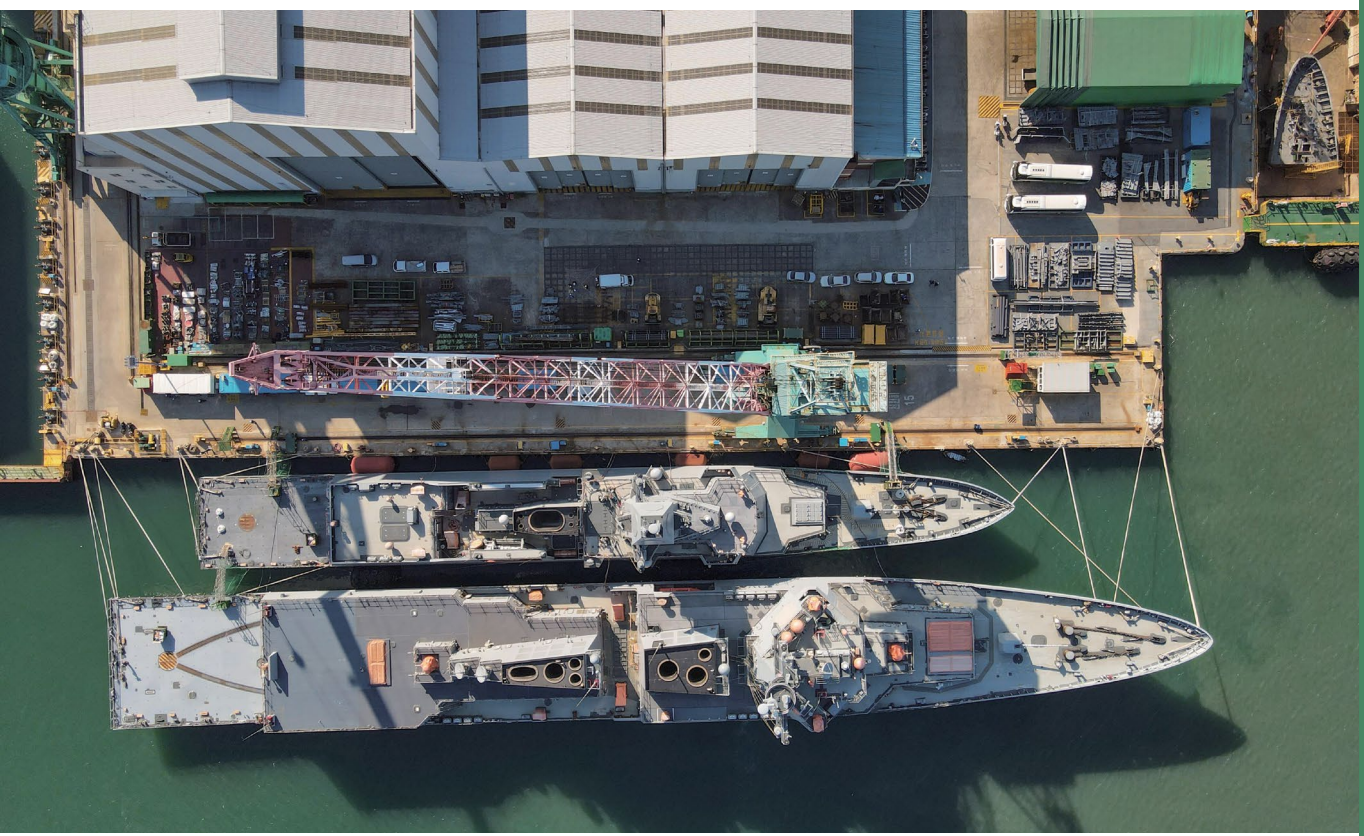
ASAN
REPORT

An Indo-Pacific Allied Shipbuilding Enterprise

Peter K. Lee

December 2024



The Asan Institute for Policy Studies

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About

The Asan Institute for Policy Studies is an independent, non-partisan think tank with the mandate to undertake policy-relevant research to foster domestic, regional, and international environments conducive to peace and stability on the Korean Peninsula, East Asia, and the world-at-large.

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Executive Summary

The United States and its Indo-Pacific allies and partners face a shipbuilding dilemma. China already has the world's largest navy, but its naval buildup is also part of a wider expansion of its commercial shipbuilding sector. The United States is trying to revitalize its commercial and naval shipbuilding industries in response, but it will take more than national renewal to restore a maritime balance of power with China. The United States needs help from its allies. It will require a collective effort and an Indo-Pacific Allied Shipbuilding Enterprise.

This *Asan Report* examines the potential for U.S. shipbuilding cooperation with Indo-Pacific allies and partners, such as South Korea, Australia, Japan, and the Philippines. It proceeds as follows. First, it outlines the scale of China's naval and commercial shipbuilding challenge to the Indo-Pacific's current maritime balance of power. China today has the world's largest navy, with over 370 ships and submarines compared to 297 for the United States, and it already has a balance-of-forces advantage in the Western Pacific. Chinese shipbuilders also dominate the commercial shipbuilding industry, accounting for almost 40 percent of the global market.

Second, it identifies key sources of American shipbuilding decline. American shipyards built 5,000 ships during the Second World War. Today, all U.S. naval shipbuilding programs are behind schedule while American commercial shipbuilding is almost nonexistent. The current shipbuilding crisis stems from many factors, but one problem in particular is outdated protectionist legislation such as the Buy American Act and Jones Act which has stifled competition in commercial shipbuilding and efficiency in naval shipbuilding by prohibiting allied partners from helping.

Third, the report examines U.S. efforts to rebuild naval and commercial shipbuilding, including by the executive and legislative branches, the U.S. Department of Defense and U.S. Navy, and industry and organized labor. The first Trump administration set an ambitious target to build a 350-ship Navy. The Biden administration took bold steps through the AUKUS partnership to build up allies' naval capabilities. The U.S. Congress put forward various legislation and amendments and the U.S. Navy's Maritime Statecraft strategy tried to make it easier to work with allies on forward sustainment. Labor unions also petitioned to investigate Chinese trade practices. While these efforts

may help reinvigorate parts of U.S. shipbuilding, most fail to leverage the industrial capacity of U.S. allies in the Indo-Pacific.

Finally, the report examines how a collective shipbuilding and sustainment enterprise in the Indo-Pacific could be created. It reviews four key pathways, including multinational maintenance, repair, and overhaul (MRO) for ship sustainment, joint capital investment in shipyards throughout the region and in the United States, technology-oriented shipbuilding cooperation focusing on uncrewed vessels, and joint auxiliary ship and surface combatant production.

- The first pathway is to expand ship maintenance, repair, and overhaul (MRO) in allied shipyards. This expands on recent contracts with Korean shipbuilders as part of the DOD Regional Sustainment Framework as well as expanding the precedent set by the 2024 AUKUS amendment to United States Code §8680 enabling submarine sustainment.
- The second pathway is to promote new allied investment both into under-utilized U.S. shipyards and joint investments into Indo-Pacific shipyards such as in the Philippines to enable MRO work.
- The third pathway is to move beyond "battle force ship" definitions to take advantage of the rapid manufacturing of uncrewed vessels to offset Chinese numerical superiority and alleviate workforce shortages.
- The fourth and final pathway is to lay the legal groundwork to enable AUKUS-like allied manufacturing of auxiliary support ships as well as surface combatants such as frigates and destroyers.

The Asan Report contributes new insights into how allied shipbuilding and sustainment could realize its full potential to catch up to China and uphold a favorable maritime balance of power in the decades to come.

국문 요약본

미국과 인도-태평양 지역 내 동맹국 및 파트너국은 '조선업 딜레마(shipbuilding dilemma)'에 직면해 있다. 중국은 이미 세계 최대 규모의 해군을 보유하고 있고, 현재 상업용 선박 점유율까지 장악하고 있다. 이에 대응하기 위해 미국은 조선업을 재활성화 하고자 노력을 기울이고 있지만, 중국과의 해양 세력균형을 회복하기 위해서는 단순한 국가적 재건만으로는 부족하다. 이제 미국은 동맹국 및 파트너국과의 협력이 필요한 현실에 부딪혔다.

따라서 본 아산 보고서는 미국이 한국, 호주, 일본, 필리핀과 같은 동맹국 및 파트너국과 조선업 협력을 확장해, 향후 인도-태평양 동맹 조선산업(An Indo-Pacific Allied Shipbuilding Enterprise)이 발전될 수 있는 가능성을 검토한다. 본 보고서는 다음과 같은 순서로 분석을 진행한다. 첫째, 현재 중국이 인도-태평양 지역 내 해양 세력균형에 끼치는 영향력을 분석한다. 국가별 함정의 경우, 미국이 보유한 297척에 반해 중국은 무려 370척 이상을 보유하고 있고, 중국의 상업용 선박은 글로벌 세계 시장의 약 40%를 차지할 정도다.

둘째, 미국 조선업의 쇠퇴 원인을 분석한다. 미국은 제2차 세계대전 당시 약 5,000척의 선박을 건조하며 조선업을 장악했지만, 현재는 함정 건조 일정 지연 및 상업용 선박 부족 현상에 허덕이고 있다. 미국의 조선업 위기는 여러 요인에서 비롯되었지만, 가장 대표적인 문제는 미국산우선구매법(Buy American Act), 존스법(Jones Act)과 같은 보호주의 법안이라고 볼 수 있다. 해당 법안은 미국의 조선업 효율성을 저해하고 동맹국과의 거래를 금지하고 있다.

셋째, 이러한 조선업 쇠퇴를 복구하기 위해 미 행정부 및 입법부, 국방부 및 해군, 산업계 및 노동조합 등이 어떠한 노력을 기울이고 있는지 살펴본다. 트럼프 1기 행정부는 350척의 함정을 건조하겠다는 야심 찬 목표를 설정했고, 바이든 행정부는 오커스(AUKUS) 파트너십을 통해 동맹국과 해군 역량을 구축하기 위한 조치를 취했다. 미 의회는 다양한 법률 개정안을 제출했고, 해군의 경우 해양 치국(Maritime Statecraft) 전략을 내세웠다. 또한 노동조합은 중국의 무역관행과 관련해 공식적으로 조사하기 위한 청원을 한 바 있다. 그러

나 위와 같은 노력은 조선업 일부를 재활성화 하는 데 도움이 되었을지 모르지만, 여전히 인도-태평양 지역 내 동맹국 및 파트너국의 산업 역량을 활용하지 못했다.

넷째, 본 보고서는 인도-태평양 지역 내에서 공동의(collective) 조선산업 체계를 구축할 수 있는 방안을 검토한다. 이를 위해 네 가지 핵심 경로를 제시한다.

- 다국적 선박 유지보수, 수리 및 운영(Maintenance, Repair, and Overhaul, MRO) 체계 확장: 미 국방부에서 새롭게 제안한 '지역 유지보수 프레임워크(Regional Sustainment Framework, RSF)'하에 한국 조선소를 시작으로 다양한 동맹국 조선소와의 선박 유지보수 협력을 확대한다. 또한 2024년 AUKUS 개정안(AUKUS amendment to United States Code § 8680)에서 확립된 잠수함 유지보수 모델을 확장하는 방안도 있다.
- 미국 및 인도-태평양 지역 내 조선소에 대한 공동 투자 촉진: 과거 미국 조선소뿐만 아니라 필리핀 등 지역 내 조선소에 대한 공동 투자로 첫 번째 경로(MRO 확장)를 지원한다.
- 무인선박 대량생산을 통한 중국 선박의 양적 우위 극복: 전통적인 전투함대(battle force ship) 개념을 넘어 대량생산이 가능한 무인선박을 적극 활용한다. 이를 통해 중국 해군의 양적 우위를 상쇄하고 미국 내 노동인력 부족 문제를 해결할 수 있다.
- AUKUS와 유사한 법적 틀을 마련해 동맹국 간 공동 전투함 생산 추진: 동맹국들과 군수지원함(auxiliary support ship)을 공동 생산할 수 있는 법적 기반을 마련할 수 있고, 호위함 및 구축함과 같은 수상전투함(surface combatant) 생산으로도 확대할 수 있다.

본 아산 보고서는 동맹국 간 조선업 및 유지보수 협력이 최대한의 잠재력을 실현하여 중국의 영향력을 따라잡고 해양 세력균형을 유지하는 데 기여할 수 있는지에 대한 새로운 통찰을 제공한다.

