



MEDIA RELEASE

Singapore, 17 April 2024 | For Immediate Release

Singapore gears up to meet net-zero needs of shipping

More than 500 participants from the industry, academia and international organisations gathered at the Accelerating Digitalisation and Decarbonisation Conference to discuss how value-chain stakeholders can work together to produce, transport, and bunker net-zero fuels safely, explore promising digital and data technology and solutions to decarbonise the maritime industry, and seed opportunities for collaboration on pilots and trials. The Maritime and Port Authority of Singapore (MPA) updated participants on Singapore's methanol and ammonia bunkering capability developments, and net-zero pathways for the domestic harbour craft sector. The 3rd MaritimeSG LowCarbon50 Awards ceremony was also held during the event.

2. Speaking at the conference, Mr Teo Eng Dih, Chief Executive, MPA said, "As an international maritime centre and global hub port, Singapore will work with our tripartite partners and international shipping community to digitalise, enhance energy efficiency, and deploy low and zero-carbon emission marine fuels. MPA is working with stakeholders to develop pathways for these marine fuels, especially in areas of provision of necessary infrastructure, crew training, regulations, and safety standards for bunkering of such fuels. A key priority is to establish the end-to-end value chains for these new fuels."

3. In his opening address, International Maritime Organization (IMO) Secretary-General Arsenio Dominguez highlighted the concrete steps taken by IMO Member States following the landmark adoption of the 2023 IMO Strategy on Reduction of GHG Emissions from Ships. Mr Dominguez said, "The IMO 2023 GHG Strategy demonstrates the shared commitment of Member States and the global shipping industry. We are on track to adopt mid-term measures by late 2025 to cut GHG emissions, to reach net zero targets. These mid-term measures, which are currently being discussed by Member States, include a goal-based marine fuel standard, and a pricing mechanism for maritime GHG emissions. These will help us progress towards achieving net-zero GHG emissions by or around 2050, with indicative checkpoints to reach by 2030 (cut GHG emissions by at least 20%, striving for 30%), and 2040 (cut GHG emissions by at least 70%, striving for 80%). The targets are for the entire shipping sector."



4. At the Marine Environment Protection Committee (MEPC 80) in July 2023, Singapore had worked actively with the IMO and other Member States to forge consensus in the adoption of the 2023 Strategy for the Reduction of GHG emissions from ships. Mr Dominguez thanked Singapore for its support to ensuring that the green and digital transition in maritime reaches all parts of the world, bringing on board Least Developed Countries and Small Island Developing States. Specific projects include the joint IMO- MPA NextGEN initiative¹ (where “GEN” stands for “Green and Efficient Navigation”) and the IMO-Singapore Single Window for Facilitation of Trade (SWIFT) project².

5. MPA and the International Energy Agency (IEA) signed an MoU on the Energy Transition of the Maritime and Port Industries and announced the partnership at the event. The MoU will enable the sharing of best practices across maritime and energy industries, support the adoption and transition of zero and near-zero emission fuels by these industries through capacity building training programmes, and contribute to relevant fuel-related projects and initiatives such as the IMO-Singapore NextGEN and NextGEN Connect Initiatives. This will support the development of the IEA Regional Cooperation Centre to be hosted by Singapore. IEA Chief Economist, Mr Tim Gould, shared that the IEA warmly welcomes this MoU as a major step forward in their cooperation with the MPA, a critical player in the region and the world, to improve access to low-emission fuels.

50 proposals for the supply of methanol as a bunker fuel in Singapore

6. Following the completion of the world’s first ship-to-containership methanol bunkering in Singapore last year, MPA launched an expression of interest (EOI³) for the supply of methanol as a marine fuel in Singapore. The EOI sought proposals covering three areas; methanol supply, methanol bunkering operating model at commercial scale, and alternatives to the physical transfer of methanol molecules to Singapore, to enable a resilient fuel supply to meet the needs of methanol-capable vessels in Singapore in the coming years. Based on consultations with the industry, the demand for methanol as a marine fuel in Singapore can potentially exceed one million tons per annum (MTPA) before 2030, subject to the pace of developments of supply chains, infrastructure, and regulations globally.

