Changes in Japan's Shipbuilding Policy and Trends in Other Countries: with Reference to Efforts in China, South Korea and Europe

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Abstract

After World War II, Japan implemented a comprehensive shipbuilding policy that supported demand and supply. On the demand side, the government aided the shipping industry through the Programmed Shipbuilding Scheme (Keikaku Zosen). On the supply side, it amended the Shipbuilding Act and replaced the notification system for establishing new shipbuilding facilities with a permit system to prevent overcapacity. In 1956, Japan surpassed the United Kingdom to become the world's largest shipbuilder, and this framework of shipbuilding policy long supported Japan's shipbuilding industry. However, the Programmed Shipbuilding Scheme (Keikaku Zosen) was abolished after the 1990s, and South Korea and China rose to prominence. Recently, Japan has faced fierce international competition in terms of construction costs, technology, and research and development. Current trends in Japan include the enactment of the Act on Strengthening Maritime Industries in 2021, which established a national support system to enhance the competitiveness of the shipbuilding industry, as well as a reevaluation of the shipbuilding industry's significance from an economic security perspective. This paper provides an overview of the state of the shipbuilding industry in Japan, examines the changes and issues in shipbuilding policies, and reviews the trends in other countries.

Introduction

Over 99% of Japan's trade volume, which is surrounded by sea on all sides, comprises

maritime transport,[1] making its role vital. Therefore, the shipbuilding industry, responsible for building the ships that support maritime transportation, is critical to Japan's economic and social development.[2] After World War II, Japan developed an active shipbuilding policy, became the world's largest shipbuilder during the period of high economic growth, and maintained that position for a considerable period afterward. However, with the rise of South Korea and China, Japan has been exposed to intense international competition in recent years, making it the third-largest shipbuilder worldwide.[3] Thus, Japan has recently made efforts to strengthen its shipbuilding industry through the Act on Strengthening Maritime Industries.[4]

In this paper, Chapters I and II summarize the situation regarding Japan's shipbuilding industry, and Chapter III reviews the changes in shipbuilding policy thus far. Chapter IV provides an overview of the trends in China, South Korea, and Europe, and Chapter V examines the challenges facing Japan's shipbuilding policy.

I Shipbuilding Industry and Ships

1 *Overview of the Shipbuilding Industry*

The shipbuilding industry in Japan forms a maritime cluster with directly or indirectly related industries such as shipping, marine equipment manufacturing, and port transportation[5] and occupies a key role in the maritime cluster.[6] The shipbuilding industry takes orders from shipowners to construct the vessels used in the shipping industry and procures the required materials and equipment, such as marine engines, from the marine equipment industry.

In building a ship, when a shipowner places an order with the shipyard, the process entails designing, building, launching, and rigging the vessel, followed by test runs and subsequent completion.[7] In modern times, the block construction method—where the hull

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*The last date of access with regard to the internet information in this paper is April 30, 2024.

(1) 国土交通省海事局『海事レポート　2024』2024, p.31 (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism, *Maritime Report 2024*, 2024, p.31).

(2) 「造船業の国際競争力の強化」国土交通省ウェブサイト ("Strengthening the international competitiveness of the shipbuilding industry." Ministry of Land, Infrastructure, Transport and Tourism Website)

(3) *ibid.*

(4) Act to Partially Amend Marine Transportation Act and Others to Strengthen the Infrastructure of Maritime Industry (Act No.43 of 2021).

(5) 「用語解説」日本船主協会ウェブサイト ("Glossary of Terms." Japan Shipowners' Association Website)

(6) *ibid.*; 日本海事広報協会編「日本の海運　SHIPPING NOW 2024-2025」2024, p.18 (Japan Maritime Public Relations Center, ed., *Japan Maritime　SHIPPING NOW 2024-2025*, 2024, p.18).

(7) 「Q11：船をつくる：船はどのようにしてできる？」日本船主協会ウェブサイト ("Q11: Shipbuilding: How can a ship be built?" Japan Shipowners' Association Website)

is divided into several blocks and prefabricated, with all blocks assembled on the building berths—is primarily used.[8] As part of the construction process, materials are ordered, components are built, and the blocks are built and assembled on building berths or in docks[9]. The rigging process involves the installation of the engines and instruments required for navigation, as well as the construction of cabins.[10]

Japan's shipyards procure most of the necessary materials and equipment for shipbuilding from domestic sources, which contributes significantly to regional job creation and economic development. They also build and repair combatant ships and patrol ships that support Japan's maritime security, which is crucial from a security perspective.[11]

2 *Types of Ships*

Ships are categorized broadly into merchant ships, fishing vessels, warships, and special-purpose ships.[12] Merchant ships are intended to earn freight revenue by transporting passengers or cargo and are categorized into passenger ships, combined passenger-cargo ships, and cargo ships.[13] Cargo ships comprise various types, including general cargo ships, container ships,[14] tankers, and bulk[15] carriers.[16] When describing the size of a ship, names based on the dimensions that can travel through the canal or strait

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[8] 川崎豊彦『よくわかる最新船舶の基本と仕組み―脱炭素時代の造船業界と海運業界を俯瞰―　第 4 版』秀和システム, 2020, pp.160-163 (KAWASAKI Toyohiko, *Understanding the Fundamentals and Construction of Ships Today: An Overview of Shipbuilding and the Shipping Industry in the Decarbonization Era*, 4th Edition, Shuwa System, 2020, pp.160-163); 麻生潤「第 2 章　造船：大量建造システムの移転と変容―環黄海トライアングルの形成―」塩地洋編著『東アジア優位産業の競争力―その要因と競争・分業構造―』ミネルヴァ書房, 2008, pp.61-62 (ASO Jun, "Shipbuilding: Relocation and Transformation of Mass Construction Systems: Formation of the Yellow Sea Rim Triangle," SHIOJI Hiromi, ed., *Competitiveness of the East Asian Industries: Factors, Competition, and the Labor Division Structure*, Minerva Shobo, 2008, pp.61-62).

[9] 「海と船なるほど豆事典　船のなるほど　船のできるまで」日本海事広報協会ウェブサイト "The Small Encyclopedia of Sea and Ships: Ships - Construction of Ships." Japan Maritime Public Relations Center Website

[10] *ibid.*

[11] 「造船業の国際競争力の強化」前掲注(2) ("Strengthening the international competitiveness of the shipbuilding industry," *op.cit.*(2))

[12] 池田宗雄・髙嶋恭子『船舶知識の ABC　11 訂版』成山堂書店, 2022, p.3 (IKEDA Muneo, TAKASHIMA Kyoko, *ABCs of Ship Knowledge*, 11th Edition, Seizando Shoten, 2022, p.3).

[13] *ibid.*, p.4.

[14] When numerically expressing the size of container ships, the unit TEU (Twenty-foot Equivalent Units), which represents how many 20-foot containers can be loaded, is used. *ibid.*, pp.25-27.

[15] Refers to ships designed to transport bulk cargo, such as iron ore, coal, bauxite, aluminum ingots, lumber, chips, grain, and salt, in their holds. 拓海広志『ビジュアルでわかる船と海運のはなし 新訂　増補 2 訂版』成山堂書店, 2022, p.40 (TAKUMI Hiroshi, *Visually Understanding Ships and Marine Transportation*, A New Revised 2nd Edition, Seizando Shoten, 2022, p.40).

[16] 池田・髙嶋　前掲注(12), pp.17-97 (IKEDA, TAKASHIMA, *op.cit.*(12), pp.17-97); *ibid.*, pp.31-47.

that it operates in may be used. For example, container ships can be referred to as Panamax (the largest possible ship that can pass through the Panama Canal), Suezmax (the largest possible ship that can pass through the Suez Canal), and Malaccamax (the largest possible ship that can pass through the Straits of Malacca).(17)

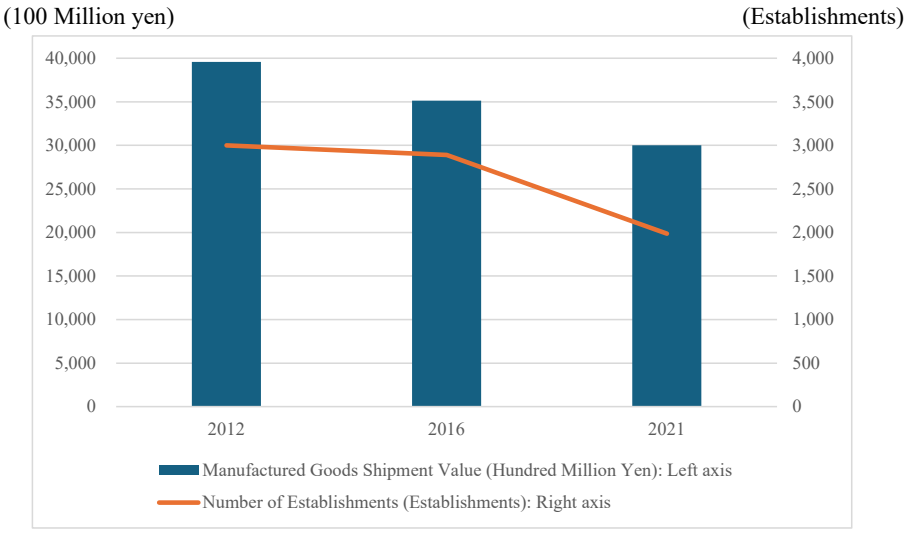
Fishing ships are vessels engaged in fishing and those related to fisheries, including those engaged in catching fish and transport vessels.(18) Warships include combatant ships, while special-purpose ships include crane ships, cable-laying ships, oil-drilling ships, and other types of workboats, research boats, patrol ships, training boats, and pleasure boats.(19)

II Status of Shipbuilding Industry

1 *Situation in Japan*

(1) Shipment Value, Number of Establishments, Number of Employees

Figure 1. **Trends in Manufactured Goods Shipment Value and Number of Establishments in Recent Years**



(Sources) Created by the author based on the annual Economic Census for Business Activity (Activity Survey).

Figure 1 shows the recent trends in shipment value for manufactured goods and the number of establishments in the "Shipbuilding and repair industry, marine machinery

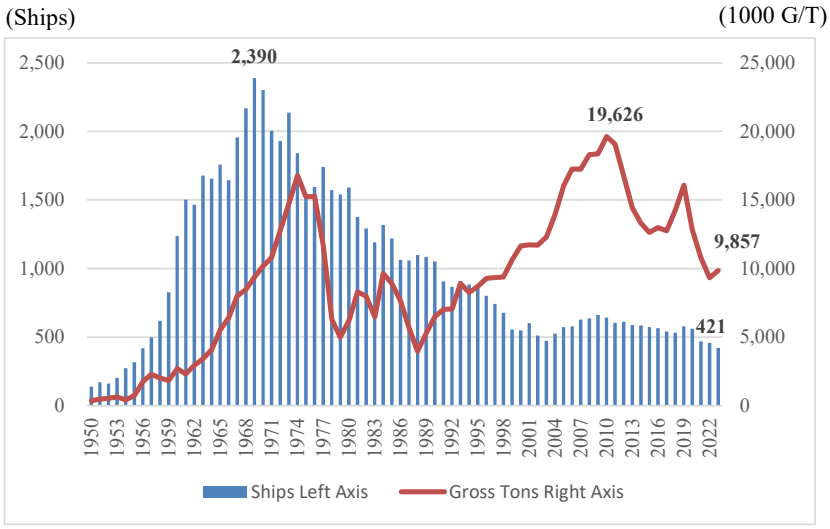
(17) The term Panamax is also used for general cargo ships and bulk carriers: there are categories such as Capesize (which are larger than Panamax) and Handysize (which are smaller than Panamax,) mainly for bulk carriers. 池田・髙嶋　同上, pp.21, 27 (IKEDA, TAKASHIMA, *ibid.*, pp.21, 27).
(18) *ibid.*, p.63.
(19) 拓海　前掲注(15), pp.25-26 (TAKUMI, *op.cit.*(15), pp.25-26).

manufacturing industry" according to the Economic Census for Business Activity (Activity Survey). The shipment value of manufactured goods in this industry was approximately 3,958.7 billion yen in 2012, which decreased to around 3,513.5 billion yen in 2016 and 3,001.2 billion yen in 2021.

Further, the number of establishments in the industry was 2,999 in 2012, falling to 2,889 in 2016 and 1,986 in 2021,[20] and the number of employees in the industry also declined from 79,442 in 2012 to 78,061 in 2016 and 66,057 in 2024.[21] As discussed below (V-1), Japan's shipbuilding industry employs many international workers through the Technical Intern Training Program and the Specified Skilled Worker Program.[22]

(2) Steel Hull Ship Construction

Figure 2. **Trends in Steel Hull Ship Construction (1950–2023)**



* Until 1969: Reckoning by fiscal year. From 1970: by calendar year.
* Okinawa was not included until 1972.
(Sources) Created by the author based on『完結昭和国勢総覧　第 1 巻』東洋経済新報社, 1991, p.440. (The Complete Showa National Survey, Vol.1, Toyo Keizai Shimpo, 1991, p.440) and『日本長期統計総覧　第 2 巻　新版』日本統計協会, 2006, p.431 (Historical Statistics of Japan, Vol.2 New Edition, Nihon Tōkei Kyōkai, 2006, p.431).

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[20] 総務省・経済産業省「第 1 表　1. 産業別統計表（産業細分類別）」（令和 3 年経済センサス活動調査産業編結果表）2022.12.26. e-Stat ウェブサイト (Ministry of Internal Affairs and Communications, "Ministry of Economy, Trade and Industry (Table 1. Industry Statistics Table (Detailed Breakdown by Industry)," (2021 Economic Census for Business Activity Survey, Industry Results Table) 2022.12.26. e-Stat Website)

[21] *ibid.*

[22] 大久保 元正「造船業と外国人技能実習生の関係についての一考察―愛媛県今治市の造船業を事例として―」『聖カタリナ大学研究紀要』34 号, 2022, pp.55-70 (OHKUBO Motomasa, "Discussing the Relationship Between the Shipbuilding Industry and International Technical Intern Trainees: The Case of the Shipbuilding Industry in Imabari City, Ehime," *Bulletin of St. Catherine University*, No.34, 2022, pp.55-70).