I. The Rise of Chinese Shipbuilding

The People's Republic of China (PRC) today has the world's largest navy. In 2024, it had a force of over 370 ships and submarines, inclusive of 140 major surface combatants, compared to 297 for the United States.[1] China's fleet is expected to grow to 435 ships by the end of this decade, marking an average increase by eight ships per year.[2] The People's Liberation Army-Navy (PLAN) is undertaking a fleet-wide naval shipbuilding program that includes new aircraft carriers, guided missile cruisers, guided-missile destroyers, guided missile frigates, auxiliary and amphibious ships, and unmanned underwater systems.[3] This PLAN naval buildup is overwhelmingly recent, meaning that approximately "70 percent of Chinese warships were launched after 2010, while only about 25 percent of the U.S. Navy's were. China's newer ships are not necessarily superior, although the U.S. Office of Naval Intelligence assessed in 2020 that China's ships were increasingly of comparable quality to U.S. ships."[4] The U.S. Department of

1. U.S. Department of Defense, "Military and Security Developments Involving the People's Republic of China" (2023), https://media.defense.gov/2023/Oct/19/2003323409/-1/-1/1/2023-MILITARY-AND-SECURITYDEVELOPMENTS-INVOLVINGTHE-PEOPLES-REPUBLIC-OFCHINA.PDF; For the U.S. estimate, Congressional Research Service, "Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress" (September 24, 2024), https://sgp.fas.org/crs/weapons/RL32665.pdf, p. 2.
2. U.S. Naval Institute Staff, "Report to Congress on Chinese Naval Modernization," *USNI News* (October 20, 2023), https://news.usni.org/2023/10/20/report-to-congress-on-chinese-naval-modernization-19#:~:text=The%E2%80%A6%20overall%20battle%20force%20%5Bof,by%20the%20end%20of%20FY2030; U.S. Department of Defense, "DOD Report Details Chinese Efforts to Build Military Power" (October 19, 2023), https://www.defense.gov/News/News-Stories/Article/Article/3562442/dod-report-details-chinese-efforts-to-build-military-power/. Lower estimates, including by the U.S. Navy, predict that China will have built 475 naval combatant ships by 2035 whereas the United States will only have between 305 and 317. See Cathalijne Adams, "China's Shipbuilding Capacity is 232 Times Greater Than That of the United States," Alliance for American Manufacturing (September 18, 2023) https://www.americanmanufacturing.org/blog/chinas-shipbuilding-capacity-is-232-times-greater-than-that-of-the-united-states/.
3. Ibid, p. 56.
4. Alexander Palmer, Henry H. Carroll, Nicholas Velazquez, "Unpacking China's Naval Buildup," Center for Strategic and International Studies (June 5, 2024), https://www.csis.org/analysis/unpacking-chinas-naval-buildup.

Defense further assesses that, "The PRC is the world's top ship-producing nation by tonnage and is capable of producing a wide range of naval combatants, gas turbine and diesel engines, and shipboard weapons and electronic systems, making it nearly self-sufficient for all shipbuilding needs."[5]

The United States Navy may be more capable than the PLAN in key areas such as joint military operations, anti-submarine warfare, operations far from home ports, and more.[6] However, China enjoys a balance-of-forces advantage in the Western Pacific where most of its ships are concentrated and intended for use, while the U.S. Navy can only focus about 60 percent of its assets on the Indo-Pacific.[7] During the Biden administration, competing U.S. commitments in Europe and the Middle East further diverted limited military capabilities away from the Indo-Pacific. For example, in the 2021 U.S. Global Posture Review, it deployed an additional 500-personnel Army Multi-Domain Task Force and Theater Fires Command in Germany.[8] During the 2023-24 Israel-Hamas/Hezbollah wars, the Biden administration also redeployed an additional aircraft carrier, the USS *Abraham Lincoln* Strike Group, to the Mediterranean Sea from Asia for extended periods, causing a "carrier gap."[9]

China's naval buildup is not happening in isolation. Today, the PRC is the world's largest builder of commercial, ocean-going ships, with over 40 percent of the global market

5. Ibid.
6. Ronald O'Rourke, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress," Updated August 16, 2024, *Congressional Research Service*, https://crsreports.congress.gov/product/details?prodcode=RL33153, pp. 4-5.
7. Joseph Webster, "How a bipartisan ships act could meet China and climate challenges," *War on the Rocks* (March 12, 2024), https://warontherocks.com/2024/03/win-wind-how-a-bipartisan-ships-act-could-meet-china-and-climate-challenges/.
8. U.S. Department of Defense, "DoD Concludes 2021 Global Posture Review" (November 29, 2021), https://www.defense.gov/News/Releases/Release/Article/2855801/dod-concludes-2021-global-posture-review/.
9. Ken Moriyasu, "U.S. sends another carrier from Asia to Middle East, widening Pacific gap," *Nikkei Asia* (August 7, 2024), https://asia.nikkei.com/Politics/International-relations/Indo-Pacific/U.S.-sends-another-carrier-from-Asia-to-Middle-East-widening-Pacific-gap.

being built in Chinese shipyards.[10] China's shipbuilding capacity is more than 230 times as large as that of the United States. Chinese shipyards have a manufacturing capacity of roughly 23,250,000 tons, whereas U.S. shipyards have less than 100,000 tons.[11] For example, according to the CSIS China Power tracker, the Jiangnan Shipyard, which is located on Changxing Island and builds the PLAN's aircraft carriers, is believed to have more shipbuilding capacity than all U.S. shipyards combined.[12] China also far surpasses the United States in commercial shipping, port ownership, container construction, fishing fleets, and overall merchant marine fleets with 7,000 ships compared to 178 for the United States.[13]

U.S. Secretary of the Navy Carlos Del Toro has explained the strategic implications of this naval-commercial shipbuilding industrial nexus by noting that "Beijing leverages its dominant commercial shipbuilding capacity and modern commercial shipyards and infrastructure to more efficiently produce its naval combatants."[14] The commercial-naval shipbuilding industrial nexus that China has built is, in some respects, unique. Today, the world's leading naval powers such as the United States, United Kingdom, and Russia do not have competitive commercial shipbuilding industries, with their

10. U.S. Navy, "Del Toro delivers remarks at Harvard Kennedy School" (September 26, 2023), https://www.navy.mil/Press-Office/Speeches/display-speeches/Article/3538420/secnav-delivers-remarks-at-harvard-kennedy-school/.
11. Michael Lee, "Chinese Shipbuilding capacity over 200 times greater than US, Navy intelligence says," *Fox News* (September 14, 2023), https://www.foxnews.com/world/chinese-shipbuilding-capacity-over-200-times-greater-than-us-navy-intelligence-says; Seth G. Jones, "Beijing Is on a Wartime Footing," *Wall Street Journal* (January 1 2024), https://www.wsj.com/articles/beijing-is-on-a-wartime-footing-defense-industrial-base-shipbuilding-16e22a87.
12. Matthew P. Funaiole, Brian Hart, Joseph S. Bermudez Jr., Samantha Lu, "Tracking China's Naval Modernization at Key Shipyards," Center for Strategic and International Studies (November 21, 2023), https://chinapower.csis.org/analysis/china-naval-modernization-jiangnan-hudong-zhonghua-shipyard/.
13. Matthew P. Funaiole, "The Threat of China's Shipbuilding Empire," Center for Strategic and International Studies (May 10, 2024), https://www.csis.org/analysis/threat-chinas-shipbuilding-empire.
14. Carlos Del Toro, "SECNAV Delivers Remarks at Harvard Kennedy School," United States Navy (September 26, 2023), https://www.navy.mil/Press-Office/Speeches/display-speeches/Article/3538420/secnav-delivers-remarks-at-harvard-kennedy-school/.

shipbuilders mostly specializing in naval contracts. China instead appears to have chosen to follow a different playbook: that of its East Asian neighbors South Korea and Japan.[15] In addition to the net benefits of having more shipyards in operation, the commercial-naval shipbuilding industrial nexus directly supports PLAN objectives. While officials and commentators might hail the revolution in military affairs and game-changing technologies of the future as making legacy platforms like warships obsolete, the contest for the Indo-Pacific is likely to continue to be waged on the seas by fleets for the foreseeable future. This report examines how the United States and its allies and partners can succeed in this contest.

15. Dongkeun Lee, "Influences behind the Development of South Korea's Shipbuilding Industry from the 1960s to the 2000s," *Marine Policy* 167 (2024). See also, Daniel Todd and Michael Lindberg, *Navies and Shipbuilding Industries: The Strained Symbiosis* (Praeger, Westport, 1996).

II. The Decline of American Shipbuilding

The United States prevailed in the Second World War by outbuilding the Axis powers and becoming the world's "arsenal of democracy." American businesses did this by implementing the biggest military buildup in history. From July 1940 until victory over Japan in August 1945, the United States produced $183 billion in arms. For the naval war against the Axis powers, dozens of new shipyards were built almost overnight across the country and within months the United States was able to build a new ship from laying the keel to launching in only four days.[16] American shipyards would go on to build 141 aircraft carriers; eight battleships; 807 cruisers, destroyers, and destroyer escorts; 203 submarines, and over 2,700 Liberty ships to carry merchant shipping.[17] In total, the United States had over 5,000 ships when the war ended.

Today, U.S. naval shipbuilding is plagued by delays, cost overruns, and workforce and supply shortages. The U.S. Navy itself has acknowledged that all of its major shipbuilding programs are behind schedule.[18] For instance, the Ford-class aircraft carrier USS *Enterprise* (CVN-80), being built by Huntington Ingalls Industries (HII), is 18 to 26 months late. The Constellation-class frigates from Fincantieri Marinette Marine (FMM) are 36 months behind schedule. The Columbia-class ballistic missile submarines (SSBN) by General Dynamics Electric Boat (GD/EB) and Huntington Ingalls Industries Newport News Shipbuilding (HII/NNS) are 12 to 16 months behind schedule. The fourth and fifth blocks of the Virginia-class attack submarines (SSN) also built by the same companies are 36 and 24 months late. Together, the proposed "2+1" schedule of delivering two SSNs and one SSBN every year does not appear realistic at the moment, despite significant additional investment for the submarine industrial base by the U.S. Congress.[19]

Meanwhile, U.S. commercial shipbuilding is essentially non-existent. As a recent report

16. Arthur Herman, *Freedom's Forge: How American Business Produced Victory in World War II* (Random House, 2012), p. 283.
17. Ibid., 335.
18. Steve Cohen, "Almost All Navy Shipbuilding is Hopelessly Behind Schedule," *The Hill* (May 2, 2024), https://thehill.com/opinion/national-security/4624326-almost-all-navy-shipbuilding-is-hopelessly-behind-schedule-as-war-looms/.

noted, "America depends almost entirely on foreign maritime partners. Less than 1 percent of global shipbuilding happens in the United States. Less than 1 percent of the world's trading vessels fly an American flag. More than 80 percent of port terminals along America's coasts are owned or operated by foreign companies, and America owns essentially no ports outside the United States."[20] In 2023, China had 1,749 vessels under construction while the United States had just five.[21] The current shipbuilding crisis stems from many factors such as inconsistent demand, budget shortfalls, rising foreign competition, workforce shortages, and more.

One problem in particular is outdated protectionist legislation which has stifled competition in commercial shipbuilding and efficiency in naval shipbuilding. In the 1980s, the Ronald Reagan administration pursued an ambitious naval buildup strategy to increase the U.S. Navy to 600 ships after years of decline during the Vietnam War (see Figure 1). At the same time, its commitment to free market competition and deregulation at a time when foreign shipbuilders were entering the commercial market led to the near-total collapse of U.S. commercial shipbuilding. Thus, despite an increase in naval shipbuilding, almost half of U.S. shipyards had closed and a third of the workforce had been cut by the end of the Cold War.[22] U.S. shipyards that once built merchant ships struggled to make the transition to high-value-added ships. For example, Korean and Japanese shipbuilders have steadily moved up the value chain to focus on LNG and LPG carriers while newer Chinese entrants have increased market

19. Justin Katz, "Navy lays out major shipbuilding delays, in rare public accounting," *Breaking Defense* (April 2, 2024), https://breakingdefense.com/2024/04/navy-ship-delays-columbia-constellation-virginia-enterprise-del-toro/
20. Mark Kennedy, Jeffrey Kucik, "It's Time for a Comprehensive National Maritime Strategy," *War on the Rocks* (March 28, 2024), https://warontherocks.com/2024/03/its-time-for-a-comprehensive-national-maritime-strategy/
21. Congressional Research Service, "U.S. Commercial Shipbuilding in a Global Context" (https://crsreports.congress.gov/product/pdf/IF/IF12534); BRS Shipbrokers, "Annual Review 2022"; and Mark Kennedy and Jeffrey Kucik, 'It's Time for a Comprehensive National Maritime Strategy', *War on the Rocks* (March 28, 2024), https://warontherocks.com/2024/03/its-time-for-a-comprehensive-national-maritime-strategy/.
22. Tim Colton, LaVar Huntzinger, "A Brief History of Shipbuilding in Recent Times," Center for Naval Analyses (September 2002), https://www.cna.org/archive/CNA_Files/pdf/d0006988.a1.pdf, p. 18.

share in comparatively easier to build bulk carriers and container ships. Thus, South Korean and Japanese firms have maintained stronger revenue despite Chinese firms growing in terms of volume of orders. The following section reviews some of the key factors that have caused the decline in U.S. shipbuilding, both commercial and naval.

