

THE ARSENAL OF DEMOCRACY

TECHNOLOGY, INDUSTRY, AND DETERRENCE
IN AN AGE OF HARD CHOICES



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LOGISTICS

No air-naval operation an ocean away from the homeland can succeed without a robust logistics chain. As Rear Admiral Henry E. Eccles once observed, logistics is “the bridge between our national economy and the operations of combat forces in the field.” This bridge is often overlooked in peacetime.¹ In wartime, however, it becomes the indispensable lifeline for military operations, determining when, where, and how effectively military forces can be deployed.² Doctrine—the way a military thinks about war—is meaningless unless it is aligned with a country’s logistical capacity. Indeed, if a doctrine cannot be resourced and sustained, a force risks entering a conflict without a viable plan.³

Today, after decades of peace, the US logistical “bridge” to the Indo-Pacific is ill-prepared to sustain a protracted air-naval conflict with China. The Philippine Sea—where US air-naval power would likely be concentrated in such a conflict—is over 11,000 kilometers from San Diego.⁴ The so-called stopping power of water presents significant challenges for operational planning, including transportation, supply, maintenance, repair, and medical support.⁵ However, the US logistics enterprise remains optimized for peacetime efficiency, designed to sustain stationary, large-scale bases rather than the dynamic, distributed

operations required in wartime. Here, “efficiency” is a euphemism for cost cutting—a system focused on reducing expenses rather than building the flexibility and redundancy necessary to perform effectively in combat.

Years of underinvestment, shifting policy priorities, and a focus on rigid procedures over results have left the US maritime logistics system brittle.⁶ The Military Sealift Command (MSC) has too few ships of the right sizes to meet wartime demands. The US Merchant Marine (USMM), once a cornerstone of wartime logistics, has been hollowed out, leaving its ranks dangerously thin. The Ready Reserve Force (RRF), which would be essential for surge operations, faces acute maintenance backlogs and struggles to bring vessels to a deployable state.⁷ Across the enterprise, shortages of skilled personnel compound these issues. These shortages are especially acute in the MSC’s administrative enterprise, where staffing gaps block the command from effectively coordinating with commercial partners, undermining efforts to augment its capabilities with private-sector resources. Worse, logistical networks would likely be high-value targets in a conflict with China, which has the capability to strike supply lines with missiles and other threats. US air logistics is in somewhat better shape, but it is no substitute for naval logistics in a theater as vast as the Indo-Pacific.

Because US adversaries can judge the condition of US logistics networks for themselves, underinvestment in logistics risks undermining deterrence. The limitations of US logistics networks will obviously constrain US strategic and operational choices in a protracted conflict.⁸ Today, the two world wars are often remembered as having been long, but both were relatively short compared with other great-power wars in history, including major wars in China’s historiography.⁹ China’s leaders must not be allowed to persuade themselves that they could triumph in a protracted conflict by simply wearing out US logistics networks.

This chapter surveys the challenges facing the US logistics enterprise. Comprehensive reform and major new investments are essential

to rebuild the logistics system to support the services' new operational concepts. Otherwise, the Navy in particular may need to modify new operational concepts that cannot be sustained. The chapter proceeds in five sections. First, it reviews the logistical challenges that US forces faced in the Pacific War with Japan, which were significant even though the situation then was far more advantageous than today. After an overview of the challenges the United States faces today, it assesses the viability of hardening forward-positioned logistical hubs and pre-positioning supplies to shorten the US logistical tail, concluding that this approach requires significantly greater resourcing and political attention. Fourth, it analyzes the role of US logistics in supporting allies and partners, particularly Taiwan, during blockade scenarios and other humanitarian and political contingencies. It concludes with programmatic recommendations to expand US logistics in the long term and short-term fixes that ameliorate the US logistical deficit.

Historical Foundations

In every war since the War of 1812, the United States has fought at a logistical advantage. By the time the United States entered World War I in 1917, its adversaries' logistics networks were nearly exhausted, whereas by the time of the Armistice, the US armed forces were comfortably supplying a million soldiers in Europe.¹⁰ In World War II, the United States had the highest proportion of support personnel of any major military.¹¹ In Korea, US forces had essentially unrestricted logistical access to the peninsula, enabling the buildup and breakout from Pusan and the subsequent attrition war of 1951–53.¹² In Vietnam, US logistical capacity was so imposing that it made strategically counterproductive operations seem attractive.¹³ In the Gulf War, US and coalition forces built up logistics lines for months before counterattacking into Iraq and Kuwait and achieved a rapid and hugely asymmetric victory, though the maritime logistics system struggled in

ways that were not well publicized.¹⁴ The wars in Iraq and Afghanistan were less materially intensive, but US forces were lavished with sustainment facilities, enabled by an air-naval logistics system and supplemented by logistics routes through Pakistan and Kazakhstan.¹⁵ The challenges that US forces subsequently faced in tackling insurgencies had little to do with logistics shortages.¹⁶ Even Operation Prosperity Guardian, the US-led effort to protect commerce in the Red Sea from attacks by Houthi rebels, has benefited from a dense allied logistical network in the region.¹⁷ It is often said that the US military can take the fight anywhere in the world, but this claim presupposes access to robust and uncontested logistics support. The takeaway is that logistical competition that the US military currently faces with China is unlike any it has ever faced before, either in war or in peace.