Figure 2 illustrates the transitions in steel hull ship construction from 1950 to the present. Japan's steel shipbuilding output was 139 ships in 1950 and rose significantly to 2,390 by 1969.[23] However, it has since been on a long-term downward trend, falling to 473 ships in 2003.[24] It subsequently recovered slightly, reaching 662 ships in 2009, but afterward fell to 421 ships[25] by 2023.[26]

Meanwhile, examining gross tonnage (G/T),[27] the total tonnage in 1950 was approximately 361,000 G/T, which rose to 16,782,000 G/T in 1974 but declined to below 4,000,000 G/T by 1988 due to the prolonged shipbuilding recession (discussed later in Section III-2) that lasted from around 1974 to 1989. Subsequently, gross tonnage increased again, driven by the trend toward larger vessels,[28] reaching approximately 19,626,000 G/T in 2010. Nevertheless, it has generally declined ever since, despite minor fluctuations, falling to approximately 9,857,000 G/T in 2023.

2 *Global Situation*

(1) Development of Japan

Shipbuilding once flourished in countries such as the United Kingdom, Germany, and Sweden.[29] However, Japan's shipbuilding industry developed rapidly during the period of high economic growth, which allowed it in 1956 to become the world leader in terms of the number of new ships launched. The global share of major shipbuilders in the same year were as follows: Japan, 26.2%; the United Kingdom, 20.7%; Germany, 15.0%; and Sweden

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[23] 『完結昭和国勢総覧　第 1 巻』東洋経済新報社, 1991, p.440 (*The Complete Showa National Survey*, Vol.1, Toyo Keizai Shimpo, 1991, p.440).

[24] 『日本長期統計総覧　第 2 巻　新版』日本統計協会, 2006, p.431 (*Historical Statistics of Japan*, Vol.2, New Edition, Nihon Tōkei Kyōkai, 2006, p.431).

[25] *ibid.*

[26] *Ibid.*; 「鋼船しゅん工実績の推移」『造船造機統計調査』2024.3. e-Stat ウェブサイト ("Trends in Steel Hull Ship Construction Works," *Survey on Shipbuilding and Engineering*, 2024.3. e-Stat Website)

[27] Tonnage, which indicates ship size, includes Gross Ton (G/T), and Deadweight Ton (D/W). Gross tonnage is calculated by multiplying the total volume of the ship by a coefficient and represents the total volume of the ship, while deadweight tonnage indicates the weight of the cargo the ship can carry (「Q9：船の大きさ：トン数とは？」日本船主協会ウェブサイト ("Q9 Ship Size: What is tonnage?" Japan Shipowners' Association Website))

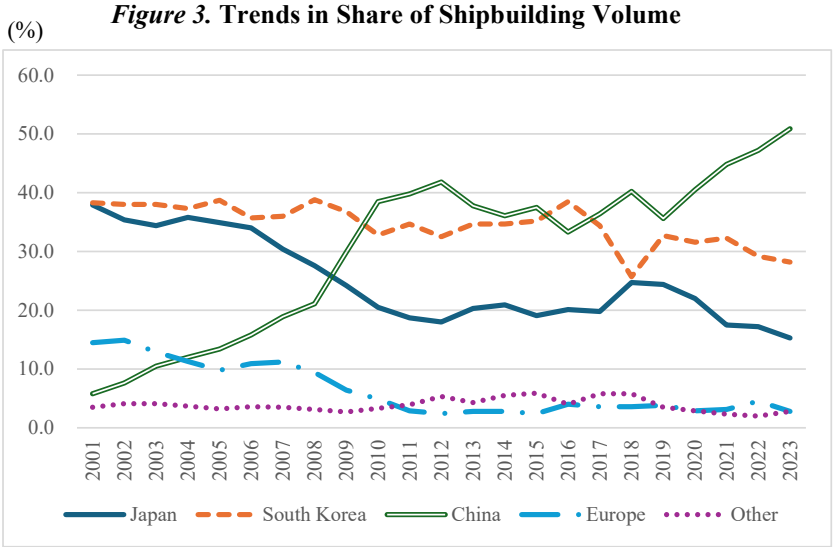
[28] Owing to increases in ship size, the number of ships and gross tonnage are not necessarily correlated, and gross tonnage may rise even without a significant change in the number of ships. 日本海事広報協会編　前掲注(6), p.30 (Japan Maritime Public Relations Association, *op.cit.*(6), p.30).

[29] 日本中小型造船工業会・日本船舶技術研究協会「欧州における造船業・船舶工業等の変遷と関連政策の変遷調査」2021.3, p.1 (Cooperative Association of Japan Shipbuilders & Japan Ship Technology Research Association, "A Survey of the Transformation of Shipbuilding and Shipbuilding Industries in Europe and Related Policy Changes," 2021.3, p.1); 麻生　前掲注(8), pp.58-60 (ASO, *op.cit.*(8), pp.58-60); 「世界の造船とわが国造船業の将来」『造船』No.1, 1958.3, pp.20-21 ("Shipbuilding in the World and the Future of Japan's Shipbuilding Industry," *Zōsen*, No.1, 1958.3, pp.20-21).

7.3%. Japan's share rose significantly from 15.6% in the previous year (1955). [30] Japan maintained its top position for a considerable period from this point onward, a crucial contributing factor being its ability to build a mass construction system for ships in a situation where other shipbuilding countries could not keep pace with the rapid expansion of the global market.[31]

(2) Rise of South Korea and China

Figure 3. **Trends in Share of Shipbuilding Volume**



(Source) Created by the author based on 日本造船工業会「造船関係資料」2024.9, p.1 (Shipbuilders' Association of Japan, "Shipbuilding-Related Materials," 2024.9, p. 1).

However, South Korea emerged on the scene in the 1990s and China in the 2000s,[32] and Japan now ranks behind both[33] of them in terms of market share. Figure 3 represents the share of shipbuilding volume since 2001, with Japan's share declining from 37.9% in 2001 to 15.3% in 2023. While Korea's share declined from 38.3% in 2001 to 28.2% in 2023, China's rose sharply, from 5.8% in 2001 to 50.9% in 2023, seizing market share from Japan, South Korea, and Europe.

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[30] 『造船』(ダイヤモンド産業全書　第 8) ダイヤモンド社, 1962, p.19 (*Zōsen* (Diamond Industry Complete Set, No.8), Diamond, Inc., 1962, p.19).

[31] 飯島正義「第 2 章　日本・韓国・中国造船業の発展過程と課題」大西勝明ほか編著『現代の産業・企業と地域経済―持続可能な発展の追及―』晃洋書房, 2018, pp.19-21 (IIJIMA Masayoshi, "Chapter 2: Development Process and Challenges to Shipbuilding Industries in Japan, South Korea, and China," ONISHI Katsuaki et al. eds., *Modern Industries, Enterprises, and Regional Economies: Pursuing Sustainable Development*, Koyo Shobo, 2018, pp.19-21).

[32] 「年間の新造船受注量、一位の座は韓国に－93 年」『毎日新聞』1993.11.25 ("Korea First Place in Yearly Number of Newly Built Ships - 1993," Mainichi Shimbun, 1993.11.25);「1-9 月新造船受注・建造・受注残/中国が世界首位。手持ちシェア 36%」『日本海事新聞』2010.10.13. ("Jan-Sep New Shipbuilding Orders, Construction, Orders Remaining/China Leading Globally. Shares in hand 36%," *The Japan Maritime Daily*, 2010.10.13).

[33] 「造船業の国際競争力の強化」前掲注(2) ("Strengthening the international competitiveness of the shipbuilding industry," *op.cit.*(2); 飯島　前掲注(31) (IIJIMA, *op.cit.*(31)); *ibid.*

III Evolution of Japan's Shipbuilding Policy

Japan's shipbuilding industry, which was severely damaged during World War II, developed under the government's aggressive post-war shipbuilding policy. Nevertheless, since 1990, due to the rise of South Korea and China, Japan's share of the world shipbuilding industry market has declined, leading to measures such as the Act on Strengthening Maritime Industries being enacted in recent years. This chapter provides an overview of the changes in Japan's shipbuilding policy from the postwar period to the present day.

1 *Postwar Reconstruction and Development*

(1) Programmed Shipbuilding Scheme (*Keikaku Zosen*)

The challenges that Japan's shipping industry faced after World War II were an absolute shortage of ships and a need to procure construction funds. The Programmed Shipbuilding Scheme was implemented to address these issues. Under this scheme, the government determined the numbers for ship construction and funding plans by type of ship for each year and selected qualified shipowners from among those who wanted to build to receive a considerable portion of the construction funds from fiscal funds. The fiscal funds utilized included loans from the Reconstruction Finance Corporation, financing from the US Aid Counterpart Fund, and loans from the Japan Development Bank.(34)

The Programmed Shipbuilding Scheme continued for a substantial period after the war, producing 1,272 vessels totaling 42.38 million gross tons by the 43rd plan in fiscal year 1987(35); nonetheless, the term "Planned Shipbuilding Scheme" itself was abolished in 1990.(36) The Scheme encountered many challenges, such as instances of bribery related to allotment under the Scheme(37) and the failure to eliminate rent-seeking when selecting qualified shipowners, as seen in shipbuilding scandals involving corruption among

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(34) 日本造船学会編『昭和造船史　第 2 巻（戦後編）』（明治百年史叢書　第 208 巻）原書房, 1973, p.422 (Society of Naval Architects of Japan, ed. *Showa-Era Shipbuilding History*, Vol 2 (Postwar Edition) (Meiji Centennial History Series, Volume 208), Harashobo, 1973, p.422).

(35) 『日本史大事典　第 2 巻』平凡社, 1993, p.1169 (*Cyclopedia of Japanese History*, Volume 2, Heibonsha, 1993, p.1169).

(36) It has been noted that the term "programmed shipbuilding" was abolished in the context of the OECD's liberalization agreement. 春成誠「戦後 50 年の我が国外航海運政策と動向」『海事産業研究所報』403 号, 2000.1, p.8 (HARUNARI Makoto, "Japan's Foreign Shipping Policies and Trends in 50 Years Since the War," *Japan Maritime Research Institute, The Bulletin*, No.403, 2000.1, p.8).

(37) 若林悠『戦後日本政策過程の原像―計画造船における政党と官僚制―』吉田書店, 2022. pp.137-138. (WAKABAYASHI Yu, *Original Shape of the Postwar Japanese Policy Process: Political Parties and the Bureaucracy in Planned Shipbuilding*, Yoshida Publishing, 2022. pp.137-138).

government officials.[38] However, in the process of coordinating interests, the Ministry of Transport (at the time) had formulated a strategy with a long-term perspective.[39] Although there are different opinions[40] regarding the Programmed Shipbuilding Scheme, some hold its effectiveness as a postwar industrial policy in high regard.[41]

(2) Enactment and Amendment of the Shipbuilding Act

Further, the Shipbuilding Act (Act No. 129 of 1950) was enacted in 1950 with the goals of advancing shipbuilding technology and ensuring the smooth operation of shipbuilding-related businesses.[42] Initially, the new law provided for a notification system for the establishment of new facilities and equipment related to shipbuilding. Nevertheless, Japan's expansion of shipbuilding capacity was regarded as an issue when the Treaty of Peace was concluded between the Allied powers and Japan. Accepting Japan's assertion that it wished to resolve this issue voluntarily,[43] the law was amended in 1952 to make it a permit system.[44] The amendment also stated the following criteria for granting permits to establish new facilities and equipment: (1) the number granted would not exceed the appropriate shipbuilding capacity for the Japanese economy; (2) the operation of the shipbuilding business would not cause competition detrimental to the sound development of Japan's shipbuilding industry; and (3) it would have a sound technical and financial basis.[45]

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[38] Refers to activities where companies lobby government agencies to change laws and policies to their own advantage, seeking to earn excess profits (rents) ("rent seeking") 『デジタル大辞泉』ジャパンナレッジ Lib) (Digital Daijisen, Japan Knowledge Lib).

[39] 橋本寿朗「戦略をもった調整者としての政府の役割―戦後復興期における「計画造船」と運輸省の活動・役割―」『社會科學研究』48(5), 1997.3, pp.222-227 (HASHIMOTO Jurō, "The Role of Government as a Coordinator with Strategy: Programmed Shipbuilding Scheme and Activities & Role of the Ministry of Transport during the Postwar Reconstruction Period," *Journal of Social Science*, 48(5), 1997.3, pp.222-227).

[40] 中川敬一郎『戦後日本の海運と造船―1950 年代の苦闘―』日本経済評論社, 1992, p.69 (NAKAGAWA Keiichirō, *Shipping and Shipbuilding in Postwar Japan: The Struggles of the 1950s*, Nihon Keizai Hyoronsha, 1992, p.69).

[41] 橋本　前掲注(39), p.200 (HASHIMOTO, *op.cit.*(39), p.200); Tomohei Chida and Peter N. Davies, *The Japanese shipping and shipbuilding industries: a history of their modern growth*, London: Athlone Press, 1990, pp.69-71, 89-91.

[42]「造船法　法律第 129 号(昭和 25.5.1.)」衆議院ウェブサイト ("Shipbuilding Act," No.129. (May 1, 1950) House of Representatives Website)

[43] 運輸省 50 年史編纂室編『運輸省五十年史』1999, p.91 (Ministry of Transport 50-Year History Editing & Compilation Office, "Ministry of Transport 50-Year History", 1999, p.91).

[44]「造船法の一部を改正する法律　法律第 199 号（昭和 27.6.16.)」衆議院ウェブサイト ("Act to Partially Amend the Shipbuilding Act," No.199. (June 16, 1952) House of Representatives Website) Notably, one reason for changing from the notification system to a permit system was the fear that expanding shipbuilding capacity by promoting capital and rationalization would lead to excessive competition. 日本造船学会編　前掲注(34), p.429 (Society of Naval Architects, *op.cit.*(34), p.429).

[45]「造船法の一部を改正する法律」同上 ("Act to Partially Amend the Shipbuilding Act," *ibid.*).

