

BOAT BUILDING & SHIPBUILDING IN INDIA

Not Only **Hope**
But Lot of **Scope**



Optimization of container layout decision policy in the vertical type terminal based on simulation
Tae-Kwang Kim

Is it time to supplement the existing box container?
Capt. Melvin Mathews

Marine Growth Prevention Systems for the vessel seawater pipelines
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Pallavi Naik
Editor-in-Chief

Ship Building is strategically important industry for india considering its importance for national defence as well as for mercantile marine sector for attaining the needs of the critical mass. Also, Ship Building is one of the highest employment providers in the country.

With its direct or indirect linkage to many other industries such as Steel, Engineering, Port infrastructure, Shipping Services, the Ship Building industry has the immense potential to strengthen the mission of an “AtmaNirbhar Bharat”.

The schemes such as Financial Assistance by the Government of India are designed to promote the governments’ “Make in India” programme, to encourage the local Shipbuilding industry by providing an equal opportunity as compared to Foreign shipyards and help India to upraise India as a Ship Building Nation.

THE MARITIME ECONOMY

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BOAT BUILDING & SHIPBUILDING IN INDIA

Not Only Hope But Lot of Scope

Overall, if we look at boatbuilding in India, things have improved over the years. If a boat is good, even an average person can sail it; in fact, that applies to every craft. Hence, reliability is of utmost importance — we will have less malfunctions, accidents, or incidents. We must consciously try and overcome this handicap of forever trying to bring down costs, and get value for money — at the cost of quality! Unfortunately, this is a ‘standard’ problem in our country. Due to such attitude and approach, the boat’s quality will suffer. Such an attitude does not leave much incentive for the boatbuilder to improvise and/or innovate. Moral of the story, or at least a lesson learnt: One should not milk the boatbuilder to the last penny!

Nowadays, the Antara keeps me busy. She is a 12.2m long and 3.90m wide sloop, with a 35 HP water-cooled inboard diesel engine, and was built in 2017. She was designed by Van de Stadt Design, The Netherlands, as a Caribbean 40 and constructed at Goa by Aquarius Shipyard. Built from a wood core laminated with fibreglass and epoxy, with mast and rigging from Sparcraft Masts, Cape Town, she is rigged with a full-battened mainsail and 130% furling genoa. Antara is registered with India’s Directorate General of Shipping as a Category I (Unrestricted service) commercial pleasure craft, is RINA-classified, and flies the Indian flag. She has an integrated multifunction display,

with inputs from GPS, ECS, radar, AIS, log, echo sounder, electronic gyrocompass, wind vane and anemometer. She also has a standalone magnetic compass.

The oceangoing sailboat has six bunk beds, one toilet and a gimbal galley. Her communication equipment

consists of Inmarsat-C, and DSC-enabled VHF MMB. For safety, the Antara is equipped with Emergency Position Indicating Radio Beacon, Search and Rescue Transponder, life raft, lifebuoys, life jackets, distress flares, smoke markers, fire extinguishers and fire blanket. Her international call sign is VTAH.

Inputs by Captain Dilip Donde, retired Indian Naval Officer. He had sailed around the world, unassisted, in the cruising sloop Mhadai — under the ‘Sagar Parikrama’ project. He trained under Sir Robin Knox-Johnston, the world’s first person to sail around the globe solo, non-stop. Capt Donde, India’s first solo circumnavigator, an avid sailor, a diver, an author, and a leadership coach, has also mentored the likes of Abhilash Tomy (the second Indian to sail solo around the world, and the

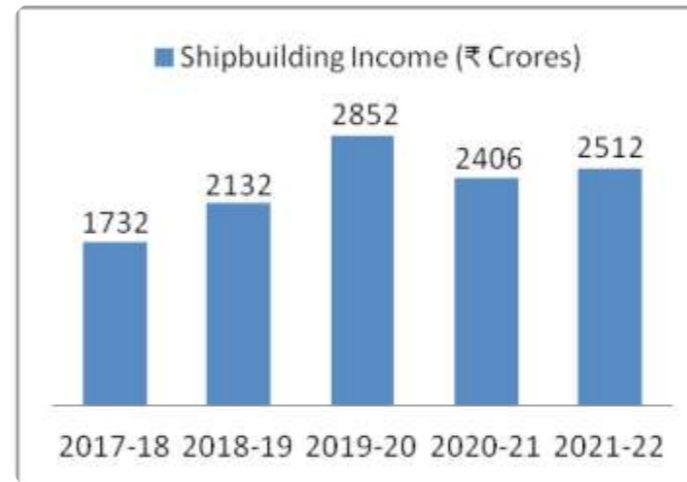


Capt. Dilip Donde

first Indian to execute it non-stop, and the only Indian to have participated in the Golden Globe Race and come second), and Team Tarini (from Indian Navy) — the first group of six ladies from the armed forces, globally, to have accomplished this circumnavigation feat.

This awe-inspiring and meticulously detailed information serves as the prelude for our article — which gives a few glimpses of shipbuilding and boatbuilding in India. Broadly, boats can be categorised into three sections: Unpowered or man-powered boats, Sailboats, and Motorboats.

Coastal and overseas cargo movement is affected through ocean-going vessels. In addition, small ships and crafts also ply on inland waterways and canals. Indian-owned vessels carried 5.62% of India’s overseas trade during 2020-21. India’s emergence as a major economic power would mean greater integration in terms of trade with the rest of the world, requiring huge shipping tonnage. As on 31 March 2022, Indian shipping tonnage was 13.12 million GT, with 1,503 ships.



This industry and trade have tremendous scope in India. A number of measures have been initiated by the Ministry of Ports, Shipping and Waterways, to improve the viability of manufacturing and repair of boats and ships, and encourage private sector participation, with emphasis on research. The demand for ships, semi-submersibles and port auxiliary vessels, new ship building as well as ship-repair activities, are projected to grow in view of rising cargo traffic from and to India.

The Government of India is supporting the Indian shipbuilding industry since 1971 by various policy measures such as pricing and shipbuilding subsidy. However, these policies were only applicable to central public sector shipyards building commercial vessels, that is for the Hindustan Shipyard Ltd, Visakhapatnam (in 1971). In 1972, Cochin Shipyard was established and the policies were applicable to that Yard too. The policies were modified from time to time in 1981, 1993, 1995, 1997, and 2000. In October 2002, the Government extended the shipbuilding subsidy scheme to all Indian shipyards, including non-central public sector and private shipyards.

Shipbuilding capacity of private sector companies in 2022



The Indian shipbuilding industry can be categorized into:

- (i) Large ocean-going vessels catering to overseas as well as coastal trade.
- (ii) Medium-size specialized vessels like port crafts, fishing trawlers, offshore vessels, inland, and other smaller crafts.
- (iii) Defence, naval crafts, and coast guard vessels.

There are 38 dry-docks for repairing ships in India, both in public and private sector. Also, there are nine dry docks operated by 5 major ports. Indian shipbuilding will be driven by alternate fuels, carbon-neutral solutions, autonomous vessels and cost-efficient technologies. New hydrogen policy announced by the government in 2021 has significant impact on the alternate fuel infrastructure.

To encourage domestic shipbuilding and to provide a level playing field vis-à-vis foreign shipyards, the Union Cabinet had approved the Shipbuilding Financial Assistance Policy (FAP) for Indian shipyards on 9 December 2015. The Government of India had approved INR 4000 crore FAP to shipyards for 10 years — for shipbuilding contracts secured between 1 April 2016 and 31 March 2026 (including these dates). Financial assistance will be granted to Indian shipyards equal to 20% of the lower of ‘Contract Price’, or the ‘Fair Price’, or actual payments received of each vessel built by them for a period of at least 10 years, commencing 2016-17. This rate of 20% will be reduced by 3% every three years.

Shipbuilding capacity of public sector companies in 2022



The quantum of financial assistance for a vessel shall be the product of the applicable rate of financial assistance prevailing on the date of contract, and, the lowest of the contract price, or the fair price, when converted in Indian Rupees. Provided that, at the time of release of financial assistance, if the actual payment received for a vessel is lower than the contract price, such payment shall replace the contract price in the formulae for computation of the financial assistance.



Article By: **Mr. Nishit Doshi**
Midnight Creatives



CyberLogitec

OPTIMIZATION

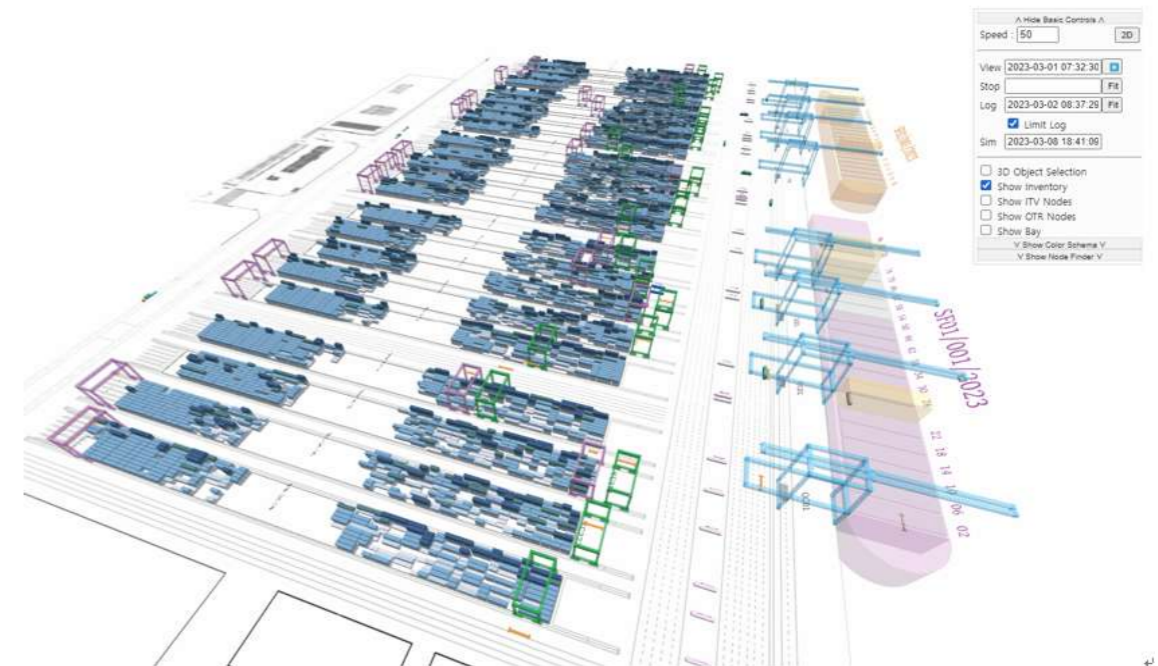
OF CONTAINER LAYOUT DECISION POLICY IN THE VERTICAL TYPE TERMINAL BASED ON SIMULATION

- Tae-Kwang Kim, Terminal Business Consultant, CyberLogitec

Terminal Operation Simulation

We would like to introduce a method for optimizing the terminal operation policy based on the simulation of terminal operation. The following contents focus on a particular explanation of how to optimize the container device layout decision policy using block operation simulation, and the introduction focuses on the performance results of the optimization process by OPUS DigiPort

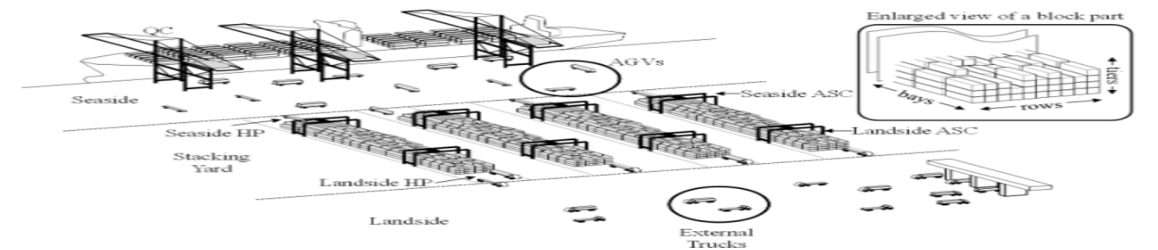
In the case of the terminal operation simulation, it depends on the purpose, whether to implement CHE (Container Handling Equipment) as a statistical model or Physics engine-based model, which considers CHE operation performance (moving speed, variable speed, etc.) and collisions between equipment. The physics engine-based model has higher reliability because it is closer to actual cases. Also, the simulation result can be checked intuitively, as you can see the status of actual terminal operation.



Terminal operation policy is a decision-making method for terminal operation. The work allocation policy for container transport vehicles is to decide on transport vehicles for container transportation, and the container device layout decision policy determines the positioning of the container that comes into the block. YC work allocation policy decides the container, which is the object of YC work, and it also decides AGV's

travel route in case of AGV operating terminals. The stated operation policy is vitally important because its performance level highly affects terminal productivity.

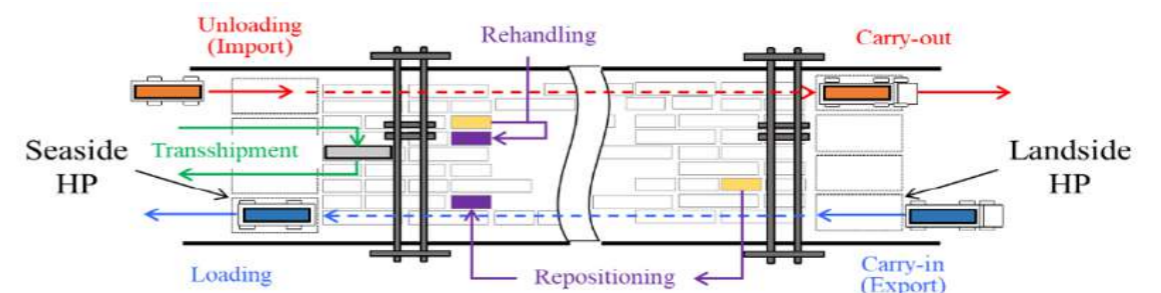
Among these operation policies, we would like to demonstrate the container device layout decision policy in the vertical-type terminal, as shown below.



