

APSN Forum on Green Shipping Corridors
October 24-25, 2024 Kota Kinabalu, Sabah, Malaysia

SUMMARY REPORT¹

1. The APEC Port Services Network (APSN) organized the **APSN Forum on Green Shipping Corridors (the APSN Forum 2024)** on 24-25 October 2024 in Kota Kinabalu, Sabah, Malaysia. The APSN Forum 2024 was hosted by APSN and Malaysia Marine Department (MMD), co-hosted by Sabah Port Authority (SPA) and Sabah Port Sdn Bhd (SPSB), and supported by the Ministry Of Transport Malaysia.



2. About 150 participants from more than 11 APEC Member Economies attended the APSN Forum 2024, including Canada; China; Hong Kong, China; Japan; Malaysia; the Philippines; Singapore; Chinese Taipei; Thailand; the United States and Viet Nam. Representatives from leading international organizations such as International Organization for Marine Aids to Navigation (IALA), International Chamber of Shipping (ICS) and Environmental Defense Fund (EDF), and leading industry players such as 3COTECH Inc; LR Maritime Decarbonisation Hub (LR MDH) and Drewry were also present at the APSN Forum 2024.
3. The Forum consisted of the following sessions:
 - 1) Opening Session,
 - 2) GPAS 2024 Award Ceremony,
 - 3) Keynote Session I & II,
 - 4) Panel Discussion,
 - 5) Interactive Session,
 - 6) Presentation by APSN, and
 - 7) Closing Remarks by the President of the APSN Council.

¹ Please note that all points of views expressed by the guest speakers do not represent the views of APSN.

4. At the Opening Session, opening remarks and welcome remarks were presented by Ms. Sonya Read, President of the APSN Council, and Tuan Haji Dickson bin Dollah, Director-General of the Malaysia Marine Department.



5. **Ms. Sonya Read, President of the APSN Council**, pronounced the APSN Forum 2024 open. In her opening remarks, Ms. Sonya Read thanked Malaysia and Malaysia Marine Department for hosting this annual flagship Forum in Kota Kinabalu. Ms. Read emphasized the significance of collaboration and innovation in advancing Green Shipping Corridors, aligning with the APEC Putrajaya Vision for sustainable and inclusive growth. Ms. Sonya Read also commended the collaborative and innovative efforts of the Malaysia Marine Department and the APSN Secretariat in planning and preparing for hosting the APSN Form 2024.
6. **Tuan Haji Dickson bin Dollah, Director-General of the Malaysia Marine Department (MMD)**, delivered warm welcome remarks, underscoring the critical importance of Green Shipping Corridors for advancing sustainable development across the region. On behalf of MMD, Tuan Haji Dickson bin Dollah emphasized Malaysia's commitment to fostering green and sustainable maritime initiatives that align with global efforts to reduce emissions and environmental impact. Tuan Haji Dickson bin Dollah expressed his sincere gratitude for the presence of all attendees and reaffirmed Malaysia's dedication to playing an important role in supporting collaborative efforts and innovative solutions within the APSN framework. Tuan Haji Dickson bin Dollah encouraged all participants to engage actively in the discussions and to build lasting connections that would advance the green shipping agenda.
7. Ms. Sonya Read, President of APSN Council, Mr. Jiravich Klomperee, Second Vice President of APSN Council, Dr. Li Qing, Secretary-General of APSN, Tuan

Haji Dickson bin Dollah, Director-General of MMD of Malaysia, Capt. Abdul Samad bin Shaik Osman, Deputy Director General of Marine (Operation) of Malaysia Marine Department, attended the GPAS Award Ceremony 2024 and presented the GPAS Awards to the winners of 2024.



8. As of today, a total number of 60 ports from 10 APEC economies have won the GPAS Awards since 2016 when this program was officially launched. In 2024, 12 ports from 5 APEC economies were awarded the GPAS title, and they are:

2024 GPAS Award Winners		
1	Bangkok Port, Port Authority of Thailand	Thailand
2	CHN ENERGY Huanghua Port Co., Ltd	China
3	Gemadep Dung Quat International Port	Viet Nam
4	Johor Port Berhad	Malaysia
5	LNG Map Ta Phut Terminal 1	Thailand
6	Nansha Port Phase IV Fully Automated Terminal	China
7	Port of Cagayan de Oro	the Philippines
8	Port of General Santos	the Philippines
9	Shandong Port Group Yantai Port West Port Area 300,000-Ton Crude Oil Terminal	China
10	South Operation Area at Shijiu Port Area of Rizhao Port	China
11	Xiamen Ocean Gate Container Terminal	China
12	Zhangjiagang Port Group Gangsheng Bulk Terminal	China



