Integrated Approach in Nurturing Indian Shipbuilding Ecosystem Towards India Becoming A Global Player

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Abstract

India is the fifth largest economy in the world in terms of GDP and it is expected to overtake the Germany acquire fourth position. Despite the Country's long coastline, 95% of its trade by volume and 70% by value is done through Sea, huge maritime infrastructure such as 25 - 30 Shipyards with capacity to build up to 0.4 million DWT (400,000), 12 major and 200 non major ports, the shipbuilding capabilities of our nation have not kept pace with its economic development, market demand and human resource potential. The global ship building and ship repair market remains meagre and hovering around 1-2%.

The paper aims to bring out the challenges and issues faced by the Indian shipyards and its current eco system, analysing and proposing way ahead towards India becoming a Global player. During the process of study, details are provided to generate shipbuilding demand of 45 million of CGT both overseas fleet and coastal/inland fleet, by evolving policies and addressing local factors which are entirely under India's control. In addition, ship repair and maintenance Industry segment has huge potential due to strategic location of India in international sea routes. Globally the ship repairs market is expected to reach 40 billion USD wherein India's share is presently miniscule less than 1%.

The research analysis in line with MIV 2030 and Maritime Amrit Kaal vision 2047, along with author's vast maritime experience has brought out few recommendations for integrated approach nurturing the shipbuilding ecosystem which would address the infrastructure, regulatory, fiscal issues and capability development is need to be developed.

Keywords: Global Shipbuilding, Challenges, Industrial growth, Competitiveness, manufacturing, economy, and Maritime India Vision.

Introduction

India has long standing maritime tradition, with shipbuilding activities documented as early as the Indus Valley Civilization. Coastal regions covering both eastern and western seaboards have been centres of shipbuilding for centuries. Shipbuilding industry holds strategic significance due to its role in energy security, national defence and its immense linkages with most other leading industries. The shipbuilding industry has the same impact as infrastructure sector and potential of generating mass employment in remote, coastal and rural areas. Promotion of ship building and ship repair industries therefore should be given prime importance due to their potential to strengthen the economy and Atma nirbhar Bharat mission.

Presently shipbuilding is dominated by China, Japan and Korea. Despite India's vast coastline, and with about 1200 islands, 12 major and approx. 200 non major ports, India's shipbuilding capabilities have not kept pace with its economic development,market demand and human resource potential. This offers huge scope for the development of the shipbuilding sector considering that country's potential have not been fully exploited. Government. of India through its vision documents MIV 2030 and Amrit kaal 2047 listed measures to be instituted which will guide the way ahead towards a robust maritime sector.

Problem Statement

Our country has got a long coastline of about 7,600 km, well protected by a large fleet of Indian maritime forces. 95% of the trade volume is done through Sea and there is a significant presence of Shipbuilding and repairs industries within the country. Despite this, the Indian shipbuilding capabilities have not kept pace with its economic development.

Aim of the Paper

This paper seeks to bring out action areas for all stake holders in nurturing the shipbuilding ecosystem of the country by analysing the inherent challenges in shipbuilding, drivers for growth of shipbuilding and requirement of policy reforms so that India can become a global maritime player.

Distinctive Features of Shipbuilding Industry

The shipbuilding is a complex and diverse industry and its distinctive features and cyclic nature is mentioned below:

Distinctive Feature

(a) Wide variation of trade ability wherein the Builder sells the Ship first and construct later unlike other Business the manufacturer builds first and sells later.

(b) Creditability: projects completion and globally competitiveness plays a major role in winning contracts.

(c) The deliverables of the industry involve long gestation periods min 2-3 years and require high cost finance over a long period.

(d) Labour intensive Industry.

(e) Shipbuilding accelerates when expansion of seaborne trade, replacement of ship, changes of regulations and for warships depending on the geopolitics.

(f) Cyclic Feature of Shipbuilding Industry: The combination of demand-side opportunism and supply-side inflexibility tends to slow the market adjustment process, leading to some very long shipbuilding cycles. Shipbuilding cycles are, of course, close relatives of the shipping cycles wherein the shipping cycle has four stages: trough, recovery, peak, and collapse. In the trough, freight rates fall to operating costs, forcing companies to sell ships at low prices. In recovery, freight rates rise above costs and laid up tonnage falls. At the peak, supply and demand are balanced with high freight rates and full fleet utilisation. In collapse, supply exceeds demand, causing freight rates and ship speeds to decrease again. As with the shipping cycles, these cycles were not just random fluctuations designed to make life difficult for the shipyards, but are part of the mechanism for adjusting shipbuilding capacity to the changing needs of world trade.

Over the last century, there have been 12 separate cycles which are plotted in **Figure. 1.** The average cycle lasted 9.6 years from peak to peak, but the spread was very wide, ranging from 5 years to over 25 years. The average reduction in output from peak to trough was 52%, and the maximum peacetime reduction was 83% during the recession of the early 1930s. It is pertinent to mention that the last peak in global ship deliveries occurred in 2011, resulting in more and more ships nearing retirement age now. **Currently, roughly 53% of ships in operation are over 20 years old. By 2030, this number is expected to reach 70%.**

This trend will continue to drive the demand for fleet renewal. On the other hand, the International Maritime Organization's (IMO) 2030 carbon emission reduction target has further accelerated the replacement of older, less energy efficient ships. Leading shipping companies are aware of the tightness in shipyard capacity and have started to place orders for clean energy ships in advance to meet the environmental requirements by 2030.