(3) Advancement of Shipbuilding Technology

The Act for Establishment of the Ministry of Transport (Act No. 157 of 1949) and the Council for Shipbuilding Technics Order (Cabinet Order No. 204 of 1949), both related to shipbuilding technology, were enacted in 1949. The Council for Shipbuilding Technics was established within the Ministry of Transport to investigate and deliberate on crucial matters related to the advancement of shipbuilding technology and the ship inspection system and advise the Minister of Transport on related matters.(46) Further, in 1949, under the same law, the Shipbuilding Laboratory was established as an agency affiliated with the Ministry to conduct research and test on ships, marine engines, and marine equipment.(47) This was reorganized into the Transportation Technical Research Institute in 1950(48) and the Ship Research Institute in 1963.(49)

2 *Shipbuilding Recession*

Japan's shipbuilding industry made significant progress after the war in light of the government's aggressive shipbuilding policy. However, it encountered two shipbuilding recessions during the period from 1974 to around 1989. Shipbuilding recessions were attributed to the excess vessel tonnage accumulated by shipping capital and the overcapacity of shipbuilding facilities by the 1970s.(50) To address the shipbuilding

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(46) 日本造船学会編　前掲注(34), p.435. (Society of Naval Architects of Japan, ed., *op.cit.*(34), p.435). The Council for Shipbuilding Technics was established as an affiliated body of the Ministry of Transport under Article 38 of the Act for Establishment of the Ministry of Transport, was merged into the Transportation Technics Council in 1970, and became the Council of Transportation Policy combining with the Maritime Transport & Shipbuilding Rationalization Council and the Harbor Council during the 2001 reorganization of the central government. 藤田保「外航海運企業の国際競争力」『中央大学大学院論究　経済学・商学研究科編』29(1), 1996, p.134 (FUJITA Tamotsu, "International Competitiveness of Foreign Shipping Companies," 1996, p.134; *Chuo University Bulletin*, Graduate School of Economics and Commerce Ed., 29(1), 1996, p.134); 菊地身智雄「国土交通省の誕生」『港湾』77(12), 2000.12, p.12 (KIKUCHI Michio, "Creation of the Ministry of Land, Infrastructure, Transport and Tourism," *Kōwan*, 77(12), 2000.12, p.12);「中央省庁再編に伴う海洋関係行政機構の改編について解説 1 国土交通省」『Ocean Newsletter』11 号, 2001.1.20. 笹川平和財団ウェブサイト ("Explanation on the Reorganization of Marine-related Administrative Organizations Following the 2001 Restructuring of the Central Government: Ministry of Land, Infrastructure, Transport and Tourism," *Ocean Newsletter*, No.11, 2001.1.20. The Sasakawa Peace Foundation Website)

(47) The Shipbuilding Laboratory was established according to Articles 29 and 31 of the then-Ministry of Transport's Establishment Act.

(48) 日本造船学会編　前掲注(34), p.439 (Society of Naval Architects of Japan, ed., *op.cit.*(34), p.439).

(49) The institute has since been reorganized into the National Maritime Research Institute under the National Research and Development Agency for Maritime, Port and Aviation Technology. 「概要・沿革」国立研究開発法人海上・港湾・航空技術研究所海上技術安全研究所ウェブサイト ("Overview & History." National Maritime Research Institute, National Maritime Research Institute Website)

(50) 麻生潤「造船不況と設備削減政策」『龍谷大学経済経営論集』30(4), 1991.3, pp.43-48 (ASO

recession, the government used temporary legislation to promote a cut in production facilities, leading to large-scale disposal of facilities and personnel reductions, substantially reducing the management resources of individual companies.(51)

Although the government holds permission authority for shipbuilders to build new facilities and equipment under the Shipbuilding Act, this temporary legislation was required because of the need to codify that joint actions by the shipbuilding industry to reduce equipment would be exempt from the Antimonopoly Act. The Ministry of Transport (at the time) had to reduce the facilities and bear the burden and responsibility of the reduction and withdrawal of small and medium-sized shipbuilder companies, and financial policy measures were necessary to enable this.(52)

(1) First Shipbuilding Recession

During the first shipbuilding recession, which was triggered by the 1973 oil crisis, measures were taken under the Act on Temporary Measures for Stabilization of Specified Depressed Industries (Act No. 44 of 1978). This law was enacted as temporary legislation against the background of rising crude oil prices and long-term sluggish demand that accompanied the transition to a period of stable growth. Of the manufacturing industries targeted, of which shipbuilding was one, if most of the entities engaged in that industry submitted a request, the relevant industry could be designated as a specified depressed industry by Cabinet Order. The relevant Minister could then establish a stabilization plan for each specified depressed industry, and the businesses of that industry would engage in joint actions, such as the disposal of facilities or a prohibition on constructing new facilities in accordance with that plan. Such joint actions taken by businesses pursuant to these instructions were exempt from the Antimonopoly Act, and the credit fund for the specified depressed industry, with financing by the Japan Development Bank and others, provided debt guarantees for the borrowing necessary to fund the disposal of facilities and other measures in the specified depressed industry.(53) During the first shipbuilding recession, the shipbuilding industry (limited to those using building berths or docks that could produce vessels of 5,000 gross tons or more) was designated as a specified depressed industry under this Act, and excess production facilities were disposed of systematically. As small and

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Jun, "Shipbuilding Recession and Policies to Cut Facilities," *The Journal of Economic and Business Studies of Ryukoku University*, 30(4), 1991.3, pp.43-48).

(51) Notably, facilities have been reduced to approximately half of the pre-recession level, and personnel are around one-third of what they were before. 国土交通省『国土交通白書　平成13年度』2001, p.249 (Ministry of Land, Infrastructure, Transport and Tourism, *White Paper on Land, Infrastructure, Transport and Tourism*, 2001 Edition, 2001, p.249).

(52) 麻生　前掲注(50), pp.45-46 (ASO, *op.cit.*(50), pp.45-46).

(53) 第84回国会衆議院会議録第10号　昭和53年3月2日　p.285 (Proceedings of the 84th Session of the House of Representatives, No.10, March 2, 1978, p.285); 第84回国会衆議院商工委員会議録第8号　昭和53年3月15日　pp.27-31 (Proceedings of the 84th Session of the House of Representatives, Committee on Commerce and Industry, No.8 March 15, 1978, pp.27-31).

medium-sized businesses with a high degree of specialization in shipbuilding found it difficult to dispose of equipment independently, the Specified Shipbuilding Manufacturing Industry Stabilization Association[54] (hereafter the "Stabilization Association") was established based on the Specified Shipbuilding Manufacturing Industry Stabilization Association Act (Act No. 103 of 1978), which conducted the acquisition of shipbuilding facilities and land at the request of businesses in the specified shipbuilding[55] industry.[56] Additionally, the demand was stimulated by promoting the replacement construction of government vessels and accelerating the scrapping of aging ships. Furthermore, to address short-term demand imbalances, the Minister of Transport made a recommendation to set operational limits for 1979 and 1980 for businesses capable of building ships above a certain size, making operational adjustments.[57]

(2) Second Shipbuilding Recession

During the second shipbuilding recession, which was triggered by the sharp rise in the yen due to the Plaza Accord of 1985 and the bankruptcy of major shipowners worldwide, the Temporary Measures Law Concerning Operational Stabilization of Designated Shipbuilding Enterprises (Act No. 25 of 1987) was enacted. This law enabled the Minister of Transport to formulate basic guidelines for achieving operational stability in the specified shipbuilding industry and designated shipbuilding operators to prepare implementation plans to stabilize operations and seek certification from the Ministry of Transport. Operators who had acquired approval for an implementation plan could receive support, such as buyout of equipment and land by the Stabilization Association and debt guarantees for borrowing funds for equipment disposal, according to the provisions in the plan.[58] During the second shipbuilding recession, groups conducting business worked

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[54] The Association is a corporation established with financing from the government and non-governmental entities, engaged in acquiring equipment and land for use in the shipbuilding industry, as well as their management and transfer. In July 1989, it was renamed the Shipbuilding Industry Infrastructure Improvement Business Association, and its tasks were expanded to include granting subsidies and conducting research and studies related to the manufacture of ships and marine equipment, contributing to the advancement of shipbuilding technology (advanced shipbuilding technology). However, in March 2001, the work related to advanced shipbuilding technology was taken over by the Corporation for Advanced Transport and Technology (what is now the Japan Railway Construction, Transport and Technology Agency), and it was dissolved.

[55] The term "Specified Shipbuilding Industry" refers to that sector of the shipbuilding industry that uses shipbuilding berths or docks capable of constructing vessels of 5,000 gross tons or more.

[56] 第 85 回国会衆議院運輸委員会議録第 1 号　昭和 53 年 10 月 13 日　pp.1-3, 31-36 (Proceedings of the 85th Diet, House of Representatives Transport Committee No.1　October 13, 1978, pp.1-3, 31-36).

[57] *ibid.*; 運輸省海上技術安全局造船課「造船 不況対策以降の造船政策概観（99 年の物流展望）」『Kaiun』856 号, 1999.1, pp.125-126 (Shipbuilding Division, Marine Technology and Safety Bureau, Ministry of Transport, "Shipbuilding - An Overview of Shipbuilding Policies After Antirecession Measures (1999 Logistics Outlook)," *Kaiun*, No.856, 1999.1, pp.125-126).

[58] 第 108 回国会衆議院運輸委員会議録第 1 号　昭和 62 年 3 月 25 日　pp.2-3, 38-40

together jointly to implement measures such as the reduction of equipment, and following its role during the first shipbuilding recession, the Stabilization Association took up the acquisition of the equipment and land of shipyards being closed.(59)

3 *Rise of South Korea and China and the Failure of the OECD Shipbuilding Agreement*

(1) Rise of South Korea and China

After the shipbuilding recessions, the industry saw the emergence of South Korea in the 1990s and China in the 2000s.(60) While Japan was the largest global shipbuilder in 1991, it initially sought to curb global shipbuilding capacity by limiting its capacity growth during a period of increasing demand. However, this did not restrain the expansion of capacity in South Korea at the time. Therefore, in 1996, a process of deregulation was implemented to increase the competitiveness and productivity of Japan's shipbuilders. This deregulation repealed the previous regulations related to the largest type of ship, which had restricted the expansion of the number of docks and building berths, and regulations related to equipment capacity and operational methods were also reviewed.(61) Regarding regulations related to operational methods, parallel construction regulations—which uniformly limited the number of ships that could be built in parallel on the same equipment—were relaxed.(62)

(2) OECD Shipbuilding Agreement Deadlock

Meanwhile, the OECD's Shipbuilding Committee began work on formulating an agreement aimed at the elimination of government subsidies for the shipbuilding industry and preventing unfair dumping related to ship transactions, leading to the drafting of the Agreement Respecting Normal Competitive Conditions in the Commercial Shipbuilding and Repair Industry in 1994.(63) From the perspective of international cooperation, Japan enacted the Act on Prevention of Predatory Pricing in Shipbuilding Contracts by Foreign

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(Proceedings of the 108th Diet, House of Representatives Transport Committee No.1　March 25, 1987, pp.2-3, 38-40); 運輸省海上技術安全局造船課同上 (Shipbuilding Division, Maritime Technology and Safety Bureau, Ministry of Transport, *ibid.*).

(59) 運輸省海上技術安全局造船課　同上, p.126 (Shipbuilding Division, Maritime Technology and Safety Bureau, Ministry of Transport, *ibid.*, p.126).

(60) 「造船業の国際競争力の強化」前掲注(2) "Strengthening the international competitiveness of the shipbuilding industry," *op.cit.*(2).

(61) 麻生潤「1990 年代の造船設備政策」『同志社商学』50(3・4), 1999.1, pp.426-433, 443-447 (ASO Jun, "Shipbuilding Equipment Policies in the 1990s," *The Doshisha Business Review*, 50(3, 4), 1999.1, pp.426-433, 443-447).

(62) *ibid.*

(63) 運輸省海上技術安全局造船課　前掲注(57), p.127 (Shipbuilding Division, Maritime Technology and Safety Bureau, *op.cit.*(57), p.127).

Vessel Manufacturers (Act No. 71 of 1996),[64] entering into the Agreement. However, the Agreement did not enter into force because the US could not obtain congressional approval and ratify it.[65] Subsequently, negotiations on a new shipbuilding agreement were held in Japan, Europe, South Korea, and China, which mainly concerned subsidy measures and price discipline. Nonetheless, these were suspended due to disagreements between the participating countries.[66]

4 *Strengthening International Competitiveness*

The shipbuilding policy of the 1990s advocated for international cooperation. However, owing to the failure of the OECD's efforts—as described in Section III-3—the shipbuilding policy since the 2000s has been to strengthen international competitiveness.[67]

(1) Shipbuilding Industry Competition Strategy Council

The Shipbuilding Industry Competition Strategy Council was established under the Ministry of Land, Infrastructure, Transport and Tourism in 2002. In 2003, it formulated the "Vision and Strategy for Japan's Shipbuilding Industry".[68] The goal for 2010 was to maintain a domestic production system with a gross tonnage of 10 million tons (1/3 of the global market share) and establish technological capability to lead the world in maritime shipbuilding.[69] The basic strategies included (1) improving the competitive environment,

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[64] This Act shall come into force on the date the Agreement takes effect for Japan (Article 1 of the Supplementary Provisions).

[65] Japan, Europe, South Korea, the United States, and Norway participated in the formulation of this Agreement. 「3・5　OECD」『船協海運年報　2005 年版』日本船主協会ウェブサイト ("3, 5 OECD," *Annual Report on Maritime Transport*, 2005 Edition. Japan Shipowners' Association Website)

[66] *ibid.*

[67] In the 1990s, the "White Paper on Land, Infrastructure, Transport and Tourism" mentioned the promotion of international cooperation as a subtitle, but it was no longer mentioned by the last white paper in 2000. Subsequent white papers by the Ministry of Land, Infrastructure, Transport and Tourism emphasized strengthening international competitiveness from the early 2000s to the present. 運輸省『運輸白書　平成 12 年度版』2000, p.456 (Ministry of Transport, *White Paper on Land, Infrastructure, Transport and Tourism*, 2000 Edition, 2000, p.456); 「(1) 造船業の国際競争力強化のための取組み」国土交通省『国土交通白書　平成 14 年版』2002 ("(1) Efforts to strengthen the international competitiveness of the shipbuilding industry" Ministry of Land, Infrastructure, Transport and Tourism, *White Paper on Land, Infrastructure, Transport and Tourism*, 2002 Edition, 2002).