Nevertheless, US forces have grappled with the logistical challenges of air-naval warfare in the Indo-Pacific before, and much can be learned from these historical successes and failures. In the interwar period, US military planners developed a series of color-coded war plans to prepare for potential conflicts with Japan.¹⁸ The key plan, known as War Plan Orange, anticipated that Japan would initiate a conflict with a blockade and assault on the Philippines.¹⁹ The US fleet would mobilize, traverse the Pacific, relieve the Philippines, and then force a decisive battle in the Philippine Sea to destroy Japan's battle fleet. In actual combat, US logistics both shaped and were shaped by operations. The attack on Pearl Harbor on December 7, 1941, is often remembered as an intelligence failure, but it was also in part a consequence of a logistical miscalculation. In 1940, President Franklin D. Roosevelt ordered the Pacific Fleet to be moved from San Diego to Pearl Harbor in an effort to deter Japanese aggression.²⁰ However, this move—meant to project American power—created vulnerabilities that the Japanese would exploit.²¹ Pearl Harbor lacked the logistical infrastructure to support long-term fleet operations, and the fleet was concentrated at a single, inadequately fortified base. Pearl Harbor

lacked sufficient repair facilities, and its air defenses were poor. The fleet could not actually have fought a war out of Pearl Harbor in 1941.²² The lesson is that deploying forces forward without ensuring that they can be sustained not only creates strategic vulnerability but also potentially undermines deterrence.

After Japan attacked, the US Navy was unprepared for the logistical demands of the Pacific theater.²³ Prewar operational decisions, such as reinforcing the Philippines under General Douglas MacArthur, were made with little regard for logistical and operational realities. Once Japan had seized the surrounding waters by February 1942, blocking seaborne supplies to sustain US forces, it quickly became clear that the Philippines could not be sustained.²⁴ The result was MacArthur's withdrawal and the surrender of the Philippines to the Japanese.

The US Pacific Fleet suddenly faced several acute logistical issues at once. It lacked sufficient ships and personnel to transport material, and it lacked overseas bases to receive this material and serve as staging areas for amphibious landings.²⁵ Roosevelt's decision to pursue a Europe-first strategy further strained Pacific logistics, slashing supply shipments and delaying any attempt at a counteroffensive.²⁶ Crucially, supply management was decentralized, bifurcated between the services, and disorganized, leading to miscalculations and shortages.²⁷ The Army and the Navy supplied their forces separately, causing overlap, inefficiencies, and waste. Supplies for different destinations were jumbled together, packed in boxes too large to be handled at overseas bases or in flimsy packaging that broke before arrival.²⁸ There was also little consideration of terrain and climate. It wasn't until mid-1942 that the US military standardized its equipment for the Pacific. Owing to the time lag in cargo shipments, crucial supplies such as waterproof bags and mosquito-repellent clothes were behind schedule as late as March 1943.²⁹

Logistical shortcomings had direct impacts on operations throughout the critical year of 1942. A shipping shortage during the Guadalcanal Campaign nearly cost US forces victory.³⁰ These problems were

only temporarily solved by diverting shipping from US forces elsewhere, including North Africa.³¹ By late 1942, General Brehon Somervell, responsible for Army logistics, estimated a two-million-ton cargo deficit by June 1943. The Bougainville Campaign, nearly a year after Guadalcanal, was similarly plagued by transport shortages, earning these operations the nicknames “Operation Shoestring No. I and No. II.”³²

Gradually, logistics problems were resolved. US industry boomed, port stocks increased, cargo planning improved, and procedures were standardized.³³ US shipyards produced thousands of “Liberty” and “Victory” supply ships.³⁴ They built new classes of amphibious ships, ranging from smaller craft to transport armored units directly onto shore, to larger craft that could deploy smaller vessels for amphibious assault. Some larger logistics ships were later armed with guns large enough to support Army and Marine Corps beach attacks.³⁵

New innovations included floating dry docks—mobile repair facilities that allowed ships damaged in combat to be repaired much closer to the action—reducing downtime and extending the fleet’s operational reach.³⁶ Naval Construction Battalions, known as Seabees, were dedicated construction units that built airstrips, naval bases, and critical infrastructure on newly captured islands. They enabled US forces to push forward with offensives, knowing that forward bases were equipped with the necessary resources.³⁷ New techniques were developed to refuel and resupply ships at sea, allowing naval task forces to remain operational for extended periods without having to return to distant bases.³⁸ It also became clear that joint supply operations between the Army and the Navy were necessary. In June 1942, a Joint Purchasing Board for the South Pacific was established.³⁹ In March 1943, General George Marshall and Admiral Ernest King signed the “Basic Logistics Plan” to coordinate Navy and Army logistical operations.⁴⁰ By 1944, the Navy could ship nearly half a million tons a month to the Pacific⁴¹ and was able to bring B-29 bombers into the theater.⁴² As logistics and supply improved, morale

and the operational situation at large improved with it. These efforts were possible because the US economy had abundant slack industrial capacity, a condition that does not apply today.