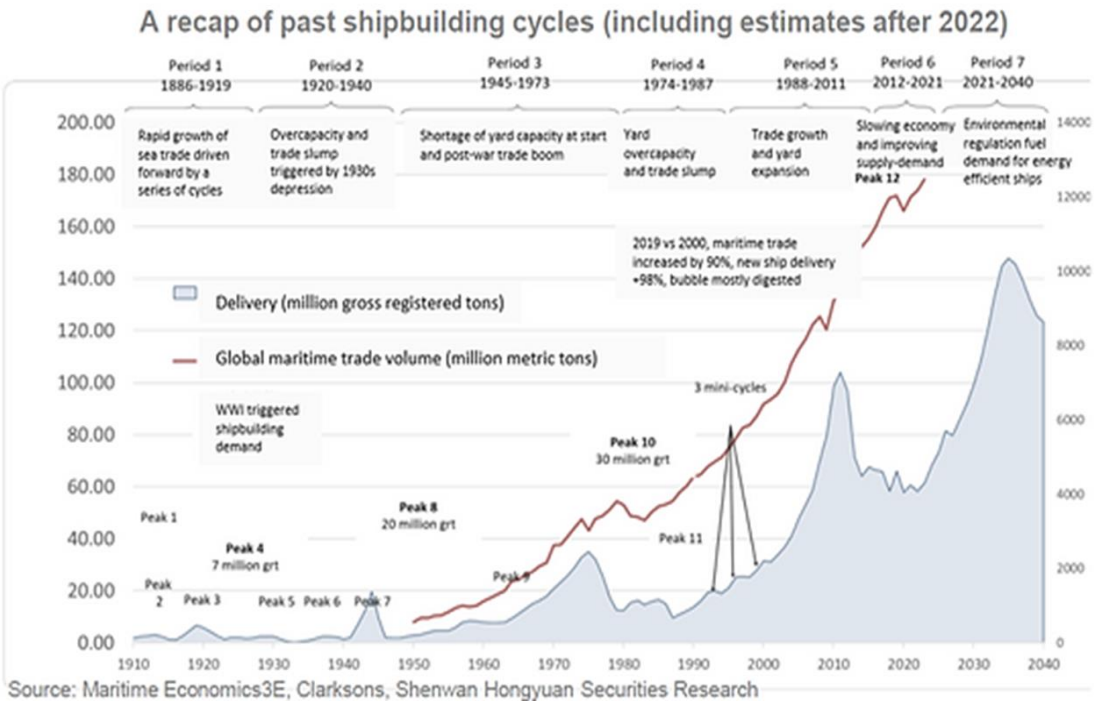

Figure 1 Shipbuilding Cycle

Source: Maritime Economics: Martin Stopford / Clarksons

Shipbuilding in India: Evaluating its current position

Indian Shipbuilding industry is anchored around 42 Shipyards (both private and public) and has a reported capacity to build large cargo vessels up to 400,000 DWT. However, the shipbuilding industry finds itself in a position that is below its true potential. The industry today exists as a monopsonist for defence shipbuilding with a reasonably strong domestic demand and insignificant demand for commercial shipbuilding. Defence shipbuilding is dominated by DPSUs and PSUs, with a small amount of work sharing with private shipyards. However, despite efforts from the government to encourage private participation in defence shipbuilding and efforts to stimulate the supply side, the private industry has gradually declined over the last few years.

Ship building capacity is defined in terms of Dead Weight Tonnage (DWT). The Shipbuilding capacity of Indian Shipyards is shown below in Bar chart:

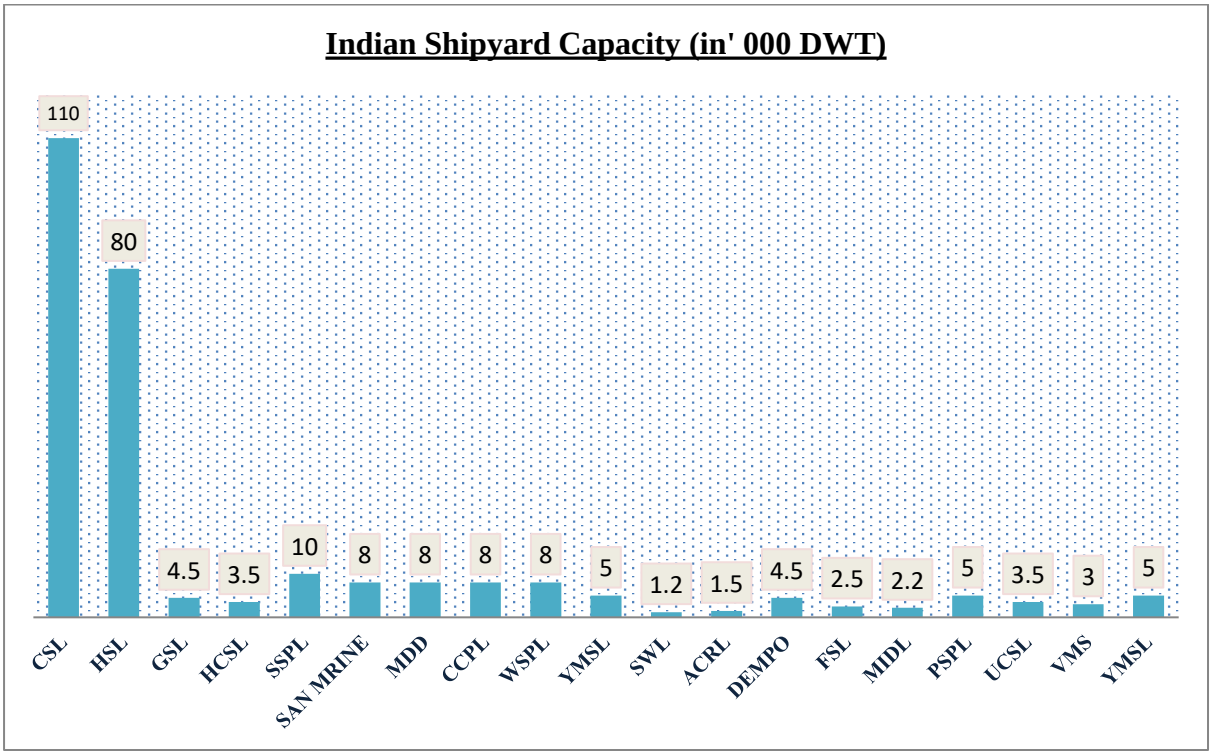

Figure 2 Shipbuilding Capacity

In addition to the Shipyards mentioned in Table1, other private players active in Shipbuilding/repairs are A. C. Roy & Co. Ltd.(ACRL), A.H. Wadia Boat Builders, Bristol Boats, Chowgule Lavgan Shipcare Pvt. Ltd. Ferromar Shipping Pvt. Ltd. (FSL), Mondovi Dry Docks (MDD), Patra Shipping Pvt. Ltd (PSPL) , San Marine , Sea Blue Shipyard Ltd. (SBSL), Udupi Cochin Shipyard Ltd, Titagarh Wagons Ltd. (TWL), Waterways Shipyard Pvt. Ltd.(WSPL) and Yeoman Marine Services Ltd.(YMSL).

Indian Shipyards in 2023, had orders of 433 ships with gross DWT 249.94 thousand tonnes. Out of these, the public sector shipyards had orders of 125 ships of 134.55 thousand DWT. The private sectors had orders for 308 ships of 115.39 thousand DWT. It is to be noted that Cochin Shipyard Ltd and A.H Wadia Boat Builders had the highest number of ships on order among public and private industry respectively.

The pie chart below depicts share of shipbuilding orders:

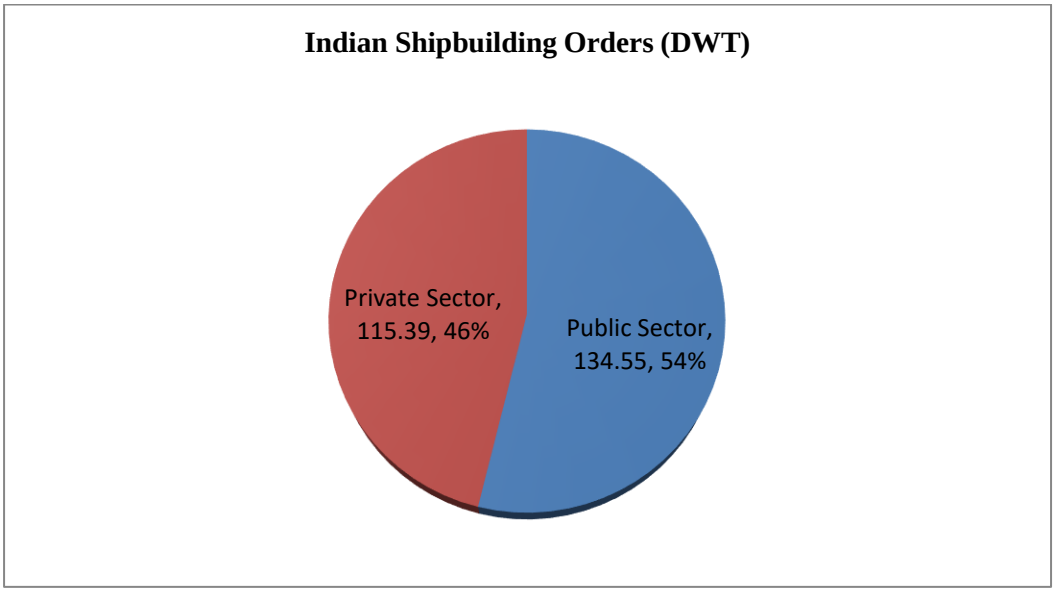

Figure 3. Pie Chart for International Ships Order (1000cgt)