9. The Opening Session was followed by the Keynote Session I. **The Keynote Session I was moderated by Ms. Sonya Read, President of the APSN Council, and the focus was on “Global Landscape for Green Shipping Corridors”.** Speakers in Keynote Session I were (in program order):
- **Mr. Francis Zachariae**
Secretary-General,
International Organization for Marine Aids to Navigation (IALA)
 - **Ms. Kat Janowicz**
President,
3COTECH Inc and author of “Chasing Zero”
 - **Mr. Simon Bennett**
Deputy Secretary General,
International Chamber of Shipping (ICS)
 - **Capt. K. Subramaniam**
General Manager, Port Klang Authority
Former President, International Association of Ports and Harbors (IAPH)
 - **Ms. Ahila Karan (Video Presentation)**
Senior Lead on Green Initiatives,
LR Maritime Decarbonisation Hub (LR MDH)



10. **Mr. Francis Zachariae, Secretary-General of International Organization for Marine Aids to Navigation (IALA) made a presentation titled “The Role of Aids to Navigation with Green Shipping”**, which was focused on the role of Aids to Navigation (AtoN) in supporting the development of green shipping and decarbonizing maritime transport. The key challenge addressed is the International Maritime Organization (IMO)’s Greenhouse Gas (GHG) strategy, which pushes for reduced carbon emissions and greater environmental sustainability within the shipping industry. A core concept introduced is the Maritime Green Corridor, a specific shipping route where environmentally sustainable practices are employed to reduce emissions. This corridor aims to promote cleaner technologies, operational efficiencies, and the use of alternative fuels. The role of Aids to Navigation is critical in ensuring safe and efficient passage through these corridors, supporting decarbonization while maintaining maritime safety.
11. In his presentation, Mr. Francis Zachariae also discussed the IALA and its transition to an Intergovernmental Organization (IGO) status. This transition enables IALA to exert more influence over global maritime navigation safety and environmental protection policies. IALA’s strategic goals include harmonizing Aids to Navigation standards through international cooperation and capacity building, ensuring that all coastal economies contribute to a global network of safe navigation. Mr. Francis Zachariae highlighted the increasing interdependence between decarbonization and digitalization trends in shipping. Digital technologies like autonomous navigation systems and just-in-time routing are viewed as essential for optimizing vessel operations and improving fuel efficiency. Additionally, alternative fuels and improvements in vessel design and terminal energy management are key levers for reducing maritime carbon footprints.
12. In summary, Mr. Francis Zachariae underscored the need for international cooperation, harmonization of AtoN standards, and the integration of digital and decarbonization initiatives to address the environmental challenges facing the maritime sector.
13. **Ms. Kat Janowicz, President of 3COTECH Inc and author of “Chasing Zero”, made a presentation titled “Charting Green Shipping Corridors”**. Ms. Kat Janowicz focused her presentation on the progress, challenges, and future goals of green shipping corridors, which are essential in decarbonizing the

maritime sector. Ms. Kat Janowicz mentioned that green shipping corridors are specific shipping routes where environmentally sustainable practices are implemented to reduce the carbon footprint of maritime transport. The Clydebank Declaration, introduced at COP 26, forms the foundation for many of these efforts, pledging to create at least six green shipping corridors by 2025, with a focus on building partnerships, overcoming regulatory challenges, and accelerating decarbonization.

14. Key international green shipping corridors, including the Los Angeles-Long Beach to Shanghai and Singapore routes, aim to peak greenhouse gas emissions by 2030, with the eventual goal of reaching net-zero emissions by 2050. These routes employ advanced ship designs to increase energy efficiency and use alternative fuels such as hydrogen, ammonia, and bio-fuels. In her presentation, Ms. Kat Janowicz emphasized that transitioning to zero-emission vessels, particularly container ships, is a critical goal for achieving decarbonization in shipping. A major focus is the role of stakeholders - ports, terminals, ocean carriers, cargo owners, and energy providers - in ensuring that these green corridors succeed. Collaboration among public and private entities, as well as international organizations like the International Maritime Organization (IMO), is highlighted as vital for creating the regulatory and infrastructural frameworks necessary to support the deployment of low-carbon technologies. These efforts include not only cleaner fuels but also digitalization and operational efficiencies like just-in-time routing and autonomous navigation. Ms. Kat Janowicz also emphasized the dual trends of decarbonization and digitalization, noting that they are interdependent and will shape the future of shipping. Green corridors represent a significant transformation in how shipping operations are structured, with long-term targets that will fundamentally alter fuel usage and supply chains by 2050.
15. In conclusion, Ms. Kat Janowicz wrapped up that green shipping corridors are a key strategy in reducing global maritime emissions. The efforts presented highlight the importance of continued collaboration, innovation in ship design and alternative fuels, and the need for robust regulatory frameworks to ensure the successful decarbonization of the shipping industry.
16. **Mr. Simon Bennett, Deputy Secretary General, International Chamber of Shipping (ICS), made a presentation titled “Global Landscape for Green Shipping Corridors”.** In his presentation, Mr. Simon Bennett outlined the global landscape of green shipping corridors and the critical role they play in decarbonizing the shipping industry. Mr. Simon Bennett emphasized that achieving net-zero emissions by 2050, a goal reaffirmed by the International Maritime Organization (IMO) in 2023, will require substantial investment and collaboration between governments, the shipping industry, and international regulatory bodies.
17. One of the key takeaways is the significant financial investment needed for the success of green shipping corridors. These corridors, which focus on using zero and near-zero greenhouse gas (ZNZ) fuels, will require billions of US dollars in investments for the development of new bunkering infrastructure, fuel production, and port facilities. The concept of Clean Energy Marine Hubs (CEM-Hubs), a cross-sectoral platform, is also introduced as a complementary initiative aimed at supporting the global transition to green fuels by ensuring that shipping plays a

central role in transporting these new energy sources. Bennett highlights that CEM-Hubs were officially launched in 2023 and are gaining international support from governments and industries to help de-risk investments in green energy.

