Transforming to Sustainable Ocean Economy

Green Ports and Shipping in the Asia-Pacific

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Abstract

Ocean economy is the sum of economic activities from ocean-based industries, together with assets, goods and services provided by the marine ecosystem. The port and shipping industry is considered an ocean-based industry; an industry facilitating the growth of global trade and economy in the Asia-Pacific. A sustainable ocean economy is a strategy that supports economic development and ocean health as compatible propositions, by balancing between economic benefits and the environment in ocean-based industries. For the port and shipping industry to achieve a sustainable ocean economy, innovative technological advancements such as green ports and ships can be a feasible method. However, the development of green ports and shipping will have cost and operational implications. Policy formulation is considered a key measure to reap the benefits and tackle the challenges of green ports and shipping for a sustainable ocean economy.

Introduction

The ocean's relationship with the economy is evolving in important ways, as the ocean is the primary medium upon which global trade takes place. The Organisation for Economic Co-operation and Development (OECD) defined ocean economy as the sum of economic activities by ocean-based industries, together with the assets, goods, and services provided by marine ecosystems (OECD, 2016). These ocean-based industries include fishing, oil and gas, ports and shipping, marine tourism, and offshore renewable energy. It was reported that recent ocean economic activity accounts for approximately USD1.5 trillion gross value-added (GVA) globally. The report also projected that ocean economic activities will reach more than USD3.0 trillion global GVA by 2030.

Economic growth is closely linked to maritime transport activities, as 90% of world trade is carried out by the shipping industry. Seaborne trade is further expanding by raising cost-effectiveness, transporting raw materials and manufactured goods *en masse* across the globe. According to the International Chamber of Shipping (2018), there are approximately 50,000 merchant ships from 150 countries involved in international trading. These ships are sophisticated and deemed as high-value assets whose operations are expected to generate an average annual profit of USD0.5 trillion. The prospect of seaborne trading remains bright, especially as the world population continues to expand and become more reliant on shipping as the main mode of transportation for raw materials and manufactured goods. In this context, optimum development of ports into capital-intensive infrastructures is extremely vital to boost seaborne trading. The Asia-Pacific region requires optimum development of ports rather than competition, to ensure sustainability.

The Economist Intelligence Unit (2015) mentioned that a sustainable ocean economy views economic development and ocean health as compatible propositions. To support sustainable economic growth from ocean-based industries, it would require a long-term strategy. The concept is relevant to all countries especially in the Asia-Pacific region, due to the importance of the ocean to the area. For a sustainable ocean economy, particularly in the port and shipping industry, it must be supported by innovative technological advancements such as green ports and green ships. The purpose of this article is to examine the eco-friendly technological characteristics of both green ports and green ships. Furthermore, this paper will focus on the prospects and challenges of green ports and shipping in the Asia-Pacific. Finally, policy recommendations will be proposed as a way forward to transform the port and shipping industry.

Eco-friendly technological characteristics of green ports

A green port, or an ecological port, is a sustainably-developed and environmentally-friendly port that fulfils specific environmental requirements in port activities, including port development, operation, and management. According to Pavlic *et al.* (2014), a green port is recognised as a new ideology to realise sustainable development at ports through harmonising the balance between economic benefits and environmental effects. Green ports were previously referred to as ports proactive in addressing negative environmental externalities between the 1990s and the late 2000s. Later in the 2010s, the term has been widely linked to ports that possess active initiatives and projects promoting the use of eco-friendly technological advancements, such as renewable energy for port operations. Anastasopouos *et al.* (2011) mentioned that the concept of a

green port highlights sustainable and efficient usage of its resources in order to reduce the negative impacts on the ocean environment resulting from port activities. The concept deals with the protection of the ocean environment through constructive approaches, such as technical infrastructures, pricing and access, and integrated management approaches.