The entire shipbuilding requirements of our maritime forces are currently met through Indian shipyards largely restricted to DPSUs. The defence shipbuilding has seen an unprecedented growth in line with our maritime forces expansion. These shipyards over the years have built capability to design and deliver advanced weapon intensive platforms. However, the contribution of defence shipbuilding towards export is negligible and not encouraging. The main reason for the limited development of India's defence industrial base, is the wide variety and mission specific ships constructed in lesser numbers for IN/ICG which limits the standardisation in view of lack of volumes. In order to develop the industry base, the shipyards have to attain 'Critical Mass'.

India shares only 0.16% of the global new shipbuilding orders. Therefore, we need to recover from the present low performing shipbuilding status with long term vision and plan for strengthening of the Indian shipbuilding industry. The commercial shipbuilding demands efficiency and cost competitiveness of very high order. It is to be noted that among the private players the performance L&T Shipbuilding, A.H Wadia Boat Builders, AC Roy & Co. Ltd., Chowgule & Co. Ltd. And Sea Blue Shipyard Ltd. have performed well, however still lacks global competitiveness. Unfortunately, few private shipyards are plagued with dwindling order books, excessive debt, non-existent credit, falling incomes and severe cash flow constraints. Poor cash flow and failed attempts at debt restructuring & liquidation proceedings has resulted in closure of three Shipyards.

Environmental Scan : Global shipbuilding

The global shipbuilding industry has undergone profound transformations, diversifying in terms of scope, complexity, and trade impact. This study explores these shifts by analysing the evolving patterns within shipbuilding firms from Japan, Korea, and China. We embark on a historical journey,

tracing the transition of industry leader - ship from Europe to Asia. As a case study, we present a detailed examination of the five stages of the Korean shipbuilding industry's transformation, spanning from domestic advantage to global prominence. To establish a comparative framework encompassing the shipbuilding industries of Japan, Korea, and China, we introduce two critical parameters: innovative value delivery capabilities and global market positioning. These parameters illuminate the distinctive evolutionary paths taken by the three Asian countries within the realm of shipbuilding. Our findings underscore that in an environment characterised by intensifying competition and shifting geopolitical dynamics, leading companies strategically leverage their national manufacturing strengths and logistical infrastructure while adeptly navigating the complexities of global politics and the industrial policies pursued by their respective nations.

This research offers invaluable insights and implications for future investigations of the global shipbuilding industry in the post-pandemic world. The global shipbuilding industry has undergone profound transformations, diversifying in terms of scope, complexity, and trade impact. This study explores these shifts by analysing the evolving patterns within shipbuilding firms from Japan, Korea, and China. We embark on a historical journey, tracing the transition of industry leader- ship from Europe to Asia. As a case study, we present a detailed examination of the five stages of the Korean shipbuilding industry's transformation, spanning from domestic advantage to global prominence. To establish a comparative framework encompassing the shipbuilding industries of Japan, Korea and China, we introduce two critical parameters: innovative value delivery capabilities and global market positioning. These parameters illuminate the distinctive evolutionary paths taken by the three Asian countries within the realm of shipbuilding. Our findings underscore that in an environment characterised by intensifying competition and shifting geo- political dynamics, leading companies strategically leverage their national manufacturing strengths and logistical infrastructure while adeptly navigating the complexities of global politics and the industrial policies pursued by their respective nations.

This research offers invaluable insights and implications for future investigations of the global shipbuilding industry in the post-pandemic world. The aim of environmental scan of global shipbuilding is to identify their efforts and strategies that have supported their growth of shipbuilding. This will help in identifying possible gaps and lessons to be drawn for Indian shipbuilding Industry. The countries are the top shipbuilding countries in the world, based on their capacity, output, and technological advancements in shipbuilding. These countries don't just build large no of Ships, also they come up with new ideas to make ships better, safer, and greener for the World.

Presently, China, South Korea, and Japan have dominated the shipbuilding market across the world and accounted for a global share of 41.6% (39930 in, 000cgt), 35.7% (34236 in, 000 cgt) and 10.5%

(10097 in, 000 cgt) respectively in ships on order in terms of compensated gross tonnage in 2022. However, India stood at distant position with meagre share of 0.16% (157) out of total global order of 96050 (in, 000cgt). The share of shipbuilding nations are shown in below pie chart:

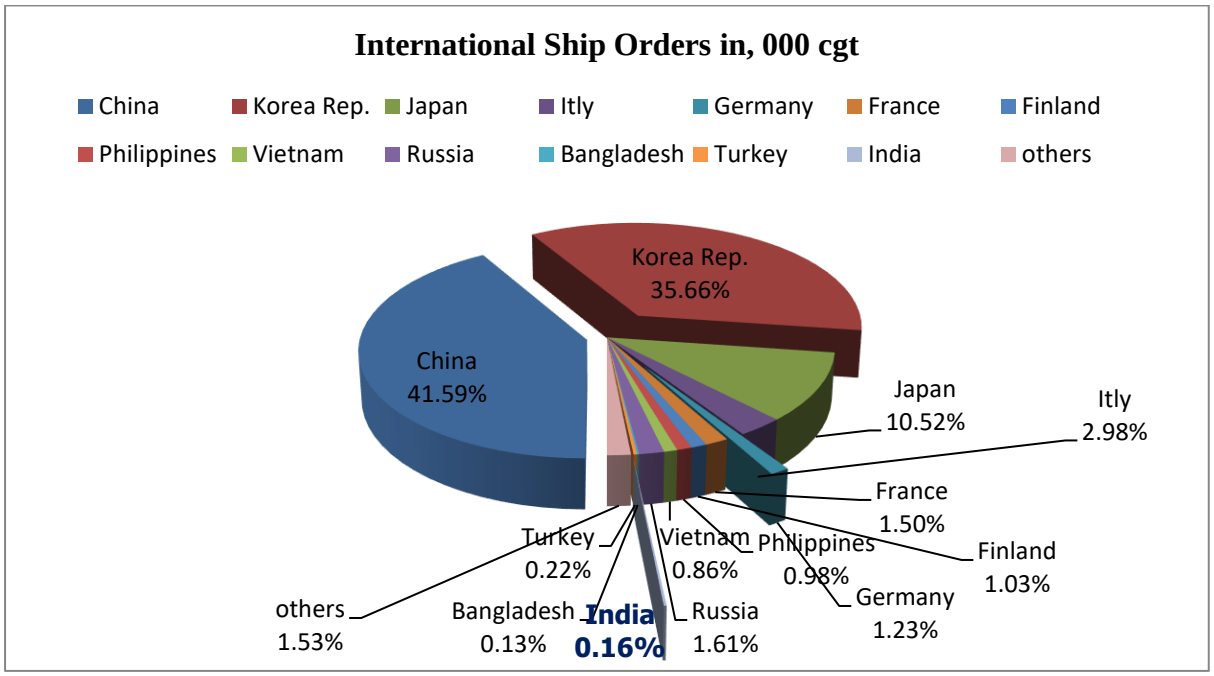

Figure 4. Pie Chart for International Ships Order (in, 000 cgt)

Study of Chinese Shipbuilding Ecosystem

China leads the global shipbuilding industry with their Shipyards are immensely competitive not only in Commercial Shipbuilding bagging large share of global orders but also, able to massively scale up their warships. The Chinese government has heavily invested in upgrading technology and facilities, aiming to dominate not just in quantity but also in the quality of ships produced. This strategic focus has positioned China as a go-to destination for cost-effective and technologically advanced shipbuilding solutions.

The Chinese shipbuilding industry has transformed from a 'basic ship producer' to an "Strategic infrastructure Industry" by sheer focus on technology and policy measures. They have dominated the world with 70 % of China's shipbuilding products exported. This enormous growth has been aptly achieved through following:

(a) Policy Changes These are profit-retention reform during 1979-83, tax-for-profit reform during 1983-86, adoption of the contract management system during 1987-92, eleventh five year plan 2006 – 2010 , Strategic status for Shipbuilding industry and finally

large scale investment.

(b) Financial reforms These are Income Tax benefits & Export tax rebates, Fundraising reforms, Stabilisation of material costs and incentives/ Subsidies to ship owners.

(c) Development in Science and Technology & Manufacturing Industry through Technical cooperation learning and Innovation between Chinese Yards and interactions with foreign shipbuilders

(d) Shipbuilding methods including Design through developing advanced hull section construction technology and outfitting technique and mechanisation and assembly line works to reduce the shipbuilding time.

(e) Shipbuilding Industry Cluster China has emphasised on creation of maritime clusters which are vital for the growth of shipbuilding and repair industry. This clusters would cultivate the entire ecosystem for the industry.

Study of Korean Shipbuilding Industry

The Korean Government has played a played a great and crucial role in growth of Korean shipbuilding. The Government has launched the export led industrialisation policy which focused on the manufacturing sector. There was a shift in the industrial plan from light industry to technology oriented industry in the1970s wherein the aim was to boost exports and GDP within a short period of time. The Government designated shipbuilding as strategic industries and focus was made through successive five year economic development plans from 1962 to 1980. The Government has supported the shipbuilding by subsidies and loans, shipbuilding clusters were developed to encourage effective coordination between the shipbuilders, ancillary industry, associated manufactures and service providers.

