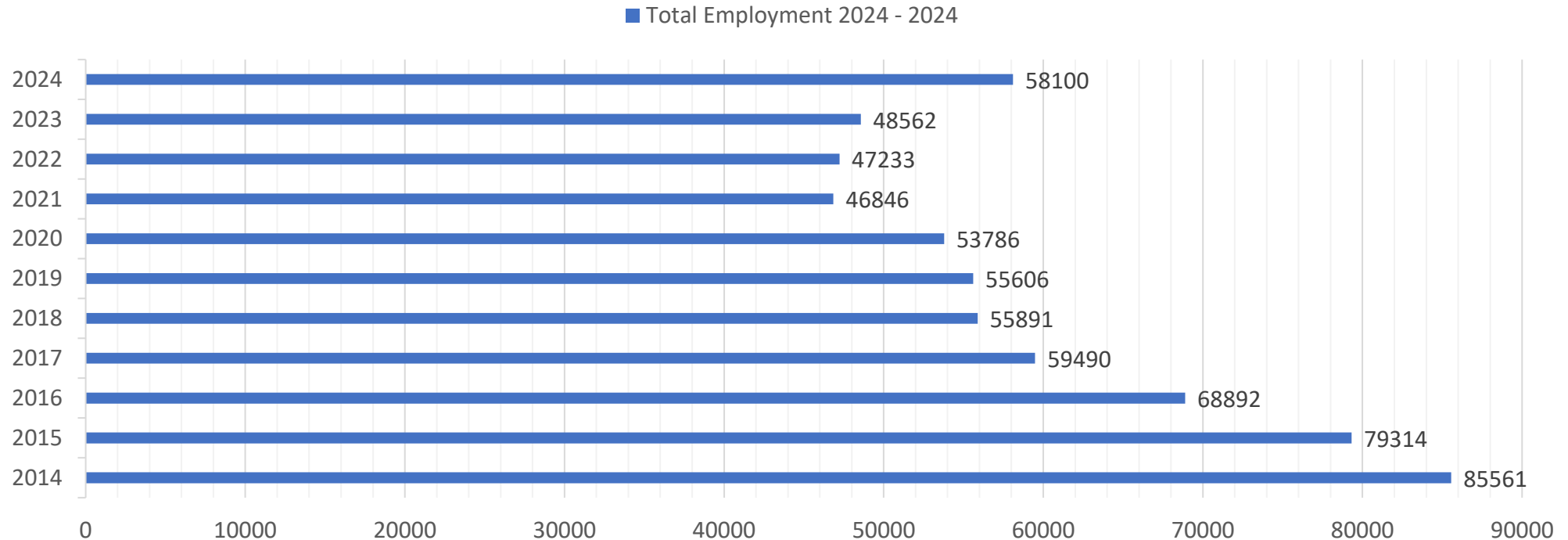


Mooreast Secures Anchor Order for 30 MW French Floating Pilot Project.

A Year In Review

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Total Employment 2024 - 2024



Source: Ministry of Manpower Singapore



M&OE Industry Plan: : The Heart of the Roadmap



Macro-trends

Net Zero Transition

Global and national (2050) commitments to achieve net-zero emissions necessitates ramping up of sectoral decarbonisation efforts but also create new business opportunities



Competitive Landscape

Increased cost competitiveness of APAC's three big yards: China, South Korea, Japan



Domestic Resourcing

National drive for productivity improvements to reduce land and manpower resource take



Vision for M&OE Sector in

To be a globally impactful and thriving Marine & Offshore hub
delivering sustainable solutions in the maritime & offshore energy value chain

2030

Bearing 1

Chart New Courses

Growth Clusters

Pursue opportunities in new green growth areas



Bearing 2

Master the Seas

Grow Champions

Grow Singapore enterprises into category leaders and global champions



Bearing 3

Raise the Tide

Uplift Sector

Catalyse business model transformation



Bearing 1: Chart New Courses

Singapore companies are already well-positioned to harness the O&G upcycle...