Technical infrastructures

A green port is well-equipped with technical infrastructures capable of solving specific environmental problems such as energy efficiency, ship waste, and air quality. According to Tseng and Pilcher (2015), cold ironing, or commonly known as Onshore Power Supply (OPS), is a technology that could supply electricity to ships from ports. In this method, electricity is generated from natural resources like hydroelectricity. Ships could switch off their diesel-powered generators when docked at ports that provide hydroelectricity. As a result, greenhouse gas emissions at ports from these ships could be eliminated, thus reducing the negative environmental impacts of port activities.

The development of a waste reception infrastructure at ports was also identified as a key measure to reduce the negative impacts of port activities. Puig *et al.* (2014) reported that the development of a waste reception infrastructure at ports allows for port authorities to collect and manage all types of waste including solid, liquid, and gaseous waste discharged by ships. For instance, ships routinely discharge ballast water, which could ideally be collected and treated at the waste reception infrastructure in order to prevent the introduction of invasive species in the area.

According to Rigot-Muller *et al.* (2013), the Greenhouse Gas Emissions Inventory could assist port authorities to monitor and analyse port activities that produce greenhouse gas emissions. The tool is useful in identifying trends and reduction measures of greenhouse gas emissions at ports, besides supporting socio-economic and political claims of port authorities, especially in cross-boundary emissions. However, the development of the aforementioned inventory is very complex and costly as it requires an all-inclusive baseline data and highly-skilled operators.

Pricing and access

A green port has a number of tools for pricing and access that are mainly focused on ships' access and shipping lines to port terminals, as well as shipping companies operating at ports. The Environmental Shipping Index (ESI) is one such tool, mentioned by Lister *et al.* (2015), a web-based tool that provides assistance in improving the environmental performance of ships visiting the ports. ESI requires a cooperative online submission of fuel receipts and the provision of incentives for ships with low greenhouse gas emissions by ship operators and port authorities, respectively. The aforementioned tool was collectively designed by port authorities in the World Ports Climate Initiative that was officially launched on 24 November 2008 in Los Angeles, California.

The concession agreement is another crucial tool that could be adopted to address port activities' impact on the ocean environment. In this case, environmental sustainability could be set as one of the topmost requirements for granting concession agreements to shipping companies that intend to operate at ports, as stated by Notteboom and Lam (2018). This tool may be legally effective in urging shipping companies to adhere to environmental objectives, such as reducing greenhouse gas emissions set by port authorities.

Acciaro *et al.* (2014) suggested that incentive pricing and penalty pricing could be used as a 'carrot and stick approach' to improve the environmental performance of ports. Both the 'sustainability and polluter pays' principle could be applied in port activities, whereby incentive pricing and penalty pricing are issued accordingly based on the performance of shipping and port operators. For example, port authorities could issue penalty pricing to shipping operators involved in oil spills. This tool may be practical in encouraging shipping companies to meet the environmental requirements as part of their responsibility.