Shipbuilding Market Research

A report from Statista research shares that the industry was worth $152 billion in 2022 is expected to increase by a compound annual growth rate (CAGR) of around 3.2 % up to 2030 and likely to increase to over $ 195 billion as shown below:

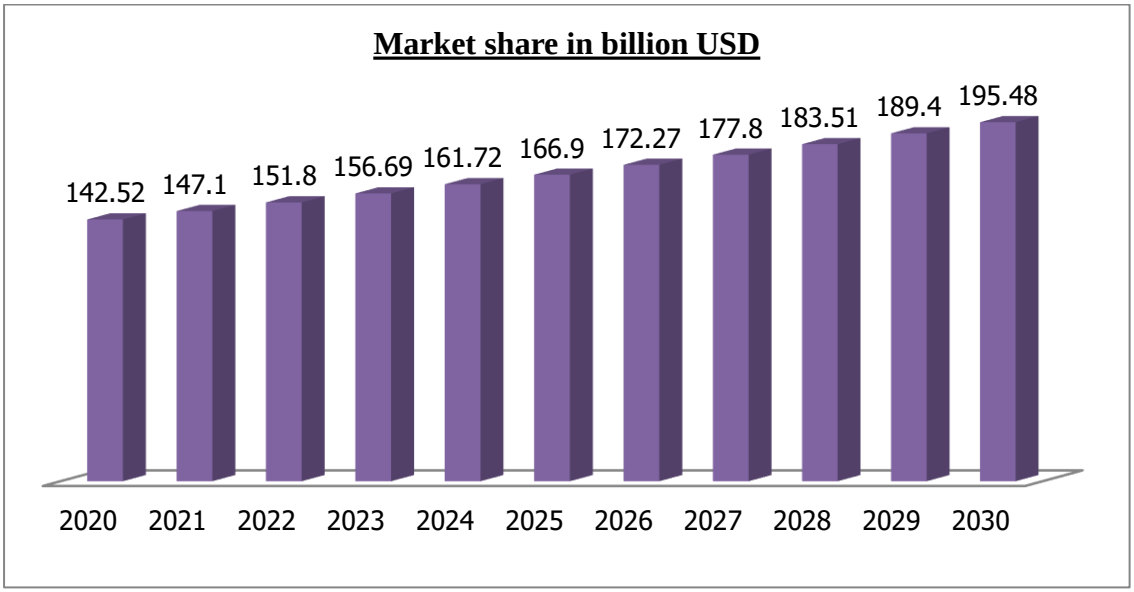

Figure 5 Statista Research Global Shipbuilding Market

Another report, from Mordor Intelligence estimated the shipbuilding market at $ 148 USD billion in 2024, and is expected to reach $ 184.5 billion by 2029, growing at a CAGR of 4.84% during the forecast period as shown below:

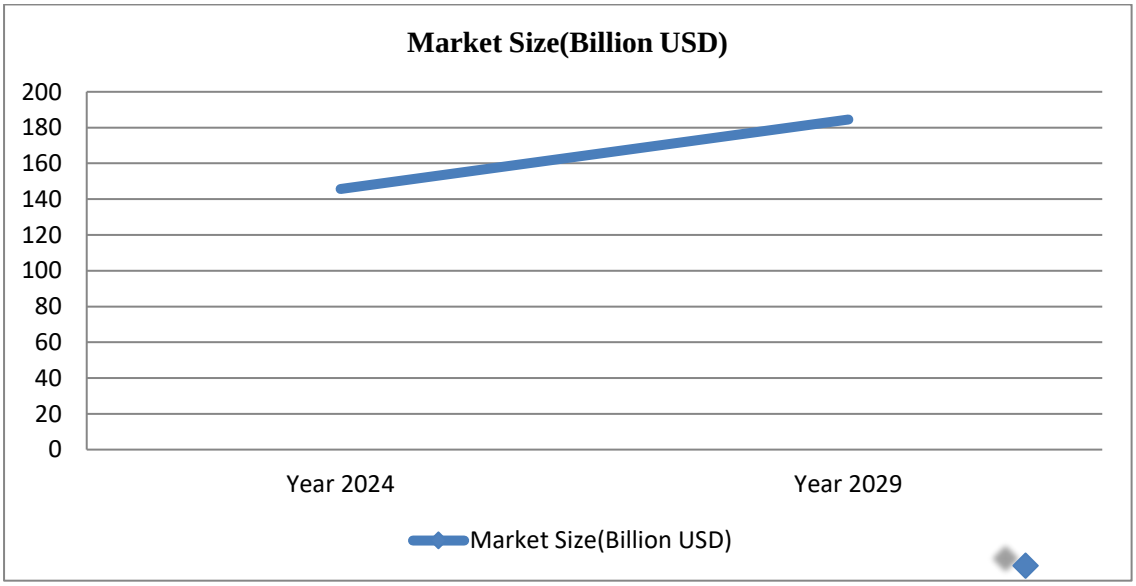

Figure 6 Mordor intelligence Research Global Shipbuilding Market

Gap analysis

The author has carefully analysed both Indian and global shipbuilding scenario which has revealed following gaps of Indian shipbuilding industry is suffering from:

(a) **Absence of Indigenous Ancillary Industry** Development of ancillary industry is very important in shipbuilding. The shipbuilding sector in China and South Korea

has received government fiscal and policy support, enabling them to develop scale as well as a cluster of ancillaries. However, in our country the ancillary industry for shipbuilding is vastly underdeveloped as major components and machinery required for shipbuilding are imported as it is cheaper and timely receipt.