1. Delays and Shortages

In addition to inconsistent demand signals from successive U.S. administrations when it comes to naval shipbuilding, shortages of shipyards, supplies and workers have hampered the ability of American industry to deliver orders on schedule. In the 1980s during the Reagan administration's 600-ship plan, the submarine industrial base was capable of producing up to eight submarines annually. But much of the infrastructure needed for this level of construction has since been diverted to repair work.[23] Today, the U.S. Navy contracts primarily with seven private shipyards to build its fleet, of which the vast majority of shipbuilding orders go to HII and GD/EB.[24] While shipbuilders currently have the capacity to launch five submarines per year, they face significant challenges in securing sufficient skilled labor to meet production demands. It is currently estimated that the United States will need 100,000 new employees in the decade between U.S. financial years 2022 and 2032, just for submarine production, or around 10,000 new workers hired each year for HII and GD/EB. This is alongside the 2,557 suppliers in 47 states that are also part of the submarine supply chain. In the case of surface combatants, FMM's Constellation-class frigates being built in Michigan have also experienced delays due to a lack of hundreds of workers.[25]

Workforce shortages also apply further upstream, such as in design work. During the Second World War, Andrew Jackson Higgins of New Orleans designed 92 percent

23. Alexander Grey, "The Submarine Workforce Crisis: Admitting Realities and Restructuring Long-term Strategy," *War on the Rocks* (April 4, 2024), https://warontherocks.com/2024/04/the-submarine-workforce-crisis-admitting-realities-and-restructuring-long-term-strategy/.
24. OSD A&S Industrial Policy, "Fiscal Year 2020 Industrial Capabilities" (January 2021), https://media.defense.gov/2021/Jan/14/2002565311/-1/-1/0/FY20-INDUSTRIAL-CAPABILITIES-REPORT.PDF, p. 97.
25. Megan Eckstein, "Frigate program delayed as shipyard is a 'few hundred' workers short," *Defense News*, (January 12, 2024), https://www.defensenews.com/naval/2024/01/11/frigate-program-delayed-as-shipyard-is-a-few-hundred-workers-short/.

of all vessels used by the U.S. Navy, primarily smaller landing crafts, patrol boats, and combatants. The Navy took the lead during the Cold War in designing its fleet, but by the 1990s it had reduced its naval architecture and engineering staff from 1,200 to 300, with most work outsourced to private firms.[26] The unions that represent many of the shipbuilding workforce, as well as Democratic members of Congress have resisted any offshoring, privatization, or consolidation of shipbuilding. For example, Matthew Paxon, president of the Shipbuilders Council of America, has stated that "There is more than enough capacity to accomplish all the fleet's maintenance needs, and yet the Navy is looking abroad for ship maintenance, as well as the capability to build combatant and logistics ships, plus vessels for the Coast Guard and the Army."[27] Similarly, Congressman Adam Smith has argued that building in "overseas shipyards are a problem. We want to maintain our shipbuilding capacity and we still have yards in this country that would like more work."[28]

2. Naval Shipbuilding Protectionism

China's own shipbuilding success has derived in part from extensive state intervention through subsidies and protectionism. Since it joined the World Trade Organization (WTO) in 2001, China designated shipbuilding as a "strategic industry" and gave its state-owned firms "massive WTO non-compliant subsidies, limits on foreign partnerships, and other anti-competitive policies."[29] From 2010 to 2018, the PRC government reportedly gave $132 billion in direct subsidies—both cash payments and rebates for taxes and levies—financing from state-owned banks, and tax incentives

26. Jeffrey L. Seavy, "The United States Must Improve Its Shipbuilding Capacity," U.S. Naval Institute (February 2024), https://www.usni.org/magazines/proceedings/2024/february/united-states-must-improve-its-shipbuilding-capacity.
27. Matthew Paxon, "Outsourcing Navy shipbuilding weakens the United States," *Defense News* (March 21, 2024), https://www.defensenews.com/opinion/2024/03/21/outsourcing-navy-shipbuilding-weakens-the-united-states/.
28. John Grady, "HASC's Adam Smith Says Pentagon Must Assess Platform Capability for Modernization Efforts," U.S. Naval Institute (May 9, 2024), https://news.usni.org/2024/05/09/hascs-adam-smith-says-pentagon-must-assess-platform-capability-for-modernization-efforts?utm_source=chatgpt.com.
29. Rana Foroohar, "Shipbuilding: the new battleground in the US-China trade war," *Financial Times* (March 13 2024), https://www.ft.com/content/4e2d5bb7-e4d5-4b98-b1a8-895c0d493b07.

for below-market steel to shipbuilders.[30] Chinese firms have used these subsidies in a number of ways, "including purchasing technology that is not yet commercially profitable, covering production costs during down markets, boosting research and development (R&D), and promoting the use of domestic components."[31]

If a commitment to free market competition explains the collapse of U.S. shipbuilding, it is ironic that protectionist legislation has allowed the few remaining shipyards to survive as sole suppliers for U.S. commercial and naval shipbuilding orders. This protectionist agenda includes multiple pieces of legislation imposed by the U.S. government, especially the U.S. Congress. The United States government explicitly codifies the prohibition of any shipbuilding outside of the United States and its territories. Most prominently, United States Code Title 10 (Armed Forces), Subtitle C (Navy and Marine Corps), Part IV (General Administration), Chapter 863 (Naval Vessels), § 8679 (Construction of vessels in foreign shipyards: prohibition), states as follows:

> "(a) Prohibition.—Except as provided in subsection (b), no vessel to be constructed for any of the armed forces, and no major component of the hull or superstructure of any such vessel, may be constructed in a foreign shipyard. (b)Presidential Waiver for National Security Interest.—(1) The President may authorize exceptions to the prohibition in subsection (a) when the President determines that it is in the national security interest of the United States to do so. (2) The President shall transmit notice to Congress of any such determination, and no contract may be made pursuant to the exception authorized until the end of the 30-day period beginning on the date on which the notice of the determination is received by Congress."[32]

This applies via Congressional appropriations to fund the U.S. Navy by the House of Representatives. For example, the U.S. Navy's "Justification Book" for Shipbuilding

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30. Jude Blanchette, Jonathan E. Hillman, Maesea McCalpin, Mingda Qiu, "Hidden Harbor: China's State-backed Shipping Industry," Center for Strategic and International Studies (July 2020), https://www.csis.org/analysis/hidden-harbors-chinas-state-backed-shipping-industry.
31. Ibid.
32. (c) Exception for Inflatable Boats.—An inflatable boat or a rigid inflatable boat, as defined by the Secretary of the Navy, is not a vessel for the purpose of the restriction in subsection (a). See, 10 USC 8679, https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title10-section 8679&num=0&edition=prelim

and Conversion notes that funds allocated to naval shipbuilding are made available by Congress, "Provided further, that none of the funds provided under this heading for the construction or conversion of any naval vessel to be constructed in shipyards in the United States shall be expended in foreign facilities for the construction of major components of such vessel. Provided further, that none of the funds provided under this heading shall be used for the construction of any naval vessel in foreign shipyards."[33]

Given that most of this protectionist legislation dates back to the early twentieth century and considering the deregulation by the Reagan administration, it stands to reason that the United States would have slowly wound back or ended such policies. American experts such as Colin Grabow of the Cato Institute have criticized the unproductive, or even counter-productive, policies and regulations that continue to harm U.S. shipbuilding. Grabow has identified at least five pieces of legislation.[34] First, the Buy American Act (BAA), enacted in 1933, mandates that federal agencies, including the Department of Defense (DOD), prioritize procurement of items that are predominantly manufactured within the United States.[35] According to this law, products are considered compliant if over 55 percent of the cost of their components comes from materials mined, produced, or manufactured domestically, or if they are commercially available off-the-shelf items.[36] However, the U.S. Congress and other parts of the U.S. government are actually moving to strengthen measures such as the BAA. For example, President Biden's "Made in America" Executive Order 14005, signed in his first week in office, increased the "domestic content threshold" from 55 percent to 75 percent by 2029.[37]

Second, the Berry Amendment, passed in 1941, imposes stricter requirements on

33. U.S. Navy, "Department of Defense Fiscal Year (FY) 2025 Budget Estimates" (March 2024), https://www.secnav.navy.mil/fmc/fmb/Documents/25pres/SCN_Book.pdf
34. Colin Grabow, "The Self-Imposed Blockade," CATO Institute (August 16, 2022), https://www.cato.org/policy-analysis/self-imposed-blockade
35. Congressional Research Service, "The Buy American Act and Other Federal Procurement Domestic Content Restrictions" (November 8, 2022), https://crsreports.congress.gov/product/pdf/R/R46748
36. It should be noted that the Trade Agreements Act of 1979 permits the waiver of the BAA and has resulted in eligible products from designated countries receiving equal consideration with domestic offers for certain federal acquisitions exceeding specified monetary thresholds.

DOD-purchased items, stipulating that they must be entirely sourced within the United States. This amendment applies to five specific categories: textiles, clothing, footwear, food, and hand or measuring tools (such as flatware and dinnerware). Unlike the BAA's 55 percent threshold, the Berry Amendment enforces a 100 percent domestic origin requirement. While the Berry Amendment covers only one percent of DOD procurement spending on products and services, it affects critical areas called "specialty metals restrictions." For instance, any specialty metals contained in aircraft, missile and space systems, ships, tanks, automotive items, weapon systems, ammunition, or any components thereof purchased by the DOD must be melted or produced in the United States.

Third, the Kissell Amendment, introduced as part of the 2009 American Recovery and Reinvestment Act, focuses on procurement by the Department of Homeland Security (DHS). It requires DHS to use funds directly related to national security interests to buy textiles, clothing, and footwear exclusively from domestic sources. However, the amendment does not apply to hand or measuring tools, flatware, or dinnerware. Additionally, its scope is limited by trade agreements, such as the World Trade Organization Agreement on Government Procurement. Consequently, the Kissell Amendment is primarily relevant to the Coast Guard and the Transportation Security Administration.

Fourth, the Military Cargo Preference Act of 1904 mandates that all items owned or purchased by the military be transported on U.S.-flagged vessels whenever available, provided the shipping rates are not deemed excessive or unreasonable. To ensure fairness, U.S.-flag liner operators—vessels operating on fixed routes and schedules—must file and publish their rates with the Federal Maritime Commission, which automatically considers them fair and reasonable, regardless of foreign-flag carrier rates.

Finally, the Byrnes-Tollefson Act encompasses two key amendments that focus on the construction of vessels for the U.S. Navy and Coast Guard. The Tollefson Amendment, part of the 1965 DOD Appropriations Act, prohibits the use of appropriated funds for constructing major vessel hull components in foreign shipyards. Similarly, the Byrnes Amendment, incorporated into the 1968 DOD Appropriations Act, forbids the construction of naval vessels in foreign shipyards using U.S. funds. These provisions are now codified as 14 U.S.C. § 1151, titled "Restriction on Construction of Vessels in Foreign Shipyards," and 10 U.S.C. § 8679, titled "Construction of Vessels in Foreign

Shipyards: Prohibition."

3. Commercial Shipbuilding Protectionism

Commercial shipbuilding is likewise heavily protected yet uncompetitive on the world market. One of the most cited causes is the Merchant Marine Act of 1920, more widely known as the Jones Act. First proposed by U.S. Senator Wesley Jones, the act regulates so-called "cabotage laws" limiting how foreign-flagged vessels can operate in commerce between U.S. ports. American unions defend the Jones Act as "the foundational labor law of the U.S. maritime industry," which has sustained the shipbuilding sector and nearly 500,000 jobs directly and indirectly and ensured "a pool of skilled civilian mariners capable of meeting the nation's strategic sealift needs."[38]

By contrast, free market economists decry the Jones Act as "a burden America can no longer bear."[39] The act imposes significant limitations on the U.S. maritime and inland waterways transportation sector by requiring vessels to be U.S.-built, U.S.-owned, U.S.-flagged, and U.S.-crewed.[40] This restriction inflates waterborne shipping costs by artificially constraining supply, demonstrating a clear distortion of the supply-and-demand dynamic.[41] The Jones Act was enacted over a century ago in the aftermath of the First World War to ensure domestic sealift capabilities. The legislation effectively

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37. The White House, "Executive Order on Ensuring the Future Is Made in All of America by All of America's Workers" (January 25, 2021), https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/25/executive-order-on-ensuring-the-future-is-made-in-all-of-america-by-all-of-americas-workers/; Hyeri Park, "Trends in Strengthening the U.S. Buy America Policy and Its Implications," Korea Institute for International Economic Policy, World Economy Focus, Vol. 5, No. 34 (November 22, 2022).
38. Maritime Trade Department, "The foundational labor law of the U.S. Maritime industry" https://www.maritimetrades.org/issues/the-jones-act/
39. Colin Grabow, Inu Manak, Daniel J. Ikenson, "The Jones Act: A Burden America Can No Longer Bear," CATO Institute (June 28, 2019), https://www.cato.org/publications/policy-analysis/jones-act-burden-america-can-no-longer-bear
40. Ibid.
41. Colin Grabow, "How the Jones Act Undermines U.S. Shipbuilding and National Security," CATO Institute (November 12, 2019), https://www.cato.org/policy-analysis/rust-buckets-how-jones-act-undermines-us-shipbuilding-national-security#jones-act-national-security-asset-or-liability

prevents the acquisition of ships built overseas by mandating that only U.S.-built vessels, with at least 75 percent U.S. ownership and 75 percent U.S. crew members, may operate on major domestic routes and access U.S. ports.[42] Despite these stringent requirements, U.S. commercial shipyards often rely on foreign partners for critical components and services, including design work, steel plating, engines, propellers, and contract labor, to construct Jones Act-compliant vessels.