¹ For more info: <https://www.mpa.gov.sg/media-centre/details/imo-norway-and-singapore-sign-mou-on-maritime-decarbonization>

² For more info: <https://www.mpa.gov.sg/media-centre/details/imo-singapore-project-on-maritime-single-window-delivery-at-angola-port-completed-at-angola-port-completed-si>

³ For more info: <https://www.mpa.gov.sg/media-centre/details/expression-of-interest-for-the-supply-of-methanol-as-a-marine-bunker-fuel-in-the-port-of-singapore>



7. There was strong interest in the EOI. MPA received a total of 50 submissions, out of which 40% of them proposed end-to-end solutions covering all three areas highlighted in the EOI. Over 60 regional and international companies comprising energy companies, fuel suppliers, traders, bunker operators, and storage companies, participated in the EOI, signalling clear business confidence in Singapore as a key offtake location for methanol by international shipping.

8. The proposals received for the low carbon methanol supply and delivery are promising, with several projects already in operation or have crossed Final Investment Decision. On aggregate, these projects have the potential to supply over one MTPA of low-carbon methanol by 2030, subject to commercial decisions and global developments. Many of the companies plan to use ready storage infrastructure in Singapore and will partner craft operators to build or procure bunker tankers capable of carrying and delivering methanol, taking into consideration MPA's safety and quality assurance standards, crew training requirements, and methanol bunker tanker specifications. The proposals received provide strong indications that the industry is preparing for methanol bunker demand to scale up in the coming years, most notably seen in the scheduled delivery of Type II bunker tankers capable of supplying methanol this year.

9. Insights from the EOI submissions will inform the development of the methanol bunkering regulatory framework to ensure the safe and efficient supply of methanol as a marine fuel in Singapore at a commercial scale. MPA and Enterprise Singapore (EnterpriseSG), through Singapore Standards Council (SSC), are developing national standards on methanol and also ammonia bunkering. The standards aim to ensure the safe operations and handling of these fuels and will support the maritime industry's transition to sustainable alternative fuels. They span areas including custody transfer requirements, operational and safety requirements for the delivery of methanol and ammonia from a bunker tanker to receiving vessels, as well as crew training and competencies. The standards for methanol are expected to be published by EnterpriseSG in 2025. MPA's regulatory framework for methanol bunkering licence is expected to be finalised in the coming months. MPA will call for applications for a licence to supply methanol as a marine fuel in Singapore by the end of the year.

10. MPA will work closely with the consortiums on the selected chain-of-custody proposals on pilots that assess the feasibility of these approaches and methods, with the aim for further development on a global scale.



Next steps for the development of ammonia bunkering capabilities

11. In March 2024, the world's first ocean-going ammonia-powered vessel, Fortescue Green Pioneer, successfully conducted its first fuel trial in Singapore⁴ over a period of six weeks. The Fortescue Green Pioneer received flag approval from the Singapore Registry of Ships (SRS) and the 'Gas Fuelled Ammonia' notation by classification society DNV to use ammonia, in combination with diesel, as a marine fuel. A second tranche of three tonnes of liquid ammonia will be loaded for the Fortescue Green Pioneer to conduct further tests and trials over the next few weeks. As part of the line-up of events at Singapore Maritime Week 2024, Fortescue Green Pioneer will be berthed at Keppel Bay. IMO Secretary-General Mr Arsenio Dominguez will be visiting the Fortescue Green Pioneer to meet maritime professionals onboard and learn more about the safety measures and emergency response procedures onboard the ammonia-fuelled vessel.