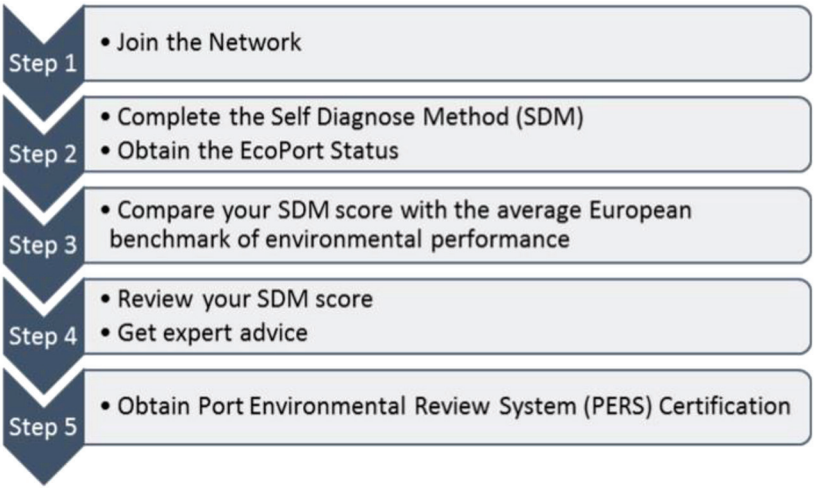
Integrated management approach

Apart from technical infrastructures, pricing, and access, the Environmental Management Systems (EMS) is also promoted as a green port tool, based on an internationally-recognised environmental management standard as reported by Lam and Notteboom (2014). Meanwhile, the Ports Environmental Review System (PERS) (Figure 1) and Eco-Management and Audit Scheme (EMAS) are examples of internationally-recognised environmental management standards that ports could adopt in EMS to maintain sustainability that fulfils specific environmental requirements. These mentioned standards are useful to port authorities in planning their port activities, including port development, operations, and management. In addition, the EMS could be used to monitor, document, evaluate, and improve the environmental performance of the port on a timely basis.

Eco-friendly technological characteristics of green ships

A green ship or an ecological ship is a vessel that serves as a significant enabler for green shipping. It is an environmentally-friendly ship that fulfils specific environmental requirements aided by the development of green technologies. According to Im *et al.* (2005), green shipping is a marine transport activity focusing on the balance between economic benefits and environmental effects by referring to the use of environmentally-friendly resources and energy to transport people and goods by ships. Compliance with specific environmental requirements regulated by the International Maritime Organisation (IMO) is made compulsory for green ships. For green ships, the International Convention for the Prevention of Pollution from Ships (MARPOL) is the main convention with provisions from six technical annexes that prevent both operational and accidental environmental pollution caused by ships. The six technical annexes with specific areas of regulations are as follows:

Annex 1: Regulations for the prevention of pollution by oil



Source: Yahya (2019)

Figure 1: The Ports Environmental Review System (PERS)

Annex 2: Regulations for the prevention of pollution by noxious liquid substances in bulk

Annex 3: Regulations for the prevention of pollution by harmful substances carried by sea in packaged form

Annex 4: Regulations for the prevention of pollution by sewage from ships

Annex 5: Regulations for the prevention of pollution by garbage from ships

Annex 6: Regulations for the prevention of air pollution from ships

Green ship technologies

The introduction of green ships is recognised as a competitive advantage in order to meet the environmental regulations of IMO, as stated by Yang (2012). These ships are well-equipped with the latest green technology and could play a role as strategic vessels for green shipping. A few benchmark technologies have been developed to build green ships that could ultimately protect the ocean environment, besides competing advantageously in terms of cost and efficiency in the shipping industry. A tri-fuel engine is one of the technologies installed in ships whereby Liquefied Natural Gas (LNG) is used with Marine Diesel Oil (MDO) and Heavy Fuel Oil (HFO) as marine fuels. LNG is a colourless and non-toxic natural gas that comprises mainly of methane. It is considered a cheaper and greener fuel compared to conventional diesel fuels such as MDO and HFO. In the tri-fuel system, conventional diesel fuel will generate power during the normal voyage, then the engine will switch to the consumption of LNG to generate power at ports, as mentioned by Karan (2019). The tri-fuel technology was initially introduced in gas carrier ships and later adopted in container ships to reduce greenhouse gas emissions and the cost of OPS. This green technology is adopted by shipping operators as one of the recent key technologies to collectively meet the global 0.5% sulphur cap in 2020, as required by MARPOL.

The application of anti-fouling paint on the hull of ships could enhance shipping performance as reported by Mohit (2019). Anti-fouling paints are formulated with copper compounds and biocides, which prevents marine fouling by retarding the growth of marine organisms such as algae and barnacles on the hull. Moreover, the anti-fouling property of the paint is effective in facilitating the detachment of marine organisms, thus resulting in a clear and smooth hull devoid of marine fouling. Ships with clear and smooth hulls could reduce the consumption of marine fuels during voyage due to the reduced resistance from friction caused by oceanic currents. As a result, these ships are able to reach their destinations with minimum usage of marine fuels, which could decrease the cost of ship operations. However, the application of anti-fouling paints containing tributyltin was banned by IMO on account of its toxicity to marine ecology in the 1970s. The chemical properties of anti-fouling paints applied to hulls must be environmentally-friendly in order to meet IMO's strict environmental regulations.