Container Device Layout Decision Policy

The feature of a vertical-type yard block is that the flow of the import container and the export container is opposite, as shown below picture. The import container comes in from the seaside and goes out to the landside, and the export container comes in from

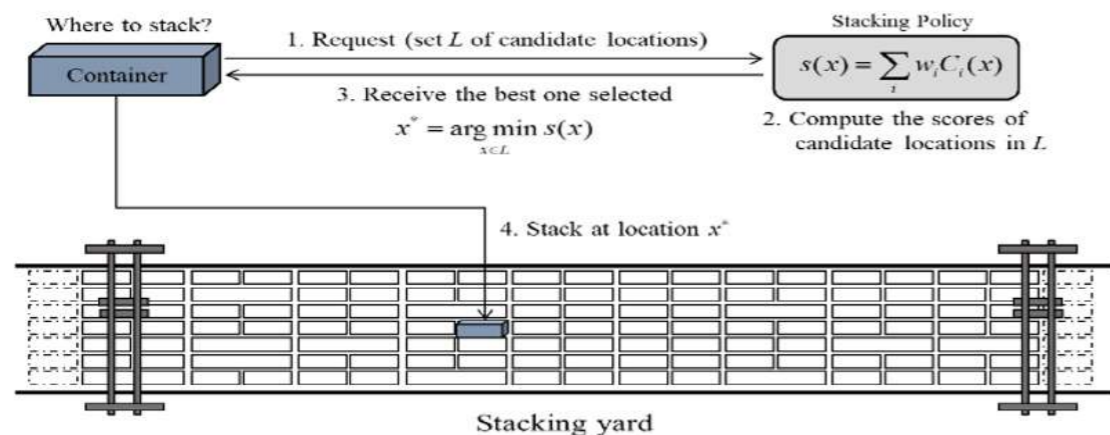
the landside end loading and goes out to the seaside end loading. Interference problems between cranes must be considered more carefully than horizontal-type terminals due to the circumstances of two-yard cranes included for each block in general and opposite container flows. Besides that, the container device layout needs to be decided by considering re-handling, the crane's travel range, and other factors.



In the container device layout decision process, there are a few criteria to consider when deciding which stack to stack containers. For example, there are the following evaluation factors such as how much a container need to be moved when leaving the block, how many layers the height of the stack needs to be stacked, how much a 40ft stack shrinks, and how many re-handling occurs. Based on the above-stated criteria, score of the stack to stack up the containers can be calculated. In this way, each criterion can be used to calculate a score for candidate stacks and then determine the device location by the

highest overall scored stack.

The importance of each criterion that terminal operators consider may be different. Hence the importance (weighting) could be assigned to each evaluation criterion accordingly. In the terminal where it places a premium on reducing the number of re-handling, for example, a large weighted value will be given to the evaluation criteria whether re-handling has occurred or not. The below picture illustrates the process.



The policy is a function(s(x)) that receives a candidate stack(x) to be applied and outputs a score for it, and the score can be calculated as weighted sum (Weighted for criteria, C_i, w_i) of multiple criteria(C_i). Among the candidate stacks, the highest scored stack(x*) is chosen as device location. According to the weighted w_i value combination, preference of the stack is changed. Hence, the combination of weights is substantially policy.

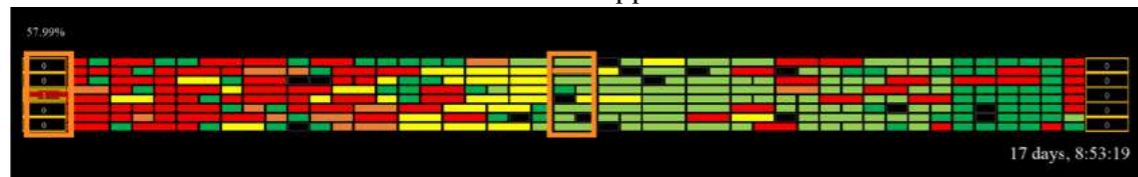
Genetic Algorithm(GA) is a commonly used artificial intelligence technique when the search space is huge. Due to the weight given to the criteria being generally real numbers, there are infinite weight combinations. Yet, finding the optimized policy is extremely difficult.

OPUS DigiPort's Optimized Device Location Layout Policy

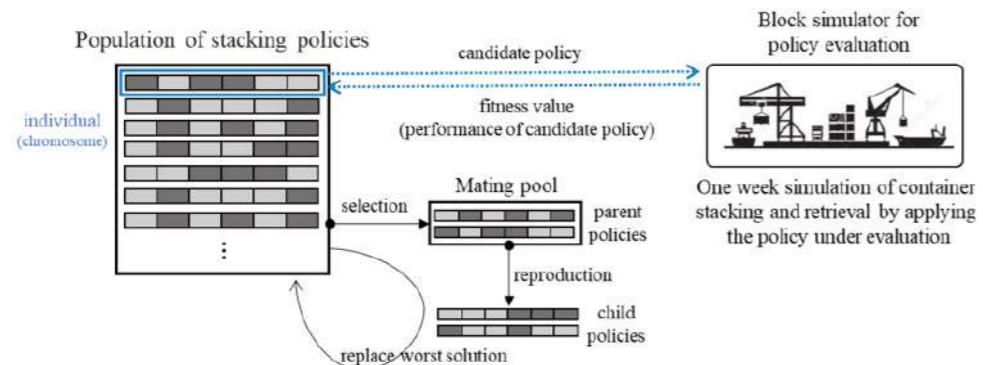
What is policy optimization, then? It is about finding the combination of weights to achieve the optimal performance. 'Optimal performance' is the purpose of policy optimization.

Applying OPUS DigiPort, let's see how to optimize the device location layout policy and what results come out. GA has been applied as an optimal algorithm, and the below-stated block simulator is used to evaluate chromosomes (candidate policy). The simulator simulates only one block as an object, and emulation including a collision between yard cranes and specification of acceleration/deceleration has been applied.

For example, optimized policy targets to minimize the block's container service could be able to reduce the service time the most compared to other policies. Likewise, the optimized policy targets to minimize the



The following is a diagram illustrating the optimization process using GA.

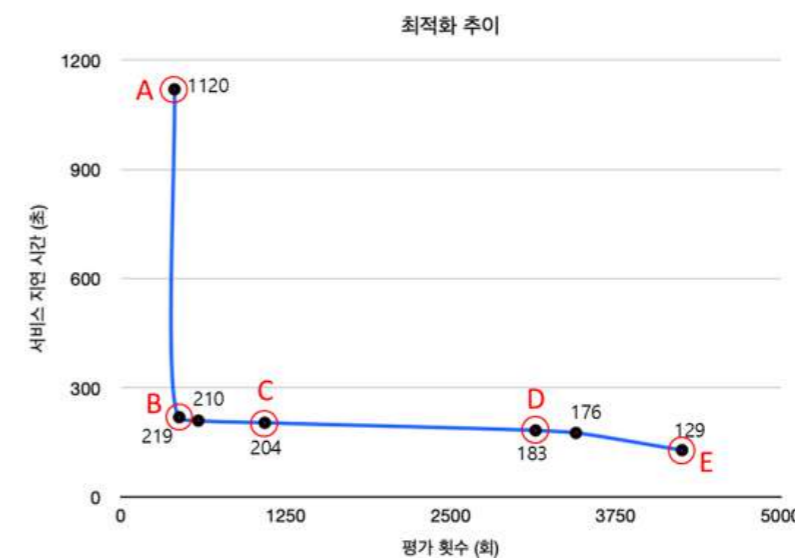


The optimization target is "Minimizing of service time delay at the seaside crane." Hence, the evaluation value for the candidate policy is calculated as the service delay time of the seaside crane from the result of block operation simulation by the candidate policy. The followings are the simulation parameters.

1. Simulation period: 174 hours (Initialization 168 hours, Evaluation 6 hours)
2. Block size: bay 46, row 8, tier 5 (based on 20ft container)
3. Block work plan
 - Transshipment ratio 50%

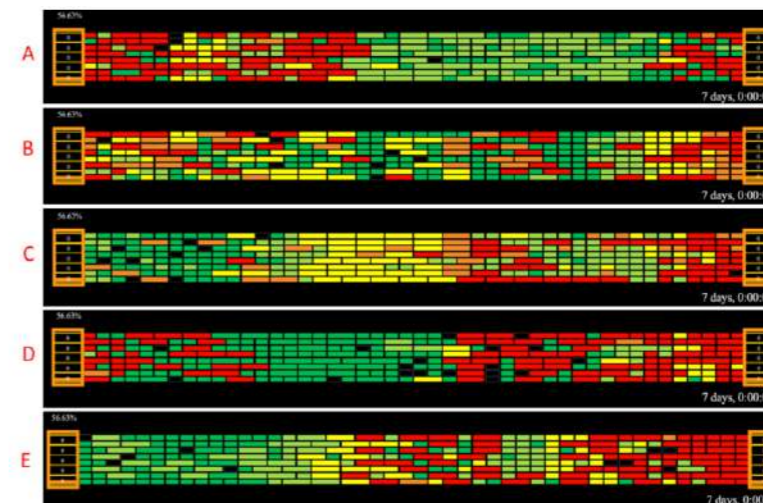
- % of 20ft and 40ft containers are 50%, each respectively
- The number of provided services for seaside containers per hour is 13.0, number of provided services for landside containers per hour is 7.3
- The average dwell time for the container is 3 days
- The average block occupancy rate is approximately 56%

Operation performance for the first 168 hours (7 days) has been excluded considering the simulation starts with an empty block circumstance. After approximately 5,000 simulation evaluations are conducted, the following optimization patterns are identified.



After the rapid growth of performance improvement in the early stage of the optimization process, gradual improvement has been identified. Let's check how the

policies detected during optimization stack up the containers. The red-circled point of the policy in the above graph is figures of stacked containers.



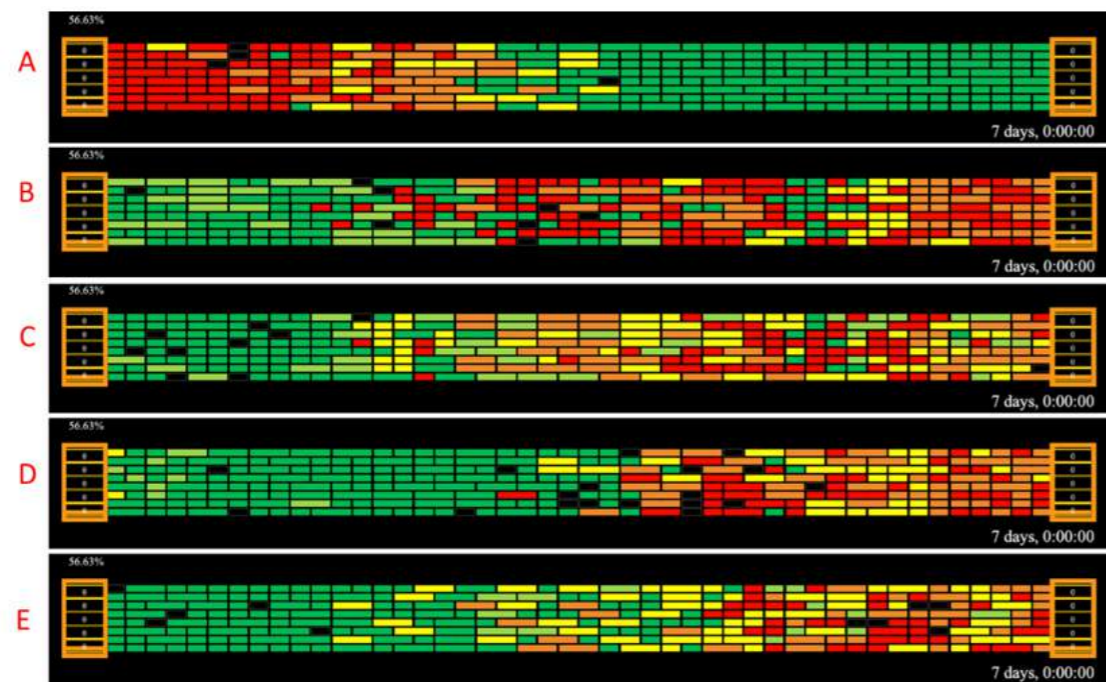
The left of the picture is the seaside, and the right of the picture is the landside. The 5-layer stack is red-colored, and the single-layer stack is green-colored in the picture.

also observed that 5-layer stacks are more distributed on the seaside than landside. Service delay time for policy A is 1,120 seconds. (Refer to 'A' in the above table) The average waiting time for transport vehicles at the seaside TP has reached almost 20 minutes. It's because blocks in this condition have disadvantage regarding delayed time for unloading and shipping the containers. Due to the high number of stacked layers, re-handling

appearance, yet the crane could stack it at a short distance when it is urgent due to the workload. Also, re-handling occurs relatively less when the shipping container is taken out. Service delay time for this policy is 129 seconds, which is approximately 2 minutes. Compared to policy A, the service delay time has been

reduced to a tenth.

For now, let's have a look at the aspects regarding shipment / importing properties of the containers that make up the stack, not the stack layer aspects.



Import containers that go out to the landside are red-colored, and they go out to the seaside are green-colored. Other colored ones, excluding red and green, are stacks that mixed containers of both properties. In the case of policy A, the containers have been stacked absurdly. Containers going out to the landside are stacked close to the seaside. Contrariwise, the containers going out to the seaside are stacked close to the landside. In this case, the service delay time will inevitably increase due to crane interference.

Fortunately, starting from policy B, the containers' outgoing directions are considered to a certain extent. In the case of policy E, almost the only containers going out to the seaside are stacked in the seaside area.