12. MPA and the Energy Market Authority (EMA) are currently reviewing proposals to develop an end-to-end solution to provide low- or zero-carbon ammonia for power generation and bunkering on Jurong Island. The proposals were submitted by the shortlisted consortiums from MPA and EMA's EOI in a restricted Request for Proposal (RFP⁵). The bidders will be further shortlisted and MPA and EMA will work with the selected parties on the pre-Front End Engineering Design (pre-FEED) study for ammonia import terminals, ammonia bunkering and ammonia power generation. The pre-FEED is intended to confirm the technical and economic feasibility of the project before MPA and EMA select a lead developer for the project with the government by Q1 2025.

13. MPA will also be inviting shipping companies with intentions to transport ammonia, or which are already transporting ammonia, to participate in an open non-binding Request for Information (RFI) to quote the shipping and insurance cost of ammonia from potential source locations to Singapore. Participants may identify ammonia demand hubs between the source country and Singapore in order that the demand can be aggregated to reap economies of scale in the shipping of ammonia. Interested parties are invited to visit <https://go.gov.sg/mpa-rfi-ammonia-transport> to access the RFI document. Submission will close on 17 May 2024, 2359 hrs (Singapore time).

⁴ For more info: <https://www.mpa.gov.sg/media-centre/details/world-s-first-use-of-ammonia-as-a-marine-fuel-in-a-dual-fuelled-ammonia-powered-vessel-in-the-port-of-singapore>

⁵ The RFP is the next stage in the selection of a lead developer, following the Expression of Interest that was launched in December 2022 and closed in end-April 2023, inviting interested parties to submit proposals to build, own and operate low- or zero-carbon power generation and bunkering solutions in Jurong Island, Singapore.

14. The Singapore Registry of Ships is set to flag its first four ammonia dual-fuel bulk carriers around 2026. These Newcastlemax bulk carriers managed by Eastern Pacific Shipping (EPS) will be among the first in the world to be fitted with ammonia-dual-fuel engine. EPS' two other ammonia dual-fuelled Very Large Ammonia Carriers (VLACs) scheduled for delivery in 2027, will also be flagged with the SRS. MPA, EPS, and the two classification societies, American Bureau of Shipping and Lloyd's Register, signed two memoranda of understanding (MoU) earlier at the conference to mark this significant milestone for the SRS. EPS will also be working closely with MPA to explore and support crew training on zero- and near-zero emission fuels and related technologies at the new Maritime Energy Training Facility to be progressively established by 2026.

Port and terminal operators to reach net-zero by 2050

15. In line with the national target to achieve net-zero by 2050, MPA had announced domestic targets for port and terminal operators to reach net-zero by 2050, and for all new harbour craft to be fully electric, capable of using B100 biofuel or compatible with net-zero fuels from 2030 onwards. Pilots for bunker tankers, tugboats and pleasure craft are being considered and the timelines for these vessel types will be announced in due course.

16. The current operational berths at Tuas Port use electrified port equipment such as quay cranes, yard cranes, and Automated Guided Vehicles, which can reduce carbon emissions by about 50% compared to diesel prime movers. Port operator, PSA, will also further reduce energy consumption at Tuas Port through smart grid solutions, battery energy storage systems and optimisation of container handling processes. Tuas Port's Maintenance Base building was constructed with intelligent energy management strategies and solar photovoltaic panels to harvest energy, making it one of Singapore's first Super Low Energy Building, using 58% less energy compared to other similar sized buildings. PSA aims to achieve net zero emissions by 2050.

Supporting the electrification transition of domestic harbour craft fleet

17. In January 2024, MPA announced three vessel charging concepts to be piloted in Singapore following the call for proposal⁶ to develop, operate, and maintain electric harbour craft (e-HC) charging points in Singapore. The first charging point pilot,

⁶ For more info: <https://www.mpa.gov.sg/media-centre/details/vessel-charging-concepts-for-electric-harbour-craft-selected-for-trials>

installed by Pyxis and SP Mobility, was recently launched at Marina South Pier. Insights from the data collected will contribute towards the development of a national e-HC charging infrastructure masterplan, implementation plan, and national standards for e-HC charging infrastructure. MPA is also working with Enterprise Singapore, industry stakeholders and academia to develop a Technical Reference (TR) for e-HC charging and battery swap system. The draft TR is now available for public consultation via <https://go.gov.sg/mpa-tr-ehc-charging>.