Still, supply limitations impacted US operations in the Pacific until the end of the war. Though the war in the Central and South Pacific proceeded quickly in 1944, it was difficult to expedite because logistics chains could not keep up.⁴³ In the 1944 debate over whether to strike Luzon or Formosa, MacArthur argued it would be logistically impossible to take Formosa without first taking Luzon as a forward operating base.⁴⁴ It was not until after Germany surrendered that supply and logistical constraints eased.⁴⁵

In conclusion, US planners before the war were largely correct in predicting the sequence of events that ultimately played out, but they overestimated US logistical resilience, putting themselves at a disadvantage in the first months after the war broke out. The US Navy enjoyed a world-leading logistics system that allowed it to operate at sea for far longer than any of its contemporaries, thanks to underway replenishment and floating dry docks for repair.⁴⁶ By comparison, the United Kingdom formed the British Pacific Fleet to support operations against Japan in 1945, but the Royal Fleet Auxiliary had to rely on US logistics.⁴⁷ It is also inconceivable that the United States could have taken a forward-leaning global role in containing the Soviet Union after 1945 absent a premier logistics force.

Although vulnerable logistics chains can undermine deterrence, it is also worth emphasizing that robust logistics chains can help to strengthen deterrence. Perhaps the best example of this lesson is the Berlin Airlift of 1948–49. When the Soviet Union attempted to force the Western Allies out of Berlin by cutting off land access, the United States and its allies responded with a massive airlift operation that sustained the city for over a year. The operation involved over 278,000 flights and delivered more than 2.3 million tons of supplies. In the context of a political crisis short of outright conflict with the Soviet Union, the US demonstration of the ability to sustain West Berlin indefinitely ultimately persuaded Moscow to back down.

Challenges of Logistics in the Indo-Pacific

Today, the United States faces a set of logistical challenges in the Indo-Pacific that are both familiar and unprecedented. The tyranny of distance remains, but it is now compounded by China's long-range strike capabilities, which can hold US logistics chains at risk; new US operational concepts (explained below), which demand more complex and costly logistics networks; and decades of underinvestment in US military logistics, particularly its crucial maritime component.

China's development of advanced anti-access/area denial (A2/AD) capabilities has shifted the strategic calculus for US logistics in the Indo-Pacific. As we have seen, longer-range Chinese missiles such as the DF-26 and DF-27 have also made more distant targets vulnerable, including Guam and even US carriers.⁴⁸ Despite efforts to disperse key assets, harden infrastructure, and enhance missile defense systems at critical bases, the US logistics network remains exposed. If China's expanding submarine fleet can operate east of Taiwan, it can further pressure the sea lines of communication (SLOCs) around the world on which US logistics networks depend.

The US military services' new operational concepts for warfighting under the precision strike regime also have implications for the logistics enterprise. The Navy's Distributed Maritime Operations (DMO) concept disperses naval forces across a wide area and distributes offensive armament more comprehensively, complicating enemy targeting and increasing fleet survivability.⁴⁹ However, supporting distributed operations requires a larger fleet of smaller, agile logistics vessels capable of delivering supplies and refueling ships at sea in contested environments. The Air Force's Agile Combat Employment (ACE) concept emphasizes rapidly deploying to and operating from austere airfields to disperse forces and mitigate vulnerability.⁵⁰ This requires a flexible logistics system capable of sustaining operations from locations with minimal infrastructure. The Marine Corps' Expeditionary Advanced Base Operations (EABO) concept involves es-

tablishing temporary bases on small islands to support sea control and sea denial operations.⁵¹ These outposts are often remote and could well be within China's reconnaissance-strike complex (RSC), making continuous resupply under fire a significant challenge. Put simply, the greater the number of units and the larger the operating area, the greater the demands on logistics chains. Taken together, the US logistics system therefore faces a much more challenging task than it would have faced a decade ago in sustaining forces under old operational concepts. The US logistical system already struggles to support peacetime operations.

The United States still has the world's largest and most effective *air* logistics system. Heavy lift aircraft can move matériel and munitions to specific points very quickly and are invaluable for rapid deployment and for specific reserves and sustainment. The Civil Reserve Air Fleet (CRAF) program, which contracts civilian airlines to augment military airlift during crises, provides additional capacity but is unlikely to fully meet the logistics needs of a high-intensity conflict.⁵² Tanker aircraft are also essential, since they extend the range of US bombers and fighters. China is currently ramping up investments in its own tanker program to support sustained sorties off the east coast of Taiwan.⁵³ Maintaining a world-leading tanker fleet therefore contributes to US deterrence (see fig. 4.1).

Air logistics cannot substitute for naval logistics, however. Tanker aircraft are large and can be vulnerable targets if they operate within range of enemy missiles.⁵⁴ Heavy-lift aircraft move matériel very quickly, but not all airfields are capable of supporting them, and airfields within the First Island Chain are vulnerable to PLA precision strikes. Moreover, air cargo has natural capacity limits and is much less cost-effective than maritime logistics. For perspective, the largest US airlifter carries less cargo than even the smallest US Navy fast transport.