The Jones Act has seen its effectiveness decline over time. In 1960, nearly 3,000 U.S.-flag oceangoing vessels represented 17 percent of the global fleet. By 2016, that number had fallen to just 169, less than 1 percent of the world total.[43] Furthermore, only 92 Jones Act ships transporting cargo between U.S. ports. Critics have cited numerous examples where it would have been cheaper and faster to acquire vessels from allied countries. For example, the wait time for a U.S.-built icebreaker can be as high as eight years and cost $ 1 billion. Furthermore, the Jones Act's protective measures have led to a shipbuilding industry lagging behind smaller nations like Singapore and Croatia, with an aging fleet reliant on Chinese state-owned shipyards for maintenance.[44]

Another example of U.S. commercial protectionism can be found in steelmaking, a crucial precursor phase to shipbuilding. The American steel industry, much like shipbuilding, has steadily declined in global competitiveness. Today, the global market has embraced so-called "green steel" using renewable energy sources like hydrogen as well as electric-arc furnaces as ways to reduce carbon emissions.[45] In the United States, 70 percent of traditional blast furnaces will reach the end of their operational life

42. Congressional Research Service, "Shipping Under the Jones Act: Legislative and Regulatory Background" (November 21, 2019), https://sgp.fas.org/crs/misc/R45725.pdf
43. The Editorial Board, "The Jones Act Serves No Purpose," *Bloomberg* (December 14, 2017), https://www.bloomberg.com/opinion/articles/2017-12-14/the-jones-act-serves-no-purpose?sref=pfyOJ3jG
44. Colin Grabow, "Turn to American Allies for Shipbuilding Help," *Wall Street Journal* (May 19, 2024), https://www.wsj.com/articles/us-navy-ship-building-china-allies-a98895fb?mod=Searchresults_pos1&page=1
45. Paul Sracic, "Protectionism Won't Save U.S. Steel's Jobs," *Wall Street Journal* (April 29, 2024), https://www.wsj.com/articles/protectionism-wont-save-u-s-steels-jobs-4d384c8b

within the next decade.[46] The Trump administration in its first term in 2018 launched a Section 232 Investigation on the Effect of Imports of Steel on U.S. National Security of the Trade Expansion Act of 1962. That investigation found that "steel articles are being imported into the United States in such quantities and under such circumstances as to threaten to impair the national security of the United States."[47] The subsequent imposition of a general 24 percent tariff forced allies to try and negotiate exemptions or make alternative trade-offs. The American Steel Manufacturers Association has further called for a 60 percent tariff on the import of Chinese product with steel-intensive products, as well as expanding higher tariffs on associated factories set up in Vietnam, Thailand and other parts of Southeast Asia by Chinese companies to bypass U.S. tariffs.[48]

The Biden administration kept the steel tariffs in place. It has also blocked the acquisition of U.S. Steel by Nippon Steel, with unions and Democrats instead backing an alternative bid by Cleveland-Cliffs, an American steelmaker.[49] Reports have suggested that U.S. government departments are divided on the issue, with the Department of Defense and Department of State in favor while the Department of Commerce is against. If Cleveland-Cliffs were to acquire U.S. Steel, it would control 100 percent of U.S. blast furnace production, 100 percent of domestic steel used in electric vehicle motors, and 65 to 90 percent of other domestic steel used in vehicles. During the 2024 U.S. elections, steel protectionism became a campaign issue with U.S. Steel and the American Steelworkers' union as key constituencies in Pittsburgh, Pennsylvania. Both Vice President Kamala Harris and former President Trump opposed any sale

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46. Noah Berman, "Why Biden Wants to Block the Nippon-U.S. Steel Deal," Council on Foreign Relations (September 6, 2024), https://www.cfr.org/in-brief/why-biden-wants-block-nippon-us-steel-deal
47. U.S. Department of Commerce, "Section 232 Investigation on the Effect of Imports of Steel on U.S. National Security," https://www.commerce.gov/issues/trade-enforcement/section-232-steel
48. Bob Tita, "Why This U.S. Industry Is Pushing Trump for Even More Tariffs," *Wall Street Journal* (December 2, 2024), https://www.wsj.com/economy/trade/u-s-steelmakers-to-trump-bring-on-more-tariffs-d9f3f3db
49. The Editorial Board, "Biden's Moment of Truth on U.S. Steel," *Wall Street Journal* (December 8, 2024), https://www.wsj.com/opinion/u-s-steel-nippon-deal-cleveland-cliffs-donald-trump-joe-biden-japan-15c7cbb0

of U.S. Steel. Ultimately, President Trump flipped Pennsylvania again after losing it to President Biden in 2020. One of President Biden's final acts in office was to block the deal. Despite the popularity of steel tariffs and the blocking of foreign takeovers, employment in U.S. iron and steel mills fell by 3,000 jobs since the Section 232 tariffs took effect in 2018. Moreover, Chinese steel makes up only 2 percent of U.S. imports and 0.6 percent of consumption.[50]

50. The Editorial Board, "Steel Tariffs and the Race to Be Protectionist in Chief," *Wall Street Journal* (April 17, 2024), https://www.wsj.com/articles/the-race-to-be-protectionist-in-chief-ddc5d394

III. Attempts to Revive American Shipbuilding

This section examines U.S. efforts to rebuild naval and commercial shipbuilding. The United States needs a "comprehensive national maritime strategy."[51] Recognizing the scale and urgency of the challenge, all levels of the U.S. government are racing to rebuild national naval and commercial shipbuilding capacity. This section argues that while necessary, these efforts alone will be insufficient to close the gap with China.

Table 1. Major U.S. Shipbuilders

Company	Sample Outputs	Shipyard/s
General Dynamics (GD) Corporation		
- Electric Boat (GD/EB)	Submarines	Connecticut
- Bath Iron Works (BIW)	Surface combatants, Commercial	Maine
- National Steel and Shipbuilding Company (NASSCO)	Auxiliaries	California
Huntington Ingalls Industries (HII)		
- Newport News Shipbuilding (NNS)	Submarines, Surface combatants	Virginia
- Ingalls Shipbuilding	Surface combatants	Mississippi
Fincantieri Marinette Marine	Surface combatants, Commercial	Wisconsin
Austal USA	Surface combatants	Alabama

1. U.S. Executive Efforts

Both the Biden and Trump administrations have recognized the need to catch up to China when it comes to both naval and commercial shipbuilding.[52] After the naval

51. Mark Kennedy, Jeffrey Kucik, "It's Time for a Comprehensive National Maritime Strategy," *War on the Rocks* (March 28, 2024), https://warontherocks.com/2024/03/its-time-for-a-comprehensive-national-maritime-strategy/
52. James R. Holmes, "Yes, the United States Needs a Real Maritime Strategy," U.S. Naval Institute (June 2023), https://www.usni.org/magazines/proceedings/2023/june/yes-united-states-needs-real-maritime-strategy

shipbuilding peak during the Reagan administration, the U.S. Navy shrank to below 300 ships for the first time in 2003. Prior to his first term in office, President Trump had campaigned in September 2016 in Philadelphia to "build a Navy of 350 surface ships and submarines" and 12 aircraft carriers as part of his shift towards great power strategic competition after almost two decades of focus on counter-terrorism.[53] The strategy to achieve 350 included life-of-type extensions to keep existing vessels such as cruisers and mine sweepers in service longer, activating decommissioned transport vessels from the 48-ship Ready Reserve Force (RRF) within the National Defense Reserve Fleet (NDRF);[54] refitting and upgrading decommissioned ships such as the Ticonderoga-class Aegis cruisers, and building two aircraft carriers at once.[55] By the end of his term, he only increased the fleet size from 272 ships to 297 ships, falling short of his pledge. Meanwhile, the U.S. Navy projects that the net number of ships will decline by nine during FY2025, from 296 ships at the start of FY2025 to 287 ships at the end of FY2025. This decline is because the Navy is retiring ships faster than it is building new ones.[56] Maintenance and repair delays at the naval shipyards mean that 37 percent, or 18 of the U.S. Navy's 49 attack submarines, are out of commission, which far exceeds the 20-30 percent expected in most navies.[57]

2. U.S. Legislative Efforts

There have been parallel efforts to reinvigorate American shipbuilding by the U.S. Congress. In April, a bipartisan and bicameral Congressional group comprising

53. Jerry Handrix, Robert C. Brien, "How Trump Can Build a 350-Ship Navy," *Politico* (April 13, 2017), https://www.politico.com/magazine/story/2017/04/how-trump-can-build-a-350-ship-navy-215019/
54. U.S. Department of Transportation, "The Ready Reserve Force (RRF)" (April 23, 2024), https://www.maritime.dot.gov/national-defense-reserve-fleet/ndrf/maritime-administration%E2%80%99s-ready-reserve-force
55. Ibid.
56. U.S. Naval Institute Staff, "Report to Congress on U.S Navy Force Structure, Shipbuilding," *USNI News* (May 30, 2024), https://news.usni.org/2024/05/30/report-to-congress-on-u-s-navy-force-structure-shipbuilding
57. Anthony Capaccio, "Nearly 40% of US Attack Submarines Are Out of Commission for Repairs," *Bloomberg* (July 11, 2023), https://www.bloomberg.com/news/articles/2023-07-11/us-navy-attack-submarine-readiness-almost-40-out-of-commission-for-repairs

Republican Senator Marco Rubio and Congressman Mike Waltz together with Democratic Senator Mark Kelly and Congressman John Garamendi released a landmark 'Congressional Guidance for a National Maritime Strategy: Reversing the Decline of America's Maritime Power."[58] The members of Congress explicitly cited the failed legacy of market liberalization, noting that, "The U.S. doesn't subsidize commercial shipbuilders. Partially as a result, the U.S. lost 300 shipyards between 1983 and 2013. Today, only 20 U.S. shipyards can produce oceangoing vessels. Most of them, moreover, exclusively produce vessels for the U.S. Navy."[59] The Congressional guidance offered ten recommendations to rebuild American shipbuilding by increasing investment.[60] Other members of Congress such as Democratic Senator Sherrod Brown of Ohio have called for the Navy to move parts of ship construction from the coasts to smaller, civilian facilities further inland, such as on the Great Lakes where FMM already builds vessels.[61] The latest Congressional effort is the December 2024 bipartisan SHIPS for America Act introduced by Senators John Garamendi, Mark Kelly, Todd Young, and Representative Trent Kelly.

The Congress's 2025 NDAA also includes multiple provisions forcing the DOD to work more creatively to overcome shipbuilding and sustainment issues. For example, Section 356 mandates the Department to "establish an advanced manufacturing facility on or near a military installation within the area of responsibility of the United States Indo-Pacific Command for the purpose of—(1) meeting flexible manufacturing requirements to support the submarine, shipbuilding, and other defense activity industrial bases."[62] Similarly, Section 1026 includes an "exception to prohibition of

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58. Mike Waltz, Mark Kelly, Marco Rubio, John Garamendi, "Congressional Guidance for a National Maritime Strategy: Reversing the Decline of America's Maritime Power" (April 30, 2024), https://www.rubio.senate.gov/wp-content/uploads/2024/05/congressional_guidance_for_a_national_maritime_strategy.pdf.
59. Mike Waltz and Mark Kelly, "China's Sea Power Leaves U.S. Adrift," *Wall Street Journal* (May 22, 2024), https://www.wsj.com/articles/chinas-sea-power-leaves-u-s-adrift-e6a8681f.
60. Ibid.
61. The Editorial Board, "Egregious Pentagon delays reflect problem the military is just starting to solve," *The Washington Post* (June 24, 2024), https://www.washingtonpost.com/opinions/2024/06/24/pentagon-delays-navy-doomsday/.
62. 118th United States Congress, "National Defense Authorization Act for Fiscal Year 2025," https://www.congress.gov/bill/118th-congress/senate-bill/4638, p. 194.

overhaul, repair, or maintenance of certain vessels in shipyards outside the United States or Guam."[63] These and similar efforts will undoubtedly continue to be pursued by the U.S. Congress in the coming years.

