



EURONAVAL

WORLD DEFENCE SHIPBUILDING

2026

Contents

Introduction: strategic realignment and the return of naval power 4

I. World Navies: Orders of Battle 6

 United States, China, Russia: the race for dominance 8

 The European navies 10

 The navies in the Indo-Pacific region 12

 The navies in Africa and the Middle East 14

 The navies of Canada and Latin america 16

 New warships commissioned into service in 2024-2025 18

II. World Shipbuilding in 2024-2025 20

 A strong production growth 22

 The main producing countries in terms of tonnage 24

 The value of acquisitions by country in 2024-2025 26

 Major naval programs in Europe 28

 Focus: The French sector in 2025 30

 Major naval programs in the United States 32

 Major naval programs in China 33

 Major naval programs in the Indo-Pacific 34

 Major naval programs in Russia 36

 Major naval programs in Canada and Latin America 37

 Major naval programs in Africa and the Middle East 38

III. The naval defence industry: legacy, changes and future 39

 1626-2026: 400 years of technological breakthroughs 40

 The New Naval Battlefields 46

IV. 2016-2025: Ten years of global production 54

 Number of units produced by country 56

 Value of units produced by country 58

 Major importing countries and their suppliers 60

 Number of units produced by building type 62

 Value of units produced by building type 63

Appendices

 All combat ships in service at the end of 2025 64

 Methodology 68

 Glossary 69

Welcome to
EURONAVAL 2026



Dear readers,

EURONAVAL 2026 opens its doors against the backdrop of a profoundly transformed strategic environment.

The seas and oceans have once again become arenas of competition, confrontation and power projection. Persistent environmental challenges, the exponential growth of maritime traffic, the repercussions of the war in Ukraine, enduring tensions in the Indo-Pacific, crises in the Middle East, threats to freedom of navigation and to critical maritime infrastructure, together with their impact on the daily lives of our citizens, all serve as a reminder of the vital importance of maintaining control of the maritime domain.

Against this backdrop, nations around the world are strengthening their navies, modernising their fleets and investing in new capabilities. This momentum is driving activity in the naval defence shipbuilding sector, which has become a clear indicator of national strategic ambitions.

For nearly sixty years, EURONAVAL has anticipated and accompanied the evolution of the naval world. As the world's leading exhibition dedicated to naval defence and maritime security, it continually adapts to emerging challenges and provides the premier forum where navies, industry leaders, policymakers, experts and international partners come together to exchange perspectives, foster cooperation and prepare the capabilities required to operate at sea, safeguard national interests and, ultimately, help preserve peace.

On the occasion of EURONAVAL 2026, we are pleased to present a new edition of the **World Defence Shipbuilding Survey**. Prepared by the experts of *Flottes de Combat* in partnership with the French Naval Industry Association (*GICAN*) for EURONAVAL, it provides a concise overview of today's naval orders of battle and their ongoing transformation through the world's major naval procurement programs. In doing so, it highlights the long-term trends shaping both the naval defence industry and the strategic balance of tomorrow.

We hope that this new edition will provide valuable insights and contribute to fruitful discussions throughout EURONAVAL 2026 and beyond.

Enjoy your reading and welcome to EURONAVAL.

Rear-Admiral (ret.)
Guillaume Merveilleux du Vignaux
General Commissioner of EURONAVAL

The Chinese aircraft carrier *Fujian*.



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STRATEGIC REALIGNMENT AND THE RETURN OF NAVAL POWER

The strategic landscape has continued to evolve over the past two years. It is dominated by the wars in Ukraine and the Middle East, while pressure from China on Taiwan is intensifying.

Four and a half years after launching its invasion of Ukraine, Russia has failed to subdue the country, which has enshrined its European and Euro-Atlantic orientation in its constitution. By violating commitments made in 1994—notably to respect Ukraine's independence, sovereignty, and borders in exchange for its renunciation of nuclear weapons—Russian aggression drove Finland and Sweden to abandon their neutrality and join the Atlantic Alliance, significantly strengthening its strategic position in the Baltic Sea.

At sea, Ukraine has forced Russia to move its naval forces away from Crimean bases, thanks to the combined use of aerial and surface drones, long-range missiles, and special operations. Following the destruction of the cruiser Moskva early in the war, several other Russian fleet vessels have been sunk or damaged. Both sides also strike port infrastructure and maritime activities that support the adversary's war effort, turning the entire Black Sea into a zone of confrontation.

In 2026, while Russia retains the initiative on the ground, Kyiv is seeking to expand the battlefield by striking deep into Russian energy and logistics infrastructure. These attacks, which now

reach the heart of Russian territory, disrupt fuel supplies and impose new economic constraints on Moscow. In the Baltic Sea, Ukraine has also demonstrated its ability to strike Russian naval facilities.

The war in Ukraine and the growing confrontation between Russia and Western nations have accelerated Moscow's alignment with China, North Korea, and Iran.

THREATS TO SHIPPING AND TRADE FLOWS

The massacre perpetrated by the Palestinian group Hamas in Israel on October 7, 2023, triggered a war in Gaza, followed by Houthi attacks on maritime traffic in the Red Sea. In response, the United States, the United Kingdom, and the European Union have endeavored to protect commercial shipping in the Red Sea.

In June 2025, Israel launched a massive strike campaign against Iranian nuclear and military facilities, joined by the United States, which struck several deeply buried nuclear sites. In February 2026, a joint US-Israeli operation resulted in the death of the Supreme Leader and the destruction of numerous ground targets as well as key vessels belonging to the

Iranian Navy and the Revolutionary Guard. Notably, an Iranian frigate was torpedoed by a US submarine.

In retaliation, Iran struck Israel and US allies in the region and severely disrupted shipping in the Strait of Hormuz. Following a brief ceasefire agreement that provided for the reopening of the strait, hostilities resumed. Tehran made freedom of navigation conditional on a broader resolution of the conflict and advocated for Iranian control over the waterway. Due to the combined impact of Iranian actions, the US military posture, and the military risks facing vessels, traffic remains well below normal levels.

At the same time, the Houthi advance around the Bab el-Mandeb Strait—marked by the capture of several strategic islands—is intensifying pressure on this second major maritime trade choke-point.

As of autumn 2026, the outlook for resolving the crisis remains uncertain.

TENSIONS IN THE INDO-PACIFIC

In the Far East, the dramatic expansion of Chinese military power is bolstering Beijing's ability to exert pressure on Taiwan. This pressure has brought the issue of sea control versus sea denial back to the forefront. Drawing lessons from the conflict in Ukraine, Taiwan is prioritizing a distributed, asymmetric defense strategy, planning a massive buildup of its autonomous capabilities and coastal defenses. Meanwhile, Japan is enhancing its long-range strike capabilities—notably by integrating US Tomahawk cruise missiles into its naval forces and developing stand-off missiles—to strengthen deterrence against Chinese and North Korean threats.

Bolstered by its closer ties with Russia, North Korea is continuing to modernize its naval forces and develop its nuclear deterrent. It is banking on a deterrence strategy anchored in, among other assets, missile-launching destroyers. In the South China Sea, Beijing is seeking to gradually alter the maritime status quo through hybrid actions within the «gray zone.»

For its part, to counter China's rising power, India is pursuing a balancing policy that leads it to simultaneously develop its relations with Russia and with the United States and their allies in the Indo-Pacific, notably through the informal Quad partnership. Militarily, India seeks to reduce its reliance on Russian equipment.

TOWARD HIGH-INTENSITY CONFLICT

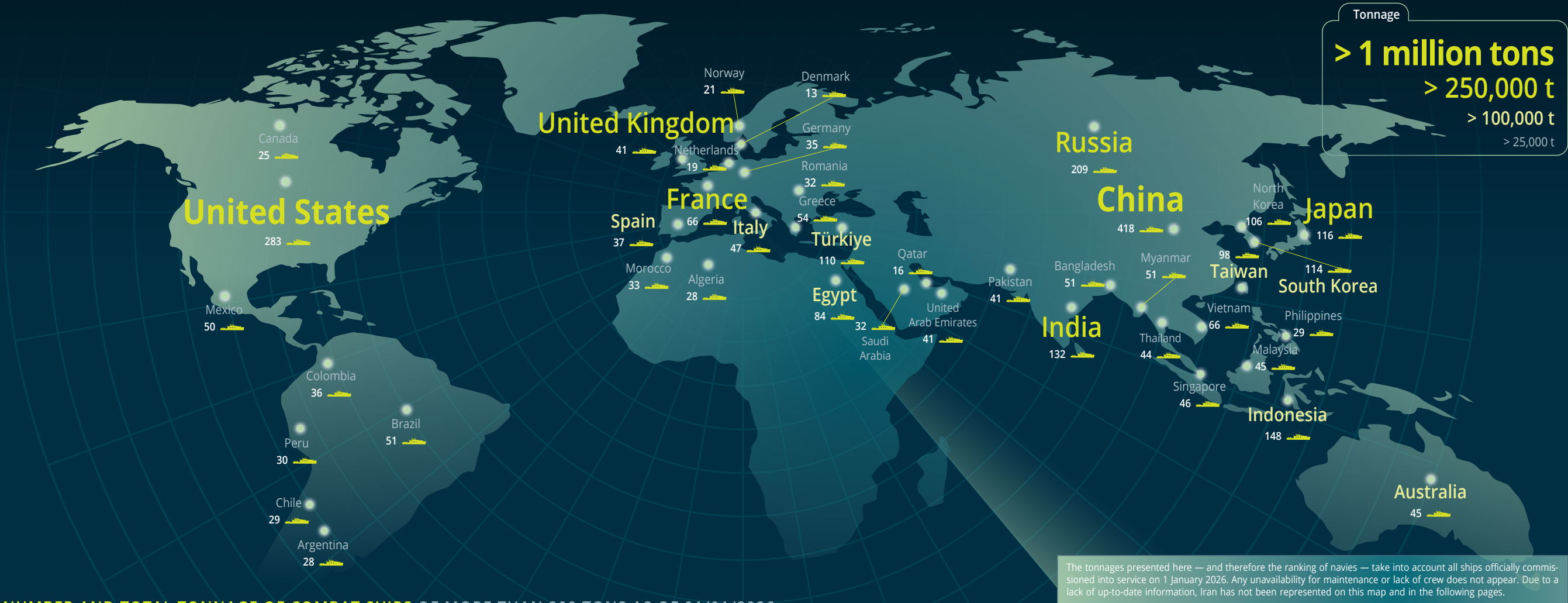
Faced with the rapprochement between Russia, China, and North Korea—and, more broadly, rising tensions in the Indo-Pacific—the Trump administration is continuing to reorient the US strategic posture. While designating Beijing as the primary threat, Washington is reestablishing a form of dialogue with Moscow. For their part, European nations are committing to increased defense spending, aiming for 5% of their GDP by 2035.

By threatening to annex Greenland and casting doubt on the long-term reliability of the US security guarantee, President Trump is undermining NATO's overall cohesion—even as he strengthens the cohesion of its European component. US pressure for increased defense spending and purchases of American equipment exists alongside a growing European desire to bolster industrial autonomy and rebuild production capabilities capable of sustaining a high-intensity defense effort.

After decades devoted to expeditionary operations, crisis management, and countering asymmetric threats, Western navies are preparing for more intense confrontations.

These upheavals in the international order are accelerating rearmament and driving an unprecedented global rise in defense spending—all within an increasingly unstable environment. Maritime domains are more than ever playing a central role in power dynamics. For navies, the return of high-intensity warfare and the expansion of conflict into new domains and environments are accompanied by a profound transformation of capabilities.

WORLD NAVIES: ORDERS OF BATTLE



NUMBER AND TOTAL TONNAGE OF COMBAT SHIPS OF MORE THAN 200 TONS AS OF 01/01/2026

COUNTRY	active	Overall tonnage
United States	283	3,105,813
China	418	1,438,728
Russia	209	660,595
Japan	116	390,480
India	132	351,325
United Kingdom	41	324,185
France	66	259,801
Indonesia	148	243,624
South Korea	114	241,999
Italy	47	170,289
Taiwan	98	157,420
Türkiye	110	153,684
Iran	79	129,575
Australia	45	129,560
Egypt	83	112,547
Spain	37	110,573
Brazil	51	94,044
Canada	25	91,287
Greece	54	78,203
Germany	35	74,360
Thailand	44	72,105
Singapore	44	69,020
North Korea	105	66,970
Netherlands	19	66,534
Mexico	50	63,022
Algeria	28	52,870
Pakistan	33	52,628
Chile	29	52,355
Philippines	29	50,824
Vietnam	66	49,943
Peru	30	48,024
Saudi Arabia	32	47,385
Argentina	28	47,351
United Arab Emirates	41	45,576
Bangladesh	51	44,369
Myanmar	51	44,229
Malaysia	45	42,845
Denmark	13	40,330
Romania	32	29,700
Norway	21	29,543
Israel	24	28,627
Morocco	33	28,414
Qatar	16	26,606
Portugal	16	25,637
Colombia	36	24,981
Poland	29	23,086
Nigeria	26	22,472
Venezuela	24	21,354
New Zealand	7	18,950
South Africa	13	18,522
Oman	14	17,240
Sri Lanka	16	16,758
Ecuador	14	15,150
Sweden	20	14,357
Bahrain	17	12,220
Bulgaria	14	11,608
Ireland	8	11,200
Belgium	8	8,540
Tunisia	11	7,560
Brunei	10	7,420
Libya	4	7,298
Finland	16	7,050
Cuba	5	6,880
Equatorial Guinea	7	6,840
Azerbaijan	17	6,800
Turkmenistan	12	6,160
Kenya	8	5,753
Kuwait	13	4,511
Syria	11	4,460
Namibia	5	4,367
Cyprus	8	4,335
Lithuania	7	4,030
Mauritania	5	3,010
Croatia	7	2,870
Ghana	9	2,800
Djibouti	6	2,703
Estonia	5	2,600
Senegal	5	2,590
Latvia	5	2,550
Tanzania	8	2,536
Bahamas	7	2,272
Eritrea	6	2,200
Malta	2	2,190
Iraq	5	2,165
Panama	4	2,035
Dominican Republic	3	1,805
Mauritius	3	1,780
Angola	2	1,500
Cameroon	4	1,444
Cyprus	2	1,215
Albania	1	1,110
Uruguay	2	872
Congo	4	812
Cambodia	4	800
Guyana	1	770
Lebanon	3	765
Sudan	3	714
Côte D'Ivoire	2	673
Guatemala	1	660
Honduras	1	574
Montenegro	2	480
Nicaragua	1	454
Seychelles	2	400
Slovenia	1	330
Papua New Guinea	1	310
Surinam	1	286
Palau	1	257
Benin	1	238
Gabon	1	238
Paraguay	1	220
Grand total	3,575	9,814,129

UNITED STATES, CHINA & RUSSIA : THE RACE FOR DOMINANCE

Together, they account for more than half the total tonnage of the world's military fleets. Employing different strategies and capabilities, the US, Chinese, and Russian navies are all capable of influencing regional—and even global—balances of power.

THE UNITED STATES

The United States possesses the world's largest navy by tonnage (3,100,000 tons), comprising 283 combat vessels. In addition to its 14 nuclear-powered ballistic missile submarines (SSBNs) and 54 nuclear-powered attack submarines (SSNs), the fleet centers on its power-projection forces—11 aircraft carriers, 9 assault aircraft carriers, and 23 landing platform docks—escorted by 7 cruisers and 74 destroyers, all equipped with the Aegis missile defense system.

However, the three Zumwalt-class destroyers—currently being modified to carry hypersonic missiles—are not yet fully operational. Meanwhile, the 27 Littoral Combat Ships have spent their short service lives on secondary missions, such as counter-narcotics or mine countermeasures. With average operational availability rates for sub-

marines, aircraft carriers, amphibious ships, and other combat vessels estimated at 66%, 45%, 41%, and 68% respectively, the US Navy is seeking to reduce maintenance times to push these figures above 70%.

During operations against Iran between February 28 and April 8, 2026, the aircraft carriers *Abraham Lincoln* and *Gerald R. Ford*—kept out of range of Iranian ballistic missiles—generated a combined total of over 300 sorties per day. However, it was the Arleigh Burke-class destroyers—about ten of them—that launched the bulk of the 850 Tomahawk missiles fired at the Islamic Republic.

CHINA

The Chinese Navy ranks second globally in terms of tonnage (1,400,000 tons) and first in the number of platforms, with 418 combat vessels exceeding 200 tons. Units commissioned within the last eight years account for more than 40% of its order of battle.

In addition to six nuclear-powered ballistic missile submarines now capable of striking US soil from Hainan Island, Beijing maintains the largest submarine fleet in the Pacific, compr-

ing 13 nuclear-powered attack submarines and 49 conventional submarines—two-thirds of which feature air-independent propulsion. Its surface fleet—consisting of 111 destroyers and frigates and around fifty corvettes—is capable of global operations to secure maritime trade routes. Its power-projection forces (three aircraft carriers, four helicopter or drone carriers, and nine landing platform docks) aim to deter the pro-independence party currently in power in Taiwan from declaring independence.