[68] 国土交通省『国土交通白書　平成 16 年版』2004, p.198 (Ministry of Land, Infrastructure, Transport and Tourism, *White Paper on Land, Infrastructure, Transport and Tourism*, 2004 Edition, 2004, p.198).

[69] Specifically, against the backdrop of increasing interest in reducing total costs over the entire lifetime of the product, the aim is to establish the technical capabilities to design and build the highest LCV ocean-going ship (MVS-2010: Most Valuable Ship 2010) that will drastically increase its life cycle value (LCV), including significant reductions in fuel consumption and air pollutant emissions. 造船産業競争戦略会議「我が国造船産業のビジョンと戦略―21 世紀

(2) strengthening comprehensive competitiveness by pursuing "economies of scale," enhancing production technologies to reduce construction periods, human resource development and skill transfer, (3) promoting new research and development (R&D) approaches.[70]

Of these, in the context of maintaining a domestic production system of 10 million gross tons as a goal,[71] production increased to 19.626 million G/T in 2010 and was maintained above 10 million G/T until 2021. However, as of 2023, it has fallen to approximately 9.857 million G/T. Conversely, Japan's share of the global market has not reached one-third; as mentioned above (Section II 2(2)), the share as of 2023 was 15.3%.

(2) New Shipbuilding Policy Study Group

In 2010, the Ministry of Land, Infrastructure, Transport and Tourism established the New Shipbuilding Policy Study Group,[72] comprising experts on shipbuilding; in 2011, the Study Group announced the "Comprehensive New Shipbuilding Policy." In addition to industry restructuring and the development of new markets and fields such as large cruise ships and ocean development-related vessels, the policy proposed measures to strengthen competitiveness in winning orders through initiatives such as ship investment funds financed by shipbuilding companies and the introduction of "CO_2 30% Reduction Ships" (fuel-efficient ships).[73] Accordingly, support was provided for the development of energy-saving technologies to achieve fuel efficiency in ships.[74]

The "Comprehensive New Shipbuilding Policy" also included Japan's initiative to set

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における新たなるチャレンジ―」2003.6.20, p.10. 国土交通省ウェブサイト (Shipbuilding Industry Competition Strategy Council, "Vision and Strategy for Japan's Shipbuilding Industry: New Challenges in the 21st Century," 2003.6.20, p.10. Ministry of Land, Infrastructure, Transport and Tourism Website);

[70] 「造船産業の競争戦略まとまる～「造船産業競争戦略会議」最終報告～」2003.6.25. 国土交通省ウェブサイト (Summary of Competition Strategies in the Shipbuilding Industry "Shipbuilding Industry Competition Strategy Council Final Report," 2006.6.25. Ministry of Land, Infrastructure, Transport and Tourism Website)

[71] As for this objective, it was said that "for Japan's shipbuilding industry to play a central role in global maritime shipbuilding, (...) it is necessary to secure the production for about 10 million gross tons and securing personnel," and here, "the production system" refers to the capability to produce and the actual state of production. 造船産業競争戦略会議　前掲注(69), pp.9-10 (Shipbuilding Industry Competition Strategy Council, *op.cit.*(69), pp.9-10).

[72] 国土交通省『国土交通白書　平成 23 年版』2011, pp.181-182 (Ministry of Land, Infrastructure, Transport and Tourism, *White Paper on Land, Infrastructure, Transport and Tourism*, 2011 Edition 2011, pp.181-182).

[73] 新造船政策検討会「総合的な新造船政策～一流の造船国であり続けるために～」2011.7.6. (New Shipbuilding Policy Study Group, "Comprehensive New Shipbuilding Policy: Staying a Global Shipbuilding Leader," 2011.7.6.)(Appendix 1) Ministry of Land, Infrastructure, Transport and Tourism; (Appendix 2) *ibid.*; (Appendix 3) *ibid.*; (Appendix 4) *ibid.*; (Press Release) *ibid.*

[74] 国土交通省『国土交通白書　平成 24 年版』2012, p.194 (Ministry of Land, Infrastructure, Transport and Tourism, *White Paper on Land, Infrastructure, Transport and Tourism*, 2012 Edition, 2012, p.194).

new standards for reducing CO_2 emissions from international shipping as a "Marine Environment Initiative," in which Japan led the deliberations of the International Maritime Organization (IMO). The IMO agreed upon a framework for reducing CO_2 emissions by amending existing treaties, and the Partial Amendment of the Act on Prevention of Marine Pollution and Maritime Disaster (Act No. 89 of 2012) was enacted to make this revision a domestic law, requiring ships subject to the amendment to calculate CO_2 emission control indicators.(75)

(3) Maritime Productivity Revolution

The Ministry of Land, Infrastructure, Transport and Tourism designated 2016 as the "first year of the productivity revolution," selecting 20 projects to accelerate efforts to support industrial productivity and support the development of new markets.(76) Part of this was promoting the "Maritime Productivity Revolution," which included i-Shipping to improve the productivity of shipbuilding and shipping by utilizing information and communications technology (ICT), and j-Ocean to support the development of engineers for marine development, technical support, and financial support.(77) The Maritime Productivity Revolution also promoted efforts toward the practical use of automated ships, and the report by the Maritime Innovation Subcommittee under the Transport Policy Council's Maritime Affairs Committee (June 1, 2018)(78) presented a roadmap that outlined

(75) The Energy Efficiency Design Index (EEDI) is an indicator of the amount of CO2 emitted from ships when carrying one ton of cargo for one mile. 国土交通省「国際海運からの CO2 排出削減のための条約改正に伴う CO2 排出規制の開始について」2012.9.6. (Ministry of Land, Infrastructure, Transport and Tourism, "On the Commencement of CO2 emission regulations following revisions of the Treaty to reduce CO2 emissions from international maritime transport," 2012.9.6).

(76) 「「生産性革命プロジェクト 20」の具体化状況について」（国土交通省生産性革命本部（第 7 回会合）参考資料）2018.5.29 国土交通省ウェブサイト ("Implementation Status of the "Productivity Revolution Project 20"," (Ministry of Land, Infrastructure, Transport and Tourism Head Office (7th Meeting) Reference Materials) 2018.5.29. Ministry of Land, Infrastructure, Transport and Tourism Website)

(77) 国土交通省『国土交通白書　平成 30 年版』2018, p.238 (Ministry of Land, Infrastructure, Transport and Tourism, *White Paper on Land, Infrastructure, Transport and Tourism*, 2018 Edition" 2018, p.238); 国土交通省『国土交通白書　令和元年版』2019, p.211 (Ministry of Land, Infrastructure, Transport and Tourism, *White Paper on Land, Infrastructure, Transport and Tourism*, 2019 Edition, 2019, p.211); 大坪新一郎「海事生産性革命」『海事の窓』76 号, 2018.3, pp.2-8 (OTSUBO Shinichiro, "Maritime Productivity Revolution" *Kaiji no Mado*, No.76, 2018.3, pp.2-8).

(78) 交通政策審議会海事分科会海事イノベーション部会「海事産業の生産性革命の深化のために推進すべき取組について～平成 28 年 6 月 3 日答申のフォローアップ～報告書」2018.6.1 国土交通省ウェブサイト (Maritime Innovation Subcommittee of the Transport Policy Council's Maritime Affairs Committee, "Initiatives to Promote the Deepening of the Maritime Industry Productivity Revolution: Follow-up to the Report Submitted on June 3, 2016-Report," 2018.6.1. Ministry of Land, Infrastructure, Transport and Tourism Website)

the framework for technological development and a review of standards and systems.[79]

Furthermore, in 2017, the Marine Transportation Act (Act No. 187 of 1949) was amended to establish the "Advanced Ship Introduction Plan Certification System."[80] This system promotes the introduction of advanced ships, such as "IoT-using ships," or ships that employ the Internet of Things and Big Data, and "alternative fuel ships," which support alternative fuels such as liquefied natural gas (LNG).[81] If a ship operator or shipbuilder applies to the Minister of Land, Infrastructure, Transport and Tourism for approval for the introduction of an advanced ship, support may be provided through special measures for administrative procedures, and it is possible to apply for subsidies for the development of advanced ship technology.[82]

5 *Recent Trends*

Japan's shipbuilding policy has made progress in recent years, with the enactment of the Act on Strengthening Maritime Industries based on the Maritime Industry Future Vision Study Group and the report of the Maritime Innovation Subcommittee under the Transport Policy Council's Maritime Affairs Committee. This section is an overview of recent developments in Japan's shipbuilding policy.

(1) Maritime Industry Future Vision Study Group

The Maritime Industry Future Vision Study Group is a meeting of experts established in 2019 in the Maritime Affairs Bureau under the Ministry of Land, Infrastructure,

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[79] This roadmap sets the goal of practical application by 2025 of "ships that support the crew, the ultimate decisionmakers, through shore-based navigation and action proposals using AI, etc." (Phase II Autonomous Ships), and demonstration projects of core technologies implemented since 2018. 「自動運航船の実用化へ向けた取組」国土交通省ウェブサイト ("Initiatives for the practical use of autonomous ships." Ministry of Land, Infrastructure, Transport and Tourism Website)

[80] 国土交通省『国土交通白書　平成 30 年版』前掲注(77) (Ministry of Land, Infrastructure, Transport and Tourism, *White Paper on Land, Infrastructure, Transport and Tourism*, 2018Edition, *op.cit.*(77).

[81] 「先進船舶導入等計画認定制度について」国土交通省ウェブサイト ("On the Advanced Ship Introduction Plan Certification System." Ministry of Land, Infrastructure, Transport and Tourism Website).

[82] At the time of introducing this system, the Basic Policy for Promoting Advanced Ship Introduction Plans and a notification defining the scope of advanced ships were formulated. *ibid.*; 田村顕洋「代替燃料を取り巻く国内外の動向等―国際規制の動向,海外の普及状況,国内支援措置等―」『Kanrin』81 号, 2018.11, p.3 (TAMURA Akihiro, "Domestic and International Trends on Alternative Fuels: Trends in International Regulations, Overseas Adoption, Domestic Support Measures, etc.," *Kanrin*, No.81, 2018.11, p.3);「先進船舶の対象範囲を定める告示」（平成 29 年国土交通省告示第 886 号）国土交通省ウェブサイト ("Notification Determining the Scope of Advanced Vessels." (2017 Ministry of Land, Infrastructure, Transport and Tourism Notification No.886) Ministry of Land, Infrastructure, Transport and Tourism Website).

Transport and Tourism, and after four meetings, it released a report in 2020.[83] This report provided an overview of the state of the shipbuilding industry in Japan and overseas and stated that the shipbuilding industry in Japan should work toward the following: (1) promoting cooperation, collaboration, and integration among the shipbuilding and marine equipment manufacturing industries; (2) changing the industrial structure in response to the digital era; (3) promoting overseas expansion to strengthen the foundation of the government's shipbuilding sector; (4) strategic efforts to realize zero-emission ships[84]; and (5) resolving issues in coastal shipping and promoting the development of new business fields.

Regarding the promotion of corporate integration in the first point, in addition to the establishment of joint ventures and the acquisition of companies in Japan and abroad to strengthen the international competitiveness of the maritime industries, it states that consideration must be given to the establishment of special purpose companies (SPCs) to promote ship exports and the utilization of financing from the Development Bank of Japan (DBJ) and the Japan Bank for International Cooperation (JBIC) to promote ship exports. It also advocates the full utilization of measures under previous frameworks, such as tax measures under the Industrial Competitiveness Enhancement Act (Act No. 98 of 2013), and two-step loans[85] by designated financial institutions based on this law.[86] Additionally, in the context of changing the industrial structure in response to the digital era, given the emergence of large system integrator companies[87] in Europe (described later in Section IV-3), it advocates for the realization of a Japanese version of such systems.[88]

The report also describes the efforts taken during the COVID-19 pandemic. Noting

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[83] 国土交通省海事局「海事産業将来像検討会　報告書」2020.5 (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism, "Maritime Industry Future Vision Study Group Report," 2020.5).

[84] Refers to ships that do not emit greenhouse gases during operation, such as hydrogen-fueled and ammonia-fueled ships. 「温室効果ガスを排出しない船舶」2021.3, 政府広報オンライン ("Ships that do not emit greenhouse gases," 2021.3. Public Relations Office Government of Japan Website)

[85] Two-step loans are included in the Business Foundation Strengthening Plan and the Specified Ship Introduction Plan certification systems under the Act on Strengthening Maritime Industries (Section III 5(3)), with low-interest loans provided from designated financial institutions that have received financing from the Japan Finance Corporation. 国土交通省海事局「海事産業強化法に基づく事業基盤強化計画認定制度」2024.4.1, p.3 (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism ("The Approval System for Business Foundation Strengthening Plans based on the Act on Strengthening Maritime Industries," 2024.4.1, p.3); 同「海事産業強化法に基づく特定船舶導入計画認定制度」2024.4.1, p.3 (*ibid.* "The Approval System for Business Foundation Strengthening Plans based on the Act on Strengthening Maritime Industries," 2024.4.1, p.3).

[86] 国土交通省海事局　前掲注(83), pp.39-40 (Marine Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism, *op.cit.*(83), pp.39-40).

[87] With the increasing digitalization of ships, and as many devices are connected to the network, these devices use software to function as an integrated system, and the entities building these systems are called system integrators. *ibid.*, p.40.

[88] *ibid.*, p.41.

the critical role of maritime transportation in terms of Japan's economic security by delivering materials such as energy resources, it aims to maintain the industrial base of Japan's shipbuilding and marine equipment manufacturing industries through short-term and medium-term measures. These include government-wide support measures and financial backing coordinated with related agencies and systematic promotion of government ship orders and implementing policies to promote the adoption of low-environmental-impact ships.

(2) Report of the Maritime Innovation Subcommittee under the Transport Policy Council's Maritime Affairs Committee

Based on the report of the Maritime Industry Future Vision Study Group (III 5(1)), in December 2020, the Maritime Innovation Subcommittee under the Transport Policy Council's Maritime Affairs Committee announced its report titled "Future of the Shipbuilding Industry and Measures to Develop the Industry's Foundation to Ensure Stable International Maritime Transport".[(89)] This report was published during the falloff in construction work at Japanese shipyards during the COVID-19 pandemic; it references the Maritime Industry Future Vision Study Group report and outlines short-term and medium-term measures for the shipbuilding industry.