The US Navy's Military Sealift Command (MSC), a critical pillar of US maritime logistics, is in a precarious state.⁵⁵ MSC operates around

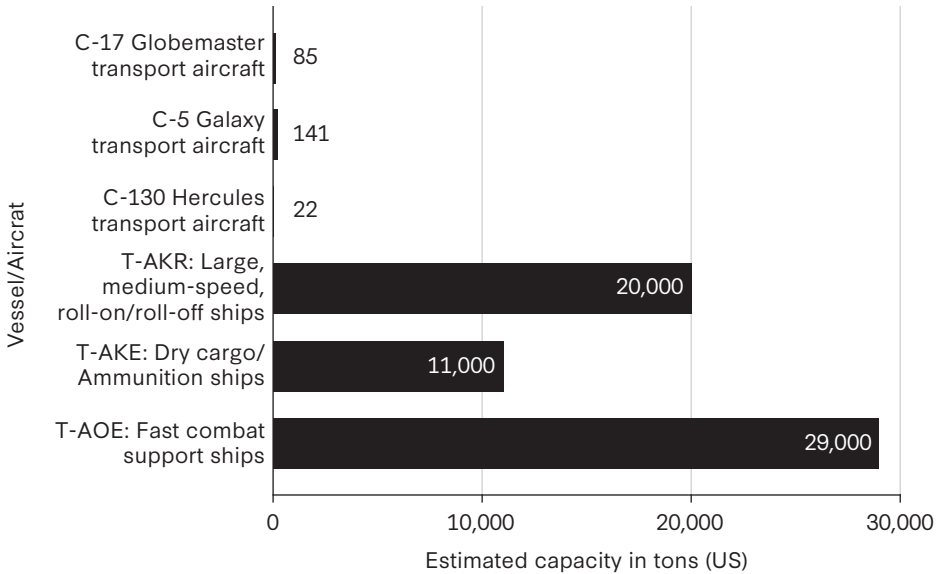


Figure 4.1 Estimated capacity of major US sea/airlifts

Estimated capacity in tons assumes that oil is stored at the typical density of around 0.85kg/l. Thus, it is around 0.135 metric tons per barrel, or 0.145 US tons per barrel (see Chevron Marine Products, “Conversion Charts,” https://www.chevronmarineproducts.com/en_mp/home/fuel-ports/fuels/conversion-charts.html).

Sources: US Air Force, “Aircraft Fact Sheets”; US Navy, “Fact Files.” Chevron Marine Products, “Conversion Charts.”

125 ships across eight programs (ship types) and relies on highly specialized US Merchant Mariners, rather than on naval officers, to crew its vessels.⁵⁶ The technical complexity of these logistics ships requires significant training, and personnel shortages have reached critical levels. These shortages are so severe that MSC has recently begun decommissioning ships that it cannot fully crew. MSC’s 4,500 mariners have little time for shore rotations, which increases stress on the workforce.⁵⁷ Commercial mariners typically have a more favorable rotation system, ranging from day-for-day leave to two months off for every four worked, along with better pay and benefits. This disparity exacerbates MSC’s recruitment and retention challenges, as mariners gravitate toward better conditions in the private sector.

The commercial sector is not immune to these pressures. It too faces a serious mariner shortage, but MSC feels these shortages more acutely and recovers more slowly due to its less competitive working conditions. This situation is compounded by systemic issues. US-flagged ships must comply with US Coast Guard (USCG) regulations requiring crew sizes approximately 30 percent larger than those of identical foreign-flagged ships, with no measurable gains in safety or operational efficiency. When US companies reflag foreign ships, they must immediately increase crew size to meet these requirements, adding to the strain on an already stretched labor pool. US-flagged ships also rank poorly on international safety metrics, despite their higher crew complements.

MSC currently plans to reduce its fleet by seventeen ships, cutting seven hundred jobs in an effort to improve shore rotation schedules and reduce workforce stress.⁵⁸ This may help with workforce management in the short term, but it comes at the cost of reduced logistical capacity, further undermining the force's ability to scale up operations in a crisis. The current system is in far worse shape than it was in the Gulf War, when it lacked the flexibility to respond effectively to surges in demand. Addressing these issues will require not only better working conditions for MSC mariners but also a reevaluation of the US regulatory policies that contribute to inefficiencies in maritime operations.

Supporting the MSC is the Maritime Administration (MARAD), a US Department of Transportation agency responsible for supporting the US Merchant Marine, improving port efficiency, and maintaining a robust shipbuilding and repair infrastructure.⁵⁹ MARAD also manages the National Defense Reserve Fleet (NDRF), a fleet of inactive, government-owned vessels.⁶⁰ Established in 1946, the NDRF primarily consists of cargo ships, tankers, and other vessels that can be activated during national emergencies, wartime, or other significant contingencies to provide essential military and logistical support. The most important subset of the NDRF is the Ready Reserve Force (RRF), which consists of ships that are maintained in a higher state of readiness

and can typically be activated and deployed within a few days.⁶¹ The RRF primarily includes roll-on/roll-off ships, heavy-lift ships, and other specialized vessels that are crucial for transporting military equipment, supplies, and personnel. The fleet is kept in various locations around the United States, close to military facilities and strategic ports. These ships are used to support rapid military deployments and provide immediate sealift capabilities during national emergencies or military operations. However, the RRF faces its own set of challenges. The average age of RRF ships is over forty years, leading to increased maintenance costs and decreased reliability.⁶² Many of these ships struggle to meet activation deadlines during exercises because of poor maintenance and manning. RRF ships should have a skeleton crew that keeps them in good shape, but limited funding makes this unlikely. Moreover, MARAD does not have a ready supply of mariners to crew RRF ships, even if they could be activated quickly.⁶³ The RRF model of keeping ships in partial layup and activating them in emergencies should be fundamentally rethought.