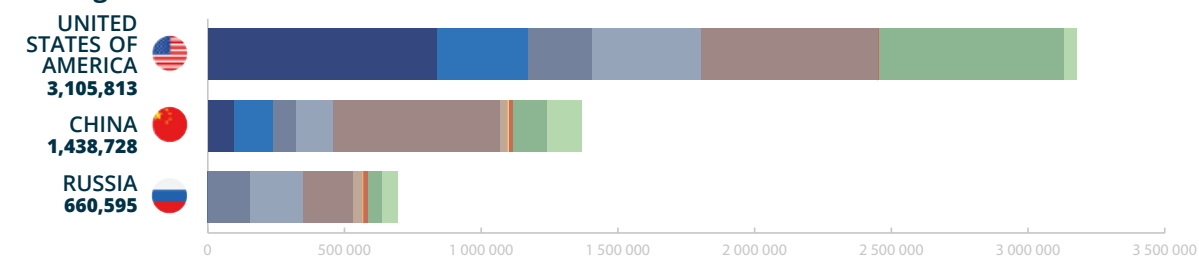
RUSSIA

The Russian Navy retains its third-place global ranking by tonnage (approximately 660,000 tons), with 209 platforms exceeding 200 tons. Following the dramatic decline experienced since 1991 (with nuclear attack submarines dropping from 122 to 17, conventional submarines from 59 to 20, cruisers from 33 to 4, destroyers from 45 to 7, and frigates from 122 to 9), priority has shifted to renewing deterrence capabilities: 11 nuclear-powered ballistic missile submarines are in service, and the Poseidon nuclear torpedo underwent its first test in 2025.

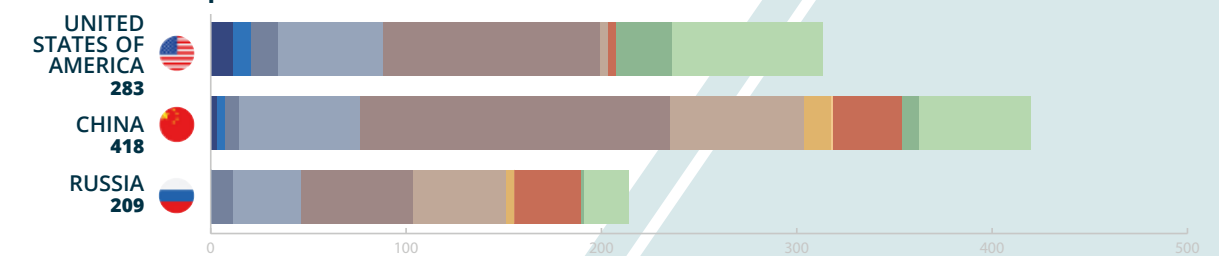
However, low production rates for attack submarines prevent Russia from maintaining its undersea standing against NATO or China. This forces Russia to attempt to return certain aging nuclear attack submarines—currently undergoing repairs or otherwise non-operational—to active service. Meanwhile, the renewal of the fleet's large surface vessels has been delayed by the loss of access to Ukrainian gas turbines. To compensate, some 40 corvettes armed with Kalibr and Oniks cruise missiles—and soon Zircon hypersonic weapons—are serving as a temporary substitute. These missiles also arm the battle-cruiser *Admiral Nakhimov*, which underwent a costly refit prompted by Ukraine's bid to join NATO. However, Russia's only aircraft carrier—long out of service—will not be repaired, and a quarter of its large amphibious vessels have been lost, notably falling victim to Ukrainian drones.

The data presented on pages 8 to 19 and 64 to 67 concern combat ships (excluding coast guards and auxiliaries) displacing than 200 tons, in active service on January 1, 2026. They include ships that are temporarily docked or in prolonged maintenance. Source: Combat fleets. The different categories of ships are defined at the end of this study, page 69.

Tonnage of the fleets

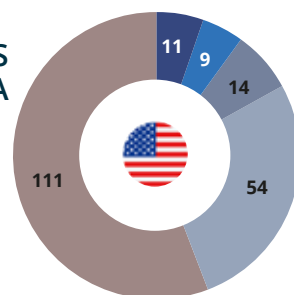


Number of ships

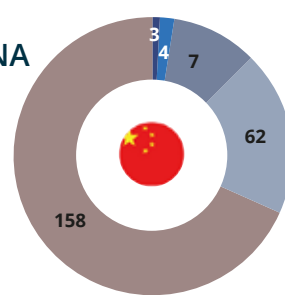


Number of main combat ships

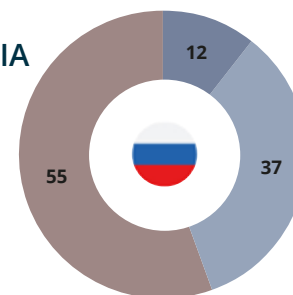
UNITED STATES OF AMERICA



CHINA



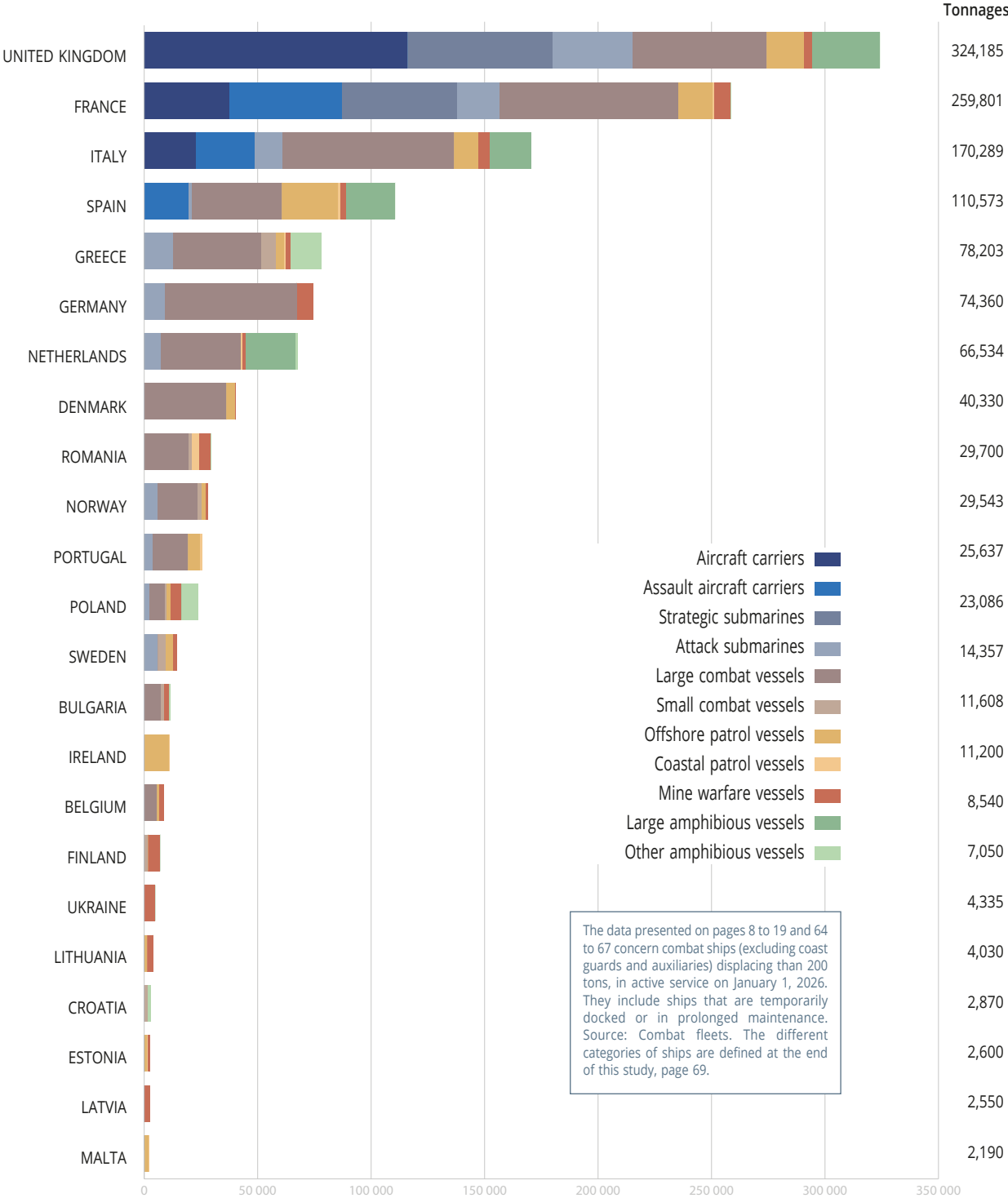
RUSSIA



- Aircraft carriers
- Assault aircraft carriers
- Strategic submarines
- Attack submarines
- Large combat vessels

- Small combat vessels
- Offshore patrol vessels
- Coastal patrol vessels
- Mine warfare vessels
- Large amphibious vessels
- Other amphibious vessels

THE EUROPEAN NAVIES



The major European navies are designed for power projection in low-threat environments; their escort vessels generally lack land-attack missiles.

Leading the way, the French Navy and the British Royal Navy maintain nuclear deterrence capabilities, each operating four nuclear-powered ballistic missile submarines (SSBNs) supported by six or seven nuclear-powered attack submarines (SSNs). They also possess significant power projection capabilities, fielding Europe's three largest aircraft carriers—complemented, in the French case, by three amphibious assault ships.

However, like the German and Italian navies, the Royal Navy faces recruitment challenges that impact vessel availability. In certain areas, the armament of Europe's two leading navies falls short of the requirements for high-intensity combat. Ammunition stockpiles and payload capacities are also lower than those of equivalent vessels in the Chinese and US navies.

CONTROLLING THE BALTIC, SEALING OFF THE BLACK SEA

Italy and Spain operate two and one aircraft carrier respectively (the *Cavour*, *Trieste*, and *Juan Carlos I*) and field 17 and 11 large escort vessels. Rome deploys eight conventional submarines. Madrid currently has only two, due to delays in the S-80 program. With more limited assets, neighboring Portugal operates two conventional submarines and five frigates.

Germany, with six Type U-212A submarines, three air-defense ships, and eight heavy frigates, can theoretically provide coalition support. The Netherlands contributes power-projection capabilities via its three amphibious ships, and the

Dutch fleet cooperates closely with the Belgian navy, particularly in mine warfare.

In Scandinavia, Norway operates four anti-submarine frigates and six submarines, enabling it to monitor Russian fleet movements toward the Atlantic.

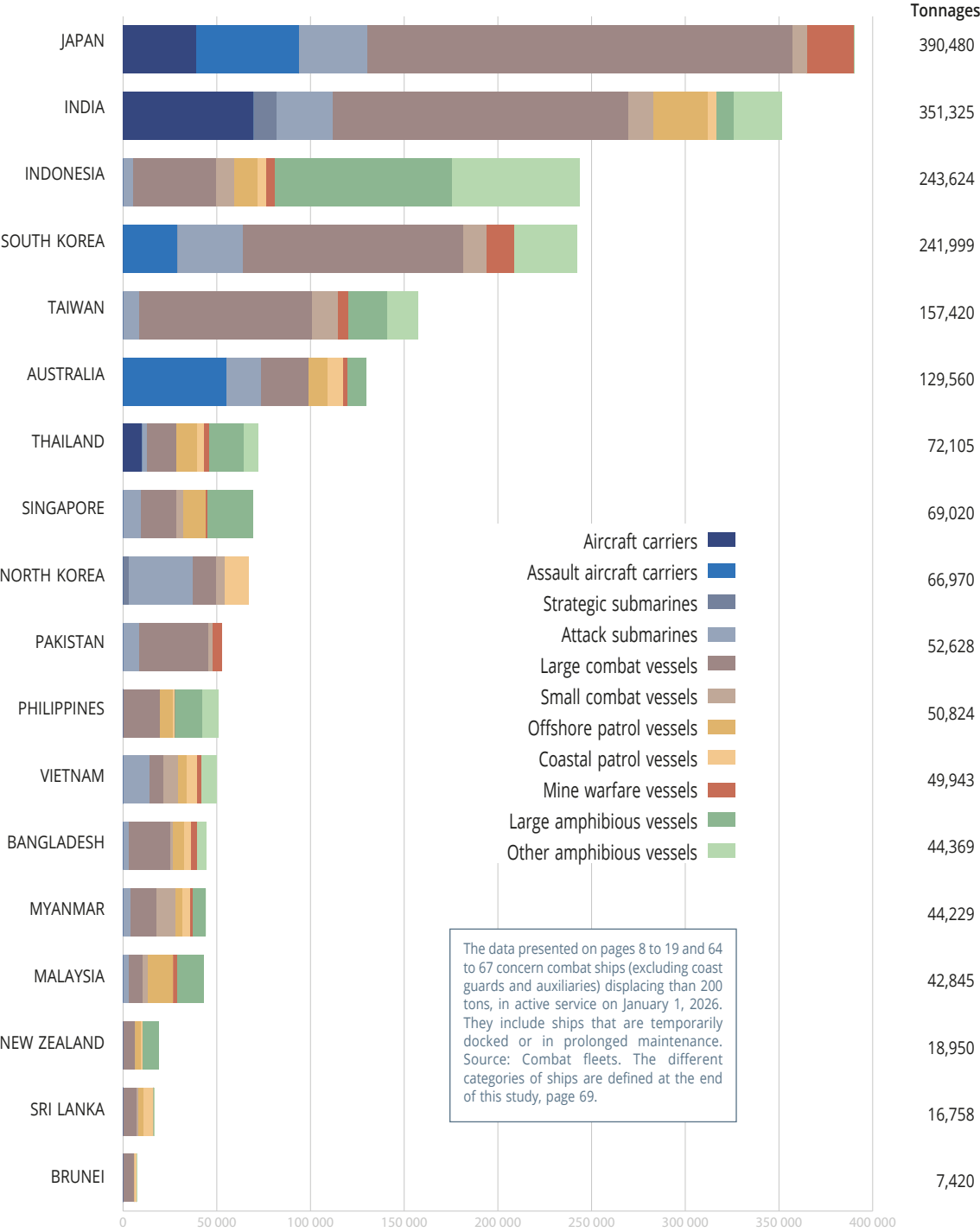
With Finland and Sweden having joined NATO in 2023 and 2024, the Baltic Sea and Russian activity in Kaliningrad are fully monitored by the Atlantic Alliance, which has at its disposal Finland's two minelayers and eight missile-armed patrol boats, as well as Sweden's four submarines, seven corvettes, and roughly one hundred combat craft.

Meanwhile, their new Polish ally contributes one (aging) submarine, two frigates, and around fifteen mine-warfare vessels, supplementing those of the three Baltic states. Additionally, the two Danish Absalon-class ships—originally troop transports—have been transformed into anti-submarine frigates.

The Black Sea presents a less favorable environment for NATO; on the front line, Bulgaria and Romania field a combined total of 14 frigates and corvettes. Together with Türkiye and Greece, these nations control access to the Mediterranean. Allies yet rivals in the waters of the Aegean Sea, the navies of Ankara and Athens are engaged in a race that is tilting in favor of the former, thanks to its large amphibious drone-carrying vessel, its 14 submarines (compared to Greece's eight), and its 26 frigates and corvettes (versus 13).

Collectively, European fleets hold a numerical advantage over the Russian navy—by a ratio of roughly 4 to 1—except in the undersea domain. However, they remain outmatched by the US Navy by a ratio of approximately 1 to 3.

THE NAVIES IN THE INDO-PACIFIC REGION



India, North Korea, and Pakistan are developing a strategic maritime capability. India now possesses two nuclear-powered ballistic missile submarines (SSBNs) capable of deploying either twelve missiles with a 750 km range or four with a 3,500 km range.

In response, Pakistan launched a cruise missile from a submerged platform as early as 2017–2018; this missile is capable of delivering a nuclear warhead over a distance of 450 km.

As for North Korea, over the course of a decade, it has unveiled five ballistic missiles, one cruise missile, and two nuclear-armed torpedoes. In 2023, Pyongyang launched its first ballistic missile submarine, followed in 2025 by two large destroyers also reported to carry nuclear strike capabilities.

In terms of conventional forces, New Delhi demonstrates considerable power with around 30 vessels armed with 280 supersonic anti-ship and land-attack missiles, supported by two aircraft carriers that provide air defense—a concept that reverses standard Western practice.

In May 2025, these Indian forces were deployed off the coast of Pakistan (Operation Sindhoor). A tacit ally of China, Pakistan protects its approaches with six submarines, nine frigates, and six corvettes, all of which possess high operational capability.

The Indian Navy occasionally patrols the South China Sea, conducting exercises with its Quad partners (the United States, Japan, and Australia) as well as with France, the United Kingdom, Russia, the Philippines, and Vietnam.

JAPAN BOLSTERS CHINA'S NEIGHBORS

Acting on a similar scale to India, Japan provides naval assistance to China's neighbors and is strengthening its own capabilities by converting two of its four helicopter-carrying destroyers into aircraft carriers and acquiring sea-to-land cruise missiles. With a fleet comprising 13 conventional submarines and 42 destroyers and frigates, the Japanese Navy serves as a valuable complement to the US Pacific Fleet in countering Beijing and Pyongyang.

South Korea is developing a conventional deterrent against its North Korean neighbor, utilizing submarine-launched ballistic missiles. Since 2020, a second assault transport ship has been available for troop deployment.