Short-term measures include the following: (1) measures to stimulate demand for construction and promote orders: using government-affiliated financial institutions and the maritime tax system to promote the construction and export of government vessels, strengthening the business activities of shipbuilding companies; (2) measures to strengthen the foundation of the industry: promoting consolidation, integration, and cooperation among companies, enhancing productivity, initiating dispute resolution procedures based on the WTO agreements in response to the South Korean government's support measures for the shipbuilding industry, and measures to address the impact of the COVID-19 pandemic.

Medium-to-long-term measures include the following: efforts to develop technology and R&D efforts, specifically zero-emission and autonomous ships; developing a Japanese version of system integrators; efforts in the marine development field, such as floating offshore wind-power generation; ensuring a fair competitive environment; securing and cultivating human resources; and efforts toward securing early entry into the Ship

(89) 交通政策審議会海事分科会海事イノベーション部会「安定的な国際海上輸送を確保するための今後の造船業のあり方及び造船業の基盤整備に向けた方策について　答申」2020.12.22 国土交通省ウェブサイト (Maritime Innovation Subcommittee of the Transport Policy Council's Maritime Affairs Committee, "Future of the Shipbuilding Industry and Measures to Develop the Industry's Foundation to Ensure Stable International Maritime Transport Report," 2020.12.22. Ministry of Land, Infrastructure, Transport and Tourism Website)

Recycling Convention.[90]

As part of implementing a comprehensive policy package, this report also proposes the establishment of a certification system under the Ministry of Land, Infrastructure, Transport and Tourism for business restructuring and productivity improvement plans submitted by shipbuilders and others, where approved projects will be eligible for measures such as two-step loans, tax incentives, and technical development support. It also proposes establishing a similar certification system under the Ministry of Land, Infrastructure, Transport and Tourism for plans to introduce high-quality, safe, low-environmental-impact ships manufactured by certified shipbuilders, with similar provisions of eligibility for two-step loans and tax incentives.[91]

(3) Act on Strengthening Maritime Industries

Based on the 2020 Report of the Maritime Innovation Subcommittee under the Transport Policy Council's Maritime Affairs Committee, the government submitted a bill in 2021 leading to the enactment of the Act on Strengthening Maritime Industries. This Act amended the Shipbuilding Act, etc., aiming to address the challenges related to shipping, shipbuilding, and seafaring comprehensively, and these amendments were based on the urgent need to strengthen Japan's competitive foundation in the field of shipbuilding through business restructuring and capital investment to enhance technical capabilities and productivity.[92] Therefore, the Purpose clause in Article 1 of the Shipbuilding Act was completely revised. Moreover, new certification systems were established for Business Foundation Strengthening Plans and Specified Ship Introduction Plans.

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[90] The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships 2009 entered into force on June 26, 2025. The Convention aims to ensure the safety and health of the people engaged in the recycling and dismantling of ships and the preservation of the living environment. In Japan, the Act on the Appropriate Implementation of Sound Recycling of Ships (Act No.30 of 61) has been enacted as the law guaranteeing the same. 「シップ・リサイクル法の施行について」国土交通省ウェブサイト ("On the enforcement of the ship recycling law." Ministry of Land, Infrastructure, Transport and Tourism Website)

[91] 交通政策審議会海事分科会海事イノベーション部会　前掲注(89), pp.14-27 (Maritime Innovation Subcommittee of the Transport Policy Council's Maritime Affairs Committee, *op.cit.*(89), pp.14-27).

[92] In addition to the Shipbuilding Act, this law also amends the Marine Transportation Act (Act No.187 of 1949), the Ship Safety Act (Act No.11 of 1933), the Coastal Shipping Business Act (Act No.151 of 1952), the Mariners Act (Act No.100 of 1947), and the Mariners' Employment Security Act (Act No.130 of 1948). 「海事産業の基盤強化―海運・造船・船員の各分野の課題に一体的に対応―海事産業の基盤強化のための海上運送法等の一部を改正する法律（令和 3 年法律第 43 号）令 3・5・21 公布 令 3・8・20 以降順次施行」『時の法令』2141 号, 2022.3.15, pp.38-41 ("Strengthening the foundation of the marine industry: Addressing issues in shipping, shipbuilding, and mariners'- Act to Partially Amend Marine Transportation Act and Others to Strengthen the Infrastructure of Maritime Industry (Act No.43 of 2021) Promulgated May 21, 2021; Enforced from August 20, 2021," *Toki no Hōrei*, No.2141, 2022.3.15, pp.38-41).

(i) Amendment to the Shipbuilding Act

The Purpose clause in the Shipbuilding Act (Article 1) had previously stated its objectives as being the improvement of shipbuilding technology and the smooth operation of shipbuilding-related businesses. However, an amendment was added, "promoting the sound development of shipbuilding-related businesses, contributing to the improvement of people's livelihoods and the healthy development of the national economy," to enhance shipbuilding competitiveness.(93)

The Shipbuilding Act, revised by the Act on Strengthening Maritime Industries, newly stipulates the strengthening of business foundations in Articles 10 to 32, with Article 10 stating that the Minister of Land, Infrastructure, Transport and Tourism and the Minister of Finance shall establish basic policies for the comprehensive and systematic promotion of measures to strengthen business foundations. Accordingly, a Basic Policy on Promoting the Strengthening of Business Foundations (2021 Notification No. 2 of the Ministry of Finance and the Ministry of Land, Infrastructure, Transport and Tourism)(94) was formulated in November 2021, setting out the significance and goals of promoting stronger business foundations. Measures based on the findings of the Maritime Innovation Subcommittee under the Transport Policy Council's Maritime Affairs Committee were also included as basic policies for the proposals the government needed to implement. The policy outlines promoting the strengthening of business foundations through restructuring and promoting productivity, which will increase the productivity of Japan's shipbuilding industry by 20% to reach the goal of building 18 million gross tons of shipping in 2025.(95)

(ii) Approval of Business Foundation Strengthening Plans

The Business Foundation Strengthening Plans stipulated in Article 11 of the Revised Shipbuilding Act are plans for productivity improvement and business restructuring prepared by shipbuilders and marine equipment operators. If approved by the Minister of Land, Infrastructure, Transport and Tourism, these will qualify for two-step loans(96) from the Japan Finance Corporation, as well as special tax treatment.(97) Approval of Business

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(93) *ibid.*, p.44.

(94) 「事業基盤強化の促進に関する基本方針（令和 3 年財務省・国土交通省告示第 2 号）」2021.11.20 国土交通省ウェブサイト ("Basic Policy on Promoting the Strengthening of Business Foundations," (2021 Notification No.2 of the Ministry of Finance and the Ministry of Land, Infrastructure, Transport and Tourism) 2021.11.20. Ministry of Land, Infrastructure, Transport and Tourism Website)

(95) *ibid.*, p.1. Additionally, Japan's steel hull shipbuilding output in 2023 was approximately 9,857,000 G/T, as mentioned above (Section II(2)).

(96) Designated financial institutions that receive loans from the Japan Finance Corporation provide long-term, low-interest loans to businesses. 国土交通省海事局「海事産業強化法に基づく事業基盤強化計画認定制度」前掲注(85) (Maritime Affairs Bureau, Ministry of Land, Infrastructure, "Transport and Tourism :The Approval System for Business Foundation Strengthening Plans based on the Act on Strengthening Maritime Industries," *op.cit.*(85)).

(97) *ibid.*

Foundation Strengthening Plans began in September 2021, with 42 plans approved as of April 2025.[98]

(iii)Approval of Specified Ship Introduction Plans

Through the amendments to the Marine Transportation Act, the Act on Strengthening Maritime Industries also establishes a certification system for Specified Ship Introduction Plans in the maritime transport field.[99] Specified Ship Introduction Plans are programs to introduce vessels that meet specific criteria related to reducing environmental impact, ensuring navigational safety and streamlining navigation and cargo handling (limited to vessels manufactured by entities under the Business Foundation Strengthening Plans based on the Shipbuilding Act: Specified ships). Each plan is prepared jointly by the ship operators[100] and the shipbuilder manufacturing the ship for the operator. If the Minister of Land, Infrastructure, Transport and Tourism approves the plan, it qualifies for benefits, including two-step loans[101] from the Japan Finance Corporation, tax incentives for ocean-going vessels, and, in the case of domestic vessels, lower interest rates on funding through the Joint Shipbuilding System[102] of the Japan Railway Construction, Transport and Technology Agency.[103] As of March 31, 2025, 30 plans for 30 ocean-going vessels and

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(98) 「認定事業基盤強化計画　一覧」国土交通省ウェブサイト (“List of Approved Business Foundation Strengthening Plans.” Ministry of Land, Infrastructure, Transport and Tourism Website)

(99) 『時の法令』前掲注(92), pp.42-43 (*Toki no Horei*, *op.cit.*(92) pp.42-43). For the introduction of specified ships, similar to the strengthening of the foundations of shipbuilding businesses, basic policies have been outlined by the Minister of Land, Infrastructure, Transport and Tourism and the Minister of Finance. 「特定船舶の導入の促進に関する基本方針（令和 3 年財務省・国土交通省告示第 1 号）」2021.11.20, 国土交通省ウェブサイト (“Basic Policy on Promoting the Introduction of Specified Ships,” (Notification No.1 of the Ministry of Finance and the Ministry of Land, Infrastructure, Transport and Tourism 2021) 2021.11.20. Ministry of Land, Infrastructure, Transport and Tourism Website)

(100) “Ship operators” includes ship operators, charterers, and their subsidiaries. 国土交通省海事局「海事産業強化法に基づく特定船舶導入計画認定制度」前掲注(85), p.18 (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism “The Approval System for Introducing Specified Ships based on the Act on Strengthening Maritime Industries,” *op.cit.*(85), p.18).

(101) *ibid.*

(102) Under the Joint Shipbuilding System, the Japan Railway Construction, Transport and Technology Agency (JRTT) accepts applications from domestic shipping operators and orders the construction of a vessel from a shipyard jointly with that operator. The completed ship is jointly owned by the operator and the JRTT for a certain period of time (roughly the service life), with shares determined by the cost-sharing ratio. 「船舶共有建造事業の概要」鉄道建設・運輸施設整備支援機構（JRTT）ウェブサイト (“Overview of Joint Ship Construction.” Japan Railway Construction, Transport and Technology Agency (JRTT) Website)

(103) 国土交通省海事局「海事産業強化法に基づく特定船舶導入計画認定制度」前掲注(85), (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism “The Approval System for Introducing Specified Ships based on the Act on Strengthening Maritime Industries,” *op.cit.*(85)).

48 plans for 50 domestic vessels had been approved.[104]

(iv) Summary

The Act on Strengthening Maritime Industries establishes supply-side support measures for shipbuilding through the Business Foundation Strengthening Plans, and the Specified Ship Introduction Plans addresses the demand side; measures on both sides aim to create a virtuous cycle.[105] The law is also regarded as the culmination of current maritime industry policy, and cooperation between the shipbuilding industry and the shipping industry is expected.[106] Meanwhile, the report of the Maritime Innovation Subcommittee under the Transport Policy Council's Maritime Affairs Committee referred to discussion on the public support measures of various countries from the perspective of ensuring a level playing field. However, as subsidies are being provided in other countries, this discussion is no longer effective.[107]

(4) Study Group for the Implementation of Changes in the Shipbuilding Industry

Recently, in May 2023, the Ministry of Land, Infrastructure, Transport and Tourism established the Study Group for the Implementation of Changes in the Shipbuilding Industry[108] to set a vision and goals for the shipbuilding industry for 2030 and consider measures for achieving these.[109] The Study Group published its report on July 16, 2024. This report outlines a vision for the shipbuilding industry by 2030, which involves the following: (1) securing a presence in the global market by leading the world in next-generation ships,[110] such as new fuel ships; (2) transforming it into an industry that creates

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[104] 「特定船舶導入計画の認定状況」国土交通省ウェブサイト ("Status of Approval of Specified Ship Introduction Plans." Ministry of Land, Infrastructure, Transport and Tourism Website)

[105] *op.cit.*(85).

[106] 大坪新一郎「海事産業強化法の成立とその意義」『Ocean Newsletter』511 号, 2021.11.20. 笹川平和財団ウェブサイト (OTSUBO Shinichiro, "Enactment of the Act on Strengthening Maritime Industries and Its Significance," *Ocean Newsletter*, No.511, 2021.11.20. Sasakawa Peace Foundation Website)

[107] 「第 1 回 海事産業委員会 開催結果概要」2024.12.20. 日本海事センターウェブサイト ("1st Research Committee on Maritime Industries Summary of Results," 2024.12.20. Japan Maritime Center Website)

[108] 「船舶産業の変革実現のための検討会　結果概要」国土交通省ウェブサイト ("Summary of Findings from the Study Group for Implementing Changes in the Shipbuilding Industry." Ministry of Land, Infrastructure, Transport and Tourism Website)

[109] 「船舶産業の変革実現のための検討会」国土交通省ウェブサイト ("Study Group for the Implementation of Changes in the Shipbuilding Industry." Ministry of Land, Infrastructure, Transport and Tourism Website)

[110] Specifically, it refers to ammonia, hydrogen, and methanol fuel ships, liquefied CO2 carriers, liquefied hydrogen carriers, and autonomous ships. 船舶産業の変革実現のための検討会「船舶産業の変革実現のための検討会　報告書」2024.6, p.14 (Study Group for the Implementation of Changes in the Shipbuilding Industry, "Report of the Study Group for the Implementation of Changes in the Shipbuilding Industry," 2024.6, p.14).

value through early investment in core technologies and components and involvement through the whole life cycle of ships; and (3) supporting Japan's economy, national life, and safety. It also sets securing the largest share of orders for next-generation vessels by 2030 as a goal for Japan's maritime industry.(111)

To achieve these goals, it outlines the following steps: (1) transforming design and construction using digital technology and fostering cooperation between operators; (2) establishing a supply system for next-generation ships; (3) securing and training human resources; and (4) creating the environment necessary to strengthen the competitiveness of the shipbuilding industry. It presented a roadmap to 2030 for each of these items.(112)

IV Trends in Shipbuilding in Foreign Countries

This chapter examines the situation and summarizes the trends in various foreign countries: in China, where the shipbuilding industry has developed significantly in recent years; in South Korea, a shipbuilding powerhouse second only to China; and in Europe, which once possessed a thriving shipbuilding industry and is engaged in the sector.