Increase in global production
(2023-2030)

Oil: ~100 to ~106mmbpd

Gas: ~68 to ~74mmbpd

Importance of Gas as a transition fuel in the
medium term

Natural gas is the cleanest-burning fossil fuel,
important as a transitional fuel until renewables
can scale post-2030s



Jack-Up Rigs
~35% global market share for
rigs delivered since 2000



FPSO Conversion
67% global market share, or
108 out of 161 vessels, from
1997 to 2017



Leading Crew Boat Builder
3 SMEs in world's top 5 crew
boat builders; 260 deliveries in
15 years

... and they can leverage their strengths to accelerate the pursuit of
growth opportunities in the energy transition

Offshore Renewables & New Energies



Offshore Wind (OSW)



Floating Solar (FPV)

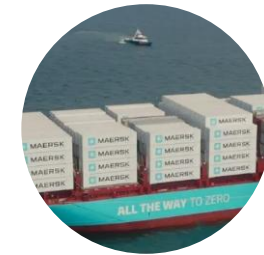


Power-to-X
(Hydrogen, Ammonia)

Maritime Decarbonisation



Electric Vessels



Alternative Fuel Vessels



Energy Efficiency Solutions



CCS

Bearing 2: Master the Seas

Singaporean M&OE companies have made their mark globally and...



MOOREAST



...and they can continue to become stronger Global Champions.

STAY Ahead

SCALE Globally

SEIZE Opportunities

**Vision for
M&OE
Champions**



**Scale up
revenue**



**Increase global
presence:
Higher proportion
of overseas
revenue**



**Category leadership:
Global stronghold in a
high-growth or
strategic product or
service category**

Bearing 3: Raise the Tide



Build future capabilities

Internationalisation

Promote SG's strength and accelerate market entry

R&D / Innovation

Seize emerging growth opportunities

Jobs & Skills

Enhance appeal and build talent pipeline

Develop adaptability

Regionalisation

Optimise land resources in Singapore

Business Model Transformation and Digitalisation

Optimise manpower resources in Singapore

Sustainability Initiatives

Work towards carbon reduction goals

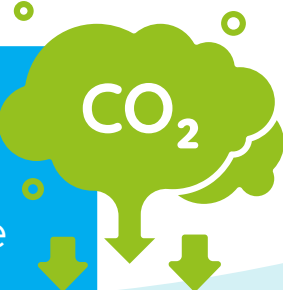
Overview of Industry Outcomes for 2030

Offshore Renewables



Secure new contracts that support cumulative development of > 50 GW of Offshore RE projects

Marine Decarbonisation



Win new orders that contribute to > 250kt CO2e in yearly emissions avoidance & reductions by 2030

Quality Local Jobs



Create and redesign ~ 1,000 local jobs roles by 2030

Productivity



Achieve >5% CAGR (2023 to 2030)



Win new orders that support the cumulative development of more than 50 GW of offshore renewables projects.

For reference, 1 GW can power 1.4 million SG households annually.

Total cumulative projection from 2024 to 2030 = 47.5 GW¹

Offshore Substations [17 GW]



Mid to large vessels: WTIV and C/SOV [4.3 GW]



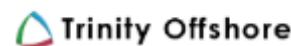
Small vessels: CTVs [9 GW]



Mooring Systems [2.2 GW]



Geotechnical Solutions [17 GW]



Global outlook for OSW (ex-China)

157GW

Total cumulative installed capacity by 2030

22%

CAGR to 2030

US\$157b

Market size/yr by 2030

Notes

- 47.5 GW is the figure arrived after sense-check with industry, rounded up to 50 GW target. Target is based on new orders awarded from Jan 2024 to Dec 2030, and does not reflect unique count as more than 1 SG or SG-based company from different parts of the value chain may support the same offshore renewable project. Target also excludes other subcomponents of the value chain and offshore support services (e.g., barges, rock dumping services, monopile and foundation fabrication).
- WTIV: Wind Turbine Installation Vessel; C/SOV: Commissioning Service Operation Vessel/Service Operation Vessel; CTV: Crew Transfer Vessel.