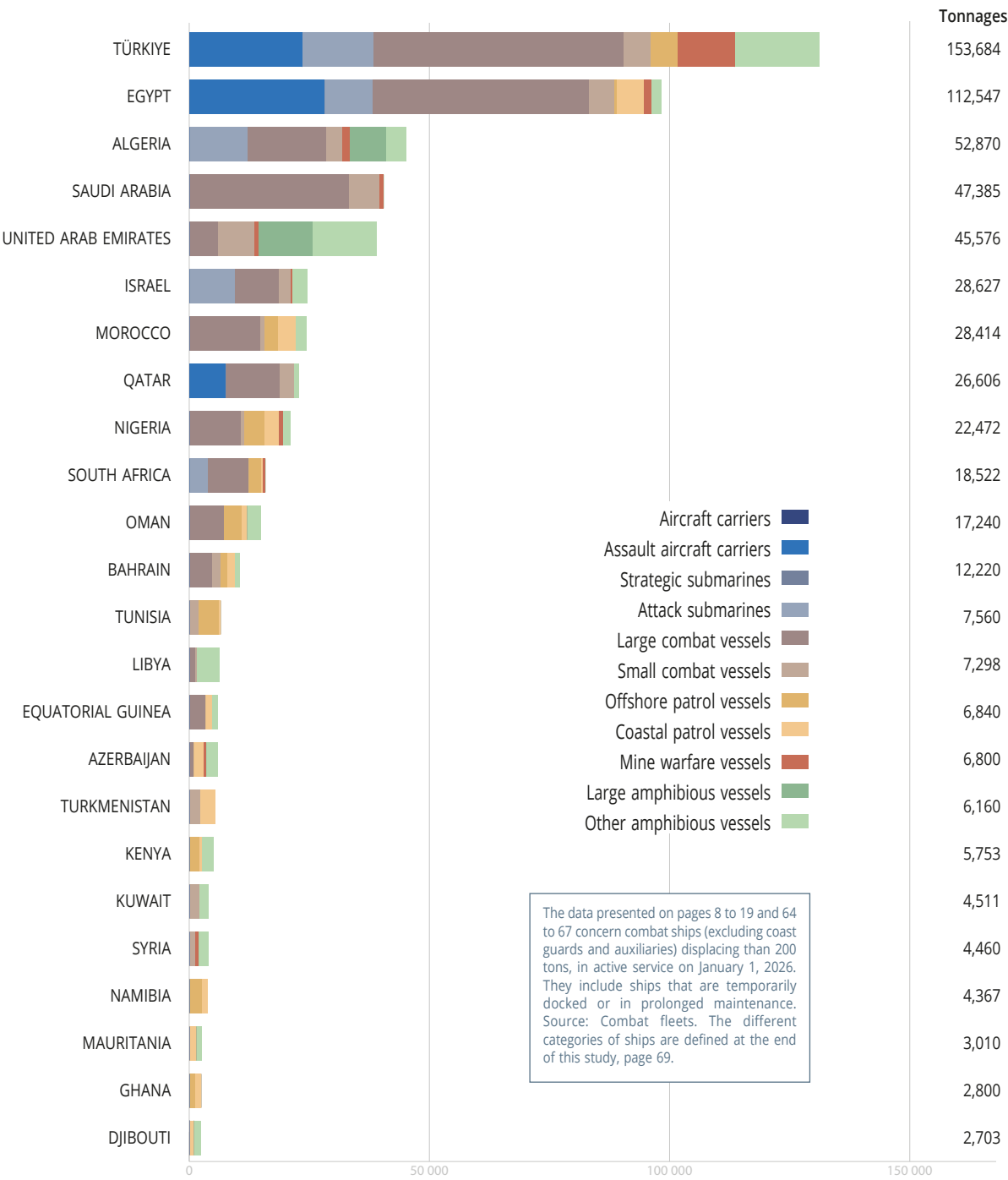
In 2021, Australia signed the AUKUS security pact with the United States and the United Kingdom; this agreement is set to enable the acquisition of nuclear-powered attack submarines (SSNs) to supplement a surface fleet—consisting of three air-defense vessels and nine frigates—deemed insufficient. The pact entails extending the service life of the country's six existing submarines—already over thirty years old—by at least ten years.

BETWEEN COOPERATION AND INDEPENDENCE

As a non-aligned nation, Indonesia outnumbers its immediate neighbors in terms of naval platforms, fielding four submarines, nine frigates, 26 corvettes, and five landing platform docks—compared to four, six, 14, and four respectively for Singapore, and two, two, 14, and two for Malaysia.

Lacking submarines, Thailand and the Philippines operate seven and two frigates respectively, as well as seven and eight offshore patrol vessels and two landing platform docks; Bangkok also fields a helicopter/drone carrier. Meanwhile, Taiwan and Vietnam prioritize anti-ship missiles and mines to counter pressure from Beijing. Although maritime disputes between Bangladesh and its Indian and Burmese neighbors were resolved in Bangladesh's favor, both Dhaka and Rangoon continue to build up their forces with Chinese assistance—supplemented, in the case of the latter, by aid from North Korea and India. For its part, the Sri Lankan Navy has acquired five ocean-going patrol vessels, 17 years after its victory over the Tamil separatist movement, which had relied on the open sea for its logistics. Finally, the numerous small island states of the Pacific Islands Forum are equipped with around twenty new patrol vessels supplied by Australia to contain and monitor fishing fleets—predominantly Chinese.

THE NAVIES IN AFRICA AND THE MIDDLE EAST



The balance of power in the Mediterranean is shifting. Israel, Egypt, and Algeria are doubling the size of their fleets, with the first two drawing closer to Greece and Cyprus to defend their exclusive economic zones.

Israel and Cairo have received three and four submarines, respectively, adding to the same number already in service. Four corvettes—designed in collaboration with Germany and armed with long-range anti-aircraft missiles—protect Israeli offshore platforms, while Egypt’s surface fleet is taking delivery of three frigates and four corvettes of German or French design.

Since the attack launched against Israel by Hamas on October 7, 2023, Israeli corvettes have been striking Gaza and southern Lebanon, while also taking advantage of the Syrian revolution of December 2024 to destroy Damascus’s fleet.

Algeria continues to build up its naval strength, now fielding six submarines, eight frigates, and eight corvettes—far outstripping its Moroccan and Tunisian neighbors, who are focusing on controlling migration flows.

As the dominant navy on the Arabian Peninsula, Saudi Arabia is modernizing its Western-sourced fleet with an initial batch of four Spanish-built corvettes.

IRAN CAN STILL BLOCK HORMUZ

Following Oman, Qatar, the United Arab Emirates (UAE), and Bahrain are acquiring blue-water capabilities. Iraq maintains a force of around fifteen patrol vessels, comparable to that of Kuwait. In Yemen, lacking a navy of their own, Houthi rebels produce the Iranian-designed missiles and drones that constantly threaten shipping in the Bab el-Mandeb Strait and the Red Sea.

In February and March 2026, the United States and Israel destroyed key units of the Iranian navy and the Revolutionary Guard, including in the Caspian Sea. However, Iran retains anti-access

capabilities—fast attack craft, mines, missiles, drones, and electronic warfare systems—that keep traffic in the Strait of Hormuz under threat.

AFRICAN NAVIES MODERNIZE

Although Somali piracy is on the decline, the threat has prompted a decade-long effort by coastal states and international donors—foremost among them Beijing and Washington. Djibouti, Eritrea, Sudan, and the Seychelles are benefiting from Chinese donations, with Djibouti also receiving an offshore patrol vessel ordered from Cape Town.

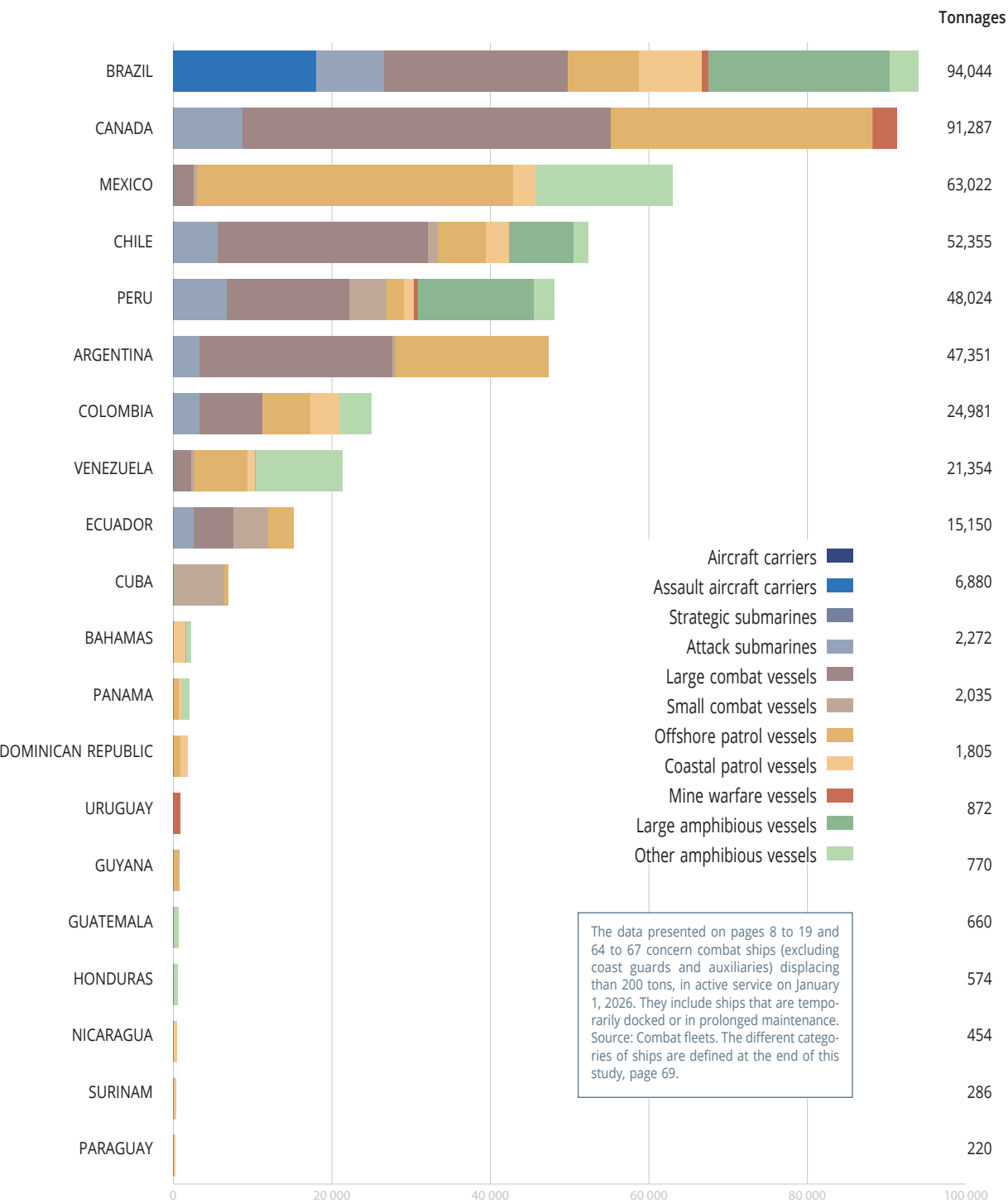
Meanwhile, India is delivering a patrol vessel to Mahé, as well as two offshore patrol vessels and ten interceptors to Mauritius. Kenya is refitting its fleet, while Mozambique is acquiring patrol vessels and interceptors built in France, Spain, and India to combat the Islamic State. Tanzania and South Africa are taking delivery of four and three ocean-going patrol vessels, respectively, built in Cape Town.

In West Africa, within the Gulf of Guinea, coastal nations have agreed to cooperate, establishing five multinational maritime coordination centers. Their navies are structured around recent acquisitions: Chinese corvettes in Nigeria and Bulgarian ones in Equatorial Guinea; Chinese patrol vessels in Benin, Côte d’Ivoire, Congo, Ghana, Mauritania, Cameroon, Cape Verde, Namibia, and Nigeria.

France also supplies patrol vessels to Angola, Senegal, Côte d’Ivoire, Togo, Benin, Gabon, and Nigeria; Israel supplies Côte d’Ivoire and Turkey supplies Nigeria, while Washington provides interceptor boats.

Several navies—including those of France, the United States, the United Kingdom, Brazil, Spain, and Portugal—share their expertise through annual or multi-year bilateral exercises.

THE NAVIES OF CANADA AND LATIN AMERICA



Seven of Latin America's eight major maritime nations (Argentina, Chile, Colombia, Ecuador, Mexico, Peru, and Venezuela) operate primarily within their own territorial waters, which in some cases extend up to 200 nautical miles from the coast.

The Brazilian fleet operates over greater distances, as it includes West Africa within its strategic sphere of operations and conducts exercises with its BRICS partners, South Africa and India. Bolivia, Brazil, Colombia, and Peru maintain riverine flotillas that are heavily involved in the fight against drug traffickers.

In North America, Canada regularly deploys its frigates to Europe and the Indo-Pacific. All these nations benefit from the annual UNITAS exercises organized by the US Navy, with some also participating in RIMPAC.

A CRITICAL NEED FOR RENEWAL

Brazil, Chile, and Peru dominate the Southern Hemisphere; each possesses between four and six submarines, seven or eight frigates, and one or two landing platform docks. Brazil also operates a helicopter carrier configured for drone operations. Within the region, Chile is the only nation equipped with long-range anti-aircraft missiles.

Canada's navy has temporarily lost its long-range air defense capability following the decommissioning of its four destroyers. Its 12 frigates will remain in service for at least another decade, as will its four modernized submarines. Arctic offshore patrol vessels enable the assertion of Canadian sovereignty within the exclusive economic zone near Greenland and allow for the monitoring of passage through polar waters.

The Colombian and Ecuadorian navies operate four and two submarines, four and two frigates, and two and six corvettes, respectively; all are

aging and in need of replacement. Four offshore patrol vessels and two more modern coast guard ships assist these two countries with maritime surveillance missions.

Once part of the leading trio, Argentina has had no operational submarines since the loss of the San Juan in 2017. Its surface fleet is antiquated, comprising three destroyers and six corvettes that are fifty years old. Four offshore patrol vessels delivered by France between 2020 and 2022 handle the bulk of sovereignty patrols.

In Venezuela, the core of the fleet now consists of three corvettes and three coast guard patrol vessels delivered by Spain starting in 2005. Five of the six frigates have been decommissioned and the last one is out of service, as are the two submarines, which have been inactive since 2004 and 2017.

The Cuban navy fields a 21-meter mini-submarine, two trawlers converted into missile-armed offshore patrol vessels, and a Soviet-origin corvette. The anti-ship missiles from its patrol vessels have been retained for use as land-based batteries, while their torpedoes are mounted on small catamarans.

COAST GUARD-STYLE NAVIES

With vast maritime territory and only one modern frigate, the Mexican Navy is at the heart of the domestic war against drug cartels. It operates 24 relatively modern offshore patrol vessels, which have replaced older, ex-US frigates and corvettes. All of them carry a helicopter.

Uruguay and the Dominican Republic use an aging replenishment tanker and three old buoy tenders, respectively, as ocean-going patrol vessels. In addition to Honduras, several island nations (the Bahamas, Barbados, Jamaica, Saint Vincent and the Grenadines, and Trinidad and Tobago) are equipped with modern coast guard patrol vessels.



VESSELS ENTERING ACTIVE SERVICE IN 2024–2025

In 2024–2025, 37 navies commissioned 136 combat units—a 25% decrease compared to the 183 vessels in 2022–2023. Having been decimated in 2026, the Iranian Navy is excluded from the tally.

The Chinese fleet takes first place with 26 units—up from 21 in the previous period—including its only aircraft carrier and a helicopter carrier. The People’s Liberation Army thus receives the highest number of large combat vessels (9) and attack submarines (9)—whether nuclear or conventional—as well as the largest number of large and medium amphibious vessels (3 of each).

The Russian fleet, meanwhile, sees its commissioning numbers drop by half. While it still takes delivery of a significant number of strategic submarines (2) and attack submarines (1 nuclear and 4 conventional), it has to settle for smaller-tonnage units (4 missile corvettes, 1 offshore patrol vessel, and 1 mine-hunter).

Two other navies see even sharper drops in commissioning numbers: a 70% decline for the South Korean Navy (from 10 to 3 units) and 57% for Indonesia (from 14 to 6 units); meanwhile, the US Navy—in third

place—drops from 17 to 9 units, a decrease of 47%.

The Japanese Navy remains stable with seven commissions—including 2 submarines and 4 frigates—as does France, with 2 nuclear-powered attack submarines (SSNs) and 2 offshore patrol vessels. The Italian Navy is taking delivery of an aircraft-carrying assault transport and three frigates—two of which replace vessels exported to Egypt.

The Indian Navy is doubling its intake with 11 vessels, while the Philippine Navy is making a significant entrance with two frigates purchased from South Korea and four Israeli-designed missile-armed patrol boats.