Finally, there is the US Merchant Marine, a fleet of privately owned US-flagged commercial vessels crewed by civilian mariners.⁶⁴ The Merchant Marine operates as part of a public-private partnership, with government agencies like MARAD providing support, regulation, and financial incentives to sustain the industry. The domestic fleet, primarily engaged in commercial cargo transport under the Jones Act, focuses on moving goods between US ports. However, the small US-flagged international fleet, which includes vessels in the Maritime Security Program (MSP) and the Tanker Security Program (TSP), as well as a handful involved in preference trade (e.g., food aid), is almost entirely dependent on government contracts, particularly from the Department of Defense. Although these international vessels may occasionally carry commercial cargo, they rely on government-funded military cargo for economic viability. Notably, the US Merchant Marine no longer includes vessels capable of transporting passengers, nor does it move troops, as troop transport is now conducted by air. This structure ensures that a minimal US-flagged fleet exists to support

national defense, though its viability depends heavily on sustained government funding.

The decline of the US maritime industry as a whole represents a critical vulnerability in America's ability to project and sustain power.⁶⁵ Although the US operated over six thousand merchant ships during World War II to supply Allied forces, today fewer than two hundred US-flagged oceangoing commercial vessels remain.⁶⁶ However, focusing solely on the number of ships misses the larger picture of the maritime industry as an interconnected ecosystem. This ecosystem includes not just ships but also ports, railroads, trucking firms, financial institutions, air cargo systems, and the information and communication systems that bind them together. China has recognized this, taking a comprehensive approach to dominate port management software, gantry crane production, and other key parts of commercial maritime operations globally, and integrating this capability into its strategy.⁶⁷ This information, a critical raw material, can be weaponized in ways the United States has yet to fully grasp.

By contrast, US policymakers often measure maritime strength by the number of platforms rather than the functionality and resilience of the broader supply chain. This fragmented focus, alongside factors such as reduced federal investment, the rise of "flags of convenience," and the deregulation of the US maritime industry in the 1980s, has contributed to a decline in readiness. The result is a maritime ecosystem that struggles to compete globally and remains vulnerable to cyberattacks and disruptions across its supply chain. In this interconnected environment, the efficiency and security of the entire system—not just the ships—are what ultimately determine a nation's maritime power. US policymakers have only begun to understand the intelligence collection capabilities and coercive power that China might gain from its global port presence, which goes far beyond ports where PRC entities own majority equity control.⁶⁸ Recognizing and strengthening the US maritime ecosystem as a whole is critical to addressing these vulnerabilities and ensuring resilience in both commercial and military logistics.

The US Merchant Marine cannot compete on the global shipping market due to higher labor costs and operational standards. Its survival depends on legislative mandates (such as the Jones Act) and subsidies (such as MARAD's Voluntary Intermodal Sealift Agreement [VISA] program and Cargo Preference Regulations).⁶⁹ Cargo preference laws require that a portion of US government-related cargo be transported on US-flagged vessels. For DOD cargo, the requirement is 100 percent, while programs like Ex-Im Bank shipments and Department of Agriculture/USAID food aid require 50 percent. Enforcement falls to MARAD, but compliance is uneven. Non-DOD agencies often try to avoid these rules, and MARAD struggles to ensure enforcement. In addition, Buy American laws, which support DOD cargo preference, do not apply to oil. As a result, the DOD sources oil from foreign suppliers, weakening support for the US tanker fleet. Although these measures prevent the Merchant Marine from being extinguished altogether, they are costly to expand and insufficient by themselves to make the US fleet globally competitive.

The Merchant Marine also faces a crisis of human capital. The average age of US merchant mariners is in the mid-50s, and many are approaching retirement. The pool of young people entering the profession has been shrinking for years, leading to a long-term personnel shortfall.⁷⁰ The Merchant Marine profession competes with other industries that offer better pay and working conditions, drawing potential recruits away. This shortage has significant implications for both commercial shipping and military sealift. In a protracted conflict, even if additional vessels were available, the United States might struggle to crew them.

To conclude, the lack of a clear US maritime policy has made logistics the weak link of deterrence. The Merchant Marine is incapable of serving its historical role as a vital auxiliary to the US Navy with the capacity to sealift large quantities of military equipment and supplies. As the US Merchant Marine has shrunk, the MSC and the RRF have had to carry the burden. A political mandate is needed for comprehensive reform and recapitalization across the enterprise—including cooperation with allied and partner governments to push back against

China's growing position in global ports. The long-term solution involves training more mariners, starting by increasing funding to the US Merchant Marine Academy, and reforming the payscale to incentivize talent retention. Once the manpower problem is addressed, which could take years, Congress might consider authorizing the purchase of more secondhand ships from the private market to support the RRF. There is also an argument for moving the Merchant Marine from the Department of Transportation to the Department of Commerce. In the meantime, the US government should explore potential partnerships with Japan and South Korea's merchant fleets.

Hardening and Pre-positioning

In principle, pre-positioning more munitions and matériel closer to potential conflict areas can reduce the strain on sealift logistics. The DOD already pre-positions stockpiles in War Reserve Stocks in NATO countries and other allied states, including in Israel.⁷¹ Expanding this practice in the Indo-Pacific—and creating additional, smaller, more distributed supply points—would be a good idea. It could enable a larger fleet of relatively small logistics ships and aircraft to deliver supplies to distributed air, land, and naval forces.