3. U.S. Bureaucratic Efforts

The U.S. Department of Defense, in responding to White House and Congressional guidance, has also outlined its own efforts to boost production. For years, the Department has listed various steps to increase production through investment, oversight, providing clear orders and block purchases, encouraging new suppliers, and more.[64] Under the Biden administration, U.S. Secretary of the Navy Carlos Del Toro has called for a new 'maritime statecraft that "encompasses not only naval diplomacy but a national, whole-of-government effort to build comprehensive U.S. and allied maritime power, both commercial and naval."[65] The 2024 National Defense Industrial Strategy also offered suggestions for a modernized defense industrial ecosystem including resilient supply chains, workforce readiness, flexible acquisition, and economic deterrence.[66]

The Department has also invited outside expertise to review the contracting process. The 2024 Commission on Planning, Programming, Budgeting, and Execution Reform (PPBE) offered five major areas for reform to improve the alignment of budgets to strategy, foster innovation and adaptability, strengthen relationships between the DOD and Congress, modernize business systems and data analytics, and strengthen the capability of the resourcing workforce with 28 recommendations. Most significantly, it proposed a new Defense Resourcing System that would streamline the existing four-

63. The exception is quite narrow, however, with the stipulation that "During any fiscal year, the cumulative work carried out under this paragraph for ships at any particular homeport may not exceed two percent of the average annual total workload of that homeport over the preceding three-year period, as measured in shipyard labor hours." FY2025 NDAA, p. 688.
64. Office of the Assistant Secretary of Defense for Industrial Base Policy, "Fiscal Year 2021 Industrial Capabilities Report to Congress" (March 2023), https://www.businessdefense.gov/docs/resources/FY2021-Industrial-Capabilities-Report-to-Congress.pdf, p. 107.
65. Ibid.
66. Congressional Research Service, "The 2024 National Defense Industrial Strategy" (January 29, 2024), https://www.defense.gov/News/Releases/Release/Article/3643326/dod-releases-first-ever-national-defense-industrial-strategy/

stage process into three interlocking stages: strategy, resource allocation and execution.[67] The U.S. Navy has also tried to be more flexible and faster in funding projects that the customary budget cycle by using below-threshold reprogramming authorities.[68] The U.S. Department of Defense has also tried to work more efficiently with the private sector and defense primes.[69]

4. U.S. Labor Efforts

In addition to U.S. government efforts, American unions have also put forward ideas to close the shipbuilding gap. On March 12, 2024, five U.S. shipbuilding unions jointly filed a petition urging the Biden administration and U.S. Trade Representative Katherine Tai, to investigate Beijing's "non-market policies" to dominate the commercial shipbuilding industry.[70] Led by the United Steelworkers Union (USW) representing 850,000 workers, the petition claimed that "The PRC is using commercial shipbuilding to dominate the full spectrum of global trade, choking out all competitors," while its policies had led to the loss of over 70,000 American jobs.[71] The coalition also included the International Association of Machinists and Aerospace Workers (IAM), representing 600,000 workers; the International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers (IBB), representing 60,000 workers; the International

67. Commission on Planning, Programming, Budgeting, and Execution Reform, "Defense Resourcing for the Future" (March 2024), https://ppbereform.senate.gov/wp-content/uploads/2024/03/Commission-on-PPBE-Reform_Full-Report_6-March-2024_FINAL.pdf
68. U.S. Navy, "SECNAV Delivers Keynote at Sea Air Space Luncheon" (April 9, 2024), https://www.navy.mil/Press-Office/Speeches/display-speeches/Article/3735383/secnav-delivers-keynote-at-sea-air-space-luncheon/7
69. An interesting example from the Air Force reflects this new procurement flexibility. In April 2024, the U.S. Air Force ended a 50-year agreement with Boeing to build the presidential command and control "Doomsday" plane. It instead contracted a small firm, Sierra Nevada Corporation, which bought five used Korean Air 747s and refitted them for the mission at much lower cost. The Editorial Board, "Egregious Pentagon delays reflect problem the military is just starting to solve," *The Washington Post* (June 24, 2024), https://www.washingtonpost.com/opinions/2024/06/24/pentagon-delays-navy-doomsday/
70. "Biden Eyes Chinese Shipbuilding Subsidies as Tensions Simmer," *Bloomberg* (March 13, 2024), https://www.bloomberg.com/news/articles/2024-03-13/biden-says-us-to-review-union-petition-on-china-shipbuilding?sref=pfyOJ3jG

Brotherhood of Electrical Workers (IBEW) representing 820,000 workers; and the Maritime Trades Department (MTD) within the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO), which promotes legislation. The union petition was supported by Democratic Senators Tammy Baldwin of Wisconsin and Bob Casey of Pennsylvania. "They want to impose docking fees on Chinese-built ships perhaps as much as $1 million each and revive a subsidy system abandoned in the 1980s, which paid up to half the cost of ships built in the United States."

On April 17, the Office of the United States Trade Representative agreed to launch an investigation, stating "The petition presents serious and concerning allegations of the PRC's longstanding efforts to dominate the maritime, logistics, and shipbuilding sectors, cataloging the PRC's use of unfair, non-market policies and practices to achieve those goals. The allegations reflect what we have already seen across other sectors, where the PRC utilizes a wide range of non-market policies and practices to undermine fair competition and dominate the market, both in China and globally."[72] However, by October 2024, the investigation had yet to release its findings or offer recommendations, leading 68 members of the House of Representatives to co-sign a letter to President Biden stating:

> "We urge you to reach a swift conclusion in this investigation and to consider strong and effective remedies to begin to turn the tide on our decades-long domestic shipbuilding crisis […] The United States needs a healthy and revitalized maritime industry capable of

71. The United Steelworkers Union, "USW Files Section 301 Petition on Shipbuilding" (March 12, 2024), https://usw.org/news/media-center/releases/2024/usw-files-section-301-petition-on-shipbuilding. The full list of issues, include: Implementing industrial planning and policies that are designed to unfairly capture market share, distort global markets, and advantage Chinese enterprises; Directing mergers and anticompetitive activities; Providing non-market advantages to Chinese firms to dominate key upstream inputs and technologies; Providing advanced financing mechanisms advantaging Chinese industry; Creating a Chinese network of upstream suppliers, foreign ports and terminals, shippers, and equipment and logistics software that allow advantageous use of information; Tolerating intellectual property theft and industrial espionage; and Controlling shipping freight rates and capacity allocations.
72. Office of the United States Trade Representative, "USTR Initiates Section 301 Investigation of China's Targeting of the Maritime, Logistics, and Shipbuilding Sectors for Dominance" (April 17, 2024), https://ustr.gov/about-us/policy-offices/press-office/press-releases/2024/april/ustr-initiates-section-301-investigation-chinas-targeting-maritime-logistics-and-shipbuilding

> meeting the commercial and defense needs of our nation for years to come […] Breaking the boom-and-bust cycle that has plagued U.S. shipbuilders is critical to maintaining that workforce and growing critical supply chains."[73]

In summary, this section has reviewed how different parts of the U.S. system—including the White House, Congress, Department of Defense, U.S. Navy, shipbuilders, and unions—are all trying to rebuild and reinvigorate American naval and commercial shipbuilding. Ronald O'Rourke, a leading American expert on naval shipbuilding at the Congressional Research Service, has laid out a compelling case for seven steps that the United States could take to rebuild its shipbuilding industry.[74] The first is to increase workforce capacity by improving pay and benefits. The second is to change the mix of ships being built for the Navy to enable smaller shipyards to participate by building smaller ships. The third is what O'Rourke calls "federated shipbuilding," which involves diversifying supply chains to inland manufacturing hubs, much like how fighter aircraft are built.

Fourth, the U.S. Navy could relax the design conditions and optimize the producibility of each section by reducing the number and cost of parts. This approach has been embraced by new-entry defense firms such as Anduril Industries in their hyperscale production of Barracuda cruise missiles.[75] The fifth option proposed by O'Rourke is to move away from the current focus on bespoke classes of ship designs and production to a more coordinated system of ship classes as a "kit of parts." Sixth, the United States could adopt a drumbeat production tempo like Japan, with regular and consistent orders rather than start-stop cycles. And seventh, the government could redesign the

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73. "House Lawmakers call on administration to finish shipbuilding probe, seek remedies," *World Trade Online* (October 22, 2024), https://insidetrade.com/trade/house-lawmakers-call-administration-finish-shipbuilding-probe-seek-remedies
74. Ron O'Rourke, "Competition at Sea: Building Resilience in a Maritime Enterprise in Crisis," Wilson Center (March 28, 2024), https://www.wilsoncenter.org/event/competition-sea-building-resilience-maritime-enterprise-crisis.
75. A single Barracuda takes 50 percent less time to produce, requires 95 percent fewer tools, and 50 percent fewer parts than competing solutions on the market today. As a result, the Barracuda family of AAVs is 30 percent cheaper on average than other solutions. Anduril, "Anduril Raises $1.5 Billion to Rebuild the Arsenal of Democracy" (August 7, 2024), https://www.anduril.com/article/anduril-raises-usd1-5-billion-to-rebuild-the-arsenal-of-democracy/

Navy to become fundamentally easier to build and crew. Yet, even if the United States were to do all of the above suggestions—which would be revolutionary—it is unclear whether it would be sufficient or in time. For a truly colossal challenge like China, it will require a colossal effort by more than just the United States. The next section considers the feasibility and pathways toward a collective enterprise.

IV. Towards an Allied Shipbuilding and Sustainment Enterprise

The United States cannot out-build China when it comes to either naval or commercial shipbuilding, and efforts to overcome domestic barriers have proven unsuccessful or made only a marginal difference to the net balance of ships at sea. U.S. naval power needs Asian allies.[76] This section considers the expected benefits and potential costs of adopting a collective approach to shipbuilding to close the gap with China. After explaining the critical contribution that allies can bring to both the overall maritime balance of power as well as contribution to American shipbuilding, it introduces four potential pathways to achieve a more coordinated shipbuilding enterprise. The four pathways include a multi-national maintenance, repair, and overhaul (MRO) system for ship sustainment; joint capital and technical investment in both shipyards in the region and the United States; shipbuilding cooperation on emerging technologies and next-generation vessels to offset China's quantitative advantage; and finally an integrated shipbuilding supply chain for battle-force ships, especially surface combatants.

Long before China exploited American shipbuilding, the major beneficiaries of U.S. shipbuilding prowess were actually U.S. allies. In the 1950s and 1960s, Western and Northern European countries such as the United Kingdom, Sweden, and Norway built export-oriented shipbuilding sectors under U.S. military protection. In the 1970s and 1980s, they were joined by emerging players from Japan and South Korea. Global competition among free market economies played out under the protective umbrella of the United States. South Korea and Japan account for 47 percent of global commercial shipbuilding orders.[77] South Korean shipbuilders account for between a quarter and third of all annual global orders for commercial ocean-going vessels. South Korea's three biggest shipbuilders, HD Hyundai, Hanwha Ocean and Samsung Heavy Industries,

76. Kang Choi and Peter K. Lee, "Why U.S. Naval Power Needs Asian Allies," *War on the Rocks* (January 12, 2024), https://warontherocks.com/2024/01/why-u-s-naval-power-needs-asian-allies/.

77. Seong Hyeon Choi, "How will China respond to US Navy's shipbuilding push with South Korea, Japan?" *South China Morning Post* (April 27, 2024), https://amp-scmp-com.cdn.ampproject.org/c/s/amp.scmp.com/news/china/military/article/3260494/how-will-china-respond-us-navys-shipbuilding-push-south-korea-japan.

collectively won $13.6 billion in commercial orders in the first quarter of 2024 alone.[78]

The logic of turning to allies to help revitalize American shipbuilding therefore rings hollow for many American workers. As Matthew Paxton, president of the Shipbuilders Council of America, recently argued, "If we need more ships or repairs for our national security fleet, the answer is not to outsource our Navy's shipbuilding to Korea and Japan, kicking American shipyard workers to the curb."[79] But as the previous section detailed, the United States is unlikely to resolve its naval shipbuilding dilemma vis-à-vis China by itself. As Australian experts have observed for several years, "A strategy of collective defence is fast becoming necessary as a way of offsetting shortfalls in America's regional military power and holding the line against rising Chinese strength."[80]

Just as China harnessed its commercial and naval shipbuilding industries, so too should the United States fully harness the untapped shipbuilding and sustainment potential of its allies and partners in the Indo-Pacific.[81] A collective shipbuilding enterprise would alleviate, if not entirely resolve, the market-driven dynamic that leads U.S. allies and partners to compete against each other in third-country markets. Shipbuilding cooperation can also benefit U.S. allies. For example, Japanese shipbuilding has remained competitive against Chinese shipbuilding thanks to technological innovation, maintaining a large merchant fleet, business consolidation and leading steel production.[82] However, until recently, Japanese firms have not had significant overseas

78. Han-Shin Park, "Korea Reclaims Crown From China as World's Top Shipbuilder," *The Korea Economic Daily* (April 3, 2024), https://www.kedglobal.com/shipping-shipbuilding/newsView/ked202404030012
79. Matthew Paxton, "Outsourcing the US shipyard industrial base will outsource American sovereignty," *Breaking Defense* (August 5, 2024), https://breakingdefense.com/2024/08/outsourcing-the-us-shipyard-industrial-base-will-outsource-american-sovereignty/.
80. Ashley Townshend, Brendan Thomas-Noone with Matilda Steward, "Averting Crisis: American Strategy, Military Spending and Collective Defence in the Indo-Pacific," United States Studies Centre at the University of Sydney (August 2019), https://www.ussc.edu.au/averting-crisis-american-strategy-military-spending-and-collective-defence-in-the-indo-pacific.
81. The Editorial Board, "US Should Let Allies Help with Ship Shortage," *Bloomberg* (May 9, 2024), https://www.bloomberg.com/opinion/articles/2024-05-09/us-ship-shortages-can-be-reversed-with-japan-korea-s-help?sref=pfyOJ3jG

naval contracts compared to South Korean firms who have already supplied naval vessels to Indonesia, the Philippines, New Zealand, Peru, and others. Working through an alliance framework would help incentivize and provide government assurances for Japanese companies to participate in only supplying the United States but other allies.[83] How might a collective allied shipbuilding enterprise look in practice? This section explores four possible pathways that vary in terms of complexity and cost.[84] Each option would draw on different industrial strengths of its allies in the Indo-Pacific.