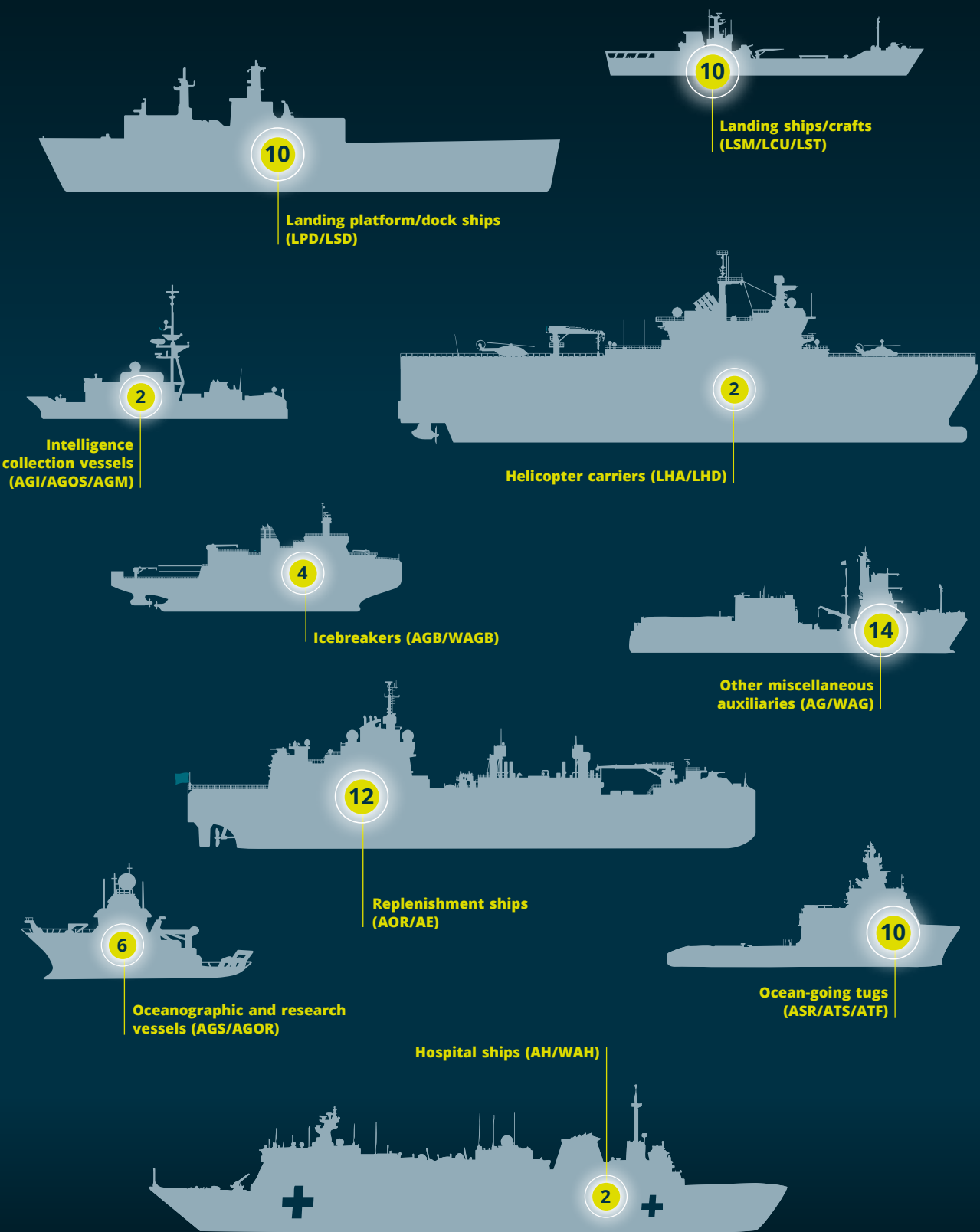
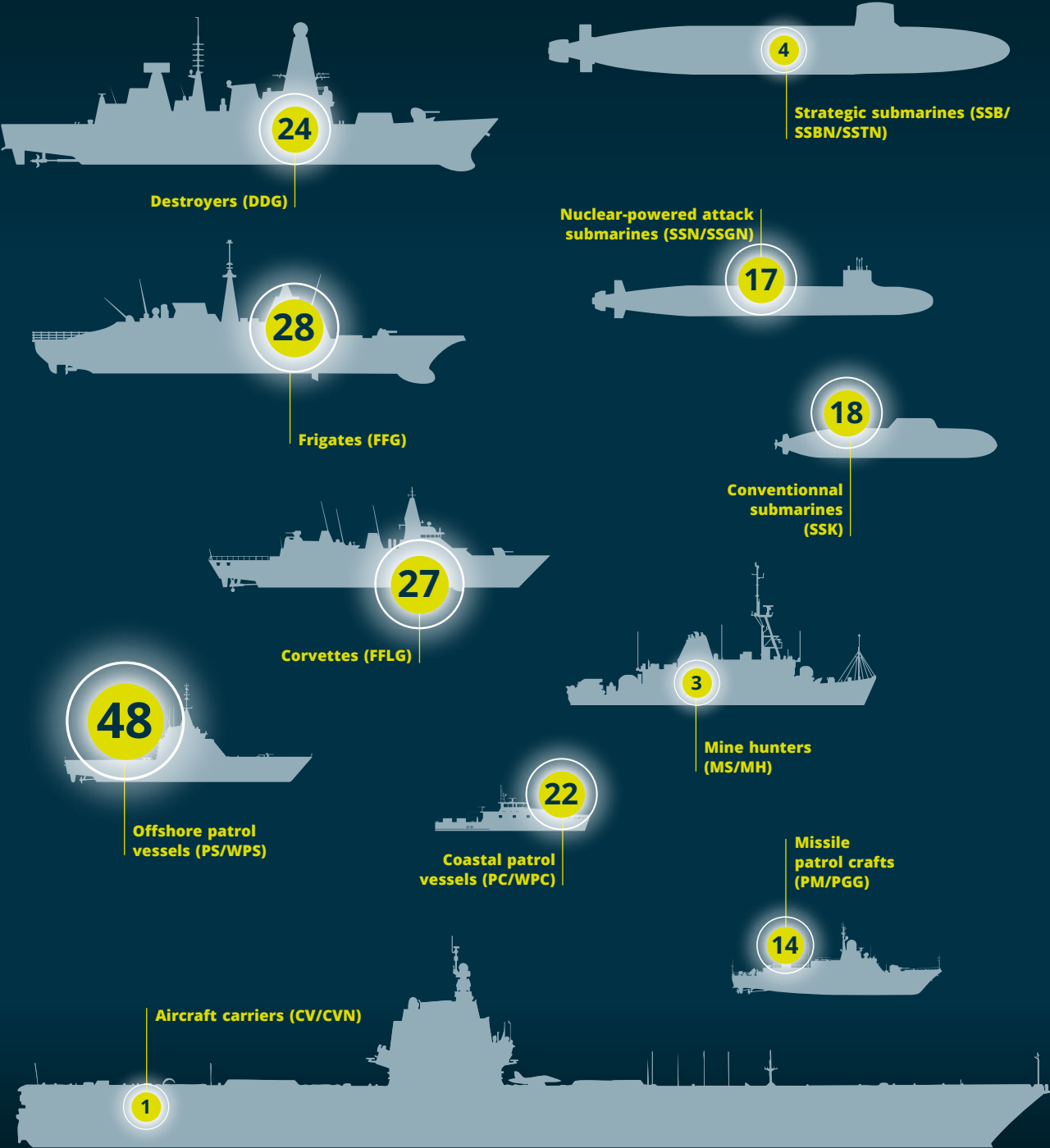
However, this downward trend in service entries is expected to reverse starting in 2026–2027, driven by sustained shipyard activity in 2024–2025 (see page 24 and following).

Combat vessels (excluding coast guard and auxiliary ships) of over 200 tonnes commissioned between January 1, 2024, and December 31, 2025. Source: *Flottes de combat*. The various vessel categories are defined at the end of this study, on page 69.

COUNTRY	Aircraft carriers	Assault aircraft carriers	Strategic submarines	Attack submarines	Large combat vessels	Small combat vessels	Offshore patrol vessels	Coastal patrol vessels	Mine warfare vessels	Large amphibious vessels	Other amphibious vessels	Grand total
CHINA	1	1		9	9				3	3		26
RUSSIA			2	5		4	1		1			13
INDIA			1	1	6		3					11
UNITED STATES OF AMERICA				2	5					2		9
JAPAN				2	4				1			7
INDONESIA					2	1	3					6
PHILIPPINES					2	4						6
FRANCE				2			2					4
ITALY		1			3							4
TAIWAN						4						4
AUSTRALIA							1	2				3
CANADA							3					3
COLOMBIA								3				3
SOUTH KOREA				1	2							3
PAKISTAN					3							3
SINGAPORE				2							1	3
TÜRKIYE				2	1							3
UKRAINE									3			3
BRAZIL				2								2
UNITED ARAB EMIRATES					1	1						2
IRELAND								2				2
SOUTH AFRICA							1					1
ALBANIA							1					1
GERMANY					1							1
ANGOLA											1	1
SAUDI ARABIA					1							1
BANGLADESH								1				1
BULGARIA					1							1
NORTH KOREA												1
GHANA							1					1
ISRAEL											1	1
NETHERLANDS								1				1
PERU										1		1
QATAR										1		1
ROMANIA									1			1
SENEGAL							1					1
THAILAND				1								1
Total 2024-2025	1	2	4	29	41	14	17	9	6	7	6	136
Total 2022-2023	1	2	3	20	67	30	14	14	14	9	9	183

SHIPBUILDING IN 2024–2025

INCLUDING AUXILIARY AND COAST GUARD VESSELS



Military, paramilitary and auxiliary vessels of over 200 tonnes delivered between January 1, 2024, and December 31, 2025. Source: Flottes de combat.



A corvette for Malaysia, built at the Turkish shipyard STM.

© STM

STRONG PRODUCTION GROWTH IN 2024-2025

The global market for military and paramilitary shipbuilding is valued at over \$122 billion—up from \$82 billion in the 2022–2023 period—representing a 50% increase. In terms of tonnage, the increase is of a similar magnitude, rising from nearly one million tonnes to approximately 1.5 million tonnes.

Amidst this strong growth in global military and paramilitary vessel production, nuclear-powered attack submarines (SSNs) lead the way (\$27.3 billion), with production tripling from 6 units in 2022–2023 to 17 units (103,820 tonnes) in 2024–2025. Similarly, the production of conventional submarines has risen from 11 to 18 units, reaching a value of \$8.5 billion.

Replenishment tankers dominate in terms of tonnage (191,000 tonnes valued at \$4.4 billion), with deliveries doubling from 5 to 12 units.

Next come destroyers, the number of which has nearly doubled: 22 or 24 units (depending on differing national classifications)—totaling 161,000 tonnes and \$25 billion—compared to 13 units in 2022–2023. The 28 frigates (105,000 tonnes; \$13 billion) and 28 corvettes

(73,500 tonnes; \$9 billion) represent a slight increase over the previous period.

In 2024–2025, the aircraft carrier and the two assault aircraft carriers produced are exclusively Chinese (valued at \$6 billion and \$3.5 billion, respectively, for 86,000 and 80,000 tonnes). By contrast, in 2022–2023, these categories comprised five vessels: Chinese (2), Indian, Turkish, and Italian.

MORE COMBAT SHIPS

The 10 landing platform docks (163,000 t), produced by four countries, represent the same cumulative value as the aircraft carriers. They are twice as numerous as in the previous period.

Meanwhile, the 48 offshore patrol vessels (137,000 t), built by ten countries, represent a higher total value than a single aircraft carrier. In terms of value, the next categories are rescue vessels (\$2.9 billion) and strategic submarines (\$2.8 billion; 33,700 t).

Also notable is the low number of mine warfare vessels, medium-displacement patrol and coast guard vessels, and experimental vessels compared to 2022–2023. These numbers can be explained, in part, by the increasing priority given to combat units, as well as—possibly—an underestimation of Chinese paramilitary production.

CHINA VS US : THE RACE FOR NAVAL ASSETS

Notably, in the span of two years, China has produced more than double the tonnage delivered by U.S. shipbuilders: 636,000 tons—including one aircraft carrier and two amphibious assault ships—compared to 270,000 tons for the United States. The Chinese industry also delivered nine nuclear-powered attack submarines (SSNs) versus three for the U.S., ten destroyers versus four, and six frigates versus five Littoral Combat Ships (LCS)—the latter being hardly comparable. Ranking first globally, the state-owned shipbuilder China State Shipbuilding Corporation (CSSC) is consolidating its position through the 2025 acquisition of its rival, China Shipbuilding Industry Corporation (CSIC).

To counter the doubling of nuclear submarine production capacity at China's Huludao shipyard, Washington has set a new course for its Electric Boat and Newport News shipyards: increasing labor input from 13 million to 70 million man-hours to simultaneously build Columbia-class SSBNs and Virginia-class SSNs at a rate of one and two units per year, respectively.

RUSSIA RANKS 3RD IN DELIVERIES

Russia ranks third in terms of delivered vessel tonnage (150,000 tons in 2024–2025), driven by its production of submarines and auxiliary vessels (an icebreaker, an ammunition transport ship, and an oil tanker). In contrast, deliveries of surface combatants are limited to smaller vessels: six corvettes and six missile-armed patrol boats. There is only one large frigate and a single tank landing ship.

In the realm of drones, China is building and operating an experimental drone carrier, as well as two or three large underwater drones and several surface drones, including one the size of a corvette. The United States is responding with a large underwater drone and several surface drones armed with anti-ship missiles or designed for anti-submarine and mine-countermeasure roles.

Trailing far behind these three major shipbuilding nations are India (76,000 tonnes), Italy (54,000 t), Türkiye (44,000 t), France (38,500 t), Japan (38,000 t), and South Korea (32,000 t).

THE SURGE OF TECHNOLOGY TRANSFERS

For all these countries, production focuses mainly on destroyers and frigates (9 for India, 6 for South Korea, 5 for Italy, 4 for Japan, 3 for France, 2 for Türkiye). A portion of this production is intended for export: Italy (4), South Korea and France (2), Türkiye (1). However, submarine production is not insignificant: one nuclear-powered attack submarine in France, one ballistic-missile submarine and an attack submarine (Naval Group license) in India, a ballistic missile submarine in South Korea, and two submarines in Japan and Türkiye (TKMS license). Pakistan is also preparing to produce submarines under a Chinese license.



The future Portuguese amphibious drone carrier under construction at Damen in Romania.

Thanks to these licensing and technology transfer agreements, several countries are launching or relaunching efforts to produce frigates (Brazil, Colombia, Egypt, Indonesia, Pakistan, Peru, Poland), design offshore patrol vessels (Colombia, Mexico), or build logistics vessels (Chile). Other players benefit from hacking other shipbuilders (North Korea) or covert cooperation (Myanmar).



SHIPBUILDING TONNAGE BY PRODUCING COUNTRY
IN 2024-2025 AND ITS VALUE

COUNTRY	Tonnage	Value Millions of US\$	Canada	18,288	2,314	Colombia	2,665	440
China	636,208	45,981	North Korea	10,000	1,400	Bulgaria	2,300	275
United States	270,509	26,794	Chile	10,000	210	Indonesia	2,300	126
Russia	149,056	10,830	Norway	9,000	206	Brazil	1,850	1,000
India	76,430	6,012	Peru	7,300	107	Netherlands	1,050	47
Italy	53,700	6,407	United Kingdom	7,000	1,800	South Africa	1,000	76
Türkiye	44,216	2,973	Spain	6,410	468	United Arab Emirates	641	300
France	38,460	4,238	Germany	5,260	1,060	Croatia	216	12
Japan	37,800	2,978	Taiwan	5,250	849	Singapore	200	4
South Korea	32,400	4,071	Australia	4,910	550	Israel	160	40
Romania	29,000	1,042	Iran	3,500	900			
			Myanmar	3,500	423			
						Grand total	1,470,579	123,933

Tonnage

> 300,000 t

> 100,000 t

> 30,000 t

> 10,000 t

> 3,000 t

> 1,000 t



VALUE OF ACQUISITIONS BY COUNTRY IN 2024-2025 AND CORRESPONDING TONNAGES

COUNTRY	Tonnage	Value Millions of US\$			
China	613,008	43,531	Germany	5,260	1,060
United States	268,723	26,762	Brazil	1,850	1,000
Russia	141,856	9,980	Iran	3,500	900
India	83,630	6,862	Taiwan	5,250	849
South Korea	26,200	3,589	Thailand	15,025	800
Japan	37,800	2,978	United Arab Emirates	3,241	725
France	27,750	2,912	Greece	4,460	660
Pakistan	19,175	2,655	Philippines	6,360	522
Egypt	9,000	2,400	Australia	4,160	520
Türkiye	39,616	2,358	Qatar	8,800	450
Canada	18,288	2,314	Colombia	2,665	440
Italy	26,100	2,259	Netherlands	20,450	432
United Kingdom	7,000	1,800	Myanmar	3,500	423
Indonesia	12,100	1,424	Saudi Arabia	2,200	400
North Korea	10,000	1,400	Bulgaria	2,300	275
			Nigeria	2,600	240
			Chile	10,000	210
			Norway	9,000	206
			Belgium	2,800	184
			Peru	7,300	107
			South Africa	1,000	76
			Spain	4,000	59
			Israel	1,786	32
			Senegal	600	30
			Angola	250	27
			Jamaica	300	15
			Lithuania	300	12
			Croatia	216	12
			Fidji	250	10
			Tuvalu	250	10
			Kiribati	250	10
			Ireland	210	10
			Tonga	200	4
			Grand total	1,470,579	123,933

Valeurs

> 10,000 M\$

> 2,500 M\$

> 1,000 M\$

> 250 M\$

> 100 M\$

THE MAJOR NAVAL PROGRAMS



IN EUROPE

The French FDI
Amiral Ronarc'h.