18. In his presentation, Mr. Simon Bennett also discussed the IMO's upcoming "Net-Zero Shipping Framework", set for adoption in 2025, which includes technical and economic measures to reduce GHG emissions. A proposed GHG emissions pricing mechanism, supported by a majority of IMO member economies, would levy a contribution on ships based on their emissions. This revenue would then be used to reward early adopters of ZNZ fuels and to fund the production and infrastructure necessary for green marine fuels, particularly in developing economies. The success of green shipping corridors will depend on the effective implementation of these measures, particularly the financial rewards for ships using ZNZ fuels. Bennett notes that the IMO has set a target for 5-10% of total energy used by international shipping to come from ZNZ sources by 2030. Achieving this target is crucial for ensuring that the industry reaches its long-term goal of net-zero emissions by 2050.
19. In conclusion, Mr. Simon Bennett argued that while the global shipping industry is committed to decarbonization, its success hinged on the willingness of IMO member economies to implement bold regulatory measures, such as the GHG pricing mechanism, at the upcoming 2025 Marine Environment Protection Committee meeting.
20. **Capt. K. Subramaniam, General Manager of Port Klang Authority, and Former President of International Association of Ports and Harbors (IAPH), made a presentation titled "Global Landscape for Green Shipping Corridors -- Role of Ports".** Capt. K. Subramaniam focused his presentation on the role of ports in supporting the global transition to green shipping corridors and decarbonization efforts. The presentation highlights the International Maritime Organization (IMO) targets for reducing CO₂ emissions by 40% by 2030, 70-80% by 2040, and achieving net-zero emissions by 2050, aligning with Malaysia's domestic policies such as the Domestic Transport Policy 2019-2030 and the Green Port Policy 2020-2025.
21. Capt. K. Subramaniam mentioned that Port Klang has implemented several sustainability initiatives to support decarbonization, such as the use of solar panels, mangrove rehabilitation, LNG bunkering, onshore power supply for cruise vessels, and waste management centers. In addition, eco-friendly port equipment, including electric reach stackers and autonomous prime movers, are being used to reduce emissions. These initiatives demonstrate the port's commitment to supporting the broader green agenda. Capt. K. Subramaniam emphasized that ports play a crucial role in green shipping corridors by providing necessary infrastructure for clean marine fuel supply, including bunkering, storage, and onshore power. Investments in technology and infrastructure, as well as a solid regulatory framework, are vital for supporting this transition. As of 2024, green ships account for 77% of the capacity ordered, with LNG and methanol as the primary propulsion types. However, there has been a shift in preferences, with methanol orders dropping from 51% in 2023 to 21% in 2024. Additionally, Capt. K. Subramaniam discussed Malaysia's energy transition and readiness, focusing on renewable energy initiatives, carbon capture and storage

- (CCS) projects led by PETRONAS, and multi-modal transport systems. These efforts are part of a broader strategy to meet the IMO's carbon reduction targets and enhance the adoption of greener fuels in the shipping and industrial sectors.
22. In conclusion, Capt. Subramaniam's presentation underscores the essential role ports must play in facilitating the global decarbonization of the shipping industry, and by investing in green infrastructure and adhering to regulatory frameworks, ports like Port Klang are positioning themselves as key contributors to the development and success of green shipping corridors.
 23. **Ms. Ahila Karan, Senior Lead on Green Initiatives, LR Maritime Decarbonisation Hub (LR MDH), made a video presentation titled "Green Shipping Corridors & Roles of Ports".** In her presentation, Ms. Ahila Karan, discussed the Silk Alliance Initiative, a collaborative green shipping corridor project based in Singapore, involving 19 stakeholders from the shipping and fuel supply value chain. The Initiative aims to accelerate the adoption of sustainable maritime fuels, such as methanol and ammonia, by creating a strong demand signal, which helps overcome the "chicken-and-egg" challenge in the transition to cleaner fuels.
 24. Ms. Ahila Karan mentioned that key achievements include on-boarding new members, conducting pre-feasibility studies, and publishing a joint statement that outlines the implementation plan through 2035, projecting future fuel demand. The Initiative has also conducted workshops to ensure transparency and accountability. The Silk Alliance is transitioning from planning to execution, with work streams focused on fleet evolution, fuel supply, and financing to bridge the cost gap of sustainable fuels. Additionally, the Silk Alliance undertook a multi-criteria assessment of 108 ports in the region, identifying those with high potential to play a significant role in the fuel transition based on factors such as renewable energy surplus, air quality improvements, and shipping traffic. The methodology and findings are being shared with other port authorities, maritime ministries, and international organizations like the IMO, with the aim of fostering similar green corridor projects globally. The Initiative emphasizes the critical role of ports in producing, bunkering, and exporting future fuels, positioning them as key players in decarbonizing the maritime industry. Through collaboration and transparency, the Silk Alliance hopes to inspire further industry efforts toward sustainable shipping.
 25. **The Keynote Session II was moderated by Mr. Jiravich Klomperee, Director of Corporate Strategy Department of PAT, and also current Second Vice President of the APSN Council, the focus was on "Status Quo of Green Shipping Corridors".**
 26. Speakers in the Keynote Session II (in program order) were:
 - **Mr. LI Fengli**
General Manager,
Shandong Port Group Co., Ltd.
 - **Mr. Francois Marier**
Director, International Marine Policy,
Transport Canada