Table 2. Major Indo-Pacific Allied Shipbuilders

Company	Orders	Shipyards
HD Hyundai (HD Korea Shipbuilding & Offshore Engineering)		
- Hyundai Heavy Industries (HHI)	Naval, Commercial	Ulsan, South Korea
- HD Hyundai Mipo (HMD)	Commercial	Ulsan, South Korea
- HD Hyundai Samho (HSHI)	Commercial	Mokpo, South Korea
Hanwha Ocean	Naval, Commercial	Geoje, South Korea
Samsung Heavy Industries (SHI)	Commercial	Geoje, South Korea
HJ Shipbuilding & Construction (HJSC)	Naval, Commercial	Busan, South Korea
Imabari Shipbuilding	Naval, Commercial	Ehime, Hiroshima, Kudamatsu, Japan
Mitsubishi Heavy Industries (MHI) *- Mitsubishi Shipbuilding (MSB) and MHI Maritime Systems*	Naval, Commercial	Kobe, Nagasaki, Shimonoseki, Tamano, Yokohama, Japan
Japan Marine United Corporation (JMU)	Naval, Commercial	Yokohama, Japan
Kawasaki Heavy Industries (KHI) Ship & Offshore Structure Company	Naval, Commercial	Kobe, Sakaide, Japan
Sumitomo Heavy Industries Marine & Engineering (SHI-ME)	Commercial	Yokosuka, Japan
BAE Systems Australia	Naval	Adelaide, Australia
ASC Pty Ltd	Naval	Adelaide, Australia
Austal	Naval	Perth, Australia
Civmec	Naval	Perth, Australia
Luerssen Australia	Naval	Perth, Australia
Josefa Slipways, Inc (JSI)	Commercial	Navotas, Philippines
Propmech Corporation	Naval, Commercial	Manila, Philippines
Cerberus Agila Subic Shipyard	Commercial	Subic, Philippines

1. Collective Maintenance, Repair, and Overhaul

One of the most obvious ways to increase the U.S. fleet size and the combined naval assets of allies in the Indo-Pacific is to keep vessels operational and deployed in the Western Pacific for longer periods of time. For example, only 36 percent to 41 percent of U.S. Navy surface ships have been repaired on time in American shipyards.[85] The global market for ship maintenance, repair, and overhaul (MRO) is expected to increase from $57.76 billion in 2024 to $63.62 billion in 2029 while the U.S. Navy MRO budget alone is $14.8 billion.[86] With American shipyards experiencing years-long backlogs in ship construction alone, it seems only logical to shift the demand for sustainment to available allied shipyards. As U.S. Ambassador to Japan Rahm Emanuel has vigorously argued, "Our ships need to be overhauled where they sail. In this day and age, we cannot afford to have vessels travel thousands of miles back across the Pacific to languish pier-side for years in backlogged U.S. shipyards. The sooner our ships are overhauled, the sooner they return to the fight or deter one. Since the United States, Japan and South Korea train and plan together, it makes sense that we also maintain and repair together."[87]

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82. Dominique Barjot, "The resilience of the Japanese shipbuilding industry despite Chinese and South Korean competition," *Entreprises et Histoire*, 2023/3 No 112 (2023), pp. 62-82, shs.cairn.info/journal-entreprises-et-histoire-2023-3-page-62?lang=en.
83. Moyuru Tanaka, "Navigating the Competitive Seas: U.S.-Japan Future Collaboration in the Shipbuilding Industry," Center for Strategic and International Studies (August 13, 2024), https://www.csis.org/analysis/navigating-competitive-seas.
84. Peter K. Lee (ed.), "Many Hands: Australia-US Contributions to Southeast Asian Maritime Security Resilience," United States Studies Centre (November 28, 2022), https://www.ussc.edu.au/australia-us-contributions-to-southeast-asian-maritime-security-resilience.
85. John Grady, "GAO Tells Senate Panel U.S. Shipyards Are Major Readiness Concern ," U.S. Naval Institute (May 7, 2024), https://news.usni.org/2024/05/07/gao-tells-senate-panel-u-s-shipyards-are-major-readiness-concern.
86. Hyeonjae Choi, "HD Hyundai Heavy Industries to Capture Annual 20 Trillion US Warship Market," *Maeil Business Newspaper* (April 11, 2024), https://www.mk.co.kr/news/business/10988087.
87. Rahm Emanuel, "The Navy is breaking down. We need our allies' help to fix our ships," *The Washington Post* (August 13, 2024), https://www.washingtonpost.com/opinions/2024/08/13/rahm-emanuel-navy-ships-repairs-china/.

However, as discussed in Section Two, the United States has historically banned any significant naval sustainment work outside of its own shipyards in the continental United States and U.S. territories. This is explicitly set out in United States Code §8680, which states as follows: "*Overhaul, repair, etc. of vessels in foreign shipyards: restrictions.* (a) Vessels Under Jurisdiction of the Secretary of the Navy with Homeport in United States or Guam. -(1) A naval vessel the homeport of which is in the United States or Guam may not be overhauled, repaired, or maintained in a shipyard outside the United States or Guam."[88]

There are two precedents for expanding the scope of a more integrated multi-national MRO system in the coming years. The first is U.S.-Japan ship sustainment cooperation, which is already well established thanks to the forward deployment of U.S. naval ships in Japan. The United States has home-ported the Seventh Fleet which is comprised of 50 to 70 ships and over 27,000 sailors and marines in Japan for decades. For example, the USS *George Washington* (CVN 73) is permanently forward-deployed in Japan. Meanwhile, the U.S. Navy's Task Force 73/Commander, Logistics Group Western Pacific (CTF 73/CLWP) is similarly forward deployed in Singapore to provide logistics support to the Seventh Fleet. Many of these vessels undergo MRO in Japan.[89] In 2019, the USS *Milius* missile-guided destroyer received repairs at the Mitsubishi Heavy Industries Yokohama shipyard, located near the U.S. Navy's Yokosuka naval base. In 2024, the USNS *Big Horn* replenishment vessel also underwent repairs by Japanese shipyard workers.[90]

The newly established U.S.-Japan Forum on Defense Industrial Cooperation, Acquisition and Sustainment (DICAS) co-led by the U.S. Department of Defense

88. United States Code §8680.
89. Ken Moriyasu, "Repairing U.S. ships in Japan 'very important': defense chief Kihara," *Nikkei Asia*, (October 6, 2023), https://asia.nikkei.com/Politics/Defense/Repairing-U.S.-ships-in-Japan-very-important-defense-chief-Kihara.
90. Ken Moriyasu, "US Seeks to integrate Japan into defense industrial base," *Nikkei Asia* (April 3, 2024), https://asia.nikkei.com/Politics/International-relations/Indo-Pacific/U.S.-seeks-to-integrate-Japan-into-defense-industrial-base.

and Japan's Ministry of Defense also includes a Ship Repair Working Group.[91] The Biden administration has worked to expand the eligible list of ships to include not only U.S. ships forward-deployed in Japan, but also allow Japanese shipyards to conduct "maintenance and repairs of 90 days or less on U.S. Navy ships deployed to the Indo-Pacific from homeports in the United States, including Guam."[92] Additionally, the two countries have discussed expanding MRO work to Japanese commercial shipyards.[93]

The second precedent for an allied MRO enterprise comes from Australia and the AUKUS submarine project. The AUKUS model includes provisions for Australian shipyards to service U.S. naval assets ostensibly homeported in the United States. For example, in 2024 the U.S. Congress amended the previously mentioned U.S. Code §8680 "Overhaul, repair, etc. of vessels in foreign shipyards: restrictions," as follows:

(c) Repair and Refurbishment of Certain Submarines.-(1) Notwithstanding any other provision of this section, and subject to paragraph (2), the President shall determine the appropriate public or private shipyard in the United States, Australia, or the United Kingdom to perform any repair or refurbishment of a United States submarine involved in submarine security activities between the United States, Australia, and the United Kingdom.

(2) (A) The President may determine under paragraph (1) that repair or refurbishment described in such paragraph may be performed in Australia or the United Kingdom only if—

(i) such repair or refurbishment will facilitate the development of repair or refurbishment capabilities in the United Kingdom or Australia;

(ii) such repair or refurbishment will be for a United States submarine that is operating forward outside of the United States; or

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91. The White House, "United States-Japan Joint Leaders' Statement" (April 10, 2024), https://www.whitehouse.gov/briefing-room/statements-releases/2024/04/10/united-states-japan-joint-leaders-statement/.
92. The White House, "Japan Official Visit with State Dinner to the United States" (April 10, 2024), https://www.whitehouse.gov/briefing-room/statements-releases/2024/04/10/fact-sheet-japan-official-visit-with-state-dinner-to-the-united-states/.
93. The White House, "FACT SHEET: Japan Official Visit with State Dinner to the United States"(April 10, 2024), https://www.whitehouse.gov/briefing-room/statements-releases/2024/04/10/fact-sheet-japan-official-visit-with-state-dinner-to-the-united-states.

> (iii) the Secretary of Defense certifies to Congress that performing such repair or refurbishment at a shipyard in Australia or the United Kingdom is required due to an exigent threat to the national security interests of the United States.

This is a significant amendment to what had long been considered the primary obstacle to allied MRO cooperation on U.S. Navy vessels. In summary, from 2025, a U.S. submarine can be repaired and sustained by Australian shipyard workers rather than having to return to U.S. shipyards. The United States and Australia have not confined their MRO discussions to submarines. For instance, the 22nd Australia–United States Ministerial Defense Advanced Capability Committee mentioned that the two countries were exploring "maintenance, repair, and overhaul opportunities, including the identification of a co-sustainment pilot project under the U.S. Regional Sustainment Framework (RSF)."[94]

In addition to the aforementioned two precedents of Japan and Australia, the United States is currently also exploring the forward sustainment of some of its Navy vessels in other allied shipyards.[95] The U.S. Navy has recently signed Master Ship Repair Agreements (MSRA) with shipbuilders in South Korea and India.[96] In India, Cochin Shipyard Limited (CSL) has signed agreements with the U.S. Navy to undertake repairs of U.S. naval vessels under the Military Sealift Command.[97] South Korea has already pioneered MRO of foreign ships both at its own shipyards and overseas, in

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94. U.S. Department of Defense, "Readout of Under Secretary of Defense for Acquisition and Sustainment, Dr. William LaPlante and Ms. Heidi Shyu, Under Secretary of Defense for Research and Engineering, Engagements at the 22nd Australia – United States Ministerial Defense Advanced Capability Committee" (June 21, 2024), https://www.defense.gov/News/Releases/Release/Article/3813437/readout-of-under-secretary-of-defense-for-acquisition-and-sustainment-dr-willia/.
95. Jeong Soo Kim, "Use Allies in Shipyard Modernization," U.S. Naval Institute (May 2023), https://www.usni.org/magazines/proceedings/2023/may/use-allies-shipyard-modernization.
96. Sakshi Tiwari, "U.S. Warships To Be Repaired In India, S.Korea & Japan; Hanwha Becomes First Firm To Bag U.S. Naval Contract," *The Eurasian Times* (August 30, 2024), https://www.eurasiantimes.com/u-s-warships-to-be-repaired-in-india/.
97. "Cochin Shipyard Signs Deal To Repair US Navy Vessels," *Pratidin Time* (April 6, 2024), https://www.pratidintime.com/assambusinessnews/cochin-shipyard-signs-deal-to-repair-us-navy-vessels.

particular with the Philippine Navy and Indonesian Navy.[98] South Korean interest in MRO cooperation with the United States is thus part of a broader desire to unlock defense industrial cooperation with the United States.[99] With South Korea, HD Hyundai and Hanwha Ocean signed MSRAs to provide MRO on U.S. Navy supply ships. Hanwha Ocean was selected to provide Regular Overhaul (ROH) maintenance for the USNS *Wally Schirra*, a 40,000-ton dry cargo and ammunition ship, as well as the USNS *Yukon*, a replenishment ship.[100] The work is being carried out at Hanwha Ocean's Geoje shipyard, with additional onshore maintenance work being conducted using the shipyard's floating facilities.[101]

The U.S. DOD's 2024 Regional Sustainment Framework (RSF) seeks to "better equip the warfighter with a network of globally dispersed capabilities that deliver MRO closer to the point of need" in order to "build a collective and resilient co-sustainment ecosystem by developing sustainment strategies that promote joint/allied regional MRO and foster collaborative relationships to expand repair network capacity across warfighting domains."[102] The RSF is expected to lead to MRO hubs being established in Japan, South Korea, Australia, Singapore, and the Philippines.[103] Congressional support for in-theatre ship sustainment could also be funded through existing funds, such as the Pacific Deterrence Initiative which seeks to improve presence, logistics, exercises,