(b) **Lack of Synergy between Public and Private Yards** A key gap in India's shipbuilding is lack of synergy between public and private shipyards. Both the shipyards operate separately without combining their respective strengths. It is pertinent to mention that the public sector has experience of war shipbuilding and private yards have greater flexibility and operational autonomy with vast infrastructure with them. It has been observed that PSU shipyards are sometimes not in a position to meet the warship delivery timeline and this opens a scope for partnership with private yards to reduce the build period. Also our shipyards are not successful in forming Joint Ventures among shipyards.

(c) **Low Labour productivity and Lack of skilled & efficient manpower** India has a huge disadvantage against the competing countries like China, Japan and Korea in terms of skills and labour productivity. There is a shortage of basic skills in the industry with lack of manpower with techno-economic specialisation in shipbuilding.

(d) **High Financing Costs and Working Capital** The shipbuilding activity is highly capital intensive and typically requires a working capital of around 25-35% of the cost of the ship during period of built. The interest rates on working capital in India are in the average range of 10-11%. In contrast, the interest rates presently offered to shipbuilding yards overseas are significantly low at 5-6% in Korea and 4-8% in China.

(e) **Tax Burden** The challenge has emerged is the applicability of 5% GST on the domestic materials to be utilised for shipbuilding, sale of ships, capital goods for shipbuilding and replacement of yard facilities. GST of 28% and 18% are applicable for sports/rowing boats and GST of 18% is applicable for ship breaking. These statutory tax burdens put a financial stress on the shipyards which are already starved of funds.

(f) **Cost of Bank Guarantee** The ship owners seek bank guarantees from the shipyards like performance guarantee for timely delivery of the vessel, refund guarantee for advance payment and post construction guarantee for covering defects to remain under guarantee for certain period post-delivery. Our financial institutions also do not focus on

shipbuilding sector `like other major shipbuilding nations provide support to the shipyards for extending these guarantees.

(g) **Inadequate R&D Infrastructure, Technological Processes and Innovation.**

The Indian Shipbuilding industries have challenges of inadequate innovation and less investment in R&D as compared to the advanced shipbuilding nations. The self-reliant capabilities in these countries were enabled through planned investments in R&D including basic research. Indian Shipyards lacks investment in R&D and future technologies such as stealth, hybrid, indigenisation, propulsion, digital twin and unmanned systems to be ready for the future.

(h) **Multiple Clearances** The present requirement to obtain multiple clearances covering land acquisition, Environmental clearance, power and water etc from various departments for new projects in shipbuilding acts as a deterrent to attracting investment into this sector.

(i) **Supportive Government Policies** The supports extended to shipbuilding industries were inadequate in the past and had severely affected the Industry particularly the private shipyards.. However, recently the Government is bringing in reforms and policies as financial assistance policy.

SWOT Analysis - Indian Shipbuilding

(a) **Strength**.

(i) India's vast coastline and proximity to major shipping routes offers a natural advantage for shipyards, reducing transportation costs and good locations for setting up shipyards.

(ii) Labour intensive industry and has high potential to generate employment vis-à-vis other manufacturing industries.

(iii) India has reputed institutes like IITs, IMU, and deemed universities producing pool naval architects and marine engineers.

(iv) Indian Shipyards has experience in both commercial and war shipbuilding.

(v) Indian skill set has proven capability of advanced software development and applications.

(b) **Weakness**.

(i) Monopsonist defence shipbuilding and poor presence in commercial shipbuilding.

(ii) Inadequate policy support, delayed decision making resulting in cost and time overrun.

(iii) Ships built period and delivery timeline is more compared international scenario.

(iv) Lacks in in-house design capability for specialised vessels.

(v) R&D in shipbuilding limited and thus not meeting the demands of the emerging market.

(vi) Absence of a dedicated government agency to integrate R&D and production in line with major shipbuilding nations.

(c) **Opportunities**

(i) 'Make in India' policy to give boost to the Indian Industry.

(ii) Labour costs in our country are on lower side even after factoring labour efficiency.

(iii) Strong domestic demand and flourishing Indian economy.

(iv) The GoI has formulated Maritime India Vision 2030 and Maritime Amrit kaal Vision 2047 with objective to propel India to the forefront of the Global Maritime.

(d) **Threats**

(i) Too much dependency on foreign vendors for supply of major machinery, propulsion equipment and weapons.

(ii) Inadequate lifecycle support for the indigenously developed systems and long delivery timeline.

(iii) Low productivity compared to Japanese, Chinese and Korean shipyards.

(iv) Conflicts like Russia & Ukraine and Israel and Palestine remain a threat to global sea borne trade.

(v) Indian naval architects and marine engineers are switching over to IT/software sector for more pay and comfort life style.