- **Mr. YANG Zhiyong**
Vice President,
Shanghai International Port (Group) Co., Ltd.
 - **Dr. LUO Xunjie**
Vice President,
Tianjin Port (Group) Co., Ltd.
 - **Capt. Muhammad Assuad bin Ahmad**
Head Port & Terminal, MISC Marine
27. **Mr. Li Fengli, General Manager of Shandong Port Group Co., Ltd., delivered a presentation titled “Exploration and Practices of SPG in Green Shipping Corridor Development”.** In his presentation, Mr. Li Fengli presented the Shandong Port Group (SPG)’s efforts in developing green shipping corridors, including but are not limited to the following initiatives: 1) **Optimizing Clean Energy Consumption System.** Adhering to the principle of “using electricity, gas and hydrogen as much as possible”, SPG has adopted precise policies from the supply side and the consumption side, and actively build a clean and low-carbon energy use system. SPG is committed to expanding the application of hydrogen energy, LNG, wind and photovoltaic power, and developing the electricity substitution for equipment, which actively expands the scope of application of electric equipment, and promoted the normalization of shore power supply. 2) **Promoting Standardization.** SPG took the lead in compiling and publishing a group standard --Technical Guidance for Near-zero Carbon Emissions Port Construction, filling the gap in the "zero carbon" standards among port industry.
28. Mr. LI Fengli also emphasized that green and low-carbon development is key to the global shipping industry, and the maritime industry is facing a number of challenges, which include but are not limited to: 1) High new energy costs; 2) International cooperation and standards setting; and 3) Industry chain integration and collaborative development. Mr. LI Fengli highlighted that looking to the future, SPG will continue to explore and make efforts in four areas: 1) Continuously optimize the energy structure of Shandong Port; 2) Enhance supply of clean marine fuels; 3) Work together in international cooperation and standards setting; and 4) Deepen cross-sector collaborations in shipping industry.
29. **Mr. Francois Marier, Director of International Marine Policy of Transport Canada Canada delivered a presentation titled “ Canada and Green Shipping Corridors”.** In his presentation, Mr. Francois Marier first presented the milestones of green shipping corridors in Canada:
- ✧ November 2021 – Joined Clydebank Declaration (6 corridor target);
 - ✧ November 2022 – Announced Great Lakes – St. Lawrence Seaway Green Shipping Corridor Network Initiative with U.S. Department of Transportation at COP 27;
 - ✧ November 2022 – Released Canadian Green Shipping Corridors Framework;

- ✧ June 2023 – G7 Transport Ministers agreed to update green shipping corridor target of 14;
 - ✧ December 2023 – Canada’s Green Shipping Corridor Program launched
 - ✧ December 2023 – Launch of Trans-Pacific Green Shipping Corridor MOU at COP 28. An MOU linking Canada’s Pacific coast to Asia and the Middle East was launched at COP 28 in 2023. A complementary MOU covering Canada’s Atlantic coast, Europe, and beyond is currently being developed.
30. Mr. Francois Marier then highlighted that Canada is engaging with several economies on the Green Shipping Corridors MOU, and key targeted economies in the APEC region include Australia, Japan, Republic of Korea, Malaysia, New Zealand, the Philippines, Singapore, and Viet Nam. Mr. Francois Marier shared that in March 2023, the Green Shipping Corridor Program announced in Canada’s Budget 2023, with the following funding schemes launched in December of that year: 1) Clean Vessel Demonstration Stream to support Canadian-led projects that study, test, and encourage the use of zero-emission, and near zero-emission technologies for the largest emitting vessels operating in Canadian waters. 2) Clean Ports Stream to help ports and terminals adopt of commercially available clean technology (e.g., shore power, electrification of port equipment, vessel charging and clean fuel infrastructure), and funding to ports to create and improve incentive programs to help attract clean vessels.
31. In wrapping up his presentation, Mr. Francois Marier stressed that APEC policy-makers are encouraged to: 1) Establish and fund programs to support industry in creating Green Shipping Corridors; Accelerate marine decarbonization, with a particular focus on the link between port and vessel decarbonization including alternative clean fuels; 3) Ensure Green Shipping Corridors align with international agreements and goals such as the Clydebank Declaration; 4) Work with other economies to agree on routes and targets, including through participation in international MOUs; and 5) Develop clear indicators to measure progress and report progress transparently.
32. **Mr. YANG Zhiyong, Vice President, Shanghai International Port (Group) Co., Ltd., delivered a presentation titled “Navigating Towards a Sustainable Future: The Path to Green Port Development at Shanghai Port”.** In his presentation, Mr. YANG Zhiyong presented the creation and the development of the world’s first transpacific green shipping corridor between ports in the United States and China. In January 2022, the Port of Shanghai and the Port of Los Angeles jointly proposed the establishment of a "Green Shipping Corridor", which aims to achieve the cleanest and most low-carbon port-to-port cargo transportation between the Port of Shanghai and the Port of Los Angeles. In September 2023, the “Shanghai Port-Los Angeles Port Green Shipping Corridor Implementation Plan Outline” jointly formulated by Shanghai Port and Los Angeles Port was released. According to the implementation plan outline, from 2025, shipping company partners will deploy ships with full life cycle low carbon or full life cycle zero carbon emission capability in this corridor. By 2030, the feasibility of the world's first full life cycle zero-carbon container ship (or fleet) will be demonstrated in the corridor. On April 10, 2024, Shanghai Port realized the first single green methanol filling for Maersk in China, which is also the first single synchronous filling operation for the world's largest methanol dual-fuel ship. Shanghai Port has become one of the few ports in the world with