CVN France Libre. 1 new-generation nuclear-powered aircraft carrier (78,000 t). Delivery: 2038. Shipyards: Naval Group & Chantiers de l'Atlantique, FRA.

SSBN L'Invincible. 4 third-generation nuclear-powered ballistic missile submarines (15,000 t). Deliveries: 2036–?. Shipyard: Naval Group, FRA.

SSN Suffren. 6 Barracuda-class nuclear-powered attack submarines (4,600 t). Deliveries: 2020–2029 (4 delivered). Shipyard: Naval Group, FRA.

FFG Amiral Ronarc'h. 5 Defense and Intervention Frigates (4,460 t). Deliveries: 2025–2032 (1 delivered). Shipyard: Naval Group, FRA.

SSBN Dreadnought. 4 Successor-class nuclear-powered ballistic missile submarines (17,200 t). Deliveries: 2029–2035. Shipyard: BAE Systems, GBR.

SSN Astute. 7 nuclear-powered attack submarines (7,000 t). Deliveries: 2008–2028 (6 delivered). Shipyard: BAE Systems, GBR.

FFG City. 8 Type 26 multi-mission frigates (5,400 t). Deliveries: 2027–2036. Shipyard: BAE Systems, UK.

FFG Inspiration. 5 Type 31 multi-role frigates (5,700 t). Deliveries: 2027–2031. Shipyard: BAE Systems, UK.

CVN. 1 nuclear-powered aircraft carrier planned. Delivery: after 2040. Shipyard: Fincantieri, Italy.

LXD. 3 large amphibious ships (16,500 t). Deliveries: 2031–?. Shipyard: Fincantieri, Italy.

SSK U212 NFS and NFS Evo. 4+2 air-independent propulsion (AIP) attack submarines (1,700/2,000 t). Deliveries: 2029–2033. Shipyard: Fincantieri, Italy.

DDGX. 2 ballistic missile defense-capable destroyers (11,000 t). Deliveries: 2031–?. Shipyard: Fincantieri, Italy.

FFG FREMM Evo. 2 FREMM Evo-type European multi-mission frigates (6,500 t). Deliveries: 2029–2030. Shipyard: Fincantieri, Italy.

FFG Thaon di Revel. 2 PPA Evo-type “multi-role offshore patrol vessels” (5,000 t). Deliveries: 2029–2030. Shipyard: Fincantieri, Italy.

SSK Isaac Peral. 4 S-80 class air-independent propulsion (AIP) attack submarines (2,700 t). Deliveries: 2023–2029 (2 delivered without AIP, which will be installed later). Shipyard: Navantia, Spain.

FFG Bonifaz. 5 F-110 class Aegis frigates (6,100 t). Deliveries: 2027–2031. Shipyard: Navantia, Spain.

SSK 212CD. 6 Type 212 Common Design air-independent propulsion attack submarines

(2,500 t). Deliveries: 2029–2037. Shipyard: TKMS, Germany.

FFG Type 128. 8 Meko A-200 class frigates (Germany) (4,000 t). Deliveries: 2029–?. Shipyard: TKMS, Germany. Replaces the Type 126 project, the order for which was cancelled.

FFG Type 127. 8 Meko A-400 AMD Aegis air-defense frigates (10,000 t). Deliveries: 2032–?. Shipyard: TKMS, Germany.

FFLG Köln. 5 K130 Batch 2 missile corvettes (1,500 t). Deliveries: 2024–2027 (1 delivered). Shipyards: Lürssen, TKMS & GNYK, Germany.

SSK 212CD. 6 Type 212 Common Design air-independent propulsion (AIP) attack submarines (2,500 t). Deliveries: 2029–2037. Shipyard: TKMS, Germany.

Type 26 FFG. 5 anti-submarine frigates (5,400 t). Deliveries: 2030–?. Shipyard: BAE Systems, UK.

SSK Orka. 4 Blacksword Barracuda-type lithium-ion battery attack submarines (3,300 t). Deliveries: 2033–2037. Shipyard: Naval Group, France.

ASWF FFG. 7 anti-submarine warfare frigates (including 3 for Belgium), RMF-22D type (6,400 t). Deliveries: 2028–?. Shipyard: Damen, Romania & Netherlands.

City-class MHO. 12 drone-equipped mine warfare vessels (including 6 for Belgium), MCMV type (2,800 t). Deliveries: 2025–2030 (2 delivered). Shipyard: Kership, France.

SSK Orka. 3 A26-type air-independent propulsion (AIP) attack submarines (2,100 t). Deliveries: 2030–2034. Shipyard: Saab, Sweden.

Miecznik FFG. 3 multi-role frigates based on the British Type 31 design (5,700 t). Deliveries: 2029–2031. Shipyard: PGZ & Remontowa, POL.

AGI Delfin. 2 Swedish Artemis-class signals intelligence (SIGINT) vessels (2,200 t). Deliveries: 2027–2028. Shipyard: Remontowa, POL.

SSK Blekinge. 2 A26-class AIP (air-independent propulsion) attack submarines (2,100 t). Deliveries: 2031–2034. Shipyard: Saab, SWE.

FFG Luleå. 4 defense and intervention frigates (4,460 t). Deliveries: 2031–2034. Shipyard: Naval Group, FRA.

PS MPV80. 3 multi-role offshore patrol vessels. Shipyard and delivery dates undefined.

FFLG Pohjanmaa. 4 Squadron 2020-class frigates (4,300 t). Deliveries: 2027–2030. Shipyard: Rauma Marine, FIN.

FFG Kimon. 4 defense and intervention frigates (4,460 t). Deliveries: 2025–2029 (2 delivered). Shipyard: Naval Group, FRA.

FFG FREMM. 2 (possibly 4) second-hand Italian FREMM (European multi-mission) frigates (4,500 t). Deliveries: 2029–2030. Shipyard: Fincantieri, ITA.

FFLG Smeli. 2 German MMPV 90-type modular multi-mission corvettes (2,300 t). Deliveries: 2026–2027. Shipyard: MTG Dolphin, BGR.

SSK. Project to acquire 3 submarines.

FFLG MMPV 90. 2 German MMPV 90-type modular multi-mission corvettes (2,300 t). Deliveries: 2030–?. Shipyard: Romania.

PS CA Roman. 1 Turkish Hisar-type multi-role offshore patrol vessel (2,300 t). Delivery: 2026. Shipyard: Afsat.

The Spanish
submarine *Isaac Peral*, the first
of four units.





Firing of a MM40 Exocet anti-ship missile.

© MBDA

FOCUS ON THE FRENCH NAVAL INDUSTRY IN 2025

The French naval defense sector is a key component of national sovereignty and the defense industrial and technological base. It encompasses a wide range of companies—from major prime contractors to specialized SMEs and mid-sized enterprises—and covers the entire value chain, from the design and construction of platforms to their combat systems, sensors, weaponry, propulsion, and through-life support.

In 2025, the French naval sector generated nearly €12 billion in revenue. It comprises over 750 companies and supports more than 46,000 direct jobs.

This diversity is reflected in the platforms produced. France possesses the expertise to design and build vessels across the entire naval spectrum: from patrol boats and interceptors to offshore patrol vessels, support ships, and mine-warfare vessels, all the way up to frontline warships such as frigates, destroyers, aircraft carriers, and nuclear submarines.

Alongside Naval Group—Europe’s leader in naval defense—shipyards such as Piriou, Kership, CMN, Socarenam, and Ocea contribute to the construction of medium-tonnage vessels and patrol boats.

A SOVEREIGN TECHNOLOGICAL MASTERY

France also possesses a rare capability to design and produce some of the world’s most complex naval platforms. Suffren-class nuclear attack submarines, as well as future third-generation nuclear-powered ballistic missile submarines, rely on mastery of a suite of sovereign technologies. Nuclear propulsion represents a particularly strategic capability in this regard, driven notably by TechnicAtome.

This capability extends to surface vessels: the next-generation aircraft carrier—intended to succeed the Charles de Gaulle—brings together Naval Group, Chantiers de l’Atlantique, and TechnicAtome to develop a nuclear-powered platform over 300 meters long.

This mastery of platforms is complemented by the ability to design the combat systems they carry. Thales supplies radars, sonars, and systems for electronic warfare, communications, command and control, and operations management, as well as advanced anti-submarine warfare capabilities. More than 100 of its CAPTAS systems have been ordered worldwide.

MBDA provides key missile systems, ranging from air defense and anti-ship warfare to deep-strike capabilities and self-defense.

KNDS France contributes to weapon systems and naval artillery. Other players, such as Safran and Lacroix, provide essential components in navigation, optronics, electronic warfare, and self-protection.

French expertise also extends to naval aviation. Dassault Aviation supplies the Rafale Marine—the combat component of the carrier-based air wing—and produces the Falcon Albatros for maritime surveillance.

For its part, Airbus Helicopters contributes to maritime aviation capabilities, notably through the NH90 Caïman Marine, the Guépard program, and the VSR700 drone. Meanwhile, Airbus Defence and Space is set to design the future French maritime patrol aircraft in a joint contract with Thales.

LEADERS IN MINE WARFARE

Mine warfare and autonomous systems represent another area where the French industry possesses world-class expertise. For instance, Exail and Thales are developing solutions that combine surface drones, underwater drones, navigation systems, and robotics.

In 2025, Thales delivered the world’s first autonomous mine-countermeasure drone system to

the French Navy. Developed under the Franco-British SLAM-F program, this system exemplifies the shift toward highly roboticized mine warfare, allowing crews and vessels to remain clear of dangerous zones. Additionally, Exail has supplied its UMIS (Unmanned MCM Integrated System)—which combines surface, underwater, and aerial drones—to several navies.

EXPORT SUCCESS

This industrial diversity translates into significant export success. Notably, Naval Group won the Dutch Orka program for four conventionally powered submarines, while the Defense and Intervention Frigates (FDI) are enjoying international success, with orders placed by Greece and Sweden. These contracts demonstrate the competitiveness of the French industry in the fields of combat vessels, submarines, and complex naval systems.

The French naval defense sector is thus characterized by the depth of its ecosystem. It brings together shipyards, system integrators, equipment manufacturers, missile manufacturers, engine manufacturers, and specialists in nuclear technology, electronics, optronics, and robotics, as well as the aeronautics sector.

A continuity of expertise that enables France to design, produce, integrate, and support naval systems covering the entire capability spectrum, from drones to nuclear-powered ballistic missile submarines.

The French naval defense sector in 2025	
Combined revenue (billions of euros)	11,97
Share of revenue from exports	36%
Share of revenue from the domestic market	64%
Direct jobs (1)	46,098
Estimated indirect jobs for the naval defense sector (2)	31,692
Estimated induced jobs (3)	24,970
Number of companies	750
Including shipbuilding yards (4)	11

(1) Prime contractors and Tier 1 subcontractors operating within the French naval industry. (2) Jobs created by the subcontracting sector from Tier 2 onwards. (3) Jobs generated by household consumption directly and indirectly linked to naval industry manufacturers. (4) Naval Group, Piriou, Constructions mécaniques de Normandie (CMN), Ocea, Kership, Socarenam, Couach (CNC), Merré, Ufast, Sillinger, Glehen.



Computer-generated image of the future battleship USS *Defiant*, Trump class

© US Navy

IN THE UNITED STATES

CVN Gerald Ford. 10 nuclear-powered aircraft carriers, CVN-21 class (100,000 t), planned; 4 ordered. Deliveries: 2017–2058 (1 delivered). Shipyard: Newport News, USA. The 2nd and 3rd units are scheduled for 2027 and 2031.

LHA America. 11 amphibious assault helicopter carriers, LHA-R class (34,000 t). Deliveries: 2014–? (2 delivered). Shipyard: Huntington Ingalls Industries, USA. The 3rd and 4th units are expected in 2027 and 2031.

SSBN Columbia. 12 nuclear-powered ballistic missile submarines, SSBN-826 class (17,000 t). Deliveries: 2030–2043. Shipyard: GD Electric Boat, USA. The first, District of Columbia, is 60% complete. It will be armed with 16 Trident D5 missiles. A delay (17 months) could necessitate extending the service life of the current Ohio-class submarines, which are due to begin decommissioning in 2027.

SSN Virginia. 28 nuclear-powered attack submarines, SSN-774 class Blocks I through IV (17,000 t). Deliveries: 2004–2028 (26 delivered). Shipyards: Newport News & GD Electric Boat, USA. Target from 2031: produce two future Block V–VIII SSNs annually.

BBGN Trump. Project for 15–25 nuclear-powered guided-missile battleships (35,000 t). Deliveries: 2036–?. Shipyard: Newport News, USA.

Intended to succeed the Ticonderoga-class cruisers still in service; to feature nuclear cruise missiles, hypersonic missiles, and 200 Mk41 silos. Expected to generate sufficient electricity for directed-energy weapons: a 32-megajoule electromagnetic railgun and two lasers. Construction of the first unit is scheduled to begin in 2028, with an estimated cost exceeding that of aircraft carriers.

DDG Arleigh Burke. 99 guided-missile destroyers, types DDG-51 Flight I through III (7,000 t). Deliveries: 1990–2033 (76 delivered). Shipyards: Huntington Ingalls & Bath Iron Works, USA. The 75th unit, DDG 125, is the first of the Flight III variant (electric propulsion, AMDR radar). A Flight IV variant is planned.

FFG Constellation. 2 frigates, type FFG-62, derived from the Italian FREMM (6,100 t). Deliveries: 2029–2030. Shipyard: Fincantieri Marinette Marine, USA. 20 units were planned, but the program was halted in 2025 due to excessive costs.

FFG FF(X). 55 to 65 frigates derived from Legend-class NSC (National Security Cutter) type coast guard cutters (4,750 t). Deliveries: 2030–?. Shipyard: Huntington Ingalls, USA. Will replace LCS vessels; initial version similar to the Legend class, followed by a second version equipped with vertical launch systems and an anti-submarine warfare system.



The amphibious aircraft and drone carrier *Sichuan*.

© PLA

IN CHINA

CVN 19. Type 004 nuclear-powered aircraft carrier (110,000 t). Delivery: 2030. Shipyard: Dalian, CHN. Fourth aircraft carrier following the 2025 delivery of the Fujian (80,000 t), which is equipped with electromagnetic catapults.

LHA Sichuan. Type 076 Yulan amphibious aircraft and drone carrier (36,000 t). Deliveries: 2026–? (1 delivered). Shipyard: Hudong-Zhonghua, CHN. Equipped with an electromagnetic catapult and arresting gear.

SSBN 09-VI. 3rd-generation nuclear-powered ballistic missile submarines. Deliveries: 2030–?. Shipyard: BSHIC (Huludao), CHN. Armed with 16 JL-3 ballistic missiles.

SSN Shang III. Type 09-IIIB nuclear-powered attack submarines (7,000 t). Deliveries: 2025–?. Shipyard: BSHIC (Huludao), CHN. The first four were delivered in 2025–2026. Four more are to follow. They feature 18 silos for hypersonic and cruise missiles.

SSN 09-V. Type 09-V Sui nuclear-powered attack submarines (7,900 t). Deliveries: 2027–?. Shipyard: BSHIC (Huludao), China. Eight are under construction or on order. They feature 24 silos for hypersonic and cruise missiles. With the doubling of BSHIC's infrastructure, annual production (three units per year) exceeds that of the United States.

SSN 041. One prototype Type 041 nuclear-powered attack submarine (4,000 t).

Delivery: ?. Shipyard: Wuchang, China. Equipped with a mini-nuclear reactor, it heralds a new class. Additionally, a 120-meter submarine without a sail, currently under construction at Jiangnan, could be an unmanned underwater vehicle (UUV).

DDG Renhai. Type 055 guided-missile cruisers (13,000 t). Deliveries: 2019–? (10 delivered). Shipyards: Jiangnan and Dagushan, China. All are equipped with hypersonic missiles; the 9th and 10th are nearing completion, while four others are on the slipway.

DDG Luyang III. At least 40 Type 052D guided-missile destroyers (6,200 t). Deliveries: 2013–? (32 delivered). Shipyards: Jiangnan and Dagushan, China. The fourth batch (Nos. 26–36, Type 52DL), all equipped with hypersonic missiles, is nearing completion. Three additional units are under construction.

FFG Jiangkai II. 50 (?) Type 054A guided-missile frigates (3,500 t). Deliveries: 2007–? (46 delivered). Shipyards: Hudong Zhonghua and Huangpu Wenchong, China. 4 more are under construction.

FFG Jiangkai III. 30 (?) Type 054B (5,700 t). Deliveries: 2024–? (2 delivered). Shipyards: Hudong Zhonghua and Huangpu Wenchong, China. Inspired by European FREMMs; 4 more are under construction.