18. In February 2024, MPA also shortlisted a total of 11 passenger launch and cargo lighter vessel designs following an EOI for e-HC design proposals⁷. MPA is currently working with Research Institutes and Institutes of Higher Learning to enhance the various vessel designs and reduce their energy requirements. When ready, the reference designs can be progressively marketed, and production orders aggregated from the industry. This is expected to reap overall cost savings for companies making a transition to e-HC.

19. MPA has received 12 financing and seven insurance proposals in response to the EOI⁸ launched in October 2023 to support early adopters of e-HC. Several banks have expressed interest in offering direct debt financing options for harbour craft owners. The response to the EOI has also affirmed the strong interest from financial institutions and intermediaries in offering alternative financing solutions beyond debt financing to support the sector's transition to e-HC. In the next phase of the EOI process, MPA will issue a closed call for proposals to shortlist the alternative financing proposal(s) for implementation. MPA will share more on the next steps in the next few months. The insurance related submissions have highlighted that the proposed insurance premiums for e-HC are comparable to that of conventional harbour craft. To address the feedback received from EOI participants who had submitted insurance proposals, MPA will be consulting the industry to put in place supportive mechanisms to help right-price the premiums. These mechanisms could include setting up of a data repository platform, development of training programmes to promote safety awareness and best practices for e-HC operations, as well as establishing quality assurance framework(s) and mechanisms.

20. Aside from electrification, biofuel blends of up to B50 are already commercially available. In 2023, 520,000 tonnes of biofuel blends were supplied, which more than

⁷ For more info: <https://www.mpa.gov.sg/media-centre/details/11-proposals-selected-to-advance-electric-harbour-craft-designs-in-singapore>

⁸ For more info: <https://www.mpa.gov.sg/media-centre/details/call-for-financiers-and-insurers-to-support-the-adoption-of-electric-harbour-craft-in-singapore>



tripled from 140,000 tonnes in 2022. MPA is working with industry to develop the standards for up to B100, which is expected to be completed by 2025.

Global partnerships to accelerate the decarbonisation of international shipping

21. As a key transshipment hub, Singapore is well positioned to catalyse the development of Green and Digital Shipping Corridors (GDSCs) to advance maritime decarbonisation for international shipping. GDSCs support the development of a supply chain of green fuels by bringing together value-chain stakeholders to study various low- and zero-carbon fuel pathways, and to identify pilots and demonstration projects. To date, Singapore has established five GDSCs⁹ serving as valuable platforms for the piloting and trial of alternative fuels, as well as digital solutions to support the transformation of the maritime sector.

22. Since the establishment of the Singapore - Rotterdam GDSC in August 2022, the initiative has brought together 26 global partners who will be implementing several first-mover pilot projects and testing out commercial structures to accelerate the uptake of zero and near-zero emission fuels, such as synthetic and bio-variants of methanol, ammonia, methane, and hydrogen¹⁰. A year after the establishment of the GDSC with Port of Los Angeles and Port of Long Beach in 2023, the corridor partners will be publishing a study on 18 April to inform the future demand for zero and near-zero emission fuels and the benefits from decarbonising the shipping routes between the GDSC partners.

Recognising companies that lead by example

23. The MaritimeSG LowCarbon50 Awards ceremony was held for the third year today. The award¹¹ is jointly organised by MPA, Singapore Shipping Association (SSA), and the UN Global Compact Network Singapore (GCNS). It recognises the top companies that have done accurate carbon accounting using the Carbon Emissions

⁹ The Singapore-Rotterdam GDSC was established in August 2022, and the GDSC with the Port of Los Angeles and Port of Long Beach was established in April 2023. In December 2023, two MoUs were signed to establish the Tianjin-Singapore GDSC and Japan-Singapore GDSC. The latter covers six Japanese ports, namely the Port of Tokyo, Port of Yokohama, Port of Kawasaki serving the Kanto region, the Port of Osaka and Port of Kobe serving the Kansai region and the Port of Nagoya serving the Chubu region. In March 2024, Singapore and Australia signed an MoU to collaborate on establishing the Singapore-Australia GDSC.