both LNG and green methanol ship filling capacity.

33. Mr. YANG Zhiyong mentioned that in 2025, green methanol dual-fuel ships will be delivered in batches, and part of the capacity will be put into the green shipping corridor between China and the United States. The delivery and operation of these ships can accelerate the achievement of the goal of carbon neutrality in shipping. Shanghai port will build a green energy filling center for ships, and realize the normal operation of green methanol ship filling in 2025.
34. **Dr. LUO Xunjie, Vice President of Tianjin Port (Group) Co., Ltd., delivered a presentation titled “A Real Green Port of world-class—Tianjin Port”.** Dr. LUO Xunjie presented two cases of Tianjin Port in the field of port and shipping renewable energy application.
35. **Case 1: The Offshore Wind Power Construction Platform.** In October 2024, the offshore wind power construction platform “Ganghang Ping 5” officially set sail. This platform is noted for its record-breaking lifting height, comprehensive lifting capacity, and longest-lifting pile legs in China. It is also the first of its kind to be equipped with an intelligent ship system. The platform not only meets the installation demands of the world's largest offshore wind turbines expected in the next five years but also possesses advanced intelligent ship systems. It features route and speed design and optimization capabilities, intelligent energy management functions, and an integrated intelligent platform, allowing for comprehensive monitoring and smart management of the vessel. **Case 2: New Energy Power System.** In recent years, Tianjin Port Group actively promote the construction of new energy power systems. As of now, Tianjin Port Group have established 13 distributed wind turbine units and a 4 megawatt photovoltaic power generation system. The total installed capacity of new energy power generation has reached 68 megawatts, generating nearly 150 million kilowatt-hours of green electricity annually, which accounts for over 25% of the total electricity consumption. Tianjin Port Group will continue to advance the construction of new energy projects, aiming to achieve an annual green electricity generation capacity of 300 million kilowatt-hours by 2025, exceeding 70% of the total electricity consumption.
36. **Capt. Muhammad Assuad bin Ahmad, Head Port & Terminal of MISC Marine, delivered a presentation titled “Status Quo of Green Shipping Corridor”.** In his presentation, Capt. Muhammad Assuad bin Ahmad presented MISC Group’s decarbonization progress as shipowner & port operator.
37. Capt. Muhammad Assuad bin Ahmad mentioned that 1) IMO 2030: To reduce total GHG by at least 20%, striving for 30% compared to 2008 levels. MISC 2030: Reduce shipping operation’s GHG intensity by 50% compared with 2008. Malaysia 2030: Reduce GHG intensity by 45% against GDP compared with 2005. The target of IMO 2050 is “Achieve Net-Zero GHG emissions”, Malaysia and MISC decarbonize their business in alignment with IMO. 2) Decarbonization for Port Operations include Green Port Aspiration for all MISC Operated Port & Terminal, alternative fuels for marine craft, carbon capture storage and CCS training. 3) Challenges and opportunities. In terms of Vessel Investment, shipowners will need to reduce emissions and transition to green/cleaner assets. In terms of Financial Barriers: High initial costs and limited financing options hinder the transition to low-carbon operations. In terms of Regulatory Alignment:

Comprehensive domestic policies are essential to set path for green shipping corridor. In terms of Infrastructure Investment: Significant upgrades needed for port facilities to support alternative fuels and green technologies. In terms of Skill Development: A workforce skills gap must be addressed through training in sustainable maritime operations. In terms of Strategic Positioning: Economies along the major trade routes offers potential to become a green fuel bunkering hub and carbon capture storage hub. In terms of Economic Growth Potential: Green shipping corridors can drive economic growth, create jobs, and enhance port competitiveness.