Hitherto, we have looked at a method to optimize terminal operation policies using simulation. Prompt

field application of the method, of course, is complex. To apply it to the field, several conditions need to be satisfied. First, real-time constraints must be satisfied. When the field requests a device location, the time required to decide the location must be short enough not to limit field operations. Secondly, the reliability of the simulation which is used for the optimization must be guaranteed. No matter how outstanding an optimization policy is, it would only be useful if the reliability of the simulator that measures its performance is reliable. Lastly, it is required to have a method to update the policy according to the terminal operation circumstance. As the terminal operation circumstance changes, so does the optimized policy. In reality, terminal circumstances change continuously. Hence it is necessary to update the optimized policy accordingly.



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Sustainable Blue Economy-

Needs serious thought and implementation.

Capt Gajanan Karanjikar has been writing articles on Blue Economy and has recently completed a century of such articles. The opportunity came out when he spoke extensively on sustainable Blue Economy. Since India's Economic advisory council has drafted out a Blue economy policy and is open for suggestion in Public domain, Capt Gajanan was interviewed to understand more of the Sustainable Blue economy and its application.

WHAT IS MEANT BY SUSTAINABLE BLUE ECONOMY

Ocean provides a huge opportunity for Business as well as greater prospects ahead for Human engagement with its various elements. 95% of the ocean is yet to be known to Human in terms of Life and resources under Ocean. Although late in time but India has gathered its way to carve the path into the Blue Economy, thanks to the country's leadership Honorable Prime Minister Narendra Modi for same. Prime Minister Narendra Modi's speech in Mauritius in 2015, which presented the doctrine of "Security and Growth for All in the Region" (SAGAR), triggered a series of discussions and studies in the non-government sector.

Commonwealth defined the Sustainability in Blue Economy very well. It says "The 'blue economy' is an emerging concept that encourages sustainable

Capt. Gajanan Karanjikar

- Blue Economy Activist and Strategist for Corporate sector
- G20- WG – consultant – Blue Economy
- President AIMPA
- CMMI- Warden

exploitation, innovation and stewardship of our ocean and its life-giving 'blue' resources." The world banks stresses on "sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem." In the old 'business-as-usual' model, nations develop their ocean economies through

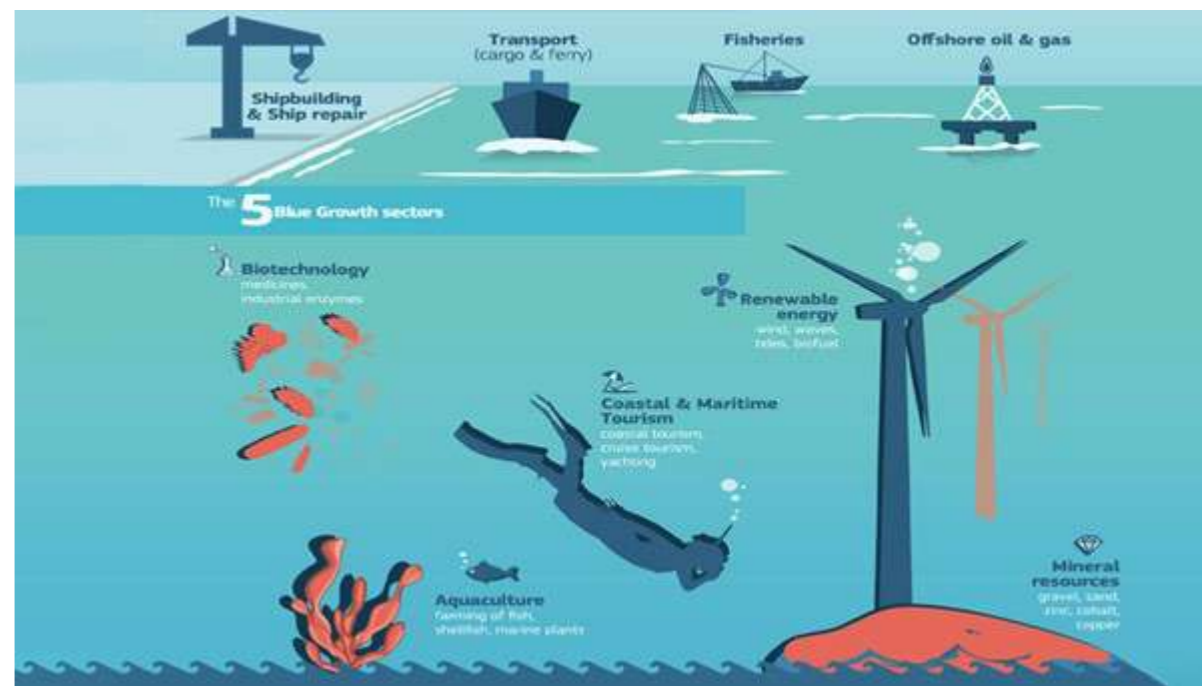


the exploitation of maritime and marine resources – for example, through shipping, commercial fishing, and oil, gas, and mineral development. Often, they don't pay adequate attention to the effect of these activities on the future health or productivity of the same resources and the ocean ecosystems in which they exist. The 'blue economy' concept provides a more holistic vision that embraces economic growth – when it is sustainable and does not damage other sectors. Similar to the 'green economy', the blue economy brings human well-being, social equity and environmental sustainability into harmony.

As per UN "A blue economy prioritizes all three pillars of sustainability: environmental, economic,

and social. When talking about sustainable development, it is important to understand the difference between a blue economy and an ocean economy. The term implies that the initiative is environmentally sustainable, inclusive and climate resilient."

Impact of Human actions are needed to be measured and known for the impact on the environment as a whole. Blue economy projects are needed to protect and develop more intangible 'blue' resources such as traditional ways of life, carbon sequestration and coastal resilience in order to help vulnerable states mitigate the devastating effects of poverty and climate change.



IT IS SUCH A NEW TERM AS IT SOUNDS. BLUE ECONOMY IS UNKNOWN TO MANY. LET ALONE THE SUSTAINABILITY MEASURES IN THAT. FOR OUR READERS CAN YOU EXPLAIN WHAT ARE THE COMPONENTS OF BLUE ECONOMY

Blue economy components are wide spread not only into ocean but also in land-based water bodies like Rivers, lakes, ponds, dams and waterways thus artificially made like canals and Farm lakes.

Under the blue economy we are looking at following activities:

1. Harvest of living resources.
2. Extraction of non-living resources.
3. Commerce and trade in and around ocean and seas including inland waterways.
4. Resource to Ocean health challenges.

Additional growth of the blue economy is possible

in a number of areas, especially: fisheries, aquaculture, mariculture, coastal tourism, marine biotechnology, and ocean energy. While some of these sectors will require little encouragement and additional governance, others need more and better planning to achieve their full potential and return more sustainable outcomes.

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? HOW IS THE WORLD REACTING TO THE SUSTAINABLE BLUE ECONOMY

The sustainability Week Asia conference being held in Marina Bay sands in February 2023, Singapore has denounced that, Countries and business leaders perceive economic, social and environmental sustainability as a mainstream method for creating new business opportunities and a better future. As the world's economic situation changes, it is critical to ensure that boards, wider corporate teams and stakeholders are focused on practical action.

Governments need to engage at the intersection of business, government and civil society, independent bodies need to work at macro-level analysis and case studies, and connect them with actionable insights and practical examples to help your projects sustainable, faster.

On blue economy front Calling for the implementation of the promises set out in the SIDS Accelerated Modalities of Action, known by the shorthand SAMOA Pathway and the ambitions of Sustainable Development Goal 14 (SDG14), on conservation and sustainable use of the oceans, world leaders are reiterating the importance of harnessing private sector collaboration to make it possible.

? CAN YOU ELABORATE MORE ON SGDI4 AND ITS IMPORTANCE FOR SUSTAINABLE BLUE ECONOMY

Saving our ocean must remain a priority. Marine biodiversity is critical to the health of people and our planet. Marine protected areas need to be effectively managed and well-resourced and regulations need to be put in place to reduce overfishing, marine pollution and ocean acidification. SDG (sustainable Development Goal) 14 is about Life Below water. The first time the UN spoke about Life under water. Earlier version of the Millennial development goals published on 2000 had no mention of Oceans and life held by them. SDG 14 is titled at *Conserve and sustainably use the oceans, seas and marine resources for sustainable development.*



SDG 14 targets seek to prevent and reduce marine pollution; further the sustainable management and protection of marine and coastal ecosystems; address the impacts of ocean acidification; regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices; conserve coastal and marine areas; increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources; and strengthen the means of implementation, including increasing scientific knowledge, the transfer of marine technology and implementation of international law as reflected in the 1982 United Nations Convention on the Law of the Sea (UNCLOS).

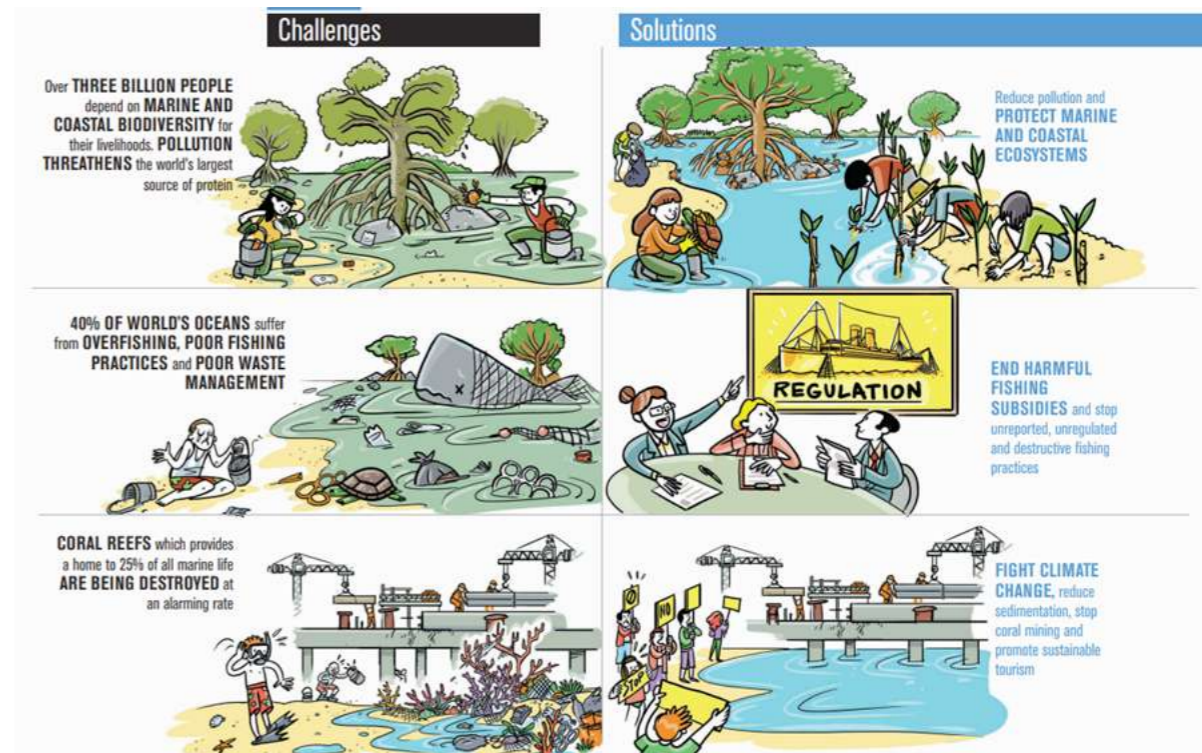
? HOW IS THE WORLD REACTING TO THE SUSTAINABLE BLUE ECONOMY

The ocean drives global systems that make the Earth habitable for humankind. Our rainwater, drinking water, weather, climate, coastlines, much of our food, and even the oxygen in the air we breathe, are all ultimately provided and regulated by the sea. Careful management of this essential global resource is a key feature of a sustainable future. However, at the current time, there is a continuous deterioration of coastal waters owing to pollution, and ocean acidification is having an adversarial effect on the functioning of ecosystems and biodiversity. This is also negatively impacting small scale fisheries.

Marine debris threaten biodiversity through entanglement or ingestion by organisms. Coastal waters are deteriorating due to nutrient loading and following eutrophication – a phenomenon expected to affect 20% of large marine ecosystems by 2050. Important habitats are under pressure and as an example, about 20% of the world's coral reefs have today been destroyed and nearly 50% of remaining reefs are under imminent risk of collapse through human pressures.

Following facts will explain this more:

1. *Over THREE BILLION PEOPLE depend on MARINE AND COASTAL BIODIVERSITY for their livelihoods. POLLUTION THREATENS the world's largest source of protein.*
2. *40% OF WORLD'S OCEANS suffer from OVERFISHING, POOR FISHING PRACTICES and POOR WASTE MANAGEMENT.*
3. *The ocean absorbs around 23 per cent of annual CO2 emissions generated by human activity and helps mitigate the impacts of climate change.*
4. *The ocean has also absorbed more than 90% of the excess heat in the climate system.*
5. *Every year, an estimated 5 to 12 million metric tonnes of plastic enters the ocean, costing roughly \$13 billion per year – including clean-up costs and financial losses in fisheries and other industries.*
6. *About 80% of all tourism takes place in coastal areas. The ocean-related tourism industry grows an estimated US\$ 134 billion per year.*
7. *Marine fisheries provide 57 million jobs globally and provide the primary source of protein to over 50% of the population in least developed countries.*
8. *35 percent of global fish stocks are overfished, a dramatic rise over the 10 percent levels of the 1990's.*



? HOW IS HUMAN ACTIONS IMPACT SUSTAINABILITY

Number of human actions are impacting ocean and water bodies' health. Be it surface transport, fishing, Farming and land-based pollution by Industrial areas impact oceans beyond repair. **Overfishing:** Destructive fishing, such as bottom trawling, can damage seafloor ecosystems and indiscriminately catch everything it encounters. **Shipping:** Intensive shipping damages marine environments through the release of chemicals, transfer of invasive species, dumping of waste, and physical disturbances. **Cumulative:** With nearly 98 percent of global oceans affected by multiple stressors, hotspots of cumulative impact include the North Sea and the South and East China Seas.