AOR 901A. Type 901 replenishment oilers (45,000 t). Deliveries: 2016–? (3 delivered). Shipyard: Longxue, China. A fourth unit is planned.



LPH/CV/CVN. 4 amphibious helicopter carriers of the MRSV type. Deliveries: ?. Shipyard: IND. Site and design not yet selected. In addition, a second aircraft carrier (45,000 t) and a third nuclear-powered aircraft carrier (75,000 t) are envisaged.

SSBN Arihant Mod. 2 nuclear ballistic missile submarines (8,000 t). Deliveries: 2025–2027 (1 delivered). Shipyard: Shipbuilding Center, IND. Two units of a new series of three, type S-5 (13,500 tons), were laid down at the same yard.

SSK Project 75 I. 6 air-independent propulsion submarines (3,000 t). Deliveries: 2029–?. Shipyard: Mazagon Dock Ltd, IND. Design TKMS (DEU).

DDG Project 18. 5 to 10 large guided missile destroyers (13,000 t). Deliveries: ?. Yard and design not yet selected.

FFG Nilgiri. 7 missile frigates type Project 17A (6,700 t). Deliveries: 2024–2026 (6 delivered). Shipyards: Mazagon Docks Ltd and Garden Reach, IND. Seven Project 17B will succeed them. In addition, 2 Russian Talwar design frigates, type Project 11356, are under construction in Goa.

PCE Mahe & Arnala. 15 ASW-SWC type anti-submarine corvettes (700 t). Deliveries: 2024–? (6 delivered). Shipyards: Garden Reach and Cochin, IND. Additionally, two new classes will replace the Tarantul and Khukri/Kora between 2027 and 2035.

SSK Hangor. 8 air-independent propulsion (AIP) attack submarines, Chinese Type 039B (2,700 t). Deliveries: 2025–? (1 delivered). Shipyards: CSOC, CHN and KSEW, PAK.

FFG Jinnah. 6 domestically designed guided-missile frigates (3,300 t). Deliveries: 2035–2045. Shipyard: KSEW, PAK.

FFLG Babur. 4 guided-missile corvettes, Turkish Milgem type (1,500 t). Deliveries: 2022–2027 (2 delivered). Shipyards: Istanbul, TUR and KSEW, PAK.

SSK Matchanu. 1 diesel-electric attack submarine, Chinese Type S26T (2,700 t). Delivery: 2027. Shipyard: Wuchang, CHN.

SSK Invincible. 6 air-independent propulsion attack submarines, German Type 218SG (2,000 t). Deliveries: 2023–? (2 delivered). Shipyard: HDW, DEU.

SSK Scorpene Evolved. 2 French-designed lithium-ion battery-powered attack submarines (1,700 t). Deliveries: 2029–2030. Shipyard: PT Pal, IDN.

FFG Balaputradewa. 4 British Type 31 guided-missile frigates (5,700 t). Deliveries: 2027–2032. Shipyard: PT Pal, IDN.

FFG Istanbul. 2 Turkish Istanbul-class guided-missile frigates (3,000 t). Shipyard and delivery dates unspecified.

FFLG Maharaja Lela. 5 French Gowind 2500-class guided-missile corvettes (2,700 t). Deliveries 2026–2030 (1 delivered). Shipyard: Boustead, MYS. Additionally, 3 LMS Batch II corvettes have been ordered from Turkey.

LPD MRSS. 3 amphibious helicopter carriers. Deliveries and shipyards to be determined. 2026–2030 (1 delivered). 17 bids are under review. One unit is to be built locally.

LPD Tarlac. 4 Indonesian Makassar-class amphibious helicopter carriers (7,300 t). Deliveries: 2015–? (2 delivered). Shipyard: PT Pal, IDN.

FFG Miguel Malvar. 4 Korean HDF-3100-class guided-missile frigates (3,100 t). Deliveries: 2024–? (2 delivered). Shipyard: Hyundai, KOR.

PS Rajah Sulayman. 6 offshore patrol vessels of the Korean HDP-2200 type (2,400 t). Deliveries: 2025–2027 (2 delivered). Shipyard: Hyundai, KOR.

SSK Taigei. 8 lithium-ion battery-powered attack submarines (3,000 t). Deliveries: 2021–2029 (5 delivered). Shipyard: Kawasaki, JPN.

CG ASEV. 2 Aegis cruisers with ballistic missile defense capability (12,000 t). Deliveries: 2027–?. Shipyard: Mitsubishi, JPN.

FFG Mogami. 24 multi-mission frigates (3,900 t). Deliveries: 2021–? (10 delivered). Shipyard: Mitsubishi, JPN.

SSBN DPRK. 1 ballistic missile nuclear submarine prototype (9,000 t). Delivery: ?. Shipyard: Pongdae, PRK. Its launch is reportedly imminent.

DDG Choe Hyon. 3 strategic missile destroyers (5,000 t). Deliveries: 2025–? (1 delivered). Shipyards: Nampo and Hambuk, PRK. Additional 10,000-ton destroyers have been announced.

CVX. 1 unmanned systems command ship (approx. 50,000 t). Shipyard and timelines unknown. Originally an aircraft carrier project, repurposed in 2025 as a drone carrier.

SSB Jang Yeong-sil. 3 KSS-III Batch II lithium-ion battery-powered strategic submarines (3,600 t). Deliveries: 2027–2031. Shipyard: Daewoo, South Korea. Four nuclear-powered KSS-III Batch III vessels are planned subsequently, around 2040.

DDG Sejong Daewang. 3 KDX-III Batch 2 guided-missile destroyers (12,000 t). Deliveries: 2023–? (2 delivered). Shipyards: Hyundai and Daewoo, South Korea.

FFG Ulsan. 6 FFX-III Batch 3 guided-missile frigates (3,600 t). Deliveries: 2023–? (2 delivered). Shipyards: Hyundai and SK Ocean, South Korea.

SSN Aukus. 5 nuclear-powered attack submarines designed and built in partnership with the United States and the United Kingdom. Shipyards and timelines uncertain. In the interim, Australia is expected to acquire 3 US Virginia-class SSNs.



FFG Hunter. 9 British Type 26 guided-missile frigates (8,800 t). Deliveries: 2027–?. Shipyard: Osborne, Australia.

FFG type FFM. 11 modified Japanese Mogami-class guided-missile frigates (4,900 t). Deliveries: 2029–?. Shipyards: Mitsubishi (Japan), then Austal (Australia).

SSK Hai Kun. 8 diesel-electric attack submarines (2,500 t). Deliveries: 2026–? (1 delivered). Shipyards: CSBC (Taiwan). Built with US and Japanese assistance.



The modernized guided-missile cruiser *Admiral Nakhimov* is scheduled to return to service in 2026

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IN RUSSIA

LHD Ivan Rogov. Two Type 23900 amphibious assault ships/helicopter carriers (40,000 t). Deliveries: TBD. Shipyard: Zaliv, Russia. Construction continues despite the war in Ukraine. A decision regarding a future aircraft carrier will not be made until the next decade.

SSBN Dolgorukiy II. Project 955A Borei-A class nuclear-powered ballistic missile submarines (15,700 t). Deliveries: 2019–TBD (5 delivered). Shipyard: Sevmash, Russia. Two more are under construction, and two others have been ordered.

SSTN Khabarovsk. Project 09851 Kalitka class nuclear-powered submarine designed to carry nuclear torpedoes (10,000 t). Delivery: 2027. Shipyard: Sevmash, Russia. Built specifically to carry six 24-meter Status-6/Kanyon nuclear torpedoes. A second unit, the Project 09853 class, has been ordered.

SSGN Kazan. Ten Project 08851 Yasen-M class nuclear-powered cruise missile submarines (7,500 t). Deliveries: 2020–2032 (5 delivered). Shipyard: Sevmash, Russia. Four others are under construction.

SSK Kilo. Modernized Project 636-3 Kilo-class diesel-electric attack submarines (2,350 t). Deliveries: 2013–? (12 delivered). Shipyard: Admiralty, RUS. Four are under construction, due for delivery by 2028.

SSK Amur. Project 677 Lada-class diesel-electric attack submarines (1,800 t). Deliveries: 2020–? (3 delivered). Shipyard: Admiralty, RUS. Two more are expected in 2027.

CGN Kirov. Modernization of the nuclear-powered cruiser Admiral Nakhimov, Project 1144 class (20,000 t), featuring Kalibr cruise missiles and hypersonic Zircon missiles. Delivery: 2026. Shipyard: Severodvinsk, RUS.

FFG Gorshkov : 10 Project 22350-class guided-missile frigates (4,500 t). Deliveries: 2017–2033 (4 delivered). Shipyard: Severnaya, RUS. The series was delayed due to the loss of access to Ukrainian gas turbines, necessitating domestic development.

FFLG/PGG. Four classes of corvettes are currently in production. Three Steregushchiy-class corvettes (Nos. 10–12), five Gremyashchiy-class (Nos. 2–6), ten Karakurt-class (Nos. 10–16), and the final Buyan-M class vessel (No. 12) were completed in 2025. Armed with cruise missiles, these four classes are expected to receive the Zircon missile.

Ivan Gren-class LST (Project 1171-2 type tank landing ship, 6,000 t). Deliveries: 2026–?. Shipyard: Yantar, Russia. Four are under construction to replace older LSTs, four of which were lost in the conflict with Ukraine.



Brazil's future nuclear-powered submarine *Álvaro Alberto*.

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IN CANADA AND LATIN AMERICA

SSK CPSP. 12 German Type 212CD air-independent propulsion (AIP) attack submarines (2,500 t). Deliveries: 2035–?. Shipyard: TKMS, Germany. In partnership with Germany and Norway.

DDG River. 15 guided-missile destroyers derived from British Type 26 frigates (8,000 t). Deliveries: 2030–2050. Shipyard: Irving, Canada.

SSN Álvaro Alberto. 1 nuclear-powered attack submarine (6,000 t). Delivery: 2037–2050. Shipyard: ICN, Brazil. With French technical assistance, except for nuclear propulsion.

FFG Tamandaré. 8 guided-missile frigates based on the German Meko A100 design (3,455 t). Delivery: 2026–? (1 delivered). Shipyard: Oceana (TKMS), Brazil.

LPD Magallanes. 4 multi-role amphibious ships (8,000 t). Deliveries: 2027–?. Shipyard: Asmar, Chile.

FFG Futura fragata. 8 multi-role frigates (5,200 t). Deliveries: 2030–?. Asmar, Chile. Separately, the replacement of the two Type 209 submarines is under consideration.

FFG HDF-3200. 1 Korean HDF-3200-type multi-role frigate (3,400 t). Delivery: 2030. Shipyard: SIMA (Peru), with assistance from Hyundai (South Korea). SIMA will also build an HDP-2200 offshore patrol vessel.

PS MPV70. 1 German MPV70 MkII-type offshore patrol vessel (2,400 t). Delivery: 2027. Shipyard: Astinave (Ecuador), with assistance from Fassmer (Germany). Quito is also considering replacing its two frigates.

FFG PES. 5 Dutch Sigma 10514-type multi-role frigates (2,600 t). Deliveries: 2030–?. Shipyard: Cotecmar (Colombia).

PS 24 de Julio. 4 local POC-type offshore patrol vessels (2,600 t). Deliveries: 2026–? (1 delivered). Shipyard: Cotecmar (Colombia).

PS Yucatán. 12 locally designed offshore patrol vessels. Deliveries: 2027–?. Shipyard: Astimar (Mexico). The 2024–2030 plan also includes 12 fast patrol boats for counter-narcotics operations and 1 logistics vessel.

The Saudi corvette *King Saud* under construction in the United States.

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IN AFRICA AND THE MIDDLE EAST

 **CV Mugem.** 1 domestically designed aircraft carrier (60,000 t). Delivery: 2032. Shipyard: Istanbul Naval Shipyard, TUR. Keel laying: 2025.

 **LHD Trakya.** 1 improved version of the LHD Anadolu (27,500 t). Delivery dates and shipyards unknown.

 **SSK Atilay.** 6 Milden-class air-independent propulsion (AIP) attack submarines (2,700 t). Deliveries: 2030–2035. Shipyards: Gölcük & STM, TUR.

 **DDG Tepe.** 8 TF-2000 class anti-air warfare destroyers (8,300 t). Deliveries: 2029–?. Shipyard: Istanbul Naval Shipyard, TUR.

 **FFG Istanbul.** 8 TF-100 class frigates, Milgem II program. Deliveries: 2024–2031 (1 delivered). Shipyards: Sefine, Anadolu & Sedef, TUR.

 **PS Hisar.** 9 multi-role offshore patrol vessels (2,300 t). Deliveries: 2025–2029 (1 delivered). Shipyard: Afsat, TUR. May be equipped with Atmaca missiles.

 **FFLG Al Jubail.** 10 Spanish Avante 2200 class missile corvettes (2,200 t). Deliveries: 2021–2030 (5 delivered). Shipyard: Navantia (Spain). Additionally, the first of four LCSs ordered from the United States is nearing completion at Marinette Marine, USA.

 **PM Altaf.** 4 Falaj-3 type missile patrol vessels (640 t). Deliveries: 2025–2028 (1 delivered). Shipyard: ADSB, UAE.

 **SS Drakar.** 3 Dolphin III type attack submarines. Deliveries: 2030–?. Shipyard: TKMS, Germany. Elongated sail suggesting the capability to launch missiles from vertical tubes.

 **FFLG S-80.** 8 Sa'ar 80 type missile corvettes (1,000 t). Schedule unknown. Shipyard: Israel Shipyards, Israel. Equipped with reconnaissance and combat drones.

 **FFG Al-Aziz.** 4 German Meko A200 type missile corvettes (2,600 t). Deliveries: 2021–2027 (3 delivered). Shipyards: TKMS, Germany, then Alexandria Shipyard, Egypt, for the last one.

 **FFLG El Fateh.** 4 French Gowind 2500 type missile corvettes (2,600 t). Deliveries: 2017–2024 (4 delivered). Shipyards: Naval Group, France, for the first, then Alexandria Shipyard, Egypt.

 **PS Moulay Hassan I.** 1 Spanish Avante 1800 type offshore patrol vessel (2,000 t). Delivery: 2026. Shipyard: Navantia, Spain.

 **FFLG El Moutassadi.** 8 Chinese Type 056 missile corvettes (1,300 t). Deliveries: 2023–? (1 delivered). Shipyards: Hudong Zhonghua, China, for the first 2. The last 6 could be built in Algeria.

 **PGG Ekuikui II.** 3 French BR71 MkII missile corvettes (700 t). Deliveries: 2027–?. Shipyard: CMN, France, and ADSB, UAE for the third one.

 **PS OPV 76.** 2 OPV 76-type offshore patrol vessels (1,100 t). Deliveries: 2026–2027. Shipyard: Dearsan, TUR.

THE NAVAL DEFENSE INDUSTRY: HERITAGE, TRANSFORMATION & FUTURE



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1626–2026: 400 YEARS OF TECHNOLOGICAL BREAKTHROUGHS

In 2026, the French Navy marks its 400th anniversary. The Royal Edict of Saint-Germain-en-Laye, inspired by Richelieu, established a permanent, professional naval force with centralized command in October 1626. Since then, like its European counterparts, it has continuously innovated.

By Vice Admiral Laurent Bechler

Major European navies were established between the mid-16th and 17th centuries. The aim was to protect maritime routes and merchant vessels—as seaborne trade had become a major economic priority—from pirates, privateers, and even direct attacks by the navies of other states. The sole exception was the venerable Portuguese navy, founded as early as the 12th century. When discussing the history of navies, one often speaks in terms of broad eras: oared ships, where ramming was the tactic; wooden sailing ships, where combat began with long-range fire but still involved boarding; steel steamships with integrated guns, where battle resembled an artillery duel; and the modern era, featuring submarines, aircraft, and missiles, where combat has become an air-sea affair involving engagements far beyond the horizon.

While this timeline has the merit of simplicity, it does not fully capture the chronology of technical advancements in a satisfactory way. It is more accurate to view warships as systems whose major components represent distinct yet interconnected areas of evolution: the hull, from wood to modern materials; propulsion, from oars to nuclear steam power; and weaponry, from the musket to the cruise missile, the laser, and remotely operated munitions. Sensors range from lookouts to radar, and from hydrophones to fiber optics. Communications span everything from signal flags on halyards to encrypted satellite links. Let us not forget submarines or shipborne aircraft.

THE EVOLUTION OF HULLS

In 1626, hulls were made of wood. Fir and oak forests provided the raw material. A mollusk brought back from tropical waters—the shipworm—triggered a major crisis in the 1730s, destroying hulls and maritime infrastructure

alike. To combat this scourge, the Royal Navy began testing copper hull sheathing as early as 1750. It is worth noting that the Romans had already practiced hull sheathing (using lead) to protect against the European shipworm, and that Chinese manuscripts mention Vietnamese ships with copper hulls as early as the 4th century.

But let us return to our story. The first copper-sheathed frigate was the HMS Alarm in 1761. Unfortunately, electrolytic corrosion between the copper and the iron bolts compromised the invention, though a suitable alloy for the bolts was eventually developed. By the mid-1770s, most Royal Navy ships had copper-sheathed hulls, prompting Suffren to call for the measure to be adopted across the French Navy in 1780. Copper not only offered protection against shipworms but also improved hydrodynamic efficiency and reduced drag caused by hull fouling. Increased speed boosts commercial returns and offsets rising construction costs. However, copper is in short supply in both France and Spain, meaning the measure will be implemented unevenly.