98. Joon-hyun Moon, "Korean shipbuilders eye US yards to tap Navy's lucrative repair deals," *The Korea Herald* (April 2, 2024), https://m.koreaherald.com/view.php?ud=20240402050532.
99. U.S. Department of Defense, "Joint Press Statement for the 24th Korea-U.S. Integrated Defense Dialogue" (April 11, 2024), https://www.defense.gov/News/Releases/Release/Article/3739122/joint-press-statement-for-the-24th-korea-us-integrated-defense-dialogue/.
100. "First US MSC Vessel Arrives in Korea for Maintenance," *The Maritime Executive* (September 3, 2024), https://maritime-executive.com/article/first-us-msc-vessel-arrives-in-korea-for-maintenance.
101. Hanwha, "Hanwha Ocean secures South Korea's first U.S. Navy MRO project" (September 4, 2024), https://www.hanwha.com/newsroom/news/press-releases/hanwha-ocean-secures-south-koreas-first-us-navy-mro-project.do.
102. U.S. Department of Defense, "2024 Regional Sustainment Framework" (May 9, 2024), https://www.acq.osd.mil/asds/docs/RSF-9MAY24.pdf.
103. Ken Moriyasu, "Pentagon to set up military repair hubs in 5 Indo-Pacific countries," *Nikkei Asia* (September 4, 2024), https://asia.nikkei.com/Politics/International-relations/Indo-Pacific/Pentagon-to-set-up-military-repair-hubs-in-5-Indo-Pacific-countries.

infrastructure and the strength of partners.[104] U.S. planners refer to this as "contested logistics." An important consideration for naval shipbuilding and sustainment in not only a period of competition but actual conflict will be the ability of each side to keep vessels in the water and get them back in action.[105] The United States would probably be unable to quickly construct many new ships or to repair damaged fighting ships in a great power conflict.[106] For example, in a protracted conflict, the United States would need to call upon its sealift fleet and merchant fleet to transport personnel. If the United States needs to double or even triple its sealift fleet, those new vessels will also have to come from existing fleets.[107]

Another issue that would arise in connection with this option would concern the ability to safeguard sensitive U.S. naval technology and ship-design know-how in foreign shipyards and supplier firms whose employees would not be U.S. citizens. This issue currently arises in connection with repairing and maintaining certain U.S. Navy ships in shipyards in locations such as Japan; one question would be how this issue might differ for a situation of building (rather than repairing and maintaining) U.S. Navy ships.

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104. Noah Robertson, "Pacific problems: why the US disagrees on the cost of deterring China," *Defense News* (April 4, 2024), https://www.defensenews.com/pentagon/2024/04/03/pacific-problems-why-the-us-disagrees-on-the-cost-of-deterring-china/; Mac Thornberry, Kimberly Lehn, "To deter China, transform the Pacific Deterrence Initiative," *Defense One* (January 30, 2024), https://www.defenseone.com/ideas/2024/01/deter-china-transform-pacific-deterrence-initiative/393739/.
105. Seong Hyeon Choi, "China could match US in military conflict thanks to shipbuilding strength, analysts say," *South China Morning Post* (June 17, 2024), https://www.scmp.com/news/china/military/article/3266860/china-could-match-us-military-conflict-thanks-shipbuilding-strength-analysts-say.
106. Thomas Black, "US Navy Shipbuilding Has Fallen Dangerously Behind," *Bloomberg* (April 17, 2024), https://www.bloomberg.com/opinion/articles/2024-04-17/us-navy-shipbuilding-has-fallen-dangerously-behind?sref=pfyOJ3jG.
107. Mark Buzby, Michael Roberts, "Where Are the Ships? Fighting a Pacific War without American Sealift," Hudson Institute (February 27, 2023), https://www.hudson.org/events/where-are-ships-fighting-pacific-war-without-american-sealift.

2. Shipyard Investment in the United States and Indo-Pacific

The second pathway towards a collective shipbuilding enterprise is to harness the full manufacturing capacity of U.S. and allied shipyards. This strategy would seek to achieve maximum efficiency out of existing infrastructure. The United States currently relies on four government-owned shipyards and a handful of private shipyards while China's 20 shipyards are for the most part new. Allied shipyard investment is not a new phenomenon. Indeed, despite its reputation as a heavily protected industry as discussed in this report, the United States does allow foreign companies to operate in its shipbuilding industry, including the Australian shipbuilder Austal which owns shipyards in Mobile, Alabama and the Italian shipbuilder Fincantieri Marinette Marine which is based in Menominee, Michigan. Yet, shipyards across allied countries throughout the Indo-Pacific vary greatly in terms of efficiency and infrastructure. For example, according to industry reports, the construction of a guided missile destroyer in South Korea is estimated to cost half that of a U.S. shipyard and be completed 30 percent faster.[108]

U.S. Secretary of the Navy Carlos Del Toro campaigned to attract allied investment in U.S. shipyards. In 2024, he delivered a speech following high-profile visits to allied shipyards in South Korea and Japan. He summed up the problem by observing that, "Right now, we build the most-capable warships in the world in shipyards that are decades behind the global technological standard […] This is an inefficient approach requiring far too much time, workforce, and taxpayers' dollars […] We have an opportunity to attract the most advanced shipbuilders in the world to open U.S.-owned subsidiaries and invest in commercial shipyards here at home."[109]

With the objective of increasing demand for U.S. commercial shipping and shipbuilding, the Maritime Statecraft effort will seek to attract new market entrants to restore competition to the U.S. shipbuilding industry.[110] According to Secretary Del Toro, this would increase overall shipping and shipbuilding capacity, incentivize private investment, grow the skilled labor pool, bolster resilience against hostile coercion, and

108. Timothy W. Martin, "At the World's Largest Shipyard, U.S. Courts an Ally to Face Up to China," *Wall Street Journal* (September 23, 2024), https://www.wsj.com/world/asia/us-south-korea-shipyard-china-30aa2b11.

109. Ibid.

ultimately result in a larger, more robust national shipbuilding base able to deliver more ships, on time, and at lower cost than the current, naval-only industrial base.[111]

Hanwha Ocean subsequently announced its plans to invest 32 billion won in overseas shipyards and 10 billion in overseas MRO companies.[112] They have also initiated the setup of a U.S. holding company and engaged in preliminary talks with Philly Shipyard.[113] In 2024, Hanwha Ocean and Hanwha Systems announced that they would acquire Philly Shipyard for $100 million.[114] Established in 1997 on the site of what used to be the U.S. Navy Philadelphia Naval Shipyard, Philly Shipyard is an American shipbuilder with a Norwegian maritime, offshore wind, and energy specialist company called Aker Group. Over the past two decades, it has built over 50 percent of the ships in the United States under the Jones Act, mostly for the United States Maritime Administration (MARAD). The deal was warmly welcomed by Secretary Del Toro, who stated that, "Knowing how they will change the competitive U.S. shipbuilding landscape, I could not be more excited to welcome Hanwha as the first Korean shipbuilder to come to

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110 Sam Lagrone, Mallory Shelbourne, "New Navy Long-Range Shipbuilding Plan Details 19 Ship Decommissionings in FY 2025," U.S. Naval Institute (March 19, 2024), Available at: https://news.usni.org/2024/03/19/new-navy-long-range-shipbuilding-plan-details-19-ship-decommissionings-in-fy-2025.

111. Min-young Kim, "Hanwha and HD Hyundai are trying to enter into U.S. MRO Market that worth 20 trillion won," *Kookmin Ilbo* (April 2, 2024), https://www.kmib.co.kr/article/view.asp?arcid=1711960332; Young-sik Hong, Man-ki Kim, Young-hwan Sohn, "A Study on Expected Impact of KOR-US Reciprocal Defense Procurement MOU," Kyunghee University, Vol 25, No. 4 (2018); Tae-jun Park, "RDP and Korea's defense export strategy" (2023); So Young Lee, "Analysis of Buy American Act and Reciprocal Defense Procurement Agreement, *Korea Law Review,* No. 98, (2020).

112. "Korean shipbuilders eye US yards to tap Navy's lucrative repair deals," *Korea Herald* (April 2, 2024), https://news.koreaherald.com/common/newsprint.php?ud=20240402050532.

113. Eun-jung Kim, "S. Korean shipbuilders eyeing U.S. naval vessel MRO market," *Yonhap News* (May 3, 2024), https://en.yna.co.kr/view/AEN20240503002900315.

114. Sam Lagrone, "South Korean Shipbuilder Hanwha Makes $100M Bid to Buy Philly Shipyard, SECNAV Del Toro Praises Deal," U.S. Naval Institute (June 20, 2024), https://news.usni.org/2024/06/20/south-korean-shipbuilder-hanwha-makes-100m-bid-to-buy-philly-shipyard-secnav-del-toro-praises-deal.

American shores—and I am certain they will not be the last."[115] HD Hyundai and Samsung Heavy Industries also have significant potential to invest in and improve U.S. shipyards. If current U.S. legal regulations were revised to allow Korean shipbuilders to share their knowledge and expertise, there would be more substantial room for investment in the United States. This could lead to the implementation of advanced technologies, more efficient production methods, addressing critical issues like labor shortages and shipbuilding productivity.

South Korean companies already have experience with overseas shipyard investment that can offer lessons for the United States. A noteworthy case is Hanjin Shipbuilding and Construction (now known as HJSC) which acquired Subic Bay shipyard in the Philippines following the departure of the U.S. Navy in the 1990s. Part of the larger Hanjin conglomerate that operates across transportation, including the de-facto national airline Korean Air, its heavy industries business also produced the South Korean Navy's flagship amphibious assault ships. Despite the acquisition, inconsistent orderbooks, disruptions to debt servicing, over expansion of facilities and workforce, and a range of industry factors ultimately saw the shipbuilder go into receivership in 2014, with its collapse in the Philippines representing the largest bankruptcy in that country's history.[116] Similarly, the demise of Daewoo Shipbuilding and Engineering (DSME) and its eventual acquisition by the Hanwha group is also an example of how precarious the shipbuilding industry is as a whole.

In 2022, U.S. investment firm Cerberus Capital Management acquired the southern section of the former Subic shipyard, three years after Hanjin ceased operations due to bankruptcy. Following the bankruptcy resolution, the Philippines allocated part of the facility for a navy base and maintenance operations, while Cerberus took over the remaining portion, committing to develop a new industrial zone and boost investment in the country. More recently, HD Hyundai signed a strategic partnership agreement

115. Sang-ho Song, "U.S. Navy secretary hails Hanwha's acquisition of U.S. shipbuilder as 'game-changing' milestone," *Yonhap News* (June 22, 2024), https://en.yna.co.kr/view/AEN20240622000500315.

116. Jee-hee Kim, "Dongbu-led Group Chosen as Top Hanjin Heavy Bidder," *Korea JoongAng Daily* (December 23, 2020), https://koreajoongangdaily.joins.com/2020/12/23/business/industry/hanjin-kdb-dongbu/20201223183800563.html.

with Cerberus to start manufacturing operations in the Philippines.[117] President Ferdinand Marcos Jr. welcomed the agreement, saying "We welcome HD Hyundai's investment that will not only open new doors for our offshore wind industry, but will also bring maritime manufacturing back to Subic, and eventually restore the glory days of shipbuilding to our shores."[118]

Rather than shipyards competing with each other, the bigger issue is the lack of shipyards. This explains why direct allied investment into the U.S. shipbuilding industrial base which would have been unimaginable only a few years ago is now being implemented. For example, to make the AUKUS deal possible, Australia is investing $3 billion ($4.7 billion AUD) into the U.S. submarine industrial base to uplift U.S. production. Eventually, these shipyards could further increase efficiency by constructing the same vessels at scale. While less likely with U.S. Navy vessels due to factors such as nuclear propulsion, technology safeguards, and export control regimes, this may be possible with frigates operated by a coalition of U.S. allies who then proceed to build the same vessel in multiple shipyards. As discussed later, this is the same logic that applies in the final phase of the AUKUS Pillar 1 optimal pathway with Australian and British shipyards building the same SSN-AUKUS submarines to reduce supply chain costs and disruptions.

The U.S. shipbuilding industry is facing significant challenges, primarily due to labor shortages as well as DOD and Congressional ship procurement policies. These issues are compounded by the inability of advanced shipbuilding countries like South Korea to transfer their expertise and technology. To address these challenges, it is crucial to consider allowing limited access for foreign personnel to transfer knowledge. The case of ST Engineering, a Singaporean shipbuilder, which withdrew from the U.S. shipbuilding industry highlights the difficulties faced by foreign companies, as they were restricted in management participation and technical support for projects.

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117. "Philippines Says HD Hyundai's Partnership at Subic Will Launch Shipbuilding," *The Maritime Executive* (May 14, 2024), https://maritime-executive.com/article/philippines-says-hd-hyundai-s-partnership-at-subic-will-launch-shipbuilding.
118. Presidential Communications Office, "Cerberus-Hyundai partnership to restore glory days of shipbuilding in PH — PBBM" (May 14, 2024), https://pco.gov.ph/news_releases/cerberus-hyundai-partnership-to-restore-glory-days-of-shipbuilding-in-ph-pbbm/.