? SO DO YOU SEE THIS AS CHALLENGES TO BLUE ECONOMY? IN YOUR OPINION WHAT ARE THE CHALLENGES TO BLUE ECONOMY

The challenges to Blue economy are only in will power and administrations' engagement. However overfishing, shipping and cumulative impact of human actions do have considerable effect on Ocean health and thus on the Blue economy. *The potential to grow the blue economy is limited by a series of challenges. For much of human history, aquatic ecosystems have been viewed and treated as limitless resources and largely cost-free repositories of waste.* These resources, however, are far from limitless and we are increasingly seeing the impacts of this approach.

Despite a range of actors and large investments, current attempts to overcome these challenges have mostly been piecemeal, with no comprehensive strategy (for example fisheries governance; improving ports; marine litter efforts). Even when one sectoral policy achieves some success, these

results are often undermined by externalities from activities in another sector. Often, for example, coastal zone management efforts, or support to coastal fishers, are undermined by unbridled sand mining, ill-sited ports or aquaculture farms or unregulated tourism development. In coastal zones, declines in mangrove forest habitat resulting from wood harvest, sea level rise, and changes in sediment and pollutant loading from river basins combined with land reclamation for agriculture or infrastructure negatively impact fisheries by reducing or degrading spawning and feeding habitats. Loss of mangrove forests, for example, threatens profits from seafood harvests exceeding US\$4 billion per year.

? HOW CAN WE OVERCOME THESE CHALLENGES

Overcoming these challenges is not easy, yet not difficult if systemic approach is taken. Good news is that Govt has already started working on this. A more systematic approach, based on a better understanding of nationally defined priorities, social context and resource base, can guide sustainable and inclusive blue growth. Government has increasingly recognized that they need more knowledge about the biophysical characteristics, carrying capacity, synergies or trade-offs between sectors to ensure an efficient and sustainable management of different activities. One of such measures of writing a blue economy Draft policy.

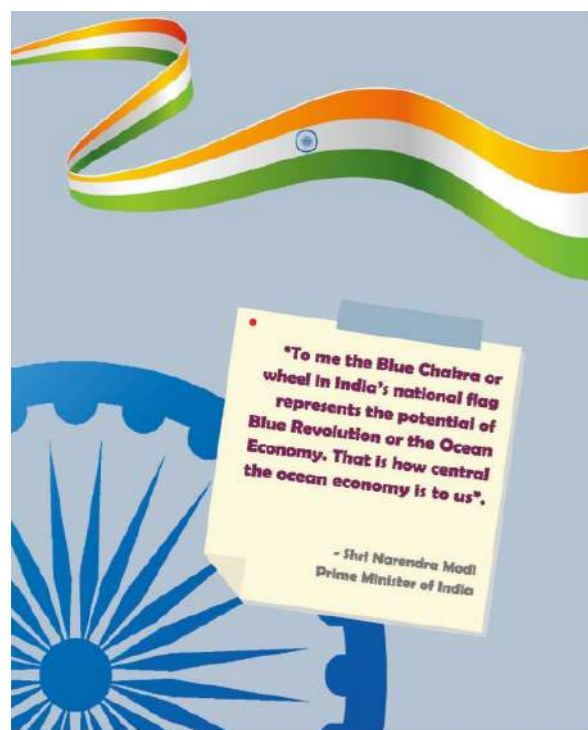
Marine and coastal spatial planning and integrated maritime surveillance are needed to give authorities, businesses and communities a better picture of what is happening in this unique space. Digital mapping of maritime and coastal space and natural assets can form the basis for cross-sector analysis and planning in order to prevent conflicts and avoid externalities. Similarly, the growing

science of data-limited stock assessments can provide critical information needed for improved fisheries management. In places such as South Africa and Indonesia, mobile technology is being tested to gather previously unavailable data, for example on fishery landings and fish stock health.

I have been advocating coastal zone management to make use of Marine Spatial planning to the fullest in order to understand more about the Blue Economy and its sustainability measures. Recently while meeting key people, I have tossed an idea of Maritime Economic zone which could be a part of Marine Protected areas where we can look at concentrated measures on Blue economy projects. Involvement of people in and around coast in very important to get and more over the Maritime Professionals, who themselves are seen ignorant of the Blue Economy. This disheartens me.

WHERE DO WE, INDIA HEADING INTO BLUE ECONOMY? ARE THERE ANY EFFORTS PUT IN?? WHAT DOES INDIA NEED TO DO

Investing in improved governance will create a pipeline of investable opportunities to grow the blue economy in a way that benefits national economies and local communities, while protecting resources for future growth. Effective governance is an essential condition to promote sustainable management of aquatic resources and environment, and ensuring biodiversity and ecosystem resilience, which in turn contribute to building community resilience against various shocks, including climate change. Effective governance will also help create an enabling environment for responsible private sector investments throughout the value chain by reducing risks and providing incentives for innovation.



After Hon Prime Minister spoken about the Blue Economy in 2015, Indian Government departments have started moving. Although a slow pace due to complexities of understanding the Blue economy, we must credit the Economic advisory council which came out with the Draft Policy on Blue Economy in Sept 2020. Everything is this country is Prime Minister driven. Probably he will now have to ask the implementation of the policy and then we would have some head start.

Nevertheless, Blue economy Draft policy is all about creating a Policy frame work to know the potential of Blue Economy so essentially it a a policy or a statement to know measure, gauge and fathom the potential and not work on the money earning projects.

Governance enhancements should include a focus on including and empowering local communities. Analysis and results of fisheries rebuilding efforts around the world have demonstrated that when local communities and fishers have a voice in setting policy and management guidelines, these rules are much more likely to be followed and create lasting change.

YOU MENTIONED BLUE ECONOMY DRAFT POLICY AND HAD BEEN PART OF GROUP GIVING SUGGESTIONS. CAN YOU ELABORATE MORE ON POLICY DOCUMENT

The draft Blue Economy policy framework envisages the optimal utilization of all sectors of the maritime domain, (living, non-living resources, tourism, ocean energy, etc.) for sustainable development of coastal areas. This policy document contains key recommendations on National Accounting Framework for Blue Economy and Ocean Governance, Coastal Marine Spatial Planning and Tourism Priority, Marine Fisheries, Aquaculture and Fish Processing. Manufacturing, Emerging Industries, Trade, Technology, Services and Skill Development, Logistics, Infrastructure and Shipping, Coastal and Deep-Sea Mining and Offshore Energy and Security, Strategic Dimensions and International Engagement.



The policy also proposes formation of BEAC, National Blue Economy Advisory Council (BEAC) which will have the Secretaries of relevant Ministries/ Depts. as members. It would also include Chief Secretaries/Principal Secretaries of Coastal States and representatives from industry.

The draft policy document was put out for comments and feedback from general public and all relevant stakeholders. Many valuable comments/ suggestions received from ministries/ departments, parliament members, Non-Governmental Organisations (NGOs), industry representatives and general public have been considered and the policy document has been revised accordingly.

The draft Policy aims to significantly enhance the contribution of the Blue Economy to India's GDP in the next five years, improve lives of coastal communities, preserve our marine biodiversity and maintain the security of our marine areas and resources. Today, the Blue Economy holds the promise of being the next multiplier of economic growth and well-being, provided that the strategy places sustainability and socio-economic welfare at the centre stage. Therefore, the proposed roadmap for evolving a Blue Economy Policy would be a crucial step towards unlocking the potential of economic growth and welfare.

DO YOU THINK THIS DRAFT POLICY IS ADEQUATE TO KICK START DRAWINGS FROM BLUE ECONOMY INTO NATIONAL GRID

Draft policy is only to measure the potential through a systemic policy framework, improve livelihood of coastal communities. Similarly, it aims to work on the existing Non-Emerging sectors which will add value to National economy. For eg Fisheries, the sector is in deep trouble now and looking at it from a different perspective will definitely give it a boost. Fisheries provide 15% food supplement and 60% protein supplement. Sagarmala will be a key to comprehensive port led coastal development. To promote port-led industrialization, the Govt. has identified 12 major ports and 14 Coastal Employment Zones (CEZs) as part of the National Perspective Plan under the Sagarmala program. Each CEZ comprises Coastal Economic Units (CEUs), with single or multiple industrial clusters where there will be manufacturing units.

A few key points pertaining to the draft policy framework are as follows: First, it defined BE as "an emerging concept comprising the entire eco-system of ocean resources including marine, maritime and the onshore coastal economic sub-systems within India's legal jurisdiction, which have close linkages with economic growth, environmental sustainability and national security." Second, it referred to a conservative estimate that BE in India represents "4% of the Gross Domestic Product," thus putting an official stamp on it. Third, it identified seven priority areas for the BE: The much-needed national accounting framework; coastal

marine spatial planning and tourism; fisheries and aquaculture; trade and technology; logistics, infrastructure and shipping; coastal and deep-sea mining and offshore energy; and security, strategic dimensions and international engagements. Fourth, it underlined the significance of BE as one of "the ten core dimensions of growth" in the government's vision of a New India by 2030. Fifth, in the context of the expanding network of submarine optical fiber cables for ensuring highspeed broadband connectivity, the draft policy advocated recognition by India of "an important, emerging economic and strategic axis called the Seychelles-Singapore-Samoa (SSS) axis," noting: "This axis should form the basis of a robust Blue Economy Policy for India. Finally, the recommendations and the roadmap contained in the draft policy document aim "to significantly enhance the contribution of the Blue Economy to India's GDP in the next five years."

The Blue Revolution should be further expanded by promoting aqua culture, cage culture, seaweed and algae harvesting and sustainable marine capture by adopting an eco-system approach to fisheries management. Extensive use of technology, tele-communication, digital and remote sensing applications would be mainstreamed in all aspects of fisheries and ocean management.

There is more need for maritime professionals to be involved in this. The subjects of Blue Economy sectors (emerging and Non-emerging) should be given out as subjects for PhDs (Thesis) and used widely for industrial application. The blue economy potential in emerging sectors needs to be explored fully as well as in Non-emerging sectors. Non emerging sectors like fishing have several issues, hurdles which need to be removed to make use of the sectors in effective fishing. The fishing community has been demanding reserved space for fish auction and packing hall so as to enable the landed catch to sort out under hygienic conditions and for auction under shelter so as to ensure deterioration of fish. Infrastructure facilities like boat repairing centre, diesel pump, toilets, water supply system, arrangement for supply of ice, market for local sale, cold storage system and other requirements for fishing activity.

India's Blue Economy Policy reads, India's drive to promote BE, which may be termed its Blue Diplomacy, has largely been conducted in multilateral fora. The IORA tops the list, given India's pre-eminent and strategic location in the Indian Ocean Region. The government, academics and business leadership have been actively supporting and shaping the IORA's programs.

The need for increased financing and enhanced capacity-building is also underscored. Developing countries, in particular small island developing States and least developed countries, face considerable hurdles in the management of maritime spaces due to the lack of resources and capacity. Ocean-related initiatives in many cases suffer from a lack of sufficient or sustainable funding, including for capacity-building. Innovative approaches and the effective use of partnerships could help overcome some of these obstacles.



MARINE GROWTH PREVENTION SYSTEMS FOR THE VESSEL SEAWATER PIPELINES



Mr. Andrey K. Burkov
Adviser of General Manager
Corporation PSS



The marine growth in the seawater pipeline systems is an outgrowth of microorganisms, plants, algae and small seawater animals on the internal pipeline surfaces supplying seawater to vessel systems, including box coolers for propulsion units. The biofouling process is characterized by the speed and volume of attachment to the inner walls of pipelines or sediments in the bodies of box coolers of various bio-organisms. According to the classification of bio-organisms that are capable to adhere on the surface there are:

- Calcareous (shells, worms, shells)
- Non-calcareous (sea grass, algae and biofilm mucus).

Biofouling leads to a critical narrowing of the pipeline inner space and eventually leads to the shutdown of vessel's systems, the shutdown of machinery, clogging of intake water openings and reduction of heat exchanger performance. In this case, cleaning the internal cavities of pipelines or box-coolers is impossible by any means - mechanical, chemical, or sound... etc., and usually subject to disassembly and replacement. Therefore, the biofouling topic is well-known and crucial.

There is an extensive research knowledge base on the biological fouling in Russia and worldwide. Researchers agree that there are no existing submerged in seawater surfaces that could be free of biological life. Bioorganic colonization of the surface, e.g. in the pipe cavity is consistent and sustainable, and passes conditionally three stages

1st stage
Formation of macromolecular layer in presence of molecules of proteins, fats, polysaccharides in water. This is the so-called substrate for further biofouling. It takes seconds and occurs immediately when the surface is in contact with water, unless there is an obstruction impact.

Stage 2
Formation of bacterial algal film, bacterial adhesion. In this case, microorganisms secrete extracellular polymers that provide a strong attachment to the surface. The biofouling process becomes irreversible if there is no counter-action preventing biomass attachment to the surface. Takes hours and days.

Stage 3
Colonization of a surface covered with biofilm by calcareous and non-calcareous macro-organisms. It takes weeks to months. At this stage, it is impossible to counteract the colonization process, except with a mechanical removal of biomass.

Most of the seawater fouling research on marine structures has been done for temperate and warm seas. Unfortunately, the same research in the northern seas is not sufficient for the world science, perhaps that is why there is still the opinion that bioactivity, associated with the biofouling of submerged objects at high latitudes is reduced to zero due to low temperature. However, the research carried out by the P.P. Shirshov Institute, Russia argues this conclusion. Microflora samples collected at different times from the White and Kara Seas show that, together with increasing of human activity in the Arctic zone, the amount of bioflora capable of forming a substrate of biofilm on submerged structures has increased as well in the recent decades. As well as the number of microorganisms types capable of expanding and colonizing the internal and external surfaces of objects under water.