The development of ECO Voyage is another remarkable green technology to enhance shipping performance in a sustainable manner. ECO Voyage is a maritime software developed by Maersk Maritime Technology with the assistance of a number of shipping operators, as mentioned by Anish (2019). The software is used to reduce the cost of ship operations through passage and voyage planning. Several factors need to be taken into account for passage and voyage planning, such as the estimated time of arrival and economical speed of the ship, together with the expected waves and currents of the ocean. The sophisticated software will provide optional passages and voyage plans for shipping operators to reach their destination with the least usage of marine fuels, directly decreasing the cost of ship operations. These passage and voyage plans will be recorded and stored in the central server system for future reference, for other shipping operators. In short, the ECO Voyage is a green technology for shipping operators to plan an ecological voyage with minimum operational cost and environmental impact.

Prospects and challenges of green ports and shipping in the Asia-Pacific

In recent years, there has been a wave of environmentally-driven regulations pushing the transformation of ports and shipping industries in the Asia-Pacific towards a sustainable ocean economy. Ports are infrastructural assets that play important roles as points of ocean-land convergence and gateways of international seaborne trading. In line with the positive growth of port traffic over the years, these infrastructures are expected to align their key

performance index by taking environmental sustainability into account. Despite the development of ports through technological approaches such as technical infrastructures, pricing, and access, as well as integrated management approaches, it will still have cost implications, such as further funding requirements. Nevertheless, it is still considered a vital strategy to improve the attractiveness of ports of call for shipping companies in the Asia-Pacific.

Clarksons Research (2019) stated that an average ship call has a turnaround time of 0.97 days at ports. The average turnaround time of ships at ports is the measurement of the efficiency and trade competitiveness of the respective ports. In the Asia-Pacific, ports with the shortest turnaround times are mostly found in technologically advanced ports such as Port of Shanghai and Port of Singapore, located in China and Singapore, respectively. Port authorities could implement port call optimisation as a measure to reduce the turnaround time of ships at ports. This measure will ensure that the arrival of ships and the operation of ports are in accordance with the schedule. In this case, additional charges will be imposed on the early or late arrival of ships at ports. Besides that, ports that fail to perform clearance (either in loading or unloading operations) on time will also be penalised. A port call optimisation aimed at improving the efficiency of ports with optimum port traffic could eventually improve the efficiency of the economy.

Ports that are built adjacent to the ocean is exposed to changes in oceanic currents, ocean-level rise, and flooding. Jevrejeva *et al.* (2018) estimated that the global damage due to extreme phenomena such as ocean-level rise accounts for approximately USD10.8 trillion per year, with a rise of average temperature of 1.5 °C, indicating global warming by the year 2100. The ports are expected to perform sustainably – protecting the ocean environment while increasing the efficiency of the economy. The environmental management standards such as PERS and EMAS should be adopted by port authorities to reduce negative environmental impact, specifically greenhouse gas emissions, which is responsible for global warming and ocean-level rise. The concept of a green port is comprehensive in driving the transformation towards a sustainable ocean economy, as both environmental and economic benefits resulting from port activities are closely related to each other.

The implementation of the IMO regulation on reducing the content of sulphur in marine fuels from 3.5% to 0.5% effective 1 January 2020 is expected to bring significant benefits to the environment. The regulation was initiated to reduce greenhouse gas emissions from ships, specifically sulphur oxide, that escapes into the atmosphere and ultimately contribute to global warming. The implementation and enforcement of the new 0.5% sulphur cap is the responsibility of every state party to MARPOL. Meanwhile, port authorities are fully responsible for detaining ships that do not comply with the regulation at ports. Furthermore, a penalty will be imposed on shipping operators accordingly for their violation of the regulations. In addition, an amendment to MARPOL further prohibits the carriage of non-compliant marine fuels on the ship during the voyage. This amendment will be effective 1 March 2020 onwards to further reduce the negative environmental impacts of shipping activities.