1 *China*

China, which has focused on developing its shipbuilding industry since the late 1990s, significantly expanded its shipbuilding capacity by increasing capital investment from the mid-2000s, overtaking Japan in 2009 and South Korea in 2010 to become the largest shipbuilder in the world.(113) It provided huge subsidies to promote entry into and expansion within the shipbuilding sector from 2006 to 2013.(114) The "Made in China 2025"(115) plan

(111) *ibid.*, pp.12-14. Regarding next-generation ships, the Ministry of Land, Infrastructure, Transport and Tourism and the Ministry of the Environment are cooperating in the construction promotion project for zero-emission ships (「ゼロエミ船建造を促進」『日本海事新聞』2025.1.10 ("Promoting the Construction of Zero-emission Ships," *The Japan Maritime Daily*, 2025.1.10).

(112) 船舶産業の変革実現のための検討会　同上, pp.15-35 (Study Group for the Implementation of Changes in the Shipbuilding Industry, *ibid.*, pp.15-35).

(113) 飯島　前掲注(31), pp.17-19 (IIJIMA, *op.cit.*(31), pp.17-19). Labor costs of Chinese shipbuilding companies are reportedly 50% lower than those of Japan and South Korea. 「中国造船、首位固めへ増産」『日本経済新聞』2025.1.17 ("China Increases Production to Solidify First Place," *Nihon Keizai Shimbun*, 2025.1.17).

(114) The scale of this subsidy is 540 billion yuan, equivalent to approximately 11 trillion yen. 国土交通省海事局「船舶産業を取り巻く現状」（第 1 回船舶産業の変革実現のための検討会資料 3）2023.5.30, p.20 (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism, "Current State of the Shipbuilding Industry," (First Meeting of the Study Group for the Implementation of Changes in the Shipbuilding Industry Document 3) 2023.5.30, p.20).

(115) 「国务院关于印发《中国制造 2025》的通知」（国发〔2015〕28 号）2015.5.19. 中华人民共和国中央人民政府ウェブサイト (Central Government of the People's Republic of China Website); 科学技術振興機構研究開発センター「「中国製造 2025」の公布に関する国務院

presented by the State Council in 2015 identified marine engineering equipment and high-tech ships as one of ten key areas for becoming a manufacturing powerhouse.

Further, in 2019, the major state-owned shipbuilding groups the China State Shipbuilding Corp. (formerly CSSC) and China Shipbuilding Industry Corporation (CSIC) merged to form the China State Shipbuilding Corporation Limited (CSSC). (116) Under the umbrella of the CSSC is the Shanghai Merchant Ship Design and Research Institute (SDARI)—which originated as a public research institution—providing drawings to all shipyards in the CSSC group and strengthening collaboration in the design phase within the group.(117)

In 2023, the Action Plan for the Green Development of the Shipbuilding Industry (2024–2030) was formulated,(118) which promotes decarbonization in the shipbuilding industry.(119) The outline states that by 2025, China will secure an international market share of more than 50% for ships using low-carbon fuels such as LNG and methanol, build a green development system for the shipbuilding industry, and raise the energy efficiency of key companies to internationally advanced levels by 2030 to complete the green development system. To achieve these goals, it proposes measures such as optimizing and improving the LNG-type hulls in large ocean-going ships and accelerating R&D of methanol- and ammonia-powered hull types.

In terms of challenges, China's shipbuilding industry suffers from structural overcapacity.(120) Furthermore, China's "civil-military integration development strategy" blurs the boundary between commercial and military activities, which raises concerns that if foreign private companies purchase ships such as container ships and tankers from Chinese shipbuilders, their profits may contribute to the strengthening of the Chinese

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の通知の全訳」2015.7.25 (Japan Science and Technology Agency, Research and Development Center, "Full Translation of the State Council Notice on 'Made in China 2025'" 2015.7.25); 「中国製造 2025 とは　重点 10 分野と 23 品目に力」『日本経済新聞』2018.12.7 ("What is Made in China 2025? Focus on 10 Key Sectors and 23 Products," *Nihon Keizai Shimbun,* 2018.12.7).

(116) 対馬和弘「中国は統合進捗、韓国はとん挫 造船再編の明暗」『Compass』248 号, 2022.3, pp.53-54 (TSUSHIMA Kazuhiro, "China Progress Integration, South Korea's Abrupt Halt: Positives and Negatives in Shipbuilding Restructuring," *Compass*, No.248, 2022.3, pp.53-54).

(117) 「造船、シェア 2 割射程」『日本海事新聞』2025.1.16 ("Shipbuilding Share in the 20% Range," *Nihon Keizai Shimbun*, 2025.1.16); 「关于我们」 上海船舶研究设计院ウェブサイト (Shanghai Merchant Ship Design and Research Institute Website)

(118) 「工业和信息化部 国家发展改革委 财政部 生态环境部 交通运输部关于印发船舶制造业绿色发展行动纲要（2024-2030 年）的通知」（工信部联重装【2023】254 号）2023.12.26. 中华人民共和国工业和信息化部ウェブサイト (Ministry of Industry and Information Technology of the People's Republic of China Website)

(119) 「中国、2040 年までの造船グリーン発展行動要綱を発表」2024.1.10. ESG Journal ウェブサイト ("China Action Plan for Green Development of Shipbuilding Industry" 2024.1.10. ESG Journal Website); *ibid.*

(120) 蒋垂東「受注・建造と業界再編を巡る中国造船業界の最新動向」『Kaiun』1124 号, 2021.5, p.25 (JIANG Chui dong "Latest Trends in China's Shipbuilding Industry: Orders, Construction and Industry Restructuring," *Kaiun*, No.1124, 2021.5, p.25).

navy.[121]

2 *South Korea*

South Korea's shipbuilding industry, which has emerged since the 1990s, overtook Japan to become the world's largest shipbuilder for a brief period, until it was overtaken by China; currently, it ranks second globally. South Korea has provided substantial public financial support to domestic shipbuilders that have fallen into business difficulties, has provided order support through public subsidies to shipbuilders with low creditworthiness, and is attempting technical development support to maintain competitiveness as a "Core Technology Development Project for Shipbuilding and Marine Industries".[122]

The "K-Shipbuilding Rebound Strategy for a Leap Forward to Become the World's Leading Shipbuilder"[123] formulated in 2021 aimed to increase productivity by 30% by 2030 (compared to 2020), advocating the Smart Yard initiative. This promotes the digitalization of all processes, such as production and logistics in shipyards, to improve productivity and efficiency.[124] In 2024, the Act on the Development and Commercialization of Autonomous Ships (Autonomous Ships Act) was enacted, establishing provisions for a basic plan for the development and commercialization of autonomous ships and training specialized personnel.[125]

More recently, in 2023, the K-Shipbuilding Next Generation Leadership Strategy was formulated as the industry's strategy until 2028.[126] The strategy aims to invest a total of

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[121] 田中三郎「空母用ドックを民間コンテナ船建造に開放!! 中国造船業界の躍進にも貢献 習近平政権の「軍民融合発展戦略」」『軍事研究』664 号, 2021.7, p.207 (TANAKA Saburo, "Aircraft Carrier Docks Used for Construction of Civilian Container Ships!! Contributing to China's Shipbuilding Rapid Progress - Xi Jinping's Administration's 'Military-Civilian Integration Strategy'," *Japan Military Review*, No.664, 2021.7, p.207).

[122] The scale of public financial support is approximately 12 trillion won, equivalent to around 1.2 trillion yen. 国土交通省海事局　前掲注(114) (Ministry of Land, Infrastructure, Transport and Tourism, *op.cit.*(114)). As South Korea's large-scale public support measures have been deemed market-distorting, Japan-South Korea bilateral consultations are being held under the WTO dispute settlement procedure. 「国際造船市場の公正な競争条件の確保」国土交通省ウェブサイト ("Ensuring Fair Competition Conditions in the International Shipbuilding Market." Ministry of Land, Infrastructure, Transport and Tourism Website)

[123] 「□□ □□ □□ □□ □□□□ □□ K-□□ □□□□ □□」 (K-Shipbuilding Rebound Strategy for a Leap Forward to Become World's Leading Shipbuilder) 2021.9.9. FOMEK website

[124] *ibid.*, pp.7, 10; 船舶産業の変革実現のための検討会　前掲注(110), p.10 (Study Group for the Implementation of Changes in the Shipbuilding Industry, *op.cit.*(110), p.10).

[125] 「韓国、自動運航船の開発急ぐ」『日本経済新聞』2025.2.19 ("Korea Quickens Autonomous Ship Development," *Nihon Keizai Shimbun*, 2025.2.19); 「□□□□□□□ □□ □ □□□□ □□□ □□ □□」□□□□□□□□ Website

[126] 「「K－造船次世代先導戦略」を発表、世界市場で競争優位を狙う」2023.11.16, 日本貿易振興機構（ジェトロ）ウェブサイト (Announcing the "K-Shipbuilding Next Generation Leadership Strategy Targeting Competitive Advantage in Global Markets," 2023.11.16. Japan External Trade Organization (JETRO) Website); 「K-□□ □□□□ □□ □□」 (K-Shipbuilding Next Generation Leadership Strategy) 2023.11.15. HRST Policy Platform website

710 billion won (approximately 74.7 billion yen) by 2028 to anticipate future technologies and upgrade shipbuilding systems, targeting an increase in the global market share of next-generation vessels from 56.3% (2022) to 80% (2030). Specifically, it includes measures such as investing approximately 200 billion won (around 21 billion yen) by 2028 on the commercialization of fuels contributing to decarbonization, such as LNG, ammonia, and hydrogen, and spending around 150 billion won (approximately 15.8 billion yen) on shipyard digitalization and the adoption of robotics.(127)

Challenges to the Korean shipbuilding industry include the need to continuously develop demand for high-value-added vessels in the medium-to-long term, low operating profits due to low-price competition, and the need to revitalize medium-sized shipbuilding companies.(128)

3 *Europe*

Europe once had a thriving shipbuilding industry, but it has now been outstripped by Japan, China, and South Korea, and the European global share of steel ships had dropped to 2.8% in 2023(129).

Once the world's largest shipbuilder as of the early 1950s, the UK's shipbuilding industry declined due to slow rationalization because of a reluctance to invest in capital for the construction of large ships, frequent strikes, and a decrease in skilled workers due to an aging workforce. Measures taken to counteract this, such as the nationalization of shipyards and the privatization of companies by grouping them according to the types of ships they built, had little effect.(130)

However, the European shipbuilding industry retains strong international competitiveness in the field of high-value-added shipbuilding,(131) such as cruise ships, with Italy and Germany's shipbuilders constructing cruise ships and Finland constructing icebreakers.(132) Furthermore, Europe is adopting initiatives to protect the intellectual

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(127) Yen conversion is based on the reporting ministerial ordinance rate (for April 2025) (1 USD = 152 yen, 100 KRW = 0.692 USD).

(128) 韓洛鉉「韓国の造船業界における受注・建造状況と現下の課題」『Kaiun』1124 号, 2021.5, pp.28-29 (Han Nak Hyun, "Orders, State of Construction and Current Challenges in the Korean Shipbuilding Industry," *Kaiun*, No.1124, 2021.5, pp.28-29).

(129) 日本造船工業会「造船関係資料」2024.9, p.1 (Shipbuilders' Association of Japan "Shipbuilding-Related Materials," 2024.9, p.1).

(130) 『20 世紀における世界造船業の趨勢に関する分析と研究―英国の盛衰要因と日本・韓国・中国の発展と今後―』海事産業研究所, 2003, pp. ⅰ - ⅱ (*Analysis and Research of 20th Century Global Shipbuilding Trends: The Rise and Fall of the UK and the Development and Outlook for Japan, South Korea, and China*, Japan Maritime Research Institute, 2003, pp.i-ii).

(131) 国土交通省海事局　前掲注(83), pp.2, 13-14 (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism, *op.cit.*(83), pp.2, 13-14).

(132) 日本中小型造船工業会・日本船舶技術研究協会「欧州主要造船関連企業動向調査 2023」2024.3, pp.9-16, 28-36, 86-89 (Cooperative Association of Japan Shipbuilders and Japan Ship Technology Research Association, "A Survey of Trends in the Major Shipbuilding Companies in

property rights of the shipbuilding industry[133]; amid the increasing complexity and sophistication of ship systems in recent years, system integrators capable of designing entire ships and integrating equipment and machinery have emerged.[134]

V Challenges to Shipbuilding Policy

This chapter examines the challenges facing Japan's shipbuilding policy, considering its evolution thus far and the trends in other countries. The main issues include international competition, technology development and R&D, and responding to changes in demand; shipbuilding has also recently garnered attention from a security perspective.

1 *International Competition*

As ships are products of a single global market, the shipbuilding industry is highly competitive internationally. Since World War II, the world's largest shipbuilder has changed from the United Kingdom to Japan, then South Korea, and ultimately China. Japan's shipbuilding industry faces intense international competition from the newly emerged South Korea and China. In the 1990s, the OECD attempted to establish an agreement governing shipbuilding to regulate the international competitiveness of the industry, but these attempts faltered, and since then, Japanese efforts have focused on strengthening the international competitiveness of Japan's shipbuilding industry.[135]

Europe in 2023," 2024.3, pp.9-16, 28-36, 86-89). Finland holds the record of having built more than half of the world's icebreakers, and recently signed a cooperation agreement with the United States and Canada on the construction of polar icebreakers. 「米、北極砕氷船で 3 国協力　同盟国と築く新産業強化策」『日本経済新聞』2024.8.16. ("US Seeks 3-Country Cooperation for Arctic Icebreaker: New Industrial Strengthening Policy Construction with Allies," *Nihon Keizai Shimbun*, 2024.8.16).

(133) 日本船舶輸出組合ほか「欧州造船業における知的財産権保護対策に関する調査」2010.3, pp.5-9 (Japan Ship Exporters' Association et al., "Survey on Measures to Protect Intellectual Property in the European Shipbuilding Industry," 2010.3, pp.5-9).