¹⁰ <https://www.mpa.gov.sg/media-centre/details/singapore-rotterdam-green---digital-shipping-corridor-accelerates-digitalisation-and-decarbonisation-with-new-global-value-chain-partners>

¹¹ The award is part of the Maritime Singapore Green Initiative's Green Awareness Programme, which encourages maritime companies to increase their carbon awareness.



Recording Tool (CERT)¹² and have taken significant steps to reduce emissions and to decarbonise. In 2023, 30 participants from about 20 companies took part in the Carbon Management Workshops that was jointly organised by MPA and GCNS. Companies' submissions were then evaluated by a panel comprising members from MPA, SSA and GCNS, based on 'Accuracy of Carbon Accounting', 'Effective Reduction of Emissions', 'Scalability and Value Creation of Emissions Reduction Measures', and 'Innovation of Emissions Reduction Measures'. The MaritimeSG LowCarbon50 award was given out to five companies, and Honorable Mentions were given to four companies. Please refer to Annex for details.

<End of Release>

About the Maritime and Port Authority of Singapore (MPA)

MPA was established on 2 February 1996 with the mission to develop Singapore as a premier global hub port and international maritime centre, and to advance and safeguard Singapore's strategic maritime interests. MPA is the driving force behind Singapore's port and maritime development, taking on the roles of port authority, maritime and port regulator and planner, international maritime centre champion, national maritime representative and a champion of digitalisation and decarbonisation efforts at regional and international fora such as at the International Maritime Organization. MPA partners industry, research community and other agencies to enhance safety, security and environmental protection in our waters, facilitate maritime and port operations and growth, expand the cluster of maritime ancillary services, and develops maritime digitalisation and decarbonisation policies and plans, R&D and manpower development. MPA is responsible for the overall development and growth of the maritime domain and Port of Singapore. In 2023, Singapore's annual vessel arrival tonnage crossed 3 billion Gross Tonnage and remains the world's busiest transshipment hub, with a total container throughput of 39.0 million 20-foot equivalent units (TEUs).

For more information, please visit www.mpa.gov.sg/

About Singapore Maritime Week 2024

SMW is an annual gathering of the international maritime community to advance key industry issues and exchange ideas to bring the sector forward. Driven by MPA, in collaboration with industry stakeholders and research and educational institutions, SMW brings together key opinion leaders and industry leaders through conferences, dialogues and forums.

¹² CERT is a guiding tool for companies to measure and monitor their emissions, paving the way for businesses to lower their carbon impact.



The range of activities and events organised by MPA, industry stakeholders and research and educational institutions, as well as the cosmopolitan profile of participants, reflect the vibrancy and diversity of Singapore as a global hub port and leading international maritime centre.

For media enquiries, please contact:

Serene Liu

Communications and Community, Maritime and Port Authority of Singapore

Serene_liu@mpa.gov.sg

HP: 98246525



Annex: MaritimeSG LowCarbon50 Award Recipients

MaritimeSG LowCarbon50 Award Winners

- (i) Asiatic Lloyd Maritime LLP
- (ii) Executive Ship Management Pte Ltd
- (iii) Goodwood Ship Management Pte Ltd
- (iv) Hong Lam Marine Pte Ltd
- (v) Synergy Marine Pte Ltd

Honorable Mentions

- (i) Metizoft Asia Pte Ltd
- (ii) Ocean Network Express (Singapore) Pte Ltd
- (iii) Peninsula Petroleum Far East Pte Ltd
- (iv) X-press Feeders / Sea Consortium Pte Ltd