In addition to research in the sphere of biofouling of both offshore structures and internal surfaces of supporting systems, Scientific and practical developments have been carried out in the field of methods of counteracting this biological process using various physical and chemical principles. Many theoretical and practical methods have been developed to prevent the biofouling of cooling systems and seawater supply systems. These methods for controlling the formation of harmful sediments include mechanical, electrochemical, ultraviolet and ultrasonic effects on biomass.

In our view, the simplest and most versatile way to prevent bio-fouling is an electrolytic method. This prevention mode is activated at the very first stage of biofouling while the process is reversible. The electrolytic anti-fouling method is based on the negative effect of certain metals free ions on the seawater bioorganism's ability to attach themselves to the pipeline walls, as well as in suppressing the microflora's ability to grow and reproduce. Extensive research has established that copper ions are able to inhibit of bioflora life even in the

smallest concentrations. At the same time, aluminum hydroxide ions forming because of flocculation copper-aluminum flakes, evenly spread along the pipelines and prevent microorganism's adhesion to their walls. Moreover, the resulting copper and aluminum ion film protects the piping surface from corrosion.

This method uses two anodes made from copper and aluminum, located either in the seawater pump filter, or near the piping inlet in the sea chest or in the cooling box. The anodes are supplied with direct current, which leads to releasing copper ions and aluminum hydroxide ions, which negatively affect biological microorganisms and prevent corrosion processes in the inner spaces of pipelines and other ship systems.



Copper Anode AF



Aluminum Anode AF

In general, the anti-fouling system consists of a power supply unit with a control panel, pair of copper and aluminum anodes, junction box and cables (pic 1). Anti-Fouling unit works on the principle of electrolysis, which consists of simple electrolytic cell having anode and a cathode and a D.C voltage applied between the two, the output voltage is automatically adjusted to maintain the current requirements. The process results in copper ions generation which is further transported within the system through water flow. It is well known phenomenon that the main fouling organisms can be inhibited from growing by the introduction of very small quantities of copper into the water. The required dosage per litre is only a few parts per billion and since the sea water is a good electrolyte, a low DC voltage is sufficient to provide the necessary current. The controlled electrolytic dissolution of copper to inhibit macro-fouling in the seawater intakes and piping systems has been employed for many years and has been known as effective substance to marine organisms. Controlled release of copper at parts per billion (ppb) levels effectively inhibits the attachment and growth of algae, mussels, oyster, barnacles and other calcareous and non-calcareous species. Furthermore, maturing (live) organisms have a threshold tolerance to copper and by exceeding ambient levels they will exfoliate, thereby gradually cleaning out and already fouled system.



Anodes & Control Panel AF

The system operates automatically and does not require constant monitoring or special start-up mode. This anti-fouling system design provides continuous protection without using any toxic substances, complex mechanical or ultrasonic systems.

Such anti-fouling and inner pipeline surfaces protection equipment can be installed on both large-tonnage vessels and small boats. In this case, all pairs of anodes from all sea chests are commuted to one multichannel panel.



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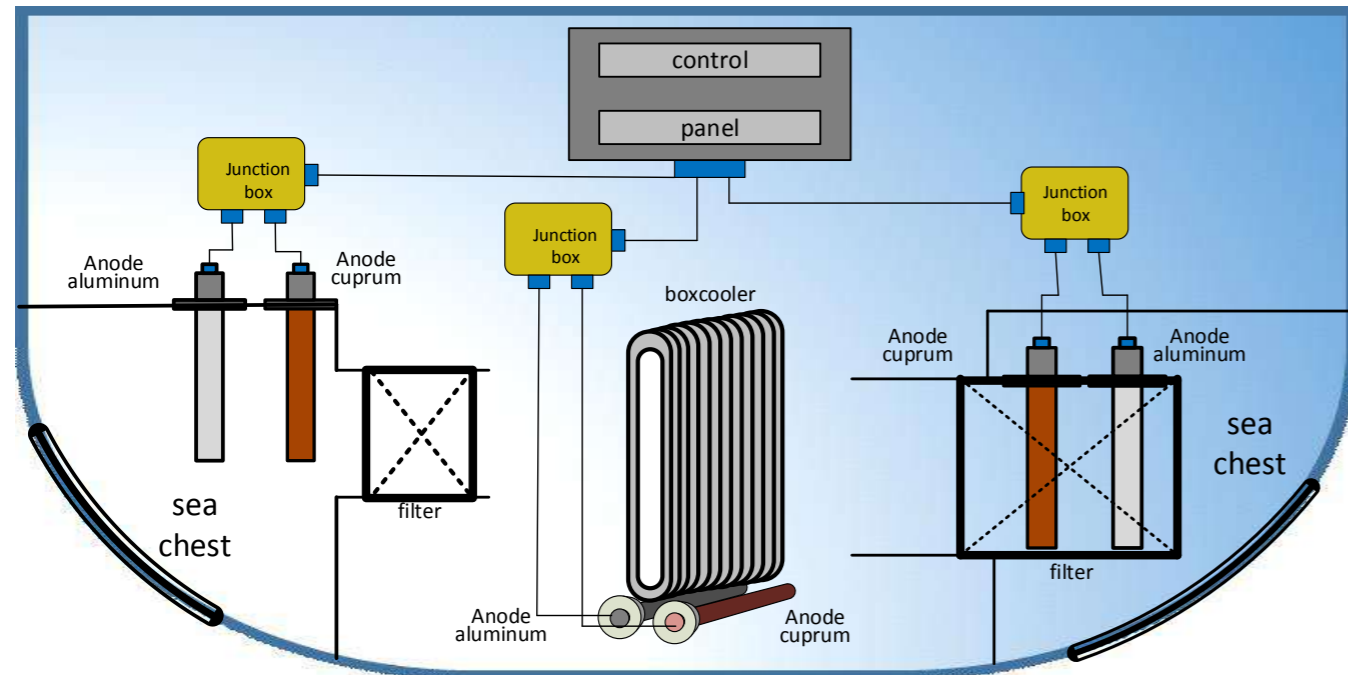
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PSS Corporation, Russia, Perm city, has obtained a vast experience in design and manufacturing of the biofouling prevention systems for ships of all classes. The manufacturing cycle for such equipment, together with testing and preparation for delivery to the customer takes from 6 to 12 weeks, depending on the number of anodes and seawater pump characteristics. The larger pump capacity, the larger size of anode units is required. Anti-fouling systems of the PSS Corporation have already been delivered to many shipyards and installed on ships of different classes. The PSS Corporation also provides installation and commissioning of equipment.

The PSS Corporation offers full service support to the supplied equipment during the life cycle providing continuous monitoring of the individual components

functioning and accumulate statistics on the units efficiency. Experience of work with anti-fouling systems proves that such equipment reduces the cost of dry dock maintenance several times.

For 30 years now, the company has been supplying electrical equipment for vessels oil and gas and energy-saving industries. PSS Corporation provides Russian and foreign partners with electrics, corrosion protection equipment and antifouling complete systems for shipbuilding industry, offshore and onshore objects, charging stations for electric vehicles. PSS Corporation always ready to technical cooperation with customers, to deliver complete systems and would be glad to share production technologies and to launch the production on abroad relevant producing capacity.



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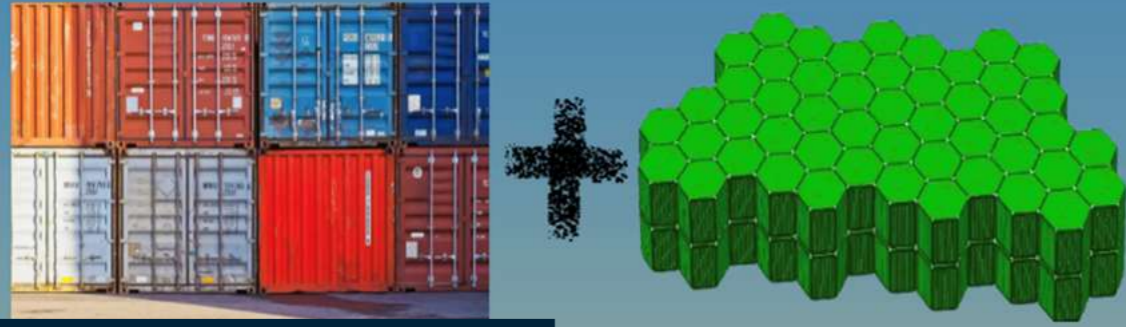
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Building Sustainable
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Is it time to supplement the existing box container?

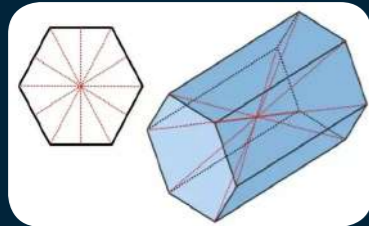


Capt. Melvin Mathews
CEO - Shallow Waterways Shipping Pvt Ltd

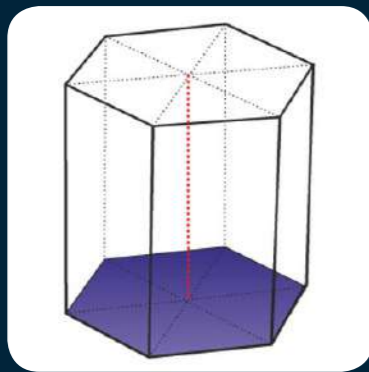
Cargoes come in various forms - size, weight & volume. Hence, no one size fits all. Therefore, depending on the type and nature of cargoes, the supply chain must have options available for efficient and productive transportation of each cargo. Unfortunately we only have ISO GP (General Purpose) containers of 20 ft and 40 ft, all being fundamentally same in shape - rectangular box.

The global supply chain operations need to be simple, efficient, sustainable and scalable. These requirements can be met easily by the operations of the hexagonal shaped container (HGC).

Benefits of the shape:



-Centre of Gravity which gives the freedom to lift from a single point and making handling operations easy, safe and fast.



-For a lower perimeter area it gives more volume which means the manufacturing and material costs are lower.



-Better heat dispersion quality makes refrigeration more efficient. It takes less time in cooling the whole container.

Benefits when arranged in honeycomb structure:

- Interlocking with adjacent containers
- Enhanced group strength & stability
- Heat dissipation qualities when arranged in honeycomb pattern.



When it comes to containerising all cargoes globally, irrespective of the type and nature, there therefore exists an alternate container in the form of HGC containers. While currently GP ISO containers primarily carry and are well suited for packaged cargoes, HGC containers can play a complimentary role in containerisation, by being the default container for the carriage of bulk cargoes. HGC containers will therefore supplement the existing GP ISO container operations to enable further efficiency in transportation of all cargoes across the global supply chain.

Let us know your thoughts. _____

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BALLAST WATER TREATMENT SYSTEMS

DESMI OCEAN GUARD

COMPANY OVERVIEW

DESMI is one of the oldest companies founded in Denmark in the year 1834, we offer pumping solutions on the following segments ie Marine & Offshore, Industry, Defence & Fuel, Utility markets including environmental equipment for oil spills, seaweed, and clean waterways. DESMI thrives upon a robust foundation of supplying sustainable solutions and maintaining an innovative approach.

DESMI India LLP Liaison office was established during the year 2014 and offering solutions in India and extends to Indian sub-continent ie Bangladesh, Sri Lanka and the Maldives. A strategic brainchild, DESMI India was founded by Mr. AVSN Murthy Managing Director, he played a pivotal role in building the blocks for DESMI in the Indian market, finally during the year 2021 it has converted to DESMI India Pvt Ltd and achieved significant milestones over the years.

THE FOUNDER'S DESK

Mr. AVSN Murthy is a Mechanical Engineer and a Master of Business Administration by qualification, he carries with him extensive knowledge and 30 plus years of experience, He has worked in various capacities starting his career with Coromandel Fertilizers Ltd (Murugappa Group), Eagle Burgman Seals formerly EG&G Sealol, Carborundum Universal, SPX flow, Grundfos Pumps.

He feels a sense of pride in promoting the DESMI Brand in India which is a very complex market, but the customers were very understanding and could see the real benefit by using DESMI Product, the Life Cycle Cost is so low especially good experience had from Shipyards, Ship Owners, ie Marine Companies, Industry Segments, Oil Spill Response Equipment along with Defence Shipyards building for Indian Navy and Coast Guard, DESMI is now a preferred brand in these areas.



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LIMITED
MOBILE : +91 9949339054
EMAIL : AMU@DESMI.COM





BALLAST WATER TREATMENT SYSTEMS | COMPACTCLEAN

DESMI's CompactClean Ballast Water Management & Treatment Systems offer high quality, compliant performance anywhere in the world – even in extremely dirty and challenging water conditions. They are approved for operation in waters regulated by the International Maritime Organization (IMO) and by the United States Coast Guard (USCG).

CompactClean has no salinity or temperature limitations and fits in any vessel type due to the various sizes ranging from down to 35 m³/h and up to 2500 m³/h. The Ballast Water Management Systems operates in the exact same way both inside and outside US Territory at record-breaking low UV transmission values.

WE OFFER THREE SYSTEM VARIANTS:



CompactClean →

If your vessels operate worldwide, you will need the standard, CompactClean system.



CompactClean OptIMO →

If your trading pattern is mainly in IMO waters, then we recommend the CompactClean OptIMO solution.



CompactClean Bulker →

If you have a bulk carrier, then consider the CompactClean Bulker solution

WHICH BALLAST WATER SYSTEM DOES MY SHIP NEED?

It is important to look at your vessels trading pattern, some systems has been optimized for certain types of operation. The CompactClean system comes in

different variants, namely;

CompactClean – for worldwide operation and simple operation, one treatment mode for the entire world.