(134) 国土交通省海事局　前掲注(83), pp.2, 13-14 (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism, *op.cit.*(83), pp.2, 13-14). Examples of system integrators in Europe include Kongsberg in Norway, Wärtsilä in Finland and Switzerland, and ABB, which has its headquarters in Switzerland, with its marine equipment business mainly in Finland. Kongsberg is focused mainly on design and marine systems, Wärtsilä on propulsion systems, and ABB on propulsion systems and digital equipment. 「【Mari Tech　海事未来図】商社系 2 社が連携、日本版 SI 構築へ。 舶用から海事産業活性化」『日本海事新聞』2020.7.22 ("[Mari Tech Maritime Plan for the Future] Two trading companies partnered to build a Japanese version of SI. Stimulation of the marine industry from marine use," *The Japan Maritime Daily*, 2020.7.22); 「欧州主要造船関連企業動向調査 2023」前掲注(132), pp.17-21, 57-61, 105-107 ("A Survey of Trends in the Major Shipbuilding Companies in Europe in 2023," *op.cit.*(132), pp.17-21, 57-61, 105-107).

(135) For example, 2003's "Vision and Strategy for Japan's Shipbuilding Industry" set the goal of improving the quality of ships by establishing technical capabilities to design and build ocean-

As stated by the 2020 report of the Maritime Innovation Subcommittee under the Transport Policy Council's Maritime Affairs Committee (III 5(2)), Japan's shipbuilding industry addresses the following measures: in the short term, strengthening the foundation of the shipbuilding industry, stimulating construction demand and promoting orders; in the medium to long term, technology development and R&D (described later in V-2).(136) Of these, strengthening the foundation of the shipbuilding industry involves challenges such as promoting cooperation between businesses and improving productivity.

(1) Cooperation between Businesses

Promoting consolidation, integration, and cooperation between businesses has long been a challenge; more recently, the Act on Strengthening Maritime Industries introduced a certification system for Business Foundation Strengthening Plans. Comparing Japan to South Korea and China, shipyards in both those countries are larger than those in Japan.(137) Thus, the recommendation is that shipbuilders form alliances (partnerships or coalitions between companies) to increase orders to strengthen the international competitiveness of Japan's shipbuilding industry. For next-generation shipbuilding systems, there is a proposal to standardize data structures from design to manufacturing and build a system that may be flexibly coordinated between shipyards and marine equipment manufacturers.(138) Recently, seven shipping and shipbuilding companies formed a consortium to jointly study establishing standard specifications and hull designs for liquefied CO_2 carriers (LCO_2 carriers), attracting attention as a potential turning point for Japan's maritime industry.(139)

(2) Increased Productivity and Mechanization

Meanwhile, in the context of improving productivity, shipbuilding has long been considered labor-intensive, and labor-saving and the mechanization of production

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going vessels with high LCV. 造船産業競争戦略会議　前掲注(69) (Shipbuilding Industry Competition Strategy Council, *op.cit.*(69)).

(136) 「造船業の国際競争力の強化」前掲注(2) ("Strengthening the international competitiveness of the shipbuilding industry," *op.cit.*(2)).

(137) 国土交通省海事局　前掲注(114), p.23. (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism, *op.cit.*(114), p.23).

(138) 平方勝ほか「次世代造船システムの構想」『研究発表会』20 回 (令和 2 年度), 2020.7.29, p.15 (HIRAKATA Masaru et al., "Concept for Next-Generation Shipbuilding Systems", *Research Presentation*, 20th (2020), 2020.7.29, p.15).

(139) This consortium is looking at ships using new fuels such as ammonia, and it may be aiming to develop a Japanese version of China's SDARI. 「海運・造船 7 社連合、LCO2 船開発へ。」『日本海事新聞』2024.8.28 ("Seven Shipping & Shipbuilding Companies Ally to Develop LCO2 Ships," *The Japan Maritime Daily*, 2024.8.28);「(2) 7 社連合が発足。全日本で造船業強化」『日本海事新聞』2024.12.24; ("(2) Seven-company alliance established. Strengthening shipbuilding in Japan," *The Japan Maritime Daily*, 2024.12.24); 「造船、シェア 2 割射程」前掲注(117) ("Shipbuilding Share in the 20% Range," *op.cit.*(117)).

processes have been a challenge.(140) There has been a trend in recent years of introducing robots and similar devices, both in Japan and overseas,(141) and since 2016, Japan has promoted "i-Shipping," which introduces the latest ICT, as part of the Maritime Productivity Revolution.(142) Moreover, as mentioned above (IV-2), support for the use of robots was also seen in South Korea's K-Shipbuilding Next Generation Leadership Strategy.

(3) Stimulation of Construction Demand and Promoting Orders

To stimulate construction demand and promote orders, efforts are being made to use the Specified Ship Introduction Plans under the Act on Strengthening Maritime Industries and to promote the construction and export of ships for governments and other agencies.(143) While demand for the export of such vessels is expected mainly from Southeast Asian and Pacific Islander countries that want to strengthen their coastal security capabilities, challenges such as understanding the needs of other countries and enhancing sales capabilities that communicate the high level of Japan's technological efficiency have been identified.(144)

(4) Overseas Expansion

To address the issue of international competition from countries with lower manufacturing costs, overseas expansion is also a strategy. Japanese companies have expanded overseas to China and the Philippines, and cases of overseas expansion by South Korea can also be observed. While overseas business grows steadily in some cases of overseas expansion in the shipbuilding industry, there are cases of forced withdrawal due to the impact of the recession and other factors; therefore, the strategy is risky. Additionally, when expanding overseas to reduce costs, overseas factories frequently outperform

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(140) 運輸省『運輸経済年次報告　昭和 44 年度』1969, p.362 (Ministry of Transport, *Annual Report on Transport Economics*, 1969 Edition, 1969, p.362).

(141) 定廣健次ほか「造船ロボット溶接システム」『R&D 神戸製鋼技報』238 号, 2018.3.2 (SADAHIRO Kenji et al., "Shipbuilding Robot Welding System," *R&D Kobe Steel Engineering Report*, No.238, 2018.3.2); 「造船業界のデジタルトランスフォーメーション―無人化する造船所―」『日韓経済協会協会報』617 号, 2024.12, pp.22-24 ("Digital Transformation of the Shipbuilding Industry: Unmanned Shipyards," *Japan Korea Economic Association Bulletin*, No.617, 2024.12, pp.22-24).

(142) 「最新の ICT を導入し日本の海事産業の未来を開く i-Shipping」『国土交通』147 号, 2017.12・2018.1, pp.4-5 ("i-Shipping Introducing the Latest ICT to Open the Future of Japan's Maritime Industry," *Ministry of Land, Infrastructure, Transport and Tourism*, No.147, 2017.12, 2018.1, pp.4-5).

(143) 「造船業の国際競争力の強化」前掲注(2) ("Strengthening the international competitiveness of the shipbuilding industry," *op.cit.*(2)).

(144) 「官公庁船 輸出強化へ 政府 中韓の後塵、造船業支援 巡視船など技術維持」『産経新聞』2020.8.6 ("Government Ships Strengthening Exports, Administration Support for Shipbuilding Industry to Catch up to China and South Korea, Maintaining Technology for Patrol Boats, etc.," *Sankei Shimbun*, 2020.8.6).

domestic factories in terms of cost competitiveness, creating issues in terms of the relationship between them.(145)

(5) Accepting Foreign Workers

The acceptance of foreign workers is also being promoted within the shipbuilding industry, with many foreign workers employed in Japan through the Technical Intern Training Program and the Specified Skilled Worker Program.(146) However, Japan is not unique in accepting foreign workers and represents only one option for workers wishing to work abroad. Thus, the challenge lies in whether Japan can become an attractive destination for foreign workers to choose.(147)

2 *Technological Development and R&D*

(1) History and Current Status

The medium-to-long-term challenges to Japan's shipbuilding industry include technological development and R&D. Japan has long been engaged in shipbuilding-related technical development and R&D; in the past, the Council for Shipbuilding Technics was established under the Ministry of Transport after the war, and R&D was being conducted at the Shipbuilding Laboratory (later the Ship Research Institute). Currently, the Council for Shipbuilding Technics has been reorganized into the Maritime Innovation Subcommittee of the Transport Policy Council's Maritime Affairs Committee, and the Shipbuilding Laboratory into the National Maritime Research Institute of the National

(145) 対馬和弘「海事レポート 韓進重工フィリピンが経営破綻 造船業の海外生産戦略に示唆」『Compass』230 号, 2019.3, pp.52-55 (TSUSHIMA Kazuhiro, "Maritime Report: HJ Shipbuilding & Construction Philippines Files for Bankruptcy: Implications for Overseas Production in the Shipbuilding Industries," *Compass*, No.230, 2019.3, pp.52-55).

(146) Looking at the number of specific skilled workers in the shipbuilding and marine equipment manufacturing industries, as of the end of December 2024, there were 9,665 foreign nationals with Specific Skilled Worker (ⅰ) status and 74 with Specific Skilled Worker (ⅱ) status in this sector. 「特定技能在留外国人数　【第１表】主な国籍・地域別　特定産業分野別　特定技能１号在留外国人数（令和 6 年 12 月末現在）」出入国在留管理庁ウェブサイト ("Number of Foreigners with Specific Skilled Worker Status [Table 1] Number of Foreigners Residing with Specific Skilled Worker (ⅰ) status by Nationality and Region (as of the end of December 2024)." Immigration Bureau Website); 「特定技能在留外国人数　【第１表】国籍・地域別　特定産業分野別　特定技能２号在留外国人数（令和 6 年 12 月末現在）」出入国在留管理庁ウェブサイト "Number of Foreigners Residing with Specific Skilled Worker Status [Table 1] Number of Foreigners Residing with Specific Skilled Worker (ⅱ) status by Nationality and Region (as of the end of December 2024)." Immigration Bureau Website)

(147) 斉藤（押見）善久「日本は「外国人が働きたい国」になれるか」2023.6.13. 神戸大学ウェブサイト (SAITO (Oshimi) Yoshihisa, "Can Japan Become a Country Attractive to Foreign Workers?" 2023.6.13. Kobe University Website)

Research and Development Agency for Maritime, Port, and Aviation Technology.[148]

(2) Human Resource Development

Meanwhile, shipbuilding engineers who support technological development and R&D are primarily individuals who studied naval architecture at universities or graduate schools; nonetheless, recent years have witnessed a decline in specialized courses in shipbuilding.[149] Moreover, there are concerns about the stagnation of technological development capabilities due to the downsizing of major heavy industry giants that traditionally led the shipbuilding industry.[150] In this context, some proposals advocate for the construction of a database through open innovation, integrating the technologies of each shipyard, equipment manufacturer, and university to maintain and develop shipbuilding technology in Japan.[151]

(3) Greenhouse Gas Reduction and Zero-Emission Ships

Creating zero-emission ships is currently a major challenge in technology development and R&D. The IMO aims to reduce greenhouse gas (GHG) emissions from international shipping to zero by around 2050 and has set a target of reducing CO_2 emissions (per ton of cargo transported) by 40% compared to 2008 levels[152] with a usage

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[148] The institute conducts research on technologies related to autonomous ships, which are being developed as part of the Maritime Productivity Revolution. 間島隆博「自動運航船の実現に向けた避航操船技術の研究開発」『海上技術安全研究所講演会』20 回 (令和 2 年度), 2020.12.10 (MAJIMA Takahiro, "Research and Development of Evasion Manoeuvring Technology to Realize Autonomous Ships," *National Maritime Research Institute Lecture*, No.20 (2020), 2020.12.10).

[149] 「造船業の国際競争力の強化」前掲注(2) ("Strengthening the international competitiveness of the shipbuilding industry," *op.cit.*(2); 国土交通省海事局　前掲注(114), p.32 (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism, *op.cit.*(114), p.32).

[150] 「造船・舶用工業を取り巻く 3 つの大きな変化」（第 1 回海事産業将来像検討会　資料 3）2019.6.11, p.4. 国土交通省ウェブサイト ("Three Major Changes in the Shipbuilding and Marine Equipment Industry," (First Maritime Industry Future Vision Study Group Meeting, Document 3) 2019.6.11, p.4. Ministry of Land, Infrastructure, Transport and Tourism Website)

[151] 鷲尾祐秀「オープンイノベーションによる海運・造船技術のシステムインテグレーター開発構想」『舟艇技報』144 号, 2020.12, pp.30-33 (WASHIO Yushu, "Open Innovation System Integrator Development for Shipping and Shipbuilding Technology," *Boat Engineering*, No.144, 2020.12, pp.30-33).

[152] 「国際海運「2050 年頃までに GHG 排出ゼロ」目標に合意～国際海事機関 第 80 回海洋環境保護委員会（7/3～7/7）の開催結果～」国土交通省ウェブサイト ("International Shipping Agrees to Net-Zero Emissions by 2050 - Results of the 80th Session of the Marine Environment Protection Committee, International Maritime Organization (7/3-7/7)." Ministry of Land, Infrastructure, Transport and Tourism Website); "2023 IMO Strategy on Reduction of GHG Emissions from Ships." IMO website. The Study Group for Promoting Carbon Neutrality in Domestic Shipping also set CO2 emission reduction targets for 2040 but the revised global warming countermeasures plan approved by the Cabinet in February 2025 did not include this target value. 「海事局長、GHG 削減議論進展期待」『日本海事新聞』2025.3.4 ("Director of Maritime Affairs Bureau Hopes for Progress in GHG Reduction Discussions," *The Japan Maritime Daily*, March 4, 2025).

ratio of zero-emission fuels of 5–10% by 2030. Accordingly, Japan has set a goal of achieving carbon neutrality by 2050, aiming to introduce zero-emission ships that use fuels such as hydrogen and ammonia into the market by 2030.(153)

This Green Transformation (GX) is being promoted in the Maritime Industry Strengthening Act's Business Foundation Strengthening Plan and Specified Ship Introduction Plan. The 2024 Report of the Study Group for the Implementation of Changes in the Shipbuilding Industry (III 5(4)) states that one of the aspirations of the shipbuilding industry in 2030 is to ensure a leading presence in the global market in next-generation ships.(154) Support for GX is considered an opportunity for Japan's future growth,(155) and the importance of building a next-generation shipbuilding system through capital investment using the Green Innovation (GI) Fund(156) and GX economic transition bonds(157) has been recognized.(158) Additionally, private shipbuilders are coming together to develop next-generation, environmentally friendly ships.(159)

China and South Korea are also actively engaged in technological developments related to GX in shipbuilding; China is promoting R&D of ship engines fueled by LNG, methanol, ammonia, hydrogen, and other fuels as part of its "Ship Power Innovation Project"(160). South Korea aims to train over 3,000 technical personnel annually and invest approximately 200 billion won (around 21 billion yen) in technological development for

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(153) 「造船業の国際競争力の強化」前掲注(2) "Strengthening the international competitiveness of the shipbuilding industry," *op.cit.*(2).