38. **The Panel Discussion was facilitated by Capt. Abdul Samad Bin Shaik Osman, Deputy Director General of Marine (Operation), Malaysia Marine Department, and the focus was on “The Path Forward for Green Shipping Corridors – Challenges and Opportunities ”. Five panelists who participated in this discussion were:**

- **Ms. HAN Ning**
Principal Consultant of Drewry Singapore Office,
Drewry
 - **Mr. GUI Dong**
Executive General Manager, Operations & Commercial Division
China Merchants Port, Hong Kong, China
 - **Mr. LIU Hongming**
Director, Carbon Market
Environmental Defense Fund (EDF) Beijing Representative Office
 - **Mr. Benjamin Wong**
Director (Strategy and Policy)
Maritime and Port Authority of Singapore (MPA)
 - **Professor Ts. Dr. Mohamad Rosni Othman**
Director General
Maritime Institute of Malaysia
39. Each panelist led off with a short presentation about their perspectives on the challenges and opportunities for developing green shipping corridors.



40. The Panel Discussion were themed on the following questions:
 - 1) Identifying Major Challenges;
 - 2) Technological Barriers and Solutions;
 - 3) Economic Viability and Funding;
 - 4) Regulatory and Policy Challenges;
 - 5) Opportunities for Innovation; and
 - 6) Leveraging International Collaboration.
41. Panelists shared their perspectives about “The Path Forward for Green Shipping Corridors–Challenges and Opportunities”. The Summary of key points raised at the Panel Discussion is as follows:
42. In terms of the challenges faced by the green shipping corridor, experts generally believe that the challenges of the construction and implementation of the green shipping corridor are complex and multi-faceted: first, the investment of shipping companies in the construction of green energy ships is relatively large, and it is difficult to build green energy ships in large quantities in a short time; Second, the high use cost of green energy hinders its wide application, and also brings relatively large market uncertainty to green energy production enterprises; Third, the lack of domestic unified zero-carbon energy standards; Fourth, the lack of new energy supply infrastructure; Fifth, there is a lack of technical guidance and training in the application of zero-carbon and low-carbon energy.
43. In terms of promoting the implementation of green shipping corridors, experts believe that, first of all, strengthening the carbon reduction of maritime links between ports is an important part of the construction of green shipping corridors. To this end, we must pay attention to the application of zero-carbon and low-carbon energy in ships, as well as the research and promotion of various technologies, standards and related equipment involved in the application; Moreover, in addition to strengthening the carbon reduction between ports, we should also pay attention to the carbon reduction of the port itself and the transport links in the port hinterland. For the carbon reduction of the port itself,

the application of zero-carbon and low-carbon energy is of course an inevitable choice. However, strengthening the digital construction and improving the operation efficiency of the port can also greatly improve the carbon reduction capacity of the port itself, such as promoting the extensive application of the digital terminal operating system and strengthening the construction of the smart port in various economies at different stages of development. All these contribute to the port's own carbon reduction targets. Promoting the adjustment of transportation structure is an important means to reduce carbon in the transportation link of the port hinterland. For example, by greatly enhancing the rail connectivity between the Port of Greece and Central and Eastern Europe, COSCO has shifted a large number of goods from land transport to rail transport, not only improving the reliability of the supply chain, but also significantly reducing carbon emissions. By vigorously promoting the development of container transport along the Yangtze River, the port of Shanghai has greatly reduced the traffic volume of highway containers and vigorously promoted the construction of low-carbon ports. Third, the zero-carbon and low-carbon development of the maritime industry requires a large number of ports or port hubs that can provide zero-carbon energy refueling services for ships. Therefore, various economies should strengthen the construction of ports in terms of zero-carbon and low-carbon energy supply capacity. Of course, not all ports must have the capacity of zero-carbon and low-carbon energy production and supply at the same time. A large number of ports may only need to have a certain degree of zero-carbon low-carbon energy storage and refueling capacity, which requires ports to have a full understanding of their own land resources, technical capabilities and new energy production and supply capacity and necessary preparation.

44. In addition, with regard to how to promote the construction and implementation of green shipping corridors, experts believe that: first, relevant government agencies should encourage all parties to establish green shipping corridors and make efforts to support them; The second is to focus on the application of green alternative energy in ports and shipping; Third, it is necessary to strengthen cooperation with other economies, but also to strengthen the coordination and cooperation between the various participants of the green shipping corridor, including ports, shipping companies, green energy producers, government regulators and related logistics enterprises; Fourth, it is necessary to establish the evaluation index system and evaluation mechanism of green shipping corridor.
45. Mr. Cai Ouchen, Deputy Director of APEC Port Study Center, briefed the forum his research updates on Green Shipping Corridors. He first introduced the past initiatives and studies of APSN related to port and shipping decarbonization, including his collection on the best practices of APSN Green Ports, the key elements for global low-carbon port development proposed by his research on the framework for low-carbon port evaluation in the Asia-Pacific region, and key findings produced by the APEC Self-funded Projects “Establishing green shipping corridors among ports in APEC economies”, and the 4th APEC Green Port Development Forum.
46. In addition, Mr. Cai analyzed the background conditions for the development of the green shipping corridor and the interactions and impacts on it. Following that, he proposed some constructive strategies and suggestions for promoting the green shipping corridors in the short term.