CompactClean OptIMO – optimized for operation mainly in IMO waters, dual mode software with specific treatment mode for IMO and USCG waters.

CompactClean Bulker – specifically designed for the operation pattern of a bulker vessel. Can treat double the amount of water during discharge.

ARE THERE ANY SPECIAL REQUIREMENTS WITH REGARDS TO INSTALLATION (WATER COOLING OR COMPRESSED AIR)?

The CompactClean system is very simple to install. It more or less only requires power connections. All valves in the system are electrical actuates. This eliminates the hassle of pneumatic valves. Furthermore, the main electrical cabinet is air-cooled, so no need to install additional water cooling.

HOW DO I NAVIGATE THE BALLAST WATER MANAGEMENT CONVENTION?

On 28 October 2020, most of the world's ports will close to new ballast water treatment systems installed on or after that date without meeting **IMO BWMS CODE** requirements. - To ensure compliance and operability of your vessel you should choose a Ballast Water Management System having the IMO BWMS Code type approval.

DO YOU PROVIDE ENGINEERING SERVICES?

DESMI Ocean Guard has its own Engineering Department which can perform all necessary parts of Engineering to ensure the most optimal installation of a CompactClean system. The Engineering package can contain everything from 3D scanning till the final Engineering drawings for Class. Review can also be performed of 3rd party engineering.

DO YOU PROVIDE INSTALLATION (TURNKEY)?

Normally your preferred shipyard will perform the installation based on the Engineering. However, we have partners which can undertake a turnkey delivery with DESMI Ocean Guard as subcontractors.

WHAT ARE THE BALLAST WATER TREATMENT REGULATIONS?

A known challenge for UV-based BWM systems is the different regulations, requirements, and efficacy testing methods adopted by the two regulatory bodies: USCG and the IMO.

The USCG evaluates BWM system performance using a test which measures the number of living organisms after treatment (FDA/CMFDA method). On the other hand, the IMO evaluates UV-based BWM systems by determining whether the treated organisms are viable or non-viable, i.e. are they capable of reproducing.

For more details visit: <https://desmioceanguard.com/services-support/various/selecting-a-ballast-water-management-system/>

WHY COMPACTCLEAN IS YOUR ANSWER

- The smallest footprint in industry
- Only system in the world with integrated stripping solution
- Automatic flow control and lamp dimming
- Worldwide service network
- Fully automated operation
- 2 hours' holding time on USCG TA Certificate
- IMO type approval according to the new BWMS code from IMO
- Graphic HMI touchscreen interface
- Automatic generation of PDF reports to authorities
- Short delivery time
- Easy maintenance
- No salinity or temperature limitations
- Down to UV Transmission of just 35% in IMO waters and 40% in USCG territory
- 100% chemical free treatment

SPECIAL FEATURES

CompactClean Ballast Water Management System has a great number of special features.

Smooth Port Operations

Automatic adjustment of treatment in order to cope with extremely challenging water, avoiding alarms and interrupted port operations in dirty and challenging water conditions.

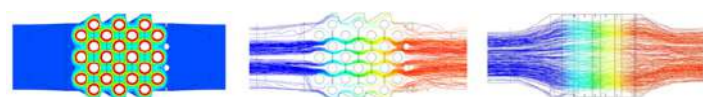
CompactClean does not just raise an “out of compliance” warning in very dirty water conditions as some other systems. Instead, CompactClean automatically reduces flow through the system to ensure compliant treatment even under extreme conditions.

This enables the vessel to carry on with its port operations instead of forcing the vessel to interrupt the ballast water discharge and you will save costs relating to delays in harbour.

High Efficiency Keeps your OPEX Down

UV unit design with very high treatment efficiency reduces the power consumption.

The special shapes of the CompactClean UV chambers have been developed and optimised on the basis of hundreds of state-of-the-art CFD simulations. This ensures that each kW of generated UV light is utilized to the max. which means that the power consumption is as low as possible, resulting in reduced operational costs!



Integrated and Compliant Solution for Ballast Stripping Operations

The CompactClean filter back flush pump can be used as stripping pump during stripping of ballast tanks. Use of ejectors for stripping of ballast tanks jeopardizes compliance with the IMO and USCG discharge standards because untreated drive water is mixed with treated ballast water.

In addition, the untreated drive water can introduce significant wear and tear of the system components. As the only system in the world, CompactClean solves this, as the system is fitted with a special filter back-flush pump that can be used as dedicated stripping pump during de-ballasting. One system, one pump: two problems solved!

Fully Automated with Easy Integration into Ship Automation System

CompactClean is PLC controlled and supports all generally used main types of communication interfaces.

With CompactClean the crew on board the vessel will hardly notice that they are treating the ballast water.

The system is fully automatic and can be seamlessly integrated with already existing systems on the vessel.

When wanting to take ballast water on board, press the “Start Ballast” button on the touch screen, and when discharging the ballast water press the “Start De-ballast” button on the touch screen. That’s how simple it should be – that’s how simple it is!



Intelligent Control

The System is Delivered with a Standard Electrical Panel. Additional Remote HMI Screen on e.g. Bridge or in Engine Control Room can be Added. The BWMS is delivered with a main panel that can be placed in any convenient place. The main panel is equipped with an HMI screen, from which the system is controlled and alarms are visualized. All operations can be done from a secondary screen in the deck control office or on the bridge, if option for installing remote control screens is used.

On the HMI screen, the operator can switch between several screen views (main page, active alarms, alarm history, PI-D page and UV drivers) to display all relevant information. During operation, the status of all components and sensors can be monitored, and operational values such as flow, pressure, temperature and UV intensity can be viewed instantaneously; and trend curves can be displayed to see the development over time.

Standard fully automated operating modes for treatment are:

- Ballast
- De-Ballast
- Stripping
- Other automated modes which can be selected are:
- Water Filling
- Recirculation

Long Lifetime of Components Gives you Reliable Treatment and Low OPEX

The CompactClean UV units are made of cast Nickel-AluBronze with proven sea-water corrosion resistance. DESMI has decades of good experience with sea water pumps in the same material: Proven Technology keeps the downtime and maintenance costs to a minimum!



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02

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03

Highlighting Best Practises to Ensure Workers' Health and Safety.

04

Best Practices for Ship Recycling at Alang.



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SHIP & BOAT INTERNATIONAL EXPO 2024

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INTERNATIONAL GREEN SHIP RECYCLING SUMMIT 2024

NEWS & UPDATES

Maya Marine & Logistics Shipyard announces the successful completion of sea trials for its first new-build vessel, MAYA22.

The sea trials were conducted at Ghogha, Bhavnagar. This is the first ship built as the outcome of the company's development of a shipyard division and design collaboration with Mumbai-based Vector Marine & Offshore Technology.

Shallow Draught | High Speed | Low Emissions

During the sea trials, MAYA22 demonstrated exceptional performance, exceeding all expectations. The vessel's advanced design and state-of-the-art technology enabled it to achieve an average speed of 15+ Knots at a shallow draught of 1.7 M producing sustainable 12+ T BP.

With a LOA of 23.9M, she's built under RINA for coastal operations and will be delivered in the coming month to the towage division for its operations on the West Coast of Gujarat.

Recycled Flooring

The flooring used in the entire tugboat has been recycled from worn tires with excellent properties of resilience and higher density with water resistance and can tolerate considerable activity without getting damaged by dampness or spills.

360-Degree Unhindered View from the Bridge Deck

With unhindered and on-point 360-degree visibility weather day or not aiding the overall operations for better navigations and maneuvering capabilities.

Considerate Spacious Design for Engine Room & Crew Accommodation

Ample space for the engineers and drivers to work efficiently & safely,

Respective indicators that are simple to read are all over the tugboat to aid the crew and all passengers when they are on board. Luxurious crew accommodations and cabins.

"We are thrilled with the results of the sea trials and proud of the hard work and dedication of our team in bringing our yard's first new-build vessel to life," said Mr. YashdeepSingh Gohil, Director of Maya Marine & Logistics.

"The success of the trials is evidence of the innovative design and advanced technology that contributed to the development of MAYA22. We think that this ship will completely alter the tug design and building sector of the Indian maritime industry," Mr. YashdeepSingh Gohil further added.

The successful sea trials mark a significant milestone for Maya Marine & Logistics Shipyard, MAYA22 being their first new build project. ●



IME (I) ELECTIONS FOR TERM 2023-25

Elections of Office Bearers for the **Term 2023-25** of The Institute of Marine Engineers (India) will be held between **15th July to 1st September 2023** through **e-Voting only**.

Corporate **Members** are urged to **update their e-Mail IDs*** to receive the e-Voting Link. Members can send their updated contact details and e-Mail IDs to membership@imare.in by 10th May 2023.

* Members are advised to provide personal e-mail IDs to receive the e-Voting Link as notification mails, especially with links, tend to be blocked by firewalls of organisation's mail domain(s) / office workplace IT policies.

Important dates to note are:

15th May - Mailing of Nomination Papers to Corporate Members on their Registered e-Mail

15th June - Nomination Papers to be Filed

30th June - Last Date to withdraw Nomination

15th July - e-Voting Starts

31st August - Last Date of e-Voting

For specific queries related to election, members can mail to electionofficer@imare.in AND hgs@imare.in



Hyundai Mipo Dockyard wins 240.1 billion won order for 4 medium-sized PC ships

Hyundai Mipo Dockyard announced on the 31st (Friday) that it recently signed a contract to build four mid-sized PC carriers (Product Carriers) with a shipping company located in Africa. The total contract amount is KRW 240.1 billion.

The ships ordered this time are worth 46.2 million dollars per ship, and will be built at Hyundai Mipo Dockyard in Ulsan and delivered to ship owners sequentially from the second half of 2025.

Hyundai Mipo Dockyard received orders for a total of 11 medium-sized

PC ships by February of this year, and this time, it received orders for 4 additional ships, winning orders for 15 out of a total of 27 PC ships ordered worldwide this year, accounting for about 56% of the order.

In addition, Hyundai Mipo Dockyard owns 24 ships, which account for 80% of the 30 ship order backlog, in the world's medium-sized LPG carrier sector, showing the world's No. 1 market share.

Medium-sized LPG ships mainly transport LPG and ammonia. Demand for ammonia is expected to increase as ammonia is attracting attention as a next-generation eco-friendly fuel, and when ammonia propulsion engines are commercialized in the future, they are expected to be applied to medium-sized LPG ships first, maximizing the economic feasibility of ship operation.

An official from Hyundai Mipo Dockyard said, "As the market conditions for medium-sized PC and LPG carriers continue to improve, additional orders are expected in the future, and ship prices are also on the rise. We plan to continue to lead the way."

1. Signed a contract to build 4 medium-sized PC ships with an African shipping company ... Expected delivery in 2025
2. Orders for a total of 15 medium-sized PC ships this year ... Leading mid-size LPG order backlog ranks first in the world
3. "We will lead the market with quality and technology as the world's No. 1 medium-sized ship"

Hyundai Mipo Dockyard, an affiliate of HD Hyundai Shipbuilding Division, is leading the mid-size ship market.

Photo Description : A 50,000-ton PC ship built by Hyundai Mipo Dockyard in 2021 and delivered to the ship owner

Andhra Pradesh Chief Minister Y S Jagan Mohan Reddy on 19 April, 2023 laid the foundation stone for the Rs 4,362 crore Mulapeta Port in the district of Srikakulam.

The Mulapeta Port, being built across 1,250 acres of land parcel with an annual capacity of 23.5 million tonne, will have four loading and unloading berths, which will enable handling of coal, multipurpose containers, and general cargo, as also the exports and imports arriving from Chhattisgarh, Jharkhand, Madhya Pradesh and Odisha.

The CM stated that the project will encourage the growth of ancillary industries in the nearby areas and would provide employment to the local communities. It will potentially generate direct and indirect job opportunities for 25,000 people.

The project is expected to be completed in a span of two years.

The CM also laid the foundation stones for a Rs 360 crore fishing harbour at Budagatlapalem, Rs 176.35 crore Vamsadhara lift irrigation project, and Rs 300 crore Mahendratanya offshore reservoir project works.



Andhra Pradesh Chief Minister lays foundation stone for Rs 4,362 crore for Mulapeta Port in Srikakulam



CMA CGM signs a landmark contracts for 16 Large Container Ships with CSSC

French Shipping Company CMA CGM has reportedly signed a record contract of 3 billion USD with China State Shipbuilding Corporation (CSSC) to construct and deliver 16 Ultra-large Container Ships.

The contract signed between China State Shipbuilding Corporation and CMA CGM Group, marked the largest single contract by value that a China's shipbuilder has ever received. A total of 12 methanol-powered dual-fuel container ships with a capacity of 15,000 TEUs and four 23,000-TEU LNG dual-fuel vessels are involved in the deals.

The 15,000 TEU ships will be built by Jiangnan Shipbuilding and Dalian Shipbuilding, both part of CSSC. They will measure 366-meters in length with a beam of 51 meters.

The 23,000 TEU ships will be built by CSSC shipyards and will measure 399.9-meters in length with a beam of 61.3 meters. The series of ships are believed to be the first in China built with dual-fuel methanol capability as reported in the media.

For the first time, APM Terminals Pipavav, Maersk and Pipavav Rail Corporation Ltd (PRCL) have joined forces to provide a customised block train service for a single consignee - Tinna Rubber and Infrastructure. The new service will operate via the fast, secure and more sustainable Dedicated Freight Corridor (DFC).

The first 48-wagon rake of specialist Spine Cars arrived at APM Terminals Pipavav this week. A new concept for India, spine Cars also known as BLSS wagons are 25T axle load flat cars designed to transport all types of containers, for greater flexibility. They use a sturdy and lighter frame which increases a rake's carrying capacity by 7.4%, making it more commercially advantageous.