However, any supply depots within China's RSC are exposed to potential direct strikes, as well as to other local disruptions. Solving this problem requires hardening forward-deployment areas with bunkers, reinforced warehouses, covered piers, backup generators, and potentially electronic defenses and air defense missiles to prevent PLA attacks from knocking them out.⁷² If these supplies were diversified across a large number of supply depots, China would likely have to devote more firepower to degrade the logistics network. US forces can complicate China's task further by collaborating with regional partners to build joint facilities, dual-use military-civilian facilities, and even decoy facilities. The DOD is likely also taking other classified measures to build resilience to potential attacks.

Since 2021, Congress has been ramping up funding to harden US military installations in the Indo-Pacific, including logistics facilities. The most prominent program is the Pacific Deterrence Initiative (PDI).⁷³ The PDI is modeled after the European Deterrence Initiative (EDI), a similar effort that began after Russia's 2014 annexation of Crimea and invasion of Ukraine.⁷⁴ EDI was originally funded through the Overseas Contingency Operations (OCO) budget.⁷⁵ This mechanism was created after 9/11 to fund the War on Terror and was used subsequently to support specific budget items beyond the traditional interservice budget process, not as part of the base budget. However, OCO had significant oversight problems. In 2021, the Biden administration eliminated OCO, and EDI funding was brought into the base budget. PDI has always been part of the base budget.⁷⁶

Although one might hope that Congress would keep up the momentum for funding PDI, the experience of EDI provides reason for concern that this will not happen. EDI funding has fallen significantly since it was folded back into the base budget. Congress has appropriated large defense aid packages for Ukraine in this period, but EDI-specific priorities, such as hardening of NATO facilities in Europe, have not benefited from this spending. PDI is similarly vulnerable if members of Congress do not fully understand its strategic significance. Since PDI funding is a traditional interservice budget item, it is subject to political wrangling within the Pentagon and the House and Senate Armed Services and Appropriations Committees. For example, in FY 2021, the year the PDI was established, the Armed Services Committee earmarked \$2 billion of funding for it in the base budget, but the Appropriations Committees stripped it out.⁷⁷ The Pentagon has sought increased spending for the PDI in each of its annual budget requests since 2021, but it has not sought dramatic increases, perhaps out of fear that other programs will be cut if the PDI is fully funded.⁷⁸ A better approach might be to break PDI funding out of the base budget and give INDOPACOM more control to determine how the money is spent.

Not all pre-positioned supplies need to be located at US bases. The closure of bases in the Philippines in the 1990s and the potential

political restrictions on basing rights in Japan and Australia complicate logistics planning.⁷⁹ Efforts are being made now to expand the number of facilities accessible to US troops in Japan, the Philippines, Australia, Papua New Guinea, and elsewhere. Many of these facilities are “places, not bases”—US forces enjoy access to them but do not permanently base large forces there.⁸⁰ In a crisis, access to these places could be constrained by host-nation politics. A “places, not bases” logistics concept must therefore ensure both resilience and redundancy.

The MSC also runs pre-positioning ships designed to discharge various types of cargo, including liquid, containerized, or motorized, either at a pier or while anchored offshore. This flexibility enables operations in areas with poor or nonexistent port facilities, allowing US military forces to function effectively in both developed and undeveloped regions. In addition to combat gear, the program includes specialized ships like the Expeditionary Sea Base,⁸¹ which serves as a mobile sea base supporting various missions, and Offshore Petroleum Distribution System ships, capable of delivering fuel from up to 13 kilometers offshore.⁸² The Maritime Pre-positioning Force ships are organized into squadrons. They are loaded with essential supplies for Marine Corps operations, ensuring readiness for rapid deployment ashore when needed.⁸³ However, these capabilities have been significantly degraded; US forces cannot count on this capability to provide assistance at scale.

If the United States were to develop a distributed logistics system with smaller, forward-positioned regional facilities, it would need a fleet of small logistics vessels to transport these supplies to combat forces. This fleet does not yet exist, and it could not feasibly be scaled up without regulatory reform to reduce the mandatory minimum crew size. MSC operates twelve small Expeditionary Fast Transports (EPFs) that would fit this role, but this fleet is too small and questions remain about performance. The number of MSC small transports may also be cut.⁸⁴ Building more EPFs would help and would not be terribly expensive, at under \$200 million per hull. But MSC would need dozens more to sustain a distributed base concept.

Unmanned surface vessels (USVs) may provide an alternative, depending on cost, size, and construction time. There are already concepts for low-crew vessels in Europe that are armed with anti-ship missiles and capable of carrying supplies.⁸⁵ Costs are currently unclear. The Dutch Ministry of Defense, which is leading procurement, will spend between \$300 million and \$1 billion on these vessels, although first-in-class ships are always more expensive than subsequent hulls.⁸⁶ As these ships become cheaper, large-scale production will be more viable, making it easier to transport supplies within China's scouting network. For now, however, USVs cannot be built in large enough quantities—and are not yet cheap enough—to replace manned logistics boats.