Wood eventually proved unsuitable for ship structures in light of advances in propulsion and weaponry: steam boilers could not exceed a certain size, limiting operational efficiency, while new large-caliber guns required greater hull strength. The merchant navy led the way with the very first iron ship, launched in 1819: the Vulcan carried passengers on Scotland's Forth and Clyde Canal. Wood was gradually phased out starting in the 1840s; the 1853 Battle of Sinop—where the Russian fleet annihilated the Turkish squadron—marked the end of all-wooden warship hulls, as armor plating capable of withstanding explosive shells required far more robust structures.

Technology continues to shape hull design today, utilizing high-yield-strength steels, aluminum, composites, and coatings designed to minimize biofouling (such as silicone and graphene).

THE EVOLUTION OF PROPULSION

In 1626, ships were propelled by sails. Oars were still in use, but not for much longer: Louis XV abolished the galley fleet (built at the Arsenal des Galères in Marseille) in 1748. While rowing allowed ships to sail against the wind, it left little room for naval artillery, condemning galleys to severely limited firepower.

The late 18th century saw the first attempts at propulsion using a new source of energy: steam. Claude de Jouffroy d'Abbans tested his "Palmipède" on the Doubs River in 1776. History particularly remembers the demonstration given by Robert Fulton on the Seine on August 9, 1803, which proved the value of this invention for ships. An Englishman, Aaron Malby, built the first iron-hulled steamship in 1821 at the Horseley Ironworks; it began service in 1822 with a steamship company operating between Paris and Le Havre.

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Early steam propulsion trials.

Initially, the steam engine drove a paddle wheel, which was only suitable for calm seas. The creation of the screw propeller—which harnessed the full potential of the ship's boilers—made it possible to navigate the open sea, even in heavy swells. Credit for the invention is shared by a Frenchman (Frédéric Sauvage), an Englishman (Sir Francis Pettit Smith), and a Swede (John Ericsson). The first screw-propelled steamship, the merchant vessel SS Archimedes (built by Henry Wimshurst), was commissioned in 1839. The US Navy launched the first warship featuring this new propulsion system—the USS Princeton—on September 5, 1843. However, it was in France that the first warship designed from the outset with both a steam engine and a propeller was built: the Napoléon, launched in 1850.



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Model of the battleship *La Gloire*.

The adoption of the propeller revolutionized naval propulsion. Yet, the concept dates back to antiquity, inspired by Archimedes' screw, which had been used for pumping and irrigation since 200 BC. The earliest propellers—known as "long" propellers—actually resembled worm screws with two full turns; they were fragile and relatively inefficient. An improvement came about by chance when it was discovered that efficiency was far greater with only a single turn. Finally, the shift to a propeller design featuring distinct blades rather than a continuous surface fully unlocked the invention's potential. Since the 19th century, advancements have focused on the shape and number of blades to enhance efficiency and eliminate cavitation.

With the combination of propellers and steam power, navies gained immense power reserves, enabling the use of thick armor plating capable of withstanding enemy artillery shells. During the Crimean War, the French Navy's armored floating batteries braved enemy Turkish artillery fire with impunity and silenced the forts at Kinburn (October 17, 1855). Armored protection had proven its effectiveness, though these particular batteries had to be towed. It was in 1859 that the French Navy acquired its first steam- and propeller-driven battleship with a steel hull. *La Gloire* paved the way for other navies.

However, steam power was not without its downsides; coal—and the logistics surrounding it—imposed severe constraints, a lesson

the Russian Navy learned at great cost during the Battle of Tsushima (May 1905). The internal combustion engine—stemming from the work of the Swiss inventor François Isaac de Rivaz and the German Rudolf Diesel—reached power levels sufficient to equip ships just before World War I. Thanks to excellent efficiency and the advantage of storing a high-energy-density liquid fuel, the diesel engine became widely adopted for electricity generation, for the propulsion of small- to medium-tonnage vessels, and for submarines. Nevertheless, the largest ships still relied on high-power turbines to achieve high speeds. At the onset of World War II, the adaptation of aeronautical gas turbines for marine use offered a genuine alternative. Finally, nuclear power for naval propulsion was tested in deep water for the first time in 1955, featuring the iconic submarine Nautilus and the pivotal figure of American Admiral Hyman G. Rickover.

THE EVOLUTION OF WEAPONS AND SENSORS

In the 17th century, naval artillery consisted of wheeled guns firing through broadside ports. Technical progress initially focused on the weight of the cannonballs, increasing from 9 pounds to 36 pounds by the 18th century.

In 1823, the Frenchman Henri-Joseph Paixhans invented the shell gun, which fired explosive shells on a flat trajectory, wreaking havoc on wooden hulls. By 1824, the Indret foundries had built and tested two prototypes on an old ship, the *Pacificateur*, with convincing results; mass production of "Paixhans" guns soon followed in 1827, and by 1835, French ships of the line carried four Paixhans guns, while frigates carried two. Other navies soon followed suit. Images of World War II battleships, bristling with turrets of every type—ranging from heavy guns for shore bombardment to anti-aircraft batteries—remain etched in memory. In modern fleets, main gun calibers range from 76 mm to 127 mm. This weapon remains formidably effective for both short-range defense and offense.

When it comes to range, the missile—launched from a ship or aircraft—reigns supreme. Undeniably, this is a German story. Development began in 1932 at a laboratory in Kummersdorf. The V-1 and V-2 rockets, developed under the supervision of German engineer Wernher von Braun, are well remembered. The Henschel Hs 293 anti-ship missile—developed by the Henschel Flugzeugwerke aircraft plants in Berlin and responsible for sinking its first victim, the Royal Navy escort ship *Egret*—is frequently cited; however, it was essentially a radio-controlled glide bomb with a profile strikingly similar to certain modern drones.

The effectiveness of missiles is well established, and they are standard equipment on all frontline warships.

Their use became widespread starting in the 1970s. Engaging a target requires the ability to detect it and guide the munition toward it. For a long time, this was done visually. Fighting tops—some of them armored—were mounted high on the masts to allow for the greatest possible visibility, unobstructed by cannon smoke or shell splashes.

The Barr & Stroud rangefinder appeared in 1892, followed by the first centralized fire-control systems in 1895. However, the true breakthrough was radar. Although the first patent for an electromagnetic (EM) detection system was filed in 1904 by the German Christian Hülsmeyer (Teleobiloskop), its range remained insufficient.



© Marine nationale

A French air-defense frigate (FDA) with its imposing air-surveillance radar.

The development of the magnetron in 1921—an American invention—changed the game. The first ship equipped with radar appeared in 1931. Radar underwent rapid development in England at the start of World War II, playing a decisive role in the Battle of Britain against the Luftwaffe. In 1951, the improvement offered by Doppler radar—again originating in America—provided excellent capability for detecting moving objects on the water's surface or in the air.

However, electromagnetic waves barely penetrate underwater, and the emergence of submarines in the late 19th century necessitated the development of an underwater detection capability in response. The merchant marine also had a keen interest in this for navigation safety: continuous measurement of the depth beneath the keel and long-range iceberg detection following the trauma of the Titanic.

Studies on sound propagation in water had begun as early as 1822 with the French physicist Jean-David Colladon and his friend, the mathematician Charles Sturm. At that time, underwater bells were used as sound sources, and acoustic horns served as hydrophones. A technological breakthrough occurred with the piezoelectric detector during World War I (developed by the Frenchmen Paul Langevin and Constantin Chilowski), followed by the 1917 development of the quartz ultrasonic transducer by the Canadian Robert William Boyle. The initial detection trials conducted in Toulon yielded successful results. This marked the beginning of ASDIC—which would come into widespread use during World War II against German sub-



A Thales Captas sonar on board a French FREMM multimissions frigate.

marines—before eventually being superseded by the term “sonar.”

THE PERENNIAL CHALLENGE OF DETERMINING POSITION AT SEA

At sea, determining one's position is paramount. This is essential not only for obvious reasons of nautical safety but also for optimizing navigation time, coordinating the convergence of convoys at a rendezvous point, programming a ballistic missile launch by inputting the exact starting coordinates, and so on.



A sextant.

In 1626, European officers estimated their position using a compass heading (a technology dating back to the 12th century), a rough speed estimate, and timekeeping provided by a 24-hour sandglass or a mercury clepsydra. Pendulum clocks mounted on gimbals offered some improvement. This form of dead reckoning could be corrected by measuring latitude—a value obtainable in the Northern Hemisphere by observing the altitude of the North Star or the sun at its meridian passage, using instruments such as the astrolabe and later the sextant. Longitude, however, remained highly imprecise.

As commercial shipping became vital to the economy, the ability to control routes and travel times offered a distinct economic advantage. In 1714, the British Parliament promised a substantial reward to anyone who could accurately measure longitude. In 1731, Hadley's double-reflecting octant enabled the measurement of lunar distances. In 1736, John Harrison unveiled his marine longitude timepiece. Timekeeping

made great strides with the advent of chronometers; while initial sea trials took place in 1767 with Pierre Leroy, their true development did not occur until the 1870s and 1880s. With accurate timekeeping established, determining one's position via three lines of position—a principle discovered in 1837 by an American captain and formalized as a method by Marcq Saint-Hilaire in 1875—provided sufficient precision for the era.

However, this method relies on weather conditions and is unsuitable for a submarine conducting long patrols while submerged. Another technique would solve this problem: the inertial navigation system. By measuring accelerations and angular deviations along three axes, it is possible to calculate one's position relative to the starting point at any moment.

Physicist Léon Foucault had created the gyroscope in 1852, alongside his famous pendulum that measures the Earth's rotation. The first gyrocompass truly practical for navigation was developed by the German inventor Hermann Anschütz-Kaempfe in 1907, though it remained sensitive to effects caused by changes in the ship's speed or heading. His compatriot Max Schuler explained the phenomenon and the means to compensate for it. Mechanical gyrocompasses still operate on this principle. By adding acceleration measurements along the three axes, the construction of an inertial navigation system is completed. The principle of inertial guidance was used by the Germans in V-2 missiles. It enables submarines to navigate safely beneath the ice.



A French Suffren-class nuclear-powered attack submarine.

Of course, finding one's way around today seems trivial, given that our watches or phones are equipped with GPS sensors providing positioning accurate to within a meter or so. Yet this is the result of a truly epic scientific and industrial journey, combining physics ...more advanced technology (general relativity, atomic clocks) to the space industry. It began in the United States under the direction of the Department of Defense in 1973. The first satellite was launched in 1978. Since then, Europe, Russia, and China have caught up.

However, GPS signals can be jammed, making the system vulnerable in war zones. Today, laser inertial navigation systems and high-precision clocks make it possible to maintain navigational accuracy for days or even weeks. The introduction of quantum technologies may eventually allow for such minimal drift that the need to recalibrate navigation could be eliminated for months at a time.

IN CONCLUSION

Naturally, it is impossible to provide a comprehensive overview of the history of naval technology over the past 400 years in just a few pages. The examples selected demonstrate that the term “technological breakthrough” is somewhat misleading: the evolution of ships and their weaponry is better described as a blend of hard science—driven by scientists—and industrial development led by engineers and naval personnel. It takes years, sometimes even decades, for a breakthrough in physics to translate into a technological revolution.

Much is said these days about quantum technology and artificial intelligence—fields rich in innovation. Yet, quantum physics dates back to the early 20th century, and the mathematical theory behind LLMs has been under development for over sixty years. Their practical applications—which may seem to have been slow to emerge—are now advancing at a rapidly accelerating pace that must be kept up with; it is because the French Navy has embraced innovation for nearly 400 years that it has been able to maintain its operational capabilities and performance.

The Turkish supersonic combat drone Kizilelma, designed for carrier-based operations.



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THE NEW NAVAL BATTLEFIELDS

Drones, hypersonic missiles, detection systems, underwater weaponry, cyberspace, and artificial intelligence—the new naval battlefields are the focus of an innovation race whose effects are already being felt in ongoing conflicts.

BY ALEXANDRE SHELDON-DUPLAIX

Autonomous systems are nothing new in the naval sector. Automated self-defense systems and the onboard intelligence found in torpedoes are examples of a long-established form of decision-making autonomy, comparable to that seen in today's drones.

For drones, the shift stems notably from the transition from remotely operated to autonomous models—particularly in the case of underwater drones, which have seen improvements in endurance and the ability to carry out missions in highly challenging environments.

A new milestone was reached in the 2020s with the deployment of armed drones—whether surface, aerial-maritime, or underwater. Costs,

weight, and energy consumption are falling, while computing power is skyrocketing. The Ukrainian campaign to retake Snake Island from Russian occupation in May 2022 illustrates the capabilities of this new weapon.

THE RISE OF NAVAL DRONES

A pivotal development for navies is the deployment of drones from the sea. They are no longer merely assets operating above the maritime domain; they are becoming integral components of naval forces. Recent mine-countermeasure programs—such as the SLAMF system developed in France for several European navies—illustrate this evolution.

At the same time, dedicated drone-carrying vessels are emerging, designed to operate aerial, surface, or underwater systems. Turkey, South Korea, Portugal, and the United Kingdom are developing or studying various types of naval platforms dedicated or adapted to their deployment.

The real shift in recent years lies less in the advent of the drone itself than in its widespread adoption and integration across all domains of naval warfare. At the high end of the spectrum, Turkey is developing its first supersonic combat drone capable of operating from its aircraft carrier. Meanwhile, at the other end, low-cost, “expendable” systems are evolving into loitering munitions capable of shooting down other drones or helicopters.

NAVAL SURFACE DRONES

Similarly, the applications for unmanned surface vehicles (USVs) are diversifying; they are carrying military payloads and replacing manned platforms in numerous operational areas (mine warfare, reconnaissance, and anti-surface or anti-submarine warfare). The use of surface drones as munitions has also re-emerged. While

explosive-laden boats—inspired by the fireships of the age of sail—played only a marginal role in the past, their return to the battlefield has been foreshadowed by recent events: the attack on a US destroyer by a Yemeni suicide boat in 2000, and the neutralization at sea—a first—of a Saudi frigate by a Houthi surface drone in 2017.

Everything is accelerating with the war in Ukraine and the conflict in the Middle East. Since January 2024, surface drones such as the Ukrainian Magura V5 and its successors have sunk several Russian warships. Infrared technologies, navigation systems, and satellite communications have enhanced their effectiveness, prompting many countries—whether belligerents or not—to embark on developing their own combat drones.

SOPHISTICATED SHIPBORNE WEAPONS

Russia aims to conduct trials during military exercises in 2025, while the United-States has already developed several generations of surface drones of various sizes for diverse missions. Recently, Washington issued a tender for vessels comparable to those used by Ukraine, with the aim of equipping Taiwan to counter a potential Chinese invasion. In July 2026, three US surface drones destroyed an Iranian shipyard.

Another revolution lies in the increasingly sophisticated weaponry carried by USVs. A missile-armed Ukrainian drone shot down a Russian jet fighter and a helicopter, while the “Sea Baby” model, equipped with six rocket launch tubes, can engage a naval or coastal target. In the field of intelligence, another surface drone carries aerial drones linked by fiber optics.

For mine countermeasures, Germany deployed the first drone system in the 1980s: three mine-sweeping drones accompanying a command vessel helped reduce personnel

The Ukrainian Magura V5 surface drone.



© MinDef Ukraine

The Belgian mine warfare vessel *Oostende*, equipped with drones.



© MinDef Belgique

exposure. Today, like Belgium and the Netherlands, the French Navy and the Royal Navy are adopting surface drones using Thales's future mine countermeasures system (SLAMF). China is following the same path to protect itself against Taiwanese mine-laying.

In the realm of combat rescue, an American Saronic surface drone rescued the crew of an Apache helicopter in 2026 after it was shot down by an Iranian aerial drone in the Strait of Hormuz. And for intelligence and data acquisition—above, below, and on the seabed—drones such as Exail's DRix are used by numerous navies.

Eventually, surface drones will take on much more ambitious roles. In the United States, the United Kingdom, and France (via the updated Military Programming Law), the goal is to gradually build a hybrid fleet. Other major navies are investing heavily in these technologies, such as China and Israel.

For, as Admiral Caudle, the US Chief of Naval Operations, points out: "It is not the platforms but the munitions that decide the outcome of a battle." The USX-1 *Defiant*, launched in 2025, illustrates this point: it is equipped with a 57 mm gun and is designed to deploy anti-ship missiles or anti-submarine weaponry.

COUNTER-DRONE OPERATIONS

As a prime target for aerial and surface drones, the Russian fleet initially increased the number of light weapon mounts on its vessels and stepped up electronic countermeasures. This proved successful against the threat posed by the TB-2 Bayraktar drones acquired by Ukraine.

Inexpensive quadcopter drones also excel at intercepting aerial drones, complementing more costly missiles.

To counter surface drones, Russia is deploying patrol boats armed with rapid-fire guns, as well as aerial and surface drones equipped with optical sensors to escort and protect high-value assets. Additionally, to defend its ports, a modular barrier known as Aurelia—consisting of floats and a net—aims to immobilize drone engines. The development of mini-torpedoes is also underway. To counter this growing threat, most major navies are developing ship-borne capabilities for multilayered defense. Effectors range from jammers and interceptor drones to lasers, guns, and missiles.