UNCTAD (2019) reported that compliance with the 2020 IMO regulation will bring challenges, particularly on cost implications to the shipping industry. This is because compliance with the regulation requires huge investments in the development of certification schemes and technological advancements for green ships. For instance, entry into force of certification schemes for the green ships will have a direct cost implication on the shipbuilding and ship repair sector to incorporate the new standards required by the regulation. Furthermore, the installation and maintenance of a tri-fuel engine powered by LNG in green ships will be cost-consuming compared to a normal engine powered by conventional diesel fuel. Consequently, additional costs will unavoidably be absorbed by shipping operators and then dispersed to consumers across the supply chain as increments on the cost of shipping and price of goods.

Apart from cost implication, the supply of ships could be disrupted by the 2020 IMO regulation. The transition period from the development of certification schemes and technological advancements for green ships will greatly reduce the availability of ships for seaborne trading. In addition, older ships that cannot be upgraded into green ships will be permanently delisted from the industry. The supply of ships will not be able to support the demand for direct port calls, thus increasing the demand for trans-shipment, as mentioned in World Maritime News (2019). In short, the 2020 IMO regulation is undoubtedly a practical test to transform the shipping industry towards a sustainable ocean economy by adjusting the balance between economic benefits and environmental impacts.

Way forward for the port and shipping industry

A sustainable ocean economy is a collaborative model that emphasises joint consultations, cooperation, and mutual benefits through ocean-based industries. In the context of a sustainable ocean economy, the port and shipping industry is expected to deliver economic gains with minimum negative environmental impact. While the prospect of seaborne trading remains bright, the feasibility of transforming the port and shipping industry towards a sustainable ocean economy in the Asia-Pacific is being questioned by industry players. From the perspective of industry players, the full implementation of the 2020 IMO regulations will bring uncertainties in relation to the standardisation of certification schemes and technological advancements for green ports and shipping. Besides that, the cost and availability of alternative green fuels, namely LNG, to support green ports and shipping are the emerging concerns of industry players since it directly affects the cost of shipping. There is an urgent need to adopt an immediate and systematic approach in order to support the transformation of the port and shipping industry towards a sustainable ocean economy in the

Asia-Pacific. Risks from the transformation of the industry can be mitigated through the standardisation of laws and rules governing industrial investments and operations. For example, the National Shipping and Port Council (NSPC) was established by the Ministry of Transport Malaysia to address environmental and economic disputes emerging from the transformation of the port and shipping industry to a sustainable ocean economy.

An international maritime cooperation could be initiated to realise the transformation of the port and shipping industry to a sustainable ocean economy in the Asia-Pacific. Maritime cooperation, specifically on environmental and economic aspects, could be promoted via the establishment of an international platform for cross-border maritime information sharing. For example, respective stakeholders could take collaborative efforts to accelerate joint research on green technology that may reduce cost and development risks in the port and shipping industry. Moreover, human capacity development inclusive of technical training and academic exchange via cross-border seminars and workshops can be another important measure in transforming the industry. These collaborative efforts for international maritime cooperation at different levels and scales in the Asia-Pacific will eventually stimulate a sustainable ocean economy.

The transformation of the port and shipping industry towards a sustainable ocean economy could be facilitated by a national policy focused on a proactive long-term vision. An overarching national policy focusing on environmental and economic development is useful in establishing essential standards and principles for industry players to translate their green strategies into their business reality. A sustainable ocean economy relating to green ports and shipping is inevitably affected by institutional and situational factors such as national priorities and interests. These priorities and interests that will be timely highlighted in the policy may constructively ensure industry players will be able to selectively adopt green strategies that fit the institutional and situational contexts of the nation. In this case, industry players could adopt different combinations of strategies at different time periods based on the environmental, economic, and regulatory priorities highlighted by the national policy, in reaching a sustainable ocean economy.