Blockade and Humanitarian Contingencies

The condition of the US Merchant Marine is critical for any Taiwan crisis scenario, particularly in the event of a blockade or “quarantine.”⁸⁷ The US Navy lacks sufficient assets to provide escort services, even if a merchant fleet were available. It is also important to note that merchant fleets are run by private companies, not governments. Few, if any, commercial shipping companies would want to abandon their business interests in China to support Taiwan. Moreover, they hesitate to put their crews and ships at risk, meaning that the US government would likely have to handle such operations alone. The reactions of shippers, ship owners, and cargo owners would likely emerge as obstacles even before insurance considerations came into play. The standard “Five Powers Clause” in commercial war-risk insurance policies effectively terminates coverage in any conflict involving the five major powers, including the United States and China.⁸⁸ This would necessitate government-provided war-risk insurance as a replacement. The United States has no such program funded and prepared for immediate implementation. MARAD claims it could establish such a program quickly, but it would struggle to handle the administrative

challenge of becoming one of the world's most important maritime insurers overnight.

Given the massive volume of peacetime seaborne trade in the Western Pacific, it is not viable for the United States or any other government to build a Merchant Marine to fully replace merchant sealift in a crisis. Countries in the region that depend on maritime trade—particularly Taiwan—should heed the warning and expand their stockpiles of food, fuel, medical supplies, commodities, and machine parts. Trade would not continue normally in any wartime scenario, but the United States and its allies need a credible plan to ensure that they can supply Taiwan with at least some food, energy, and weapons if Beijing restricts the island's access to international markets. To do so, the United States and allied countries will need to maintain a sufficiently robust Merchant Marine fleet in case commercial shippers refuse to do so.

China is already demonstrating the ability to harass and obstruct commercial shipping on both sides of the First Island Chain. In August 2022, in response to House Speaker Nancy Pelosi's visit to Taiwan, the PLA announced four days of military live-fire drills in six zones that surrounded the island on all sides, including the approaches to Taiwan's major ports, in what it called a "joint blockade and joint support operation" (联合封控和联合保障行动).⁸⁹ Over the next week, China fired eleven missiles into the exclusion zones, some of which flew over the island of Taiwan. Tourist videos captured them in flight, with their screeching roar and trails of smoke. The exercises affected civilian traffic in some of the world's busiest international waterways and aviation routes.⁹⁰ Indeed, that was the point. The previous week, 240 cargo ships per day had passed through the exclusion zones. During the exercises, all but three ships rerouted, fearing that insurance would not cover them.⁹¹

Beijing's objective in these exercises is to demonstrate that it can deter private shippers from working with the United States and Taiwan in a crisis. "Our firepower covers all of Taiwan, and we can strike wherever we want," Zhang Junshe, a researcher at the PLA Navy

Research Institute, explained at the time. “We got really close to Taiwan. We encircled Taiwan. And we demonstrated that we can effectively stop intervention by foreign forces.”⁹² In May 2024, after Taiwan President Lai Ching-te was inaugurated, the PLA conducted another air-naval blockade exercise.⁹³ In future crises, if Beijing draws out such exercises for longer periods, the disruption to Taiwan’s economy could be highly significant. Even during the Gulf War, when US relative power was far greater than in the current situation, non-US flagged ships chartered by the US military occasionally refused to deliver cargoes for fear of being struck by Iraqi missiles.⁹⁴

A PRC blockade or attack on Taiwan could also cause a humanitarian crisis, requiring a large-scale evacuation of foreign nationals. As of April 2023, there were more than 800,000 foreign residents in Taiwan, representing 164 countries, plus an unknown number of PRC citizens.⁹⁵ More than 700,000 of the foreigners come from Southeast Asia, mainly Indonesia, the Philippines, Vietnam, and Thailand. There are also around 11,000 American citizens and tens of thousands more from US allies, particularly Japan, South Korea, Canada, the United Kingdom, and the European Union. If PLA strikes killed or injured foreign civilians, or made it impossible for them to be safely evacuated, Beijing would risk uniting the world against it. For this reason, Beijing might prefer to frighten foreign countries into evacuating their people from Taiwan *before* it made a military move. Forcing a mass evacuation would also signal to Taiwan that it was being abandoned.

In any scenario, a noncombatant evacuation operation (NEO) to withdraw foreign nationals from Taiwan would be an enormous undertaking. In 2023, the House Armed Forces Committee asked the Pentagon to draw up plans for a potential Taiwan NEO, suggesting that no such plan currently exists.⁹⁶ None of the other countries listed above currently has anything approaching the resources and doctrine to withdraw its nationals quickly. Japan does not admit to having any such plan, and the United States and its allies do not have a joint doctrine for NEOs.⁹⁷ The US airlift out of Saigon between April 5 and 29,

1975, carried just 45,000 people, including 5,600 US citizens. Thousands of refugees and many US citizens were left behind when the last C-130s departed, including the US ambassador and his staff. An additional 7,800 people had to be evacuated by helicopter on April 29 and 30.⁹⁸ As Afghanistan fell to the Taliban in August 2021, just over 122,000 people were airlifted out of the country in a frenzied sixteen-day airlift.⁹⁹ Yet US forces were uniquely prepared for that operation, given the large combat presence they already had in and around Kabul. “I think there may be a misperception that what we saw in Afghanistan is something that the U.S. government can undertake anywhere and everywhere in the world,” Ned Price, the State Department spokesman, said. No American “should expect that we may be in a position to undertake something similar to what we saw in Afghanistan.”¹⁰⁰

Because of these facts, the US president would face very different choices in the lead-up to a Taiwan conflict than President Biden faced before Russia’s invasion of Ukraine in February 2022. At that time, millions of refugees escaped to Poland and other contiguous countries by road or rail over a period of months. But Taiwan is an island, and the only viable way to get hundreds of thousands of people out quickly is through an air operation. Taiwan is also a wealthy society, and there are probably hundreds of thousands—if not millions—of residents who would be keen to escape with their families *before* hostilities broke out. There would be a stampede to buy tickets for seats on the limited number of outbound flights. Ticket prices would soar, becoming unaffordable for most. It is also unclear how the authorities on Taiwan would respond.