APM Terminals Pipavav, Maersk and PRCL partner for innovative new block train service

"The successful implementation of India's first import dedicated, and customized 48-wagon rake is a testament to the strategic collaboration between Maersk, APM Terminals Pipavav, PRCL, and J M Baxi Ports & Logistics," commented Mr. Girish Aggarwal, MD, APM Terminals Pipavav. "Through our collective efforts, we were able to provide an integrated and sustainable supply chain solution that not only saves time and cost for the end customer but also contributes to our shared goal of decarbonizing logistics."

Rail out by Bill of Lading

Rail transportation is widely recognized as an environmentally friendly and sustainable alternative to road transport. APM Terminals Pipavav offers several services to support the growth of rail, including rail out of import containers under the same bill of lading. This means that containers are discharged and stacked for railing out together on same rake.

"This initiative is a clear indication of our commitment to driving innovation and promoting environmentally friendly solutions in the logistics industry," said Mr. Girish Aggarwal. "We look forward to continuing our strategic partnerships to facilitate trade and create value for our customers."

For this new service APM Terminals Pipavav provides rail infrastructure and connectivity from the port to Sonapat via the new Western Dedicated Freight Corridor (DFC), while Maersk offers a complete solution from ocean to last-mile delivery, including Custom House Brokerage (CHB) services.

Environmentally friendly solution

With existing – future-proof – infrastructure, APM Terminals Pipavav was the first Port in India to connect to the Western Dedicated Freight Corridor. A 269km broad gauge railway line connects the Port directly to the new Western DFC in two locations: Mehsana and Ahmedabad.

The DFC is dedicated to transporting freight at higher speed with increased load-carrying capacity, up to 6.2 million TEUs in total, reducing operating costs in India for rail freight significantly – making it a game changer for businesses and economies in India. With electric trains (between Pipavav and Jodhpur), the DFC is expected to contribute to saving 457 million tonnes of emissions in 30 years

The DFC can also help in reducing detention & demurrage costs for customers who import & export high volumes. Customers may no longer need to clear all import boxes at the port – instead, they can use the DFC’s fast rail connection to clear the boxes at an ICD, and then return the box within the stipulated free time. ●



Eco Wave Power to Open First North American Subsidiary in New York City

Eco Wave Power’s decision reflects its commitment to expanding its footprint and impact in the United States, an increasingly important market for renewable energy. The Company’s cutting-edge wave energy technology has the potential to provide a reliable source of renewable energy to millions of people across the country’s 95,000+ miles of coastline, while also contributing to the fight against climate change.

The move represents another strong commitment to Eco Wave Power’s focus on commercializing their technology in the United States and helping the country reach its ambitious climate goals.

NEW YORK, New York – Eco Wave Power Global AB has announced the opening of a U.S. subsidiary, under the name Eco Wave Power U.S. The Company plans to also establish a corporate office in New York City, which will be Eco Wave Power’s first office in the United States. The subsidiary will serve as a North American base for Eco Wave Power’s executives and team.



Inna Braverman, Founder and CEO of Eco Wave Power, at EWP’s pilot at AltaSea at the Port of Los Angeles “The United States is a global leader in clean energy and climate initiatives, so it was extremely important for us to further develop our U.S. operations,” said Inna Braverman, Eco Wave Power’s Founder and CEO. “The United States is a key market for Eco Wave Power because, according to the U.S. Energy Information Association, wave energy can supply up to 66% of all the United States energy needs. Could you imagine the impact the wave energy could have in the United States?”

Since becoming publicly traded in the United States on the Nasdaq Capital Market in 2021, Eco Wave Power has captured the attention of activists and legislators across the country. In January 2022, the Company signed an agreement with AltaSea at the Port of Los Angeles – the nation’s leading hub for the blue economy – to bring its innovative wave energy technology to the AltaSea campus. In just over a year, Eco Wave Power has successfully modified, upgraded, and transported the conversion unit to Los Angeles and will soon begin installation on the pilot project. The speed at which the project went from concept to reality shows one of Eco Wave Power’s technology’s strongest assets – its mobility and scalability to fit the energy needs of any given coastline.

In March 2022, New Jersey Assemblyman Robert Karabinchak introduced legislation that would require the state of New Jersey – with its 130-mile coastline – to add wave energy to the state’s master energy plan and provide funding for feasibility studies and pilot programs. Additionally, in California, State Senator Steven Padilla introduced SB 605 – a bill that aims to promote and facilitate the development and growth of wave energy in the state, which will help California reach its ambitious clean energy goals. Eco Wave Power believes that California’s 840-mile coastline is an ideal location to explore this virtually untapped natural resource of renewable energy.

Both bills are making progress through the various committees. A vote on New Jersey’s wave energy legislation is expected in the coming weeks.

In August 2022, US President Joe Biden signed into law the Inflation Reduction Act, the largest piece of federal legislation ever that addresses climate change. The law will allocate \$128 billion towards renewable energy and grid energy storage. The legislation was well-timed for Eco Wave Power. Earlier in 2022, the Company announced that it would focus on the commercialization and implementation of its technology in two main markets: Europe and the United States. The Inflation Reduction Act provides a significant investment in clean energy that could serve as a significant boost to Eco Wave Power’s continued commercialization plans for the United States.

Eco Wave Power, a worldwide leader in generating clean energy through the power of ocean waves, has successfully deployed its patented, environmentally safe technology across the globe. Currently, the Company has a 404.7 MW project pipeline, with agreements to build power stations in Spain, Turkey, Portugal, the United States, and other locations across the globe.

About Eco Wave Power Global AB (publ)

Eco Wave Power is a leading onshore wave energy technology company that developed a patented, smart and cost-efficient technology for turning ocean and sea waves into green electricity. Eco Wave Power’s mission is to assist in the fight against climate change by enabling commercial power production from the ocean and sea waves.

The Company is currently finalizing the construction of its grid connected project in Israel, with co-investment from the Israeli Energy Ministry, which recognized the Eco Wave Power technology as “Pioneering Technology” and will soon commence the installation of its newest pilot in AltaSea’s premises in the Port of Los Angeles. The Company also holds concession agreements for commercial installations in Europe and has a total projects pipeline of 404.7MW.

Eco Wave Power received funding from the European Union Regional Development Fund, Innovate UK and the European Commission’s Horizon 2020 framework program. The Company has also received the “Global Climate Action Award” from the United Nations.

Eco Wave Power’s American Depositary Shares (WAVE) are traded on the Nasdaq Capital Market. ●

NCLT approves APSEZ’s acquisition of Karaikal port APSEZ portfolio grows to 14 ports in India.

1. Hon’ble National Company Law Tribunal, Chennai Bench (NCLT) has approved APSEZ’s acquisition of Karaikal port
2. APSEZ was declared as the successful resolution applicant for acquisition of Karaikal Port Private Limited by the Committee of Creditors in the Corporate Insolvency Resolution Process



Adani Ports & SEZ Acquires Karaikal Port For Rs 1,485 Crores

3. Karaikal Port is an all-weather deep-water port in Puducherry with 5 operational berths, 3 railway sidings, total land area of over 600 hectares and a built-in cargo handling capacity of 21.5 MMT

4. The port is in proximity to the containerized cargo originating industrial centres of Tamil Nadu, and the upcoming 9 MMTPA CPCL refinery.

5. Acquisition consideration of INR 1,485 crores implies an EV/EBITDA multiple of 8x on the FY23 estimated numbers

Ahmedabad: Adani Ports and Special Economic Zone Ltd (APSEZ), the largest transport utility in India, has completed the acquisition of Karaikal Port Private Limited (KPPL) pursuant to NCLT approval. Earlier, APSEZ was declared as the successful resolution applicant under the Corporate Insolvency Resolution Process (CIRP) of KPPL.

Karaikal Port is an all-weather deep-water port on India's eastern coast that was developed on the Build, Operate and Transfer format under the Public-Private Partnership by the Government of Puducherry. The Karaikal Port was commissioned in 2009, and was developed in the Karaikal District of the Union Territory of Puducherry, around 300 KMS south of Chennai. It is the only major port between Chennai & Tuticorin, and its strategic location allows the port easy access to industrial-rich hinterland of Central Tamil Nadu.

The port gets a 14-meter water draft and has land area of over 600 acres. Its existing infrastructure includes 5 operational berths, 3 railway sidings, mechanized bulk cargo handling system including mechanized wagon-loading and truck-loading systems, 2 mobile harbour cranes and a large cargo storage space that includes open yards, 10 covered warehouses and 4 liquid storage tanks. With a built-in cargo handling capacity of 21.5 MMT, the port primarily handles, Cement, Fertilizer, Limestone, Steel & Liquids. The upcoming CPCL's 9 MMTPA new refinery at Nagapattinam in Tamil Nadu presents an opportunity for Karaikal Port to handle an additional large volume of liquid cargo.

Commenting on the occasion, Mr Karan Adani, CEO and Whole-time Director, APSEZ said, "The acquisition of Karaikal Port is another milestone in consolidating our position as India's largest transport utility. With acquisition of Karaikal port APSEZ now operates 14 ports in India.

APSEZ will spend further INR 850 crores over time to upgrade infrastructure in order to reduce the logistics cost for the customers. We are envisaging to double the capacity of the port in the next 5 years and also add container terminal to make it a multipurpose port."

In FY 2023, Karaikal Port handled ~10 MMT of cargo and acquisition consideration of INR 1,485 crores implies an EV/EBITDA multiple of ~8x on FY23 EBITDA number. ●



SAGARMALA

Draft 'Sagarmala Innovation and Start-up Policy' issued for Stakeholder Consultation

up Policy'. This draft policy aims at nurturing start-ups and other entities to co-create the future of India's growing maritime sector. This entails intensive collaboration of the organizations to build a strong eco-system facilitating innovation and Startups in the country that will drive sustainable growth and generate large scale employment opportunities. This enhances the cooperation and coordination between academic institutions, public sector, private sector and convergence of different schemes and programs to groom fresh ideas and approaches to resolve the issues and challenges to boost up the efficiency in the areas of operation, maintenance, and infrastructure development.

Shri Sarbananda Sonowal, Union Minister, MoPSW stated: "the start-up India policy is the brainchild of PM Modi and this is the right step taken by MoPSW to create a strong ecosystem for fostering start-ups and innovation in the nation. This will surely promote innovation and entrepreneurship. Through this policy, MoPSW wants to enable start-ups to grow and prosper through innovations"

The designed framework enables the distribution of responsibilities and benefits among the various stakeholders.

Draft Policy aims to harness new technology developed by Indian Start-ups and entrepreneurs.

PM Narendra Modi termed startups as "backbone" of new India, continuing the same spirit through this policy, MoPSW is taking initiatives to promote start-ups through creativity and innovation: Shri Sarbananda Sonowal

A nation's growth is augmented by start-ups and entrepreneurs. In order to build a strong innovation ecosystem, the Ministry of Ports, Shipping and Waterways (MoPSW) issued draft on 'Sagarmala Innovation and Start-

This is not only limited to the existing stakeholders but also includes upcoming young entrepreneurs with innovative ideas.

Draft policy has identified several key areas for the startup to flourish including decarbonization, optimizing processes through data, maritime education, multi-modal transportation, manufacturing, alternate/ advance materials, maritime cybersecurity, smart communication and marine electronics.

Details of draft 'Sagarmala Innovation and Start-up Policy':

1. Digital Portal based selection of startups ensuring a transparent process
2. Grants to create a minimum viable product/ services (MVP), commercialization of proprietary technology including market entry or scaling up
3. Creation of 'Launch pads' at Ports for carrying out trials, facilitating pilot projects, establishing working space and adopting products and solutions
4. Annual Start-up Awards in the maritime sector recognizing distinguished efforts of innovation
5. Organizing Buyer-Seller Meetings and providing Technical Knowledge Support for VCs
6. Guidance to Non Registered Start-ups and Individuals with promising ideas in Maritime Sector including registration of start-up and availing Department for Promotion of Industry and Internal Trade (DPIIT) recognition
7. Regulatory support in Tenders and Sub-contracting
8. Legal and accountancy back up to start-ups for IP-Patent filing, Company registration, annual filings and closures

The promotion of start-ups shall be through development of Maritime Innovation Hubs (MIH) which shall perform the following functions:

1. Develop incubators and accelerators with state of the art facilities to cover all aspects of the startup journey from idea to scaled product.
2. Develop centralized repository containing all pertinent information to assist emerging entrepreneurs
3. Attract investment for eligible start-up businesses and innovative maritime technology
4. Entrepreneur development through 'know-how' sessions about the various aspects of the maritime industry and launching of innovation focused programs
5. Collaborate with national & international stakeholders for mentorship, knowledge sharing and facilitate access to global subject matter experts, serial entrepreneurs, business leaders, and investors with the potential to get their entry and scaling in the India

MoPSW feels proud to share that over the span of 8 successful years of Sagarmala, maritime sector has captured all the possible opportunities for the port-led development. Now, this policy will also create a field to establish a long-term action plans, network, infrastructure, and other resources to build a robust maritime innovation ecosystem. ●

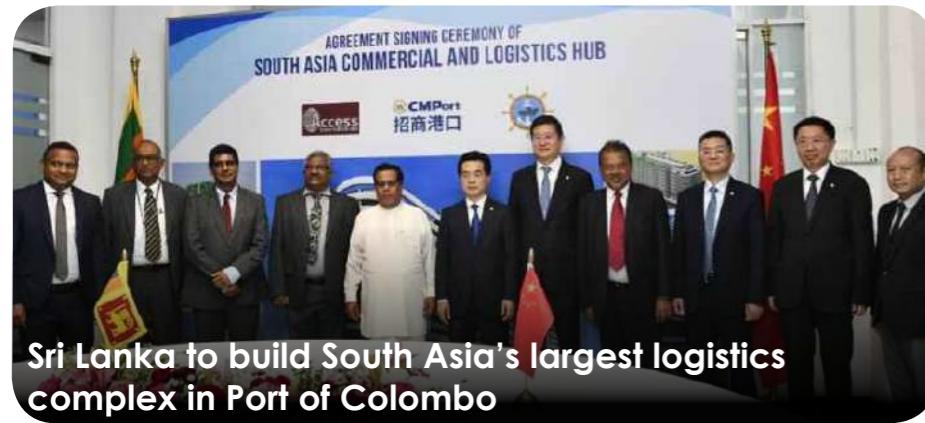
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Sri Lanka to build South Asia's largest logistics complex in Port of Colombo

region took a giant leap forward with the launch of a project to build the largest commercial and logistics complex in South Asia in the Port of Colombo with an investment of US \$ 392 million.