Recommendations on Nurturing Indian Shipbuilding Ecosystem

(a) **Government Support for Generating strong domestic shipbuilding demand** There is a need to channelize domestic demand for Indian-built ships, especially for inland and coastal shipping, and defence. Escalating disincentives on old, imported vessels can also boost demand for new, domestically built ships. It is important to note that targeting 15-20 % of indigenous shipping in overseas trade through indigenous shipbuilding will create a

potential demand of nearly 32 million CGT over next ten years and replacement of aged commercial fleet will generate another 8 million CGT in ten years. Therefore, GoI can generate a total of 40 million of CGT for shipbuilding through evolving policies and addressing local factors. In addition, both Central and State Government should take necessary action for long term policy formulation to build Coastal, Inland Vessels and Tugs are to be mandatorily built by Indian Shipyards. Also, strict guidelines to be issued to replace Vessels of more than 25 years' service life and directives to all ports for maintaining pollution infrastructure. This policy formulation will provide the required **Critical Mass** to the shipbuilding Industry. The Shipbuilding Demand that can be generated is tabulated below:-

Ser	**Demand Generation (in CGT)**	**Overseas Trade**	**Coastal Shipping & Inland Waterways**
(a)	Replacement of Ageing Fleet **>** 25 Years	8.0	3.0
(b)	Fleet Addition	32.0	12.7
(c)	Repairs and Maintenance	4.8	2.0

(b) **Commercial Specifications for Aux/Patrol Ships for Maritime Forces** The noncombat ships of maritime forces may be made to commercial specifications to achieve more standardisation so same shipbuilding set up can be used for building both commercial and naval Vessels. Defence procurement represents the largest single shipbuilding budget and has potential for improving Indian Shipyard's commercial performance

(c) **Creation of Apex level Authority for Formulation of National Maritime Policy**

The shipbuilding is an intermediate industry for the shipping sector. Growth in shipbuilding cannot be achieved in isolation, without an associated growth in the shipping industry. The government policies for shipping and shipbuilding industry are handled by multiple agencies and therefore lacks coordination.. It is recommended that an apex level authority preferably a secretary empowered with formulating policies and reforms on both the shipping and shipbuilding will strengthen India's maritime infrastructure and Shipbuilding Industry. The authority will facilitate clearance through a single window and ensure that bottlenecks for investment in the sector are removed.

(d) **Reduction of Build Period of Ships** The Shipyard operations are to be supported by process engineering and computer aided design and manufacturing. Indian Shipyards should follow integrated construction methods which are innovative mode of Ship construction wherein the Shipyard is able to design, create, install and test the outfitting elements during the correct phase of hull construction. This advanced way of construction will reduce build period of ships.

(e) **Shipyard Industry Diversification** To maintain shipyard's capability and workforce efficiency even during idle and depression period like reduced global &, domestic demands and force majeure COVID-19, it is recommended that Shipyards need to have products diversification i.e. to produce products not related to shipbuilding such as renewal energy technology, explore utilisation of excess capacity in pursuit of alternate energy technology development and production. The production of large wind turbine generators, motors, towers and specialised offshore vessels would seem to be natural fit for underemployed shipyards with large potential plants.

(f) **R&D in Ship Designing And Innovation.** For overall growth of the industry, there is a need to create an R&D base along with developing in-house design capability, infusing new technology, developing skilled workforce, adopting appropriate fiscal measures and industry friendly regulations, so that Indian shipbuilding can achieve credibility for delivering quality ships on time.

(g) **Export Promotion.** To boost the export of Indian built ships, focus should be on developing environment friendly and efficient designs. A major boost to the domestic shipbuilding industry can be given by exploring the demand for ships in emerging economies engaged in trade with India. The shipyards to create business development groups and actively pursue with Defence Attaches/Indian Embassies for exports.

(h) **Benchmarking of Shipyards**. It is recommended to bench mark business processes and the performance metrics of the company with the best-in-class. The benchmarking of Indian shipyards would enhance the competitiveness. The incentives payable to shipyards should be directly linked to benchmarking.

(i) **Right of Refusal to Indian Shipyards.** It is recommended that for acquisition/repair of any type of Vessels by Government Department including Public Sector Undertakings through global tendering process, RoFR is offered to Indian shipyards. In order to promote tonnage under Indian Flag, The revised hierarchy for RoFR Indian built & Indian flagged (Indian owned), Foreign built & Indian flagged (Indian owned), Indian built, foreign flagged (foreign owned).

(j) **Skill Initiatives of GoI.** The various Skill initiatives of the Government. of India may be extended to the Shipbuilding industry. Establishing Centres of Excellence for maritime and shipbuilding education, enhancing training programmes, and developing design capabilities will ensure a steady supply of skilled labour and improve the overall quality of shipbuilding. Initiatives to enhance the skill sets of the existing workforce.

Conclusion

It can be concluded that it is critical to support the Indian shipbuilding industry to overcome its challenges which is in the long term national interest. Though certain measures have been instituted by the government, enhancement in the prosperity of shipbuilding industry demands disruptive changes at policy level with short term focus on employment generation, self-reliance, capability development and long term focus on robust economic growth and making India a global maritime player. The analysis of various facts of Indian shipbuilding Industry clearly shows that India needs to look at multiple interventions including the Regulatory framework, Investment Policies, emphasis on infrastructure facility, R&D skill, Financing Process and Collaboration with advanced technology to nurture the thriving ecosystem of Indian shipbuilding and inching towards global maritime player.

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