Without overpromising, the United States should begin consultations with close regional allies to discuss a common operating framework for NEOs and more broadly for burden sharing in military and civilian logistics during crisis scenarios. US partners should understand what logistical needs the United States can realistically help meet in crisis scenarios and which they must prepare to handle themselves, including by exploiting one another’s geographic and industrial

advantages. If the United States is not prepared to organize an NEO from Taiwan, this fact must be part of its broader strategic planning for crisis scenarios.

Conclusion

America's lack of a national maritime strategy has put its Indo-Pacific logistics architecture in a vulnerable position. The Military Sealift Command fleet has shrunk to 125 ships—only a fraction of which actually do logistics missions—and faces a significant manpower problem.¹⁰¹ The US Merchant Marine has fewer than two hundred vessels, down from six thousand in World War II. More important than ship count, the quality of the fleet, readiness and morale of the aging workforce, and capacity of the US government and commercial sector to support a crisis mobilization are reasons for concern. Just as logistics challenges shaped the early phases of World War II, these constraints could hamstring US combat power in future contingencies unless Congress acts decisively. China, by contrast, has spent the past two decades building a world-leading maritime enterprise that includes equity ownership in ports around the world, port-management services that provide wide-ranging intelligence collection capabilities, and the world's largest shipping fleet. Although this chapter highlights US logistical challenges, China too would face significant logistical hurdles in any potential Taiwan conflict. Unlike US forces operating far from home, China would be operating close to its coast, but this proximity does not automatically translate to logistical superiority. China has limited experience with real-world amphibious operations. Though China has invested heavily in its maritime capabilities, the ability to transform these investments into effective, sustained military logistics remains unproven.

Nevertheless, in a conflict with the United States, China would be fighting off its own coast, while US assets would need to operate from across a vast ocean. The United States must immediately launch

a major effort to rebuild its maritime logistics capacity. This includes expanding the MSC fleet and offering competitive pay to attract a new generation of mariners into the enterprise. Congress should support retention incentives to compete with commercial sector benefits and allocate at least \$1 billion to modernize the RRF's aging fleet. Strengthening the Voluntary Intermodal Sealift Agreement and Cargo Preference Regulations could support a larger merchant fleet, though these alone won't overcome foreign-flagged vessels' cost advantages. Transferring Merchant Marine oversight to the Department of Commerce could better align incentives with national security priorities.

Developing a resilient, distributed logistics architecture is also essential to support the services' new operating concepts. While PDI is a useful first step, it has not yet translated into a major capability boost. The PDI budget—currently funded at \$9 billion annually—could be expanded significantly to support a faster buildup of hardened, redundant logistics hubs. Building a fleet of thirty to forty agile, smaller logistics vessels, including unmanned platforms, could greatly improve the US ability to sustain operations across vast distances, though it would create additional manpower challenges. Technology is no panacea, but investments in autonomous platforms, rapid at-sea rearmament for Vertical Launching System (VLS) cells (the primary mechanism modern navies use to launch missiles from warships), and resilient command networks will help mitigate US vulnerabilities over time. Meeting these logistical challenges could require on the order of \$50 billion in targeted investments over five years or so, with PDI and maritime logistics being the largest line items.

Since revitalizing the US maritime enterprise will take years, in the meantime Washington must deepen partnerships with key regional allies for maritime contingency planning. Japan has a robust merchant marine and its shipyards can potentially produce several logistics vessels annually, Australia's northern ports can host pre-positioned equipment, and South Korea's industrial base can sustain maintenance beyond China's reach. In addition, the United States can leverage aid

and development assistance to Southeast Asian and Pacific Island nations to secure logistics agreements, particularly with states such as Palau and the Federated States of Micronesia that already have close working relationships with the DOD. To be sure, relying on allies for logistics support comes with significant geopolitical risks. In a crisis, China could try to coerce private firms from these countries not to support the United States. Nevertheless, US allies have vital national interests in preserving deterrence and ensuring that the United States remains committed to the region. Japan in particular has a vital role to play, since without Japanese assistance, it would be unviable for the United States to fight China in any form in the Indo-Pacific.

Allies that are willing to help with combat-related supply in a war—and private firms that might be forced to do so in those circumstances—may not be willing or able to support the resupply of Taiwan through a blockade or quarantine. For this reason, among others, resupplying Taiwan's twenty-three million citizens with food and fuel at peacetime levels is likely unrealistic. Still, the United States and its allies should have capacity and viable operational plans to keep Taiwan at least partially supplied. If there is no plan to conduct mass evacuations from Taiwan, the United States must consider the implications of that fact for its broader deterrence strategy and crisis contingency plan.

The costs of rebuilding logistics capacity are substantial but far less than the potential costs of logistics failure in crisis. By investing in a more resilient logistics network, the United States sends a message to Beijing that it is capable of fighting a protracted conflict, the outcome of which would be uncertain for China. As the United States shifts focus to great-power competition, logistics—the essential bridge between economic power and military effectiveness—must be reprioritized as a foundational pillar of US strategy.