(154) These next-generation ships refer to ships fueled with ammonia, hydrogen, and methanol; liquefied CO2 carriers; liquefied hydrogen carriers; and autonomous ships. 船舶産業の変革実現のための検討会　前掲注(110), pp.12, 14 (Study Group for the Implementation of Changes in the Shipbuilding Industry, *op.cit.*(110), pp.12, 14).

(155) 「ニッポン造船は成長軌道に乗れるか、中韓との競争厳しいが…脱炭素で好機」『日刊工業新聞ニュースイッチ』2024.1.10 ("Can Nippon Shipbuilding Get Back on a Growth Trajectory? Tough Competition with China and South Korea but Decarbonization is an Opportunity," *Nikkan Kogyo Shimbun's Newswitch*, 2024.1.10); 「「造船ニッポン」再興への荒波」『朝日新聞』2024.10.26 ("Rough Waters to Revive Nippon Shipbuilding Japan," *Asahi Shimbun*, 2024.10.26).

(156) This fund was established by the New Energy and Industrial Technology Development Organization (NEDO) to achieve the 2050 carbon neutrality goal, and one of the fund's projects is the development of next-generation ships. 「グリーンイノベーション基金」経済産業省ウェブサイト ("Green Innovation Fund" Ministry of Economy." Trade and Industry Website)

(157) Refers to government bonds issued pursuant to the provisions of Article 5 of the Act on Promoting Transition to the Decarbonized Growth Economic Structure (Act No.32 of 2023).

(158) 「次世代船で競争力を　GI 基金・GX 移行債など活用」『日本海事新聞』2024.12.20 ("Boosting Competitiveness with Next-Gen Ships: Using GI Fund, GX Bonds, etc.," *The Japan Maritime Daily*, 2024.12.20).

(159) In October 2020, the Next Generation Environmental Ship Development Center was established by a group of domestic shipbuilding companies. 垣内隆太郎「次世代環境船舶開発センターの取り組みについて」『ClassNK 技報』5 号, 2022.7, pp.3-9 (KAKIUCHI Ryutaro, "Initiatives for the Next-Generation Environmental Ship Development Center," *ClassNK Bulletin*, No.5, 2022.7, pp.3-9).

(160) 「工业和信息化部 国家发展改革委 财政部 生态环境部 交通运输部关于印发船舶制造业绿色发展行动纲要（2024-2030 年）的通知」, *op.cit.*(118).

ship equipment and materials for the future by 2028.(161)

(4) Cybersecurity

Ship cybersecurity has also become an issue in recent years, and systems to detect and respond rapidly to attackers who infiltrate onboard systems are required.(162) The International Association of Classification Societies (IACS) unified its two previous rules on cyber-resilience in 2022 (ability to withstand and recover from cyber-attacks) and subsequently reviewed these unified rules. The IMO also approved a proposed amendment to the Guidelines on Maritime Cyber Risk Management (Recommended) in 2024.(163)

3 *Response to Changes in Demand*

In the modern production system, in which ships are mass-produced, responding flexibly to changes in demand is a challenge.(164) With the 1952 Shipbuilding Act amendment, Japan attempted to prevent overcapacity by implementing a permit system for new shipbuilding facilities and equipment. However, during the 1970s and 80s, the excess production capacity relative to demand led to shipbuilding recessions, and the government intervened to implement measures such as the reduction of facilities, as well as support through the Programmed Shipbuilding Scheme (*Keikaku Zosen*).

Other countries have also faced the problem of overcapacity during periods of demand decline, and Japanese and South Korean shipbuilders responded by diversifying.(165) In South Korea, during the Asian financial crisis in the late 1990s, several shipyards that had made large-scale capital investments experienced a business crisis but could save construction capacity with the support of the government and major shipbuilders.(166) Nevertheless, China's shipbuilding industry was hit hard by the global financial crisis in 2008 but responded by concentrating capital on selected high-quality shipyards, launching demand stimulation measures by promoting the dismantling of old ships, and providing subsidies to promote alternative construction for small- and medium-sized shipyards

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(161) 『20 世紀における世界造船業の趨勢に関する分析と研究』前掲注(126) ("Analysis and Research of 20th Century Global Shipbuilding Trends," *op.cit.*(130))

(162) 「港湾サイバー対策、難航路　船舶の対策、先行で義務化　船内への侵入検知、切断が課題」『日経産業新聞』2024.2.9 ("Port Cybersecurity Measures, Challenging Routes, Intrusion Detection and Disconnection Remain Difficult," *Nikkei Sangyo Shimbun*, 2024.2.9).

(163) 高木宏治「特集 迫られる船舶のサイバーリスク対応 船級協会のサポート戦略」『Compass』263 号, 2024.9, pp.12-15 (TAKAGI Koji, "Special Feature: Ship Cyber Risk Response; Classification Society Support Strategies," *Compass*, No.263, 2024.9, pp.12-15); 内田泰「脅威高まる船舶へのサイバー攻撃、将来は自律運行船の制御乗っ取りも」2023.12.14. 日経クロステックウェブサイト (UCHIDA Yasushi, "Growing Threat of Cyberattacks on Ships; Hijacking of Autonomous Vessels Possible in Future," 2023.12.14. Nikkei XTech Website).

(164) 麻生　前掲注(8), p.79 (ASO, *op.cit.*(8), p.79).

(165) 飯島　前掲注(31), pp.20-21 (IIJIMA, *op.cit.*(31) pp.20-21).

(166) *ibid.*, p.17.

through the modernization of inland river navigation ships.(167)

4 *Security*

Japan's shipbuilding is critical for maintaining national defense and maritime security and is also important for economic security. Article 7 of the Act on the Promotion of Ensuring National Security Through Integrated Implementation of Economic Measures (Act No. 43 of 2022) stipulates that important goods on which national livelihoods and economic activities rely shall be designated as specified critical products by Cabinet Order. Accordingly, the Order for Enforcement of this act (Cabinet Order No. 394 of 2022) stipulates in Article 1 Item 11 that ship parts are designated as specified critical products. Specifically, marine engines (main engines), navigation equipment (sonar), and propulsion equipment (propellers) qualify as specified critical products, and businesses supplying these items can receive support, such as loans from the Japan Finance Corporation, if they create a plan for stable supply initiatives and obtain approval from the relevant minister. Additionally, the 2023 tax reform introduced temporary measures to expand the special depreciation rate for ocean-going ships when meeting certain requirements that contribute to economic security, such as being built in a specified shipyard, based on the Act on Strengthening Maritime Industries.(168)

Regarding support for the shipbuilding industry on the grounds of economic security, the lack of clarity regarding how much weight should be attached to the shipbuilding industry in terms of economic security has been pointed out, and some have questioned the linking of economic security with commercial shipbuilding.(169)

On the topic of security, it was agreed at the Japan-US Summit in April 2024 to develop a system that would allow US naval vessels stationed in Japan to be repaired at Japanese shipyards, and a working group was established at the Defense Industrial Cooperation, Acquisition, and Sustainment (DICAS) Forum, with consultations and discussions proceeding.(170) In recent years, the shipbuilding industry has also garnered

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(167) 日本舶用工業会・日本船舶技術研究協会「中国造船業の現況に関する調査報告書」2016.3, p.1 (Japan Ship Machinery and Equipment Association & Japan Ship Technology Research Association, "Survey Report on the Current Situation of China's Shipbuilding Industry," 2016.3, p.1).

(168) 国土交通省海事局　前掲注(114), pp.17-19 (Maritime Affairs Bureau, Ministry of Land, Infrastructure, Transport and Tourism, *op.cit.*(114), pp.17-19);「令和 5 年度税制改正後の海運関係税制一覧」pp.2-3. 日本船主協会ウェブサイト ("List of Shipping-Related Tax Measures After the 2023 Tax Reform," pp.2-3. Japan Shipowners' Association Website)

(169) 「「造船ニッポン」再興への荒波」前掲注(155) ("Rough Waters to Revive Nippon Shipbuilding," *op.cit.*(155)).

(170) 「米艦船整備巡り初の作業部会」『読売新聞』2024.6.12 ("First Working Group on US Ship Maintenance," *Yomiuri Shimbun*, June 2024.6.12);「"米本土に所属の艦船 日本で補修可能に" 日米作業部会初会合」2024.6.11. NHK ウェブサイト ("Ships belonging to the U.S. mainland can be repaired in Japan: First meeting of Japan-U.S. working group," 2024.6.11. NHK Website)

attention in the United States from the perspective of security, such as the introduction of the bipartisan "Ships for America Act," and reports of the President signing an executive order to revitalize the maritime industry, including shipbuilding.(171) The United States Trade Representative (USTR) Office has announced measures under Section 301 of the Trade Act of 1974 targeting China's maritime, logistics, and shipbuilding sectors.(172) There are also suggestions for the US to strengthen cooperation with Japanese and South Korean shipbuilders in the commercial and security fields.(173)

Conclusion

After World War II, Japan followed comprehensive shipbuilding policies such as setting up the Council for Shipbuilding Technics and the Shipbuilding Laboratory to develop shipbuilding technology, providing support through the Programmed Shipbuilding Scheme (*Keikaku Zosen*) on the demand side, and reducing the risk of overcapacity by implementing a permit system for new facilities and equipment under the Shipbuilding Act on the supply side. This shipbuilding policy framework supported Japan's shipbuilding industry, although the Programmed Shipbuilding Scheme was abolished in the 1990s.

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(171) ラナ・フォルーハー「船舶法にみる米産業政策」『日本経済新聞』2024.12.20 (FOROOHAR Rana, "US Industrial Policy in the Shipping Act," *Nihon Keizai Shimbun* 2024.12.20). The bill includes provisions such as establishing a Maritime Security Advisor position within the White House and setting a 25% investment tax credit for investments in shipyards. 「国会で SHIPS for America 法案が提出される」2024.12.19. MARITIME LOGISTICS PROFESSIONAL ウェブサイト ("SHIPS for America Bill Submitted to Congress," 2024.12.19. MARITIME LOGISTICS PROFESSIONAL Website); 「米国　造船再生へ大統領令」『日本海事新聞』2025.4.11 ("US Issues Executive Order to Revive Shipbuilding Industry," *The Japan Maritime Daily*, 2025.4.11; "H.R.10493 - SHIPS for America Act of 2024." CONGRESS. GOV website; THE WHITE HOUSE, "RESTORING AMERICA'S MARITIME DOMINANCE," 2025.4.9.

(172) USTR, "USTR Finds That China's Targeting the Maritime, Logistics, and Shipbuilding Sectors for Dominance Is Actionable Under Section 301," 2025.1.20; USTR, "USTR Section 301 Action on China's Targeting of the Maritime, Logistics, and Shipbuilding Sectors for Dominance," 2025.4.17; 運輸総合研究所「米国の海事産業再興に向けた大統領令及び通商法 301 条措置について」2025.4.21 (Japan Transport and Tourism Research Institute, "U.S. Presidential Order and Section 301 Measures for Revitalizing the Maritime Industry," 2025.4.21); 「米 USTR、中国の海事・物流・造船分野の 301 条措置内容を決定、中国船の米入港に追加料金、自動車船は中国船に限定せず（米国、中国、日本）」2025.4.22. 日本貿易振興機構（ジェトロ）ウェブサイト ("US USTR Finalizes Section 301 Measures Targeting China's Maritime, Logistics, and Shipbuilding Sectors; Additional Fees on Chinese Vessels Entering US Ports; Car Carriers Not Limited to Chinese Vessels (U.S., China, Japan) ," 2025.4.22. Japan External Trade Organization (JETRO) Website)

(173) Major Jeffrey L. Seavy, "The United States Must Improve Its Shipbuilding Capacity," *PROCEEDINGS*, 150(2), 2024.2. U.S. Naval Institute website. In terms of cooperation with the US in shipbuilding, there are reports that South Korean companies will acquire American shipyards. 「ハンファ、米造船を 160 億円で買収」『日本経済新聞』2024.6.22. ("Hanwha Acquires US Shipyard for 160 Billion Yen," *Nihon Keizai Shimbun*, 2024.6.22).

Moreover, the emergence of South Korea and China has, in recent years, exposed Japan to fierce international competition in terms of construction costs, technology, and R&D.

Although the Act on Strengthening Maritime Industries was enacted in 2021, establishing a support system for the shipbuilding industry, the 2023 construction volume of approximately 9.857 million gross tons falls far short of the shipbuilding industry's target of reaching 18 million gross tons of shipbuilding in 2025.(174) Against the backdrop of concern about the decline of Japan's shipbuilding industry, private sector initiatives are underway to deepen collaboration between shipbuilders and shipping companies. The importance of the shipbuilding industry, which underpins maritime trade, is also being reaffirmed from a national security perspective. Therefore, strategic implementation of shipbuilding policy is essential for maintaining and developing Japan's shipbuilding industry.

KOHARI Taisuke, *Changes in Japan's Shipbuilding Policy and Trends in Other Countries: with Reference to Efforts in China, South Korea and Europe* (Research Materials), 2026e-3, Tokyo: Research and Legislative Reference Bureau, National Diet Library, 2026.

ISBN: 978-4-87582-959-1

(174) Additionally, 2025 targets also include increasing the construction productivity of Japan's shipbuilding industry by 20% compared to the 2019 levels and increasing the value-added productivity of Japan's shipbuilding industry by 10% compared to 2019. 「造船業の国際競争力の強化」前掲注(2) ("Strengthening the international competitiveness of the shipbuilding industry," *op.cit.*(2)).