To leverage the opportunities and address environmental and economic challenges in transforming the port and shipping industry, appropriate risk and benefit assessments on a regular basis would be vital. In Malaysia's case, industry players are incentivised by the government to conduct comprehensive risk and benefit assessments for optimum development of the port and shipping industry, in order to promote competitiveness and connectivity while tackling environmental challenges. In addition, extensive stakeholder consultations should be undertaken as another key measure to minimise risk factors associated with potential challenges resulting from the transformation of the industry towards a sustainable ocean economy. In this instance, the additional cost of shipping is considered as one of the potential challenges that will exert a significant impact on the cost and supply of ships. Industry players involved should develop visionary operational plans that include far-reaching economic impact studies to ensure that the ultimate objective of a sustainable ocean economy can be achieved.

Conclusion

A sustainable ocean economy views economic development and ocean health as compatible propositions, requiring a long-term strategy from all countries, especially in the Asia-Pacific region. Of the various ocean-based economies, a sustainable ocean economy for the port and shipping industry can be achieved via innovative technological advancements such as green port and ships that meet the environmental regulations set by IMO. However, it is important not to view a sustainable ocean economy solely in environmental terms, as the potential economic prospects and challenges should be considered in order to meet the objectives of the strategy. In this case, an international maritime cooperation of the countries in the Asia-Pacific region should be initiated to realise the transformation of the port and shipping industry towards a sustainable ocean economy. Then, the establishment of essential standards and principles through policies focusing on environmental and economic development would guide the industry players to translate green strategies into their business reality. The policies should include a focus on results towards realising the goal of shared environmental and economic prosperity through a sustainable ocean economy.

References

- ✓ Acciaro, M., Ghiara, H. and Cusano, M. I. (2014). "Energy management in seaports: A new role for port authorities", *Energy Policy*, 71, pp. 4-12.
- ✓ Anastasopouos, D., Kolios, S. and Styios, C. (2011). "How will Greek ports become green ports?", *Geo-EcoMarina*, Vol. 17, pp. 73-80.
- ✓ Anish, W. (2019). "How Maersk's Maritime Software Tool 'ECO Voyage' Can Help in Reducing Ship's Fuel Consumption?". Available at https://www.marineinsight.com/tech/how-maersks-maritime-software-tool-eco-voyage-can-help-in-reducing-ships-fuel-consumption/. [Accessed on 7 January 2020].
- ✓ Clarksons Research (2019). "*Seaborne Trade Monitor*", Volume 6, No. 6.
- ✓ Economist Intelligence Unit. (2015). "Investing in the Blue Economy - Growth and Opportunity in a Sustainable Ocean Economy", Briefing Paper.
- ✓ Im, J., Lee, E., Kim, C., Kim, J., Choi, J. and Kim, E. (2005). "Green Shipping Outlook and Response Strategy", Korea Maritime Institute.
- ✓ International Chamber of Shipping. (2018). "Shipping and World Trade". Available at http://www.ics-shipping.org/shipping-facts/shipping-and-world-trade. [Accessed on 23 December 2019].
- ✓ Jevrejeva, S., Jackson, L. P., Grinsted, A., Lincke, D. and Marzeion, B. (2018).

"Flood damage costs under the sea level rise with warming of 1.5 °C and 2 °C", *Environmental Research Letters*, Volume 13, No. 7.