Agreements for the construction and operation of the **South Asia Commercial and Logistics Hub (SACL)** as a 50-year Build-Operate-Transfer (BOT) project were formally signed in Colombo by representatives of the three investing entities, with China Merchants Port Holdings (CMPort) holding a 70% stake, and Sri Lanka Ports Authority (SLPA) and Access Engineering PLC (Access) each holding a 15% stake in the venture.

A Public Private Partnership (PPP) project, the South Asia Commercial and Logistics Hub will be built in the centre of the Port of Colombo and will have 530,000 CBM of storage capacity via an eight-floor building. The investment in the project will bring in much-needed foreign investment into Sri Lanka.

Construction of the complex is expected to begin in the second half of 2023 with a target of completion by end 2025. Adjacent to Port City and the CBD, it will be directly linked with the airport via the Port Access Elevated Highway. The five million square foot complex will offer the full gamut of logistics related facilities and services such as Less than Container Load (LCL), Multi-Country Consolidation (MCC), Container Freight Station (CFS), General warehousing and various other value-added services.

A Spokesperson for CMPort said the project will result in an infusion of US\$ 126 million in addition to an upfront payment of US\$ 26 million after the agreement is signed. The project is also expected to provide direct employment to a minimum of 1,800 people and create 10,500 other indirect job opportunities.

The project aligns with Sri Lanka's national development strategy to transform the country into a major logistics centre, identified as a key sector and a driving force for economic development in the National Policy Framework (NPF) 2019. It will provide better logistics and warehousing facilities and services, enhancing the Port's competitive advantage and consequently strengthening its Hub status. The project will also improve the operational efficiency of the Port of Colombo and introduce leading-edge technology and innovation.

The Port of Colombo is currently ranked among the top 13 ports in the world in terms of shipping network connectivity. Despite its ideal location on the international trading route, the Port still lacks a modern, state-of-the-art logistics facility, the Spokesperson said. At present, mainly loading and discharging of cargo is done at the Port of Colombo, with little value-added services being offered. SACL will change this landscape.

Additionally, since the Port of Colombo was declared as a Freeport by the Government of Sri Lanka, the project will enjoy the associated Freeport advantages in its operations, such as no customs clearance for transshipment and MCC cargo, resulting in reduced paperwork and associated costs. The project also provides an ideal platform for the registration of hub companies – which will enjoy tax concessions in CIT, WHT, VAT, etc.

The project is expected to help the Port of Colombo to strengthen its competitiveness against other competing ports in the region. Furthermore, the improved services and cost benefits provided by the project are expected to attract more business and container volumes to the Port of Colombo, benefitting all its terminals and generating higher revenues for the Port and port-related companies in Sri Lanka.

CMPort, the major shareholder in the South Asia Commercial and Logistics Hub, is the parent company of Colombo International Container Terminals (CICT) which manages the South Terminal of the Port of Colombo. CMPort is the largest and a globally-competitive public port developer, investor and operator in China with investments in Mainland China, Hong Kong and overseas. CMPort has a port network portfolio spanning 50 ports in 26 countries and regions. Guided by the vision **“To be a world class comprehensive port service provider”** and supported by its domestic, overseas and innovation strategies, CMPort strives to strengthen its core competencies in global throughput, port service and management. ●

1. China Merchants Port Holdings leads consortium of investors in US\$ 392 million South Asia Commercial and Logistics Hub
2. SLPA and Access Engineering to each hold 15% equity in venture
3. 8 storey, 5 million square foot complex with design storage capacity of 530,000 CBM to be built

Colombo: Sri Lanka's aspiration to become a major logistics hub in the

During her recent sojourn to Japan, Bangladesh's esteemed Prime Minister Sheikh Hasina espoused her strong intent to devote herself assiduously to the expeditious accession to the Hong Kong Convention (HKC) for the Safe and Environmentally Sound Recycling of Ships, 2009, an effort which was met with unanimous support from the honourable Japanese Prime Minister Kishida. This auspicious development portends a significant leap towards the establishment of an all-encompassing global regime for the safe and sustainable recycling of ships, a critical objective that has long been in the offing.



The Significance of Bangladesh's Accession to the Hong Kong Convention for Safe and Environmentally Sound Ship Recycling: Support from Japan

The HKC is a seminal international agreement crafted to enhance the safety and sustainability of ship recycling, ensuring that the process of recycling ships is carried out in an ecologically sound and secure fashion, thereby averting any potential harm to the well-being of humans and the environment. However, for the HKC to come into force, it necessitates the ratification by at least 15 states, which account for 40% of the world's merchant shipping in terms of gross tonnage and collectively partake in annual ship recycling volume that is no less than 3% of their combined tonnage.

By way of Bangladesh's ascension to the HKC, in conjunction with India, the combined maximum annual recycling capacity of these nations surpasses the mandated 3% threshold. Bangladesh, specifically, is one of the foremost nations in the world that partakes in ship recycling, and its accession to the HKC is an imperative precursor to instigate the capacity clause and bring the world closer to a sustainable and secure ship recycling industry.

In response to the expectation expressed by the dignified Japanese Prime Minister Kishida that Bangladesh would accede to the HKC, Prime Minister Hasina intimated her profound determination to make concerted efforts to this end in 2023. In addition, Prime Minister Kishida also expressed his willingness to weigh the possibility of offering support to Bangladesh in the domain of ship recycling, taking cognizance of Bangladesh's imperative need for the development of a Treatment, Storage, and Disposal Facility (TSDF). This backing is of paramount significance to Bangladesh's compliance with the HKC, given that the convention stipulates that states must ensure that the ship recycling facilities under their jurisdiction conform to the HKC's requirements for safe and ecologically sound recycling practices. Thus, the establishment of a TSDF in Bangladesh is an instrumental step towards the country's successful accession to the HKC, and Japan's support in this regard is a noteworthy impetus towards realizing this goal.

Upon the HKC's attainment of effectivity, it will pave the way for the establishment of a comprehensive global regime for ship recycling, proffering lucid guidelines for the design, construction, operation, and end-of-life management of ships. This would serve as a safeguard to ensure that the process of ship recycling is executed in an environmentally sustainable and secure manner, thus averting any untoward incidents, pollution, and damage to the marine environment.

In sum, Bangladesh's accession to the HKC will mark an imperative milestone towards the realization of this international agreement, bringing the world ever closer to a sustainable and secure ship recycling industry. The laudable efforts by Prime Ministers Sheikh Hasina and Kishida to augment cooperation in this domain are commendable, and their dedication to supporting Bangladesh's pursuits in the arena of ship recycling portends a promising future. ●



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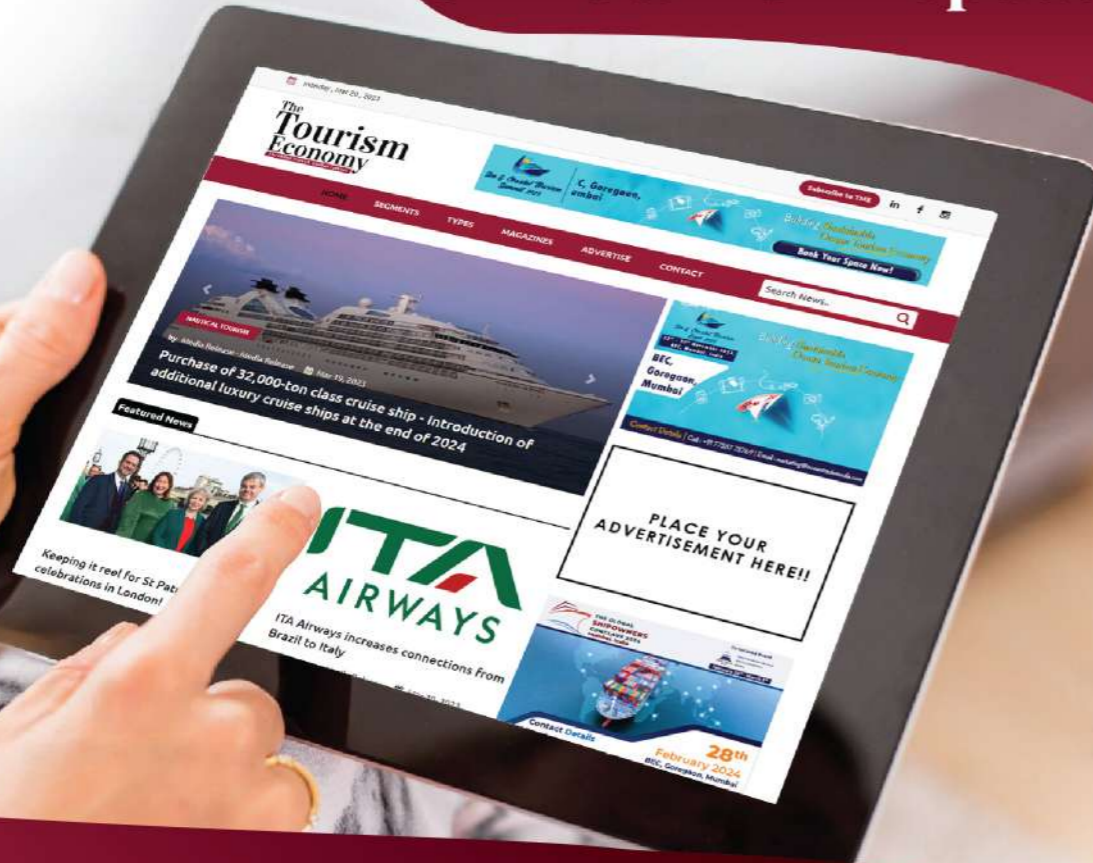


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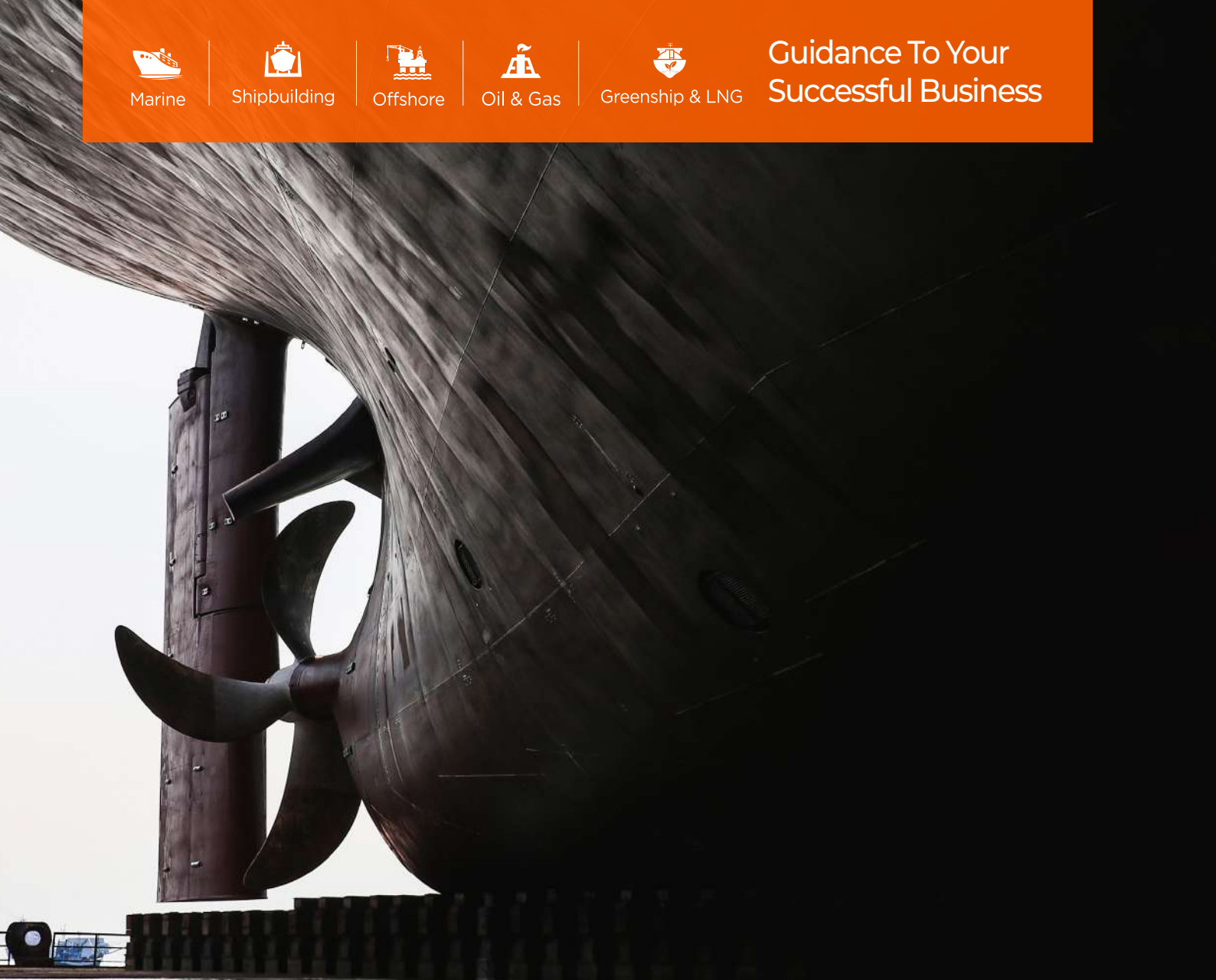


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