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47. **The Interactive Session was facilitated by Mr. Bui Van Quy, Chair of the Advisory Board of APSN .** The Interactive Session was composed of Session 4a: Interactive Session (Group Discussion) and Session 4b: Interactive Session (Presentation of Discussion). Participants were divided into three (3) groups and the group discussions were facilitated by 3 group leaders.
48. For **Group 1, Ms. HAN Ning, Principal Consultant of Drewry Singapore Office of Drewry**, led the Group Discussion and presented the outcome of Group 1's discussion on "Opportunities for Innovation and Technological Barriers and Solutions". Their points of views are as follows:
- 1) The development of green shipping corridors needs to be promoted from both the demand side and the technology side.
 - 2) **Technological Innovation:** Both ports and shipping parties need to be considered. For example, shipping parties can use artificial intelligence to help shipping companies interact more effectively with the port authority when using the port, such as applying artificial intelligence to some single Windows or application approval.
 - 3) **New Fuels:** New fuels include LNG, ammonia, methanol or hydrogen applications. LNG and methanol are more practical in terms of safety and availability, while ammonia and hydrogen may be more viable in the medium to long term future.
 - 4) **Innovation Opportunities:** Fuel suppliers, engineering suppliers, productivity and efficiency solution providers will have more opportunities. Opportunities for shipyards are also increasing, with a lot of ship refurbishment work coming from shipyards in China and Korea. In addition, there are great opportunities for innovation in ship productivity, such as companies offering innovative technologies to help reduce carbon emissions from ships. While this is only a small solution, combined with other new energy sources and innovations, it can help reduce carbon emissions by 10 to 20 percent.
 - 5) **Solutions:** The group also contributed some bold ideas, such as nuclear module applications, which provide standard, small nuclear modules to deal with the obstacles of avoiding new fuels and technical safety issues in a safer way; Nanotechnology, which involves putting tiny substances into current fuels to reduce carbon emissions from existing fuels; A global shared information platform, established by transport authorities and port authorities around the world, where policy management is discussed or simplified and can be monitored and followed by all to reduce problems.
49. For **Group 2, Mr. Francois Marier, Director of International Marine Policy of Transport Canada**, led the Group Discussion and presented the outcome of Group 2's discussion on "Identifying Major Challenges", the key points of which are as follows:
- 1) **Technical Challenges:** The need for standardization and coordination between ports, the entire supply chain, and ship owners. Port systems need to be able to communicate with each other and share data, hardware and software. The shipping industry used to adopt more local solutions, while

other industries such as banking preferred global solutions, and the shipping industry may be able to learn from this.

- 2) **Operational Challenges:** Key Performance Indicators (KPIs) and Standard Operating Procedures (SOPs) are important for port authorities and terminal operators to set benchmarks and targets. At the same time, each port has its own unique operational issues that require addressing fuel availability and distribution issues, as well as improving port efficiency to reduce greenhouse gas emissions.
 - 3) **Policy, Legislative and Regulatory challenges:** Political will is needed to establish green shipping corridors and encourage the decarbonization of the maritime industry. But political instability, climate change impacts, and disasters could be challenges. At the same time, the private sector faces uncertainties about costs, government priorities, and labor as it transitions to decarbonization. Finally, avoiding "greenwashing" requires the establishment of policy frameworks and objectives in collaboration with various stakeholders.
 - 4) **Funding and Financial Constraints:** New infrastructure is very expensive to build, such as fuel stations, and in the first few years or ten years of the transition to new fuels, very few ports will be able to actually deliver large amounts of new fuel because of the cost.
 - 5) **Training and Safety:** New fuels require new safety procedures, especially some of the more toxic fuels such as ammonia and methanol. The transition to decarbonisation will pose a huge challenge to the maritime sector, which is already facing a shortage of skilled Labour. The transfer of skills and training can be difficult between different jurisdictions and is sometimes limited by labor negotiations or contracts that exist at different ports.
50. **For Group 3, Mr. Benjamin Wong, Director (Strategy and Policy) of Maritime and Port Authority of Singapore (MPA), led the Group Discussion and presented the outcome of Group 3's discussion on "Leveraging International Collaboration", the key points of which are as follows:**
- 1) **Forum and Experience Sharing:** The group considers this forum to be a perfect example of bringing together stakeholders from different regions and ports to share green shipping experiences. Ports at different stages of development can learn from each other and share best practices and lessons learned.
 - 2) **Tailored Sharing:** While sharing best practices is important, it needs to be tailored to the characteristics of different ports. Different types of ports (such as container ports, tanker ports and liquid pump ports) have different needs when implementing green shipping, so sharing content should be tailored to these differences.
 - 3) **Capacity Building Projects:** Through capacity building projects carried out by international organizations (such as APEC, ASEAN and IMO), specific training courses and programmes can be tailored to different ports to enhance the green shipping capacity of ports.
 - 4) **Digital Development:** There is a close link between digitalization and decarbonization, and the use of digital technologies can improve the efficiency of green shipping.