- ✓ Karan, C. (2019). "The Tri Fuel Marine Engine Concept for Container Ships". Available at https://www.marineinsight.com/green-shipping/the-tri-fuel-marine-engine-concept-for-container-ships/. [Accessed on 6 January 2020].
- ✓ Lam, J. and Notteboom, T. (2014). "The Greening of Ports: A Comparison of Port Management Tools Used by Leading Ports in Asia and Europe", *Transp. Rev.*, 34, pp. 169-189.
- ✓ Lister, J., Poulsen, R. T. and Ponte, S. (2015). "Orchestrating transnational environmental governance in maritime shipping", *Glob. Environ. Chang.*, 34, pp. 185–195.
- ✓ Mohit, K. (2019). "14 Technologies to Make the Ultimate Green Ship". Available at https://www.marineinsight.com/green-shipping/13-technologies-to-make-the-ultimate-green-ship/. [Accessed on 7 January 2020].
- ✓ Notteboom, T. and Lam, J. (2018). "The Greening of Terminal Concessions in Seaports", *Sustainability*, 10, pp. 3318.
- ✓ OECD (Organisation for Economic Co-operation and Development). (2016). "The Ocean Economy in 2030".
- ✓ Pavlic, B., Cepak, F., Sucic, B., Peckaj, M. and Kandus, B. (2014). "Sustainable port infrastructure, practical implementation of the green port concept", *Therm Sci*, 18, pp. 935-948.
- ✓ Puig, M., Wooldridge, C. and Darbra, R. M. (2014). "Identification and selection of Environmental Performance Indicators for sustainable port development", *Mar. Pollut. Bull*, 81, pp. 124–130.
- ✓ Rigot-Muller, P., Lalwani, C., Mangan, J., Gregory, O. and Gibbs, D. (2013). "Optimising end-to-end maritime supply chains: A Carbon footprint perspective", *Int. J. Logist. Manag.*, 24, pp. 407–425.
- ✓ Tseng, P. H. and Pilcher, N. (2015). "A study of the potential of shore power for the port of Kaohsiung, Taiwan: To introduce or not to introduce?", *Res. Transp. Bus. Manag*, 17, pp. 83–91.
- ✓ UNCTAD (United Nations Conference on Trade and Development). (2019). "Review of Maritime Transport".
- ✓ World Maritime News. (2019). "Sulphur Cap to Trigger Slow Steaming, Transhipment". Available at https://worldmaritimenews.com/archives/273341/drewry-sulphur-cap-to-trigger-slow-steaming-transhipment/. [Accessed on 13 January 2020].
- ✓ Yahya, N. (2019). "Adopting a Green Port Standard for World's Sustainability", *Journal of Arts and Social Sciences*, Vol. 2, Issue 2, pp. 1-11.
- ✓ Yang, J. (2012). "Green-ship - New Challenges and Opportunities in Shipbuilding Industry", Export - Import Bank of Korea. ■

Action Plan for Healthy Oceans, Sustainable Blue Economies

The Asian Development Bank (ADB) has launched the Action Plan for Healthy Oceans and Sustainable Blue Economies for the Asia and Pacific region at the 52nd Annual Meeting of ADB's Board of Governors in Fiji. The action plan will support the efforts of ADB's developing member countries to achieve the Sustainable Development Goals (SDGs), including SDG 14 Life Below Water.

The Action Plan for Healthy Oceans and Sustainable Blue Economies will expand financing and technical assistance for ocean health and marine economy projects to $5 billion from 2019 to 2024, including cofinancing from partners. It will focus on four areas: creating inclusive livelihoods and business opportunities in sustainable tourism and fisheries; protecting and restoring coastal and marine ecosystems and key rivers; reducing land-based sources of marine pollution, including plastics, wastewater, and agricultural runoff; and improving sustainability in port and coastal infrastructure development.

As a part of the action plan, ADB will launch the Oceans Financing Initiative to create opportunities for the private sector to invest in bankable projects that will help improve ocean health. The initiative will provide technical assistance grants and funding from ADB and other donors to reduce the technical and financial risks of projects. This will be done through instruments such as credit risk guarantees and capital market "blue bonds".

The Oceans Financing Initiative will be piloted in Southeast Asia in collaboration with the ASEAN Infrastructure Fund and the Republic of Korea. The World Wide Fund for Nature, a longtime partner of ADB, will support the design and implementation of the financing initiative.

For more information, access:

https://www.adb.org/news/adb-launches-5-billion-healthy-oceans-action-plan