In summary, the second pathway of increasing allied investment into and acquisitions of shipyards can provide much-needed funding and expertise to boost overall capacity. This is true whether the shipyard is in the United States, the Philippines, Australia or even South Korea. Any investment would obviously need to pass review by the Committee on Foreign Investment into the United States (CFIUS). The acquired shipyard would also need to delink the workforces and governance in terms of nationality restrictions that govern U.S. defense restrictions on foreign ownership, control and influence (FOCI) under a Special Security Agreement (SSA).[119]

3. Technology-centric Shipbuilding

The third pathway toward a collective shipbuilding enterprise is for the United States and its allies to re-write the playbook and start building new types of ships. These ships would not be the large, legacy platforms laden with decades of bureaucratic and technology red tape. Rather, the United States and its allies could start building the naval and commercial vessels of the future right now. Building on the wider U.S. focus on the Third Offset strategy to use technology to offset Chinese and Russian numerical superiority, this third pathway for allied shipbuilding would prioritize emerging technologies.[120] For example, one of the features of Asian shipyards that most impressed Secretary Del Toro was their cutting-edge technological infrastructure. As he explained, "When my team and I went to South Korea, we were floored at the level of digitization and real-time monitoring of shipbuilding progress, with readily available information down to individual pieces of stock materials […] Their top executives could tell us—to the day—when ships would be delivered."[121]

Technology can help to overcome the serious challenges facing not only the United States but also its allies when it comes to industrial workforce and naval crewing. For example, Australia has opted to reduce its order of nine Hunter-class 8,800-ton "heavy frigates" to six while ordering 11 general purpose frigates as well as six Large Optionally

119. Austal, "Corporate Governance Statement" (2023), https://investor.austal.com/static-files/cc2d55a1-dac4-4f7f-b62d-cfd36337a68e.

120. Gian Gentile, Michael Shurkin, Alexandra T. Evans, Michelle Grisé, Mark Hvizda, Rebecca Jensen, "A History of the Third Offset, 2014–2018," RAND Corporation (March 31, 2021), https://www.rand.org/pubs/research_reports/RRA454-1.html.

121. Ibid.

Manned Surface Vessels (LOSVs).[122] Workforce constraints have consistently been identified as the top challenge facing Australian shipbuilding.[123] The same workforce challenges exist in Korean and Japanese shipyards. In 2024, the total number of Korean shipbuilding workers was estimated at 113,000, of which 13 percent were foreign workers. The number of foreign workers is likely to surpass 20,000 this year, with 9,500 at HD Hyundai, 3,500 at Samsung Heavy Industries, and 3,000 at Hanwha Ocean. Korean shipyards are already transitioning towards so-called "smart shipyards" that rely on greater automation, artificial intelligence, and software.[124]

The third pathway therefore envisions U.S. shipbuilding cooperation with allies to start co-developing and co-producing common platforms, often based on commercial designs, that can be mass manufactured in multiple shipyards. This cooperation could focus on mass production of support ships such as the U.S. Navy's Medium Landing Ship (LSM) to support the Marine Corps for expeditionary operations in the Indo-Pacific or the U.S. Navy's light replenishment oiler (TAOL) program to build smaller and cheaper support ships to address production delays and reduce costs.[125] Countries could also work on uncrewed or optionally crewed vessels relying on autonomous navigation with new types of weapons such as drone swarms. A good example of this is U.S. investment in a "Ghost Fleet" of uncrewed surface vessels based on the

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122. Australian Government, "Press Conference, Sydney" (February 20, 2024), https://www.minister.defence.gov.au/transcripts/2024-02-20/press-conference-sydney; Andrew Greene, "Heavily armed 'optionally crewed' ships to enter service under massive reshaping of Australia's naval fleet," *ABC News* (February 20, 2024), https://www.abc.net.au/news/2024-02-20/heavily-armed-optionally-crewed-ships-under-naval-fleet-reshape/103487878.
123. Peter Dean, Alice Nason, Sophie Mayo, Samuel Garrett, "AUKUS Inflection Point: Building the ecosystem for workforce development," United States Studies Centre (December 11, 2023), https://www.ussc.edu.au/aukus-inflection-point-building-the-ecosystem-for-workforce-development.
124. Andy Hong, "Why Does Korean Shipbuilding Matter for the United States?," Korea Economic Institute of America (August 2, 2024), https://keia.org/the-peninsula/why-does-korean-shipbuilding-matter-for-the-united-states/.
125. Ronald O'Rourke, "Navy Light Replenishment Oiler (TAOL) Program: Background and Issues for Congress," Congressional Research Service, (December 12, 2024) and Ronald O'Rourke, "Navy Medium Landing Ship (LSM) (Previously Light Amphibious Warship [LAW]) Program: Background and Issues for Congress," Congressional Research Service, R46374 (December 19, 2024).

U.S. West Coast.[126] U.S. Undersecretary of Defense for Research and Engineering Heidi Shyu has similarly championed the $450-680 million per year Rapid Defense Experimentation Reserve (RDER) to cut development timelines for new weapons by two to four years.[127] South Korean shipbuilders are similarly forging strategic partnerships with leading U.S. technology companies to advance naval innovation and autonomous systems. For example, HD Hyundai has partnered with U.S. non-Prime defense technology companies such as Anduril Industries and Palantir Technologies on developing unmanned surface vessels (USVs) such as the Tenebris medium USV concept.[128] These technology partnerships reflect a changing approach beyond just legacy platforms and prime contractors.

In a strictly definitional sense, the expansion of smaller U.S. and allied vessels, including uncrewed vehicles, would not increase the battle force ship count vis-à-vis China, currently sitting at 370 for China versus 297 for the United States. This is because battle force ships are defined as "commissioned United States Ship (USS) warships built or armed for naval combat and capable of contributing to combat operations or other naval ships including United States Naval Ships that contribute directly to Navy warfighting or support missions." Ships and craft that are not counted as battle force ships include, among other things, certain types of support ships; combatant craft such as patrol boats; unmanned surface and underwater vehicles; and support craft such as floating dry docks, tugs, and lighters and barges.[129] Nonetheless, swarms of identical unmanned surface and underwater vehicles being mass-manufactured in allied shipyards throughout the Indo-Pacific may end up being a new model of collective

126. Juho Lee, "South Korea Reveals New Unmanned Navy Sea GHOST Concept," U.S. Naval Institute (November 17, 2022), https://news.usni.org/2022/11/17/south-korea-reveals-new-unmanned-navy-sea-ghost-concept

127. Jon Harper, "Pentagon Wants $450M for RDER Tech Experiments in Fiscal 2025" *DefenseScoop* (March 11, 2024), https://defensescoop.com/2024/03/11/rder-funding-fiscal-2025/.

128. Kevin Costelloe, "Anduril, Hyundai to 'Reimagine' U.S. Naval Power," *Orange County Business Journal* (April 15, 2024), https://www.ocbj.com/newsletter-feed/anduril-hyundai-to-reimagine-u-s-naval-power/; Dong-woo Chang, "HD Hyundai to co-develop unmanned surface vessel with U.S. AI firm Palantir," *Yonhap News* (April 14, 2024), https://m-en.yna.co.kr/view/AEN20240414001600320; Aaron-Matthew Lariosa, "HD HHI And Palantir Reveal Tenebris Unmanned Surface Vessel," *Naval News* (May 16, 2024), https://www.navalnews.com/naval-news/2024/05/hd-hhi-and-palantir-reveal-tenebris-unmanned-surface-vessel/.

shipbuilding in the years to come.

4. Surface Combatant Shipbuilding

The final pathway is the holy grail of allied shipbuilding: the simultaneous construction of a single class of surface combatants by multiple allied shipyards across the Indo-Pacific. The AUKUS enterprise to jointly construct a fleet of nuclear-powered submarines for the Australian and British navies represents the most ambitious example of this option. Recently, U.S. Deputy Secretary of State Kurt Campbell explained the deeper significance of the AUKUS enterprise as follows: "I believe that the circumstances increasingly demand that we work with trusted allies and partners even on the most sophisticated weapons that will increasingly be part of our *combined arsenals*. I think AUKUS, in many respects, is a game-changer. It is basically finding the way forward, and I think other endeavors and other engagements with other allies and partners will follow suit [emphasis added]."[130] The degree of inter-governmental and private sector trust required to build this 'combined arsenal' will be enormous.[131]

Experts nonetheless recognize that AUKUS-like efforts are urgently needed for the United States and its allies to meet the challenge of China's shipbuilding buildup. For example, American experts have already proposed that the United States could partner with South Korea and Japan to create a multinational guided-missile destroyer construction program: DDG-JROKUS.[132] This could be pursued either with each country independently and simultaneously manufacturing an entire ship or with each country specializing in different phases of construction. Constructing non-combat

129. Department of the Navy, "General Guidance for the Classification of Naval Vessels and Battle Force Ship Counting Procedures," SECNAVINST [Secretary of the Navy Instruction] 5030.8D (June 28, 2022).
130. Richard Fontaine and Kurt Campbell, "AUKUS: Securing the Indo-Pacific, A Conversation with Kurt Campbell," Center for a New American Security (April 3, 2024), https://www.cnas.org/publications/transcript/aukus-securing-the-indo-pacific-a-conversation-with-kurt-campbell.
131. Peter K. Lee and Heesu Lee, "Reciprocating Trust and Reconciling Ambitions in ROK-U.S. Defense Industrial Cooperation," *Asan Issue Brief* 2024-05 (May 28, 2024).
132. Commander Douglas Robb, "Japan, South Korea and the US should mirror AUKUS for destroyers," *Defense News* (October 6 2023), https://www.defensenews.com/opinion/2023/10/05/japan-south-korea-and-the-us-should-mirror-aukus-for-destroyers/.

components in allied shipyards and then integrating the equipment system in U.S. shipyards could be one of the collaborative strategies. This strategy could increase overall ship production while preserving U.S. jobs and ensuring security for critical components.

Another precedent is the use of the Aegis combat system by not only the U.S. Navy but also the navies of Japan, South Korea, and Australia. The fit-out of weapons systems and other critical parts of ships is already a multinational system. For example, on South Korea's destroyers, Lockheed Martin provides the combat system, RTX's Raytheon provides the missiles, and GE manufactures the gas turbines. Countries such as Australia and the Philippines also continue to pursue shipbuilding cooperation with other allies, rather than relying solely on the United States or indigenous manufacturing.[133] The choice of shipbuilding partners need not necessarily be mutually exclusive. It might be, in essence, something akin to the F-35 Joint Strike Fighter project where countries continue to also invest in their own capabilities such as the KF-21 or Global Combat Air Programme (GCAP) alongside purchasing the F-35. The next test for allied shipbuilders will likely be in the construction of auxiliary vessels, such as supply ships and transport ships, for the U.S. Navy.

133. The Australian Government, "Enhanced Lethality Surface Combatant Fleet" (2024), https://www.defence.gov.au/about/reviews-inquiries/independent-analysis-navy-surface-combatant-fleet; The Australian Government, "National Defense Strategy" (2024), https://s3.documentcloud.org/documents/24553016/australian_national_defense_strategy_2024.pdf.

V. Conclusion

This Asan Report has examined the potential for U.S. shipbuilding and sustainment cooperation with Indo-Pacific allies such as South Korea, Australia, Japan, and the Philippines. There are of course legitimate questions about the feasibility of the United States adopting a more integrated, less protectionist approach in an era of America First. One challenge will be mobilizing the private sector for an ambitious and multinational endeavor such as this given that firms will assess cooperation based on profits. For some allied shipbuilders, this will involve considering whether it makes more sense to invest in the commercial or naval segments of the shipbuilding market, as well as long-term market trends in orders.[134] There are also many in South Korea and Japan who are determined to preserve their defense industrial autonomy rather than share technology with competitors. The geographic needs of governments also differ, not to mention budgets for procurement and sustainment.

Overall, however, the hub-and-spokes alliance model is transforming into a latticework. So, too, must the allied defense industrial ecosystem that has historically relied upon the United States. The realization of a collective allied shipbuilding enterprise is long overdue.[135] Even as the region debates what kind of collective deterrence model will be most effective, countries also need to begin considering what kind of collective industrial model is possible. Shipbuilding is, by nature, a decades-long manufacturing endeavor. The SSN-AUKUS submarines will not be fully delivered until the 2050s, long after the current period of tensions with China, which is fixated on the near-term 2027-2035 window of crisis. But the vessels that the United States and its allies start building today will also likely have functions and roles not yet imagined. To that end, this Asan Report contributes new insights into how shipbuilding and sustainment could once again compete at scale and on pace with China to uphold a favorable maritime balance of power for the decades to come.

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134. Jae-hyuk Park, "Heirs of Hanwha, HD Hyundai compete for global buyers at Gastech," *Korea Times* (September 7, 2024), https://www.koreatimes.co.kr/www/tech/2024/05/129_358698.html.

135. Kang Choi and Peter K. Lee, "Why U.S. Naval Power Needs Asian Allies," *War on the Rocks* (January 12, 2024), https://warontherocks.com/2024/01/why-u-s-naval-power-needs-asian-allies/.

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