- 5) **Financial Support:** International financial institutions can help ports and shipping companies obtain the necessary funds to implement green measures by providing grants and loans. Moreover, it is not only ports or shipping companies, but also shipyards and ship repair companies that need financial support to retrofit existing ships.
51. Mr. Bui Van Quy wrapped up the Interactive Session after the three leaders presented their respective outcomes of discussion.
52. **In her closing remarks, Ms. Sonya Read, President of the APSN Council,** thanked all speakers for their contributions to this Forum, and for bringing different and interesting perspectives and expertise to the discussions. Ms. Read extended a special thank-you to the Secretariat, the Malaysia Marine Department (MMD), Sabah Port Authority (SPA) and Sabah Port Sdn Bhd (SPSB) for all the work they have carried out in organizing and supporting this Forum. A lot of effort goes into the planning and organizing of this type of engagement opportunity, and the Secretariat, MMD, SPA and SPSB have ensured that it was a success.
53. The Forum programme is enclosed in the Annex to this report.

ANNEX

**APSN Forum on Green Shipping Corridors
October 24-25, 2024 Kota Kinabalu, Sabah, Malaysia**

PROGRAMME

October 24

08:30-09:00 *REGISTRATION*

Opening Session

MC: Mr. Constantine Anthony

- 09:00-09:30
 - **Opening Remarks by Ms. Sonya Read**, President of the APSN Council
 - **Welcome Remarks by Tuan Haji Dickson bin Dollah**, Director General of Marine, Malaysia Marine Department (MMD)

GPAS 2024 Award Ceremony

- 09:30-10:00 **MC: Mr. Constantine Anthony**
Presented by President, Vice Presidents, Secretary-General, Guest of Honor from Malaysia

10:00-10:10 *GROUP PHOTO*

10:10-10:30 *COFFEE BREAK*

Keynote Session 1: Global Landscape for Green Shipping Corridors
Moderator: Ms. Sonya Read, President of the APSN Council

- **Mr. Francis Zachariae**
Secretary-General,
International Organization for Marine Aids to Navigation (IALA)
- **Ms. Kat Janowicz**
President,
3COTECH Inc and author of “Chasing Zero”
- 10:30-12:00 • **Mr. Simon Bennett**
Deputy Secretary General,
International Chamber of Shipping (ICS)
- **Capt. K. Subramaniam**
General Manager, Port Klang Authority
Former President, International Association of Ports and Harbors (IAPH)



- **Ms. Ahila Karan (Video Presentation)**
Senior Lead on Green Initiatives,
LR Maritime Decarbonisation Hub (LR MDH)

12:00-14:00 *LUNCH*

Keynote Session 2: Status Quo of Green Shipping Corridors

Moderator: Mr. Jiravich Klomperee, 2nd Vice President of the APSN Council

- **Mr. LI Fengli**
General Manager,
Shandong Port Group Co., Ltd.
- **Mr. Francois Marier**
Director, International Marine Policy,
Transport Canada

14:00-15:30

- **Mr. Yang Zhiyong**
Vice President,
Shanghai International Port (Group) Co., Ltd.
- **Dr. Luo Xunjie**
Vice President,
Tianjin Port (Group) Co., Ltd.
- **Capt. Muhammad Assuad bin Ahmad**
Head Port & Terminal, MISC Marine

15:30-16:00 *COFFEE BREAK*

Session 3 Panel Discussion: The Path Forward for Green Shipping Corridors – Challenges and Opportunities

Facilitator: Capt. Abdul Samad Bin Shaik Osman, Deputy Director General of Marine (Operation), Malaysia Marine Department

16:00-17:00

- **Ms. HAN Ning**
Principal Consultant of Drewry Singapore Office,
Drewry
- **Mr. GUI Dong**
Executive General Manager, Operations & Commercial Division
China Merchants Port, Hong Kong, China



- **Mr. LIU Hongming**
Director, Carbon Market
Environmental Defense Fund (EDF) Beijing Representative Office
- **Mr. Benjamin Wong**
Director (Strategy and Policy)
Maritime and Port Authority of Singapore (MPA)
- **Professor Ts. Dr. Mohamad Rosni Othman**
Director General
Maritime Institute of Malaysia

18:00-20:00 *WELCOME DINNER*

October 25

09:00-09:15 **Presentation by APSN**
Mr. CAI Ouchen, Deputy Director of APEC Port Study Center, APSN

09:15-10:15 **Session 4a: Interactive Session (Group Discussion)**
Facilitator: Mr. Bui Van Quy, Chair of the Advisory Board of APSN

10:15-10:45 *COFFEE BREAK*

10:45-11:15 **Session 4b: Interactive Session (Presentation of Discussion)**
Facilitator: Mr. Bui Van Quy, Chair of the Advisory Board of APSN

11:15-11:30 Closing Remarks by **Ms. Sonya Read**, President of the APSN Council

11:30-13:00 *LUNCH*

13:00-17:00 **TECHNICAL VISIT**

18:00-20:00 *FAREWELL DINNER*