UNDERWATER

Another major development concerns unmanned underwater vehicles (UUVs). Ukraine plans for them to replace some of its surface drones, which have become too vulnerable. It is already deploying the Marichka, a multi-functional drone with a range of approximately 500 nautical miles and a payload of about one ton. It has been used notably against the Crimean Bridge's supports and against Russian naval forces.

Acting as submarine auxiliaries, drones boost survivability by providing intelligence or serving as decoys. Submarine-launched aerial drones can provide reconnaissance and—soon—attack other submarines and surface vessels.

Conversely, underwater drones will also play a role in coastal defense. Whether armed or equipped solely with sensors, they will be able to patrol for weeks near a coastline requiring defense or surveillance. Russia even plans to submerge small nuclear power plants to supply defensive drones along the Northern Sea Route, making incursions by foreign submarines more difficult.

TOWARDS A MORE TRANSPARENT OCEAN

China already possesses several underwater drones designed to protect its approaches,

including the HSU100—equipped with sonar and torpedoes—and the AJX002, which reportedly carries mines. Like China, most advanced navies are developing large, long-endurance underwater drones (XLUUVs): the British Excalibur, French DDO, Israeli Blue Whale, American Orca, and others.

In terms of sensors, passive sonars are benefiting from advances in signal processing that extend detection ranges, despite the increasing stealth of platforms.

Non-acoustic detection is also playing a greater role (magnetic signatures, thermal variations, and radioactive or electromagnetic traces). Meanwhile, SQUID (Superconducting Quantum Interference Device) sensors mounted on drones could improve detection in high-noise environments, such as the approaches to Taiwan and the Bashi Channel north of the Philippines.

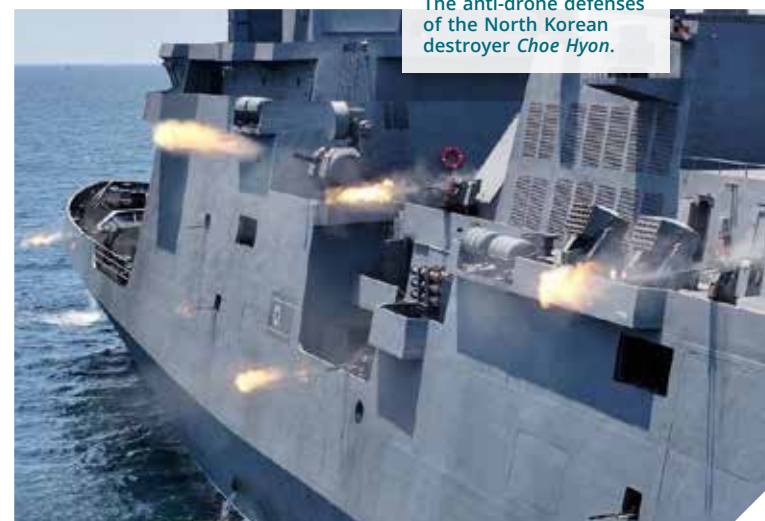
As for aerial drones deployed by submarines, they will enable better over-the-horizon target designation for missiles. This will allow torpedoes as well as supersonic and hypersonic cruise missiles to be launched from greater distances.

Finally, for close-range submarine defense, optically guided devices launched from the water could put an end to the invulnerability of aircraft. Hyper-velocity missile-torpedoes—which travel within a gas bubble and are currently in service with the Russian and Chinese navies (and possibly the Iranian navy)—could see widespread proliferation.

COMMUNICATION AND NAVIGATION

To support the development of underwater drones, we can expect a proliferation of very low-frequency (VLF) communication stations to complement acoustic or optronic systems, which are heavy energy consumers. Furthermore, blue-green laser technology (offering high data rates) will soon allow a

The anti-drone defenses of the North Korean destroyer *Choe Hyon*.



© KONA



The British underwater drone Excalibur.

© Royal Navy

attack submarines and surface vessels fitted with a universal launcher, including corvettes. The Kinzhal, meanwhile, is an air-launched weapon deployed from the MiG-31K.

For its part, the Chinese People's Liberation Army possesses nine types of hypersonic anti-ship missiles, some of which were unveiled during the Victory Day parade on September 3, 2025: four land-launched ballistic missiles (DF-21D, DF-26, DF-17, DF-27) and one land-launched cruise missile (CJ-1000); one air-launched missile (YJ-21); and three ship- or submarine-launched missiles (YJ-17—a surface-vessel variant of the

submarine to receive messages while nearing the surface, without exposing itself.

Navigation is also set to benefit from laser technology, enhancing the precision of gyroscopes and compasses by making them immune to gravitational acceleration. Meanwhile, inertial navigation systems will leverage quantum technologies to reduce drift and enable navigation independent of celestial or satellite-based position updates.

HYPERSONIC AND BALLISTIC MISSILES

Until recently, no cruise missile exceeded three times the speed of sound at low altitude. However, in 2018, the Russian president unveiled the Zircon and Kinzhal hypersonic missiles, designed to strike land and naval targets. They underwent testing in the Arctic in 2019 and 2020.

Even without a nuclear warhead, their speed and the plasma envelope surrounding them enable them to destroy high-value, hardened strategic targets. Moscow and New Delhi are co-developing a hypersonic missile tailored to Indian requirements—the Brahmos II—which incorporates technologies and components from the Zircon.

The Zircon is reported to accelerate up to Mach 9 and has a range of 1,000 kilometers. Intended to replace the Granit anti-aircraft carrier missile—which is vulnerable to anti-missile interceptors—it is slated to eventually equip nuclear-powered



Launch of a Russian hypersonic Zircon missile.

© MinDef Russie

DF-17—YJ-19—submarine-launched—and YJ-20—for surface vessels).

The DF-21D and DF-26 are anti-ship ballistic missiles with ranges exceeding 1,450 km and 5,000 km, respectively. Beijing touts the truck-mounted CJ-1000 as the world's first operational hypersonic cruise missile, predating Russia's Zircon. With a range of 6,000 km and a speed of Mach 6, it is designed to strike high-value targets, such as aircraft carriers, with precision.

Equipped with a hypersonic glide vehicle, the DF-17 reportedly has a range of between 1,800 and 2,500 km. It can reach military bases belonging to the United States and its allies along the First Island Chain. A scaled-down version, the YJ-17, is intended for Type 055 and 052D destroyers. Like the YJ-20—fired from a submarine or a Type 055 or 052D destroyer—or the YJ-19—launched from the 533 mm torpedo tubes of submarines lacking vertical launch silos.

All these missiles are designed primarily to strike carrier strike groups. Since over-the-horizon radars cannot pinpoint the exact location of an aircraft carrier, they must be used in conjunction with satellites and reconnaissance drones.

THE WESTERN SIDE

On the American side, the Intermediate-Range Conventional Prompt Strike (IRCPS or CPS) system is designed to deliver powerful munitions with a range exceeding 2,735 km and speeds greater than Mach 5. Considered a non-nuclear strategic weapon, this hypersonic missile is expected to be reserved for high-priority, heavily defended targets such as command posts, air bases, radar sites, missile batteries, and fuel or ammunition depots. Still under development, it is slated to equip the three Zumwalt-class destroyers and the battleships of the future Trump class.

Other hypersonic missiles are being developed for the US Army and US Air Force, such as the Blackbeard, Tactical Boost Glide (TBG), Air-launched Rapid Response Weapon (ARRW), and Hypersonic Air-Breathing Weapon Concept (HAWC) programs.

Firing of an Aster 30 Block 1 NT missile.



© MBDA

In France, the ASN4G is under development. It is an airborne hypersonic nuclear air-to-surface missile. It is scheduled to enter service around 2035 on the future Rafale F5, replacing the ASMPA-R.

To counter hostile ballistic missiles, the US Navy relies on the SM-3 Block IIA anti-aircraft missile—a system also adopted by the Japanese Navy. It also has the potential to intercept satellites in low Earth orbit. Complementing this, the SM-6 provides terminal ballistic missile defense, while its air-to-air variant can counter hypersonic missiles.

China possesses of an SM-3 analogue, the HQ-26 missile, on board the Type 055 cruisers.

In Europe, the Aster 30 Block 1 NT missile demonstrates a medium-range ballistic missile and hypersonic (Mach 5) anti-missile capabilities. The European Union is also contributing to the funding of the HYDIS and HYDEF interceptor projects.

Finally, in Russia, the S-300V Antey-300V (9K8, SA-12 Gladiator/Giant) and S-300VM Antey-2500 (9K81M, SA-23 Gladiator) systems can engage short- and medium-range ballistic missiles (up to 2,500 km). The naval version is designated S-300F. The S-400 Triumph (SA-21 Growler) can also be used for missile defense, as can the

S-500 air defense system, which is tasked with intercepting ballistic missiles and shooting down military satellites in low Earth orbit. No navalized version exists yet.

THE SPACE RACE

Today, space interacts with all other domains. Space assets are critical for degrading and jamming adversary communications while ensuring one's own protection. However, operational timeframes differ vastly: a few seconds in cyberspace, a few minutes in space, and a few days—or even weeks—at sea.

For US command, the absolute priority in the space domain is countering the threat posed by hypersonic missiles to carrier strike groups.

For Moscow, the objective is, conversely, to track adversary carrier strike groups. Its ocean reconnaissance constellation, Liana, comprises five satellites launched into a circular orbit at an altitude of 800 to 900 km—an altitude difficult for anti-satellite weapons to reach.

The same objective applies to the Chinese oceanic naval surveillance constellation, which consists of optronic satellites and synthetic aperture radar satellites.

Chinese YJ-20 hypersonic missiles.



ARTIFICIAL INTELLIGENCE AND QUANTUM COMPUTING

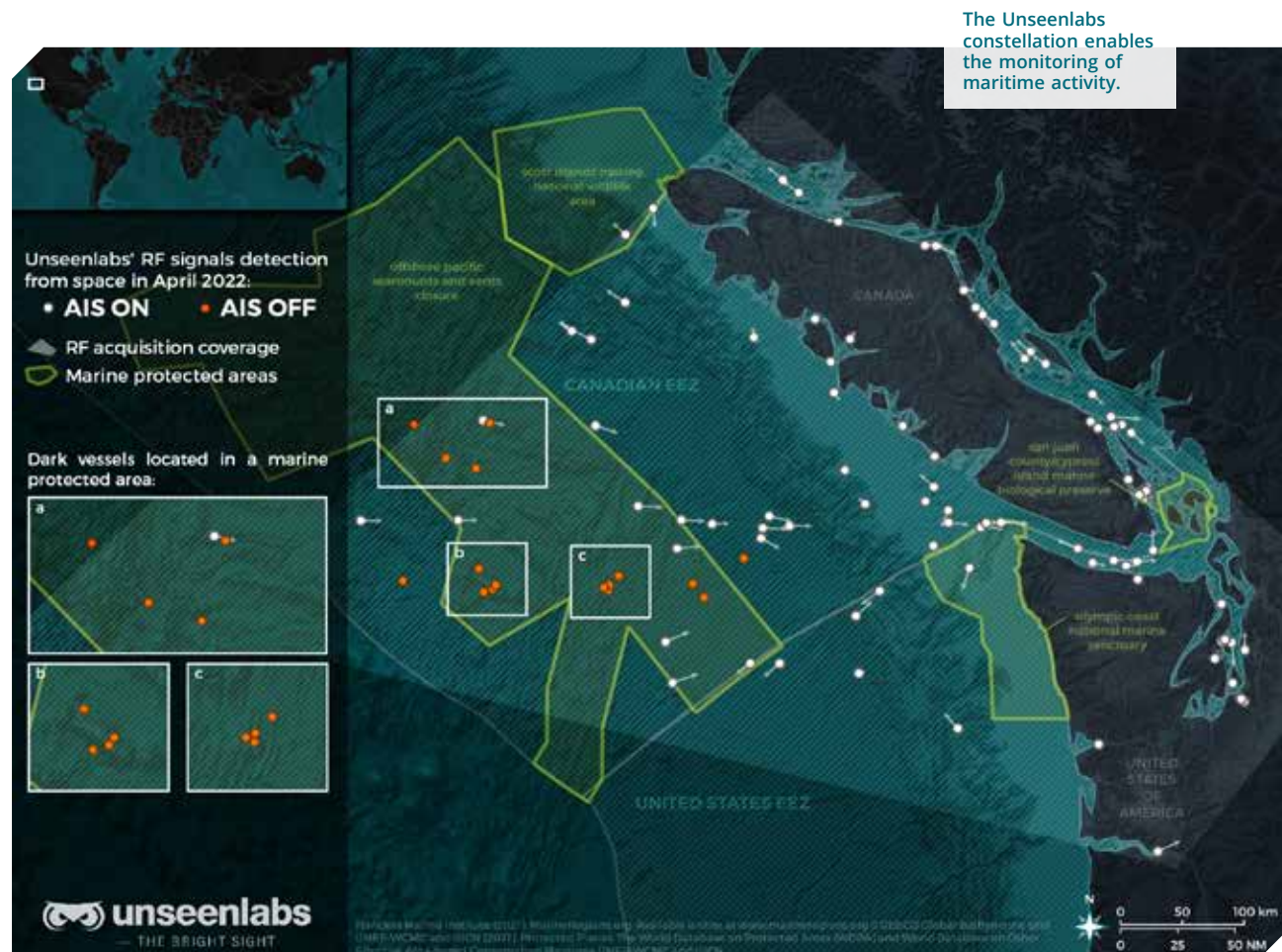
Artificial Intelligence (AI) is a combination of methods and models used to solve analytical problems under conditions of uncertainty. In the military and naval sectors, AI technologies are gradually replacing automated control systems (ACS) and decision support systems (DSS).

Unlike automation, which solves computational problems within known frameworks, AI processes vast amounts of data (big data) under conditions of incomplete information and within dynamic environments. Furthermore, AI possesses self-learning and adaptive capabilities that enhance the software itself.

However, AI decision-making processes remain opaque, and its use in autonomous weapons systems raises ethical and accountability issues. According to the US National Defense Strategy, AI will “change society and, consequently, the nature of warfare.” An AI strategy was therefore adopted by the United States in 2019, followed by NATO in 2021 and most major technological powers.

AI technologies can be applied to numerous naval missions, including: multi-sensor fusion; detection of weak signals; information and decision superiority; platform autonomy (drones) and swarming; collaborative combat; electronic warfare; counter-drone operations; missile defense; mine warfare; predictive maintenance; and logistics.

The advent of quantum computing is poised to exponentially increase AI capabilities in the coming years. Just as it will open up new possibilities in the fields of navigation, cryptography, and communications, or underwater detection...



2016-2025
10 YEARS OF NAVAL SHIPBUILDING

EURONAVAL



NUMBER OF VESSELS PRODUCED BY COUNTRY, AND CUSTOMER COUNTRIES, BETWEEN 2016 AND 2025

COUNTRY	Nbr. of ships	Japan	75	Argentina	3	Kiribati	2	Bangladesh	15	Mexico	10	Peru	7	Egypt	3
China	363	Germany	59	Angola	2	Solomon Islands	1	Bangladesh	15	South Africa	9	Malaysia	7	Ecuador	2
Thailand	6	Singapore	2	Indonesia	42	Marshall Islands	0	Vietnam	14	Tanzania	4	Malaysia	7	Ecuador	2
Pakistan	10	Israel	5	Philippines	2	Cook Islands	1	Vietnam	8	Djibouti	2	Thailand	6	Chile	2
Nigeria	3	Indonesia	2	Indonesia	40	Fidji	3	Nigeria	2	South Africa	3	Thailand	6	Chile	2
Malaysia	4	Egypt	7	Italy	36	Australia	14	Jamaica	4	Israel	9	North Korea	6	Portugal	2
Djibouti	1	Saudi Arabia	25	Qatar	7	Türkiye	31	Romania	13	Philippines	8	North Korea	6	Portugal	2
China	333	Germany	16	Malta	1	Türkiye	15	Tunisia	4	Honduras	1	Myanmar	6	Croatia	2
Bangladesh	4	Algeria	2	Italy	18	Turkmenistan	1	Netherlands	1	Netherlands	9	Myanmar	6	Croatia	2
Algeria	2	South Korea	56	Indonesia	2	Romania	2	Pakistan	6	United Kingdom	1	Poland	6	Sweden	1
United States	161	Philippines	4	Finland	1	Qatar	8	United Arab Emirates	2	Nicaragua	2	Poland	5	Sweden	1
Israel	2	South Korea	52	Egypt	4	Pakistan	2	United Kingdom	13	Mexico	2	Algeria	1	Venezuela	1
United States	159	France	53	Algeria	3	Nigeria	3	United Kingdom	11	Lithuania	1	Norway	5	Venezuela	1
Russia	112	Senegal	4	Australia	35	Taiwan	23	Ireland	2	Jamaica	2	Norway	5	Algeria	1
Vietnam	4	Poland	1	Vanuatu	1	Taiwan	23	Iran	12	Colombia	8	Brazil	5	Algeria	1
Russia	104	Philippines	1	Tuvalu	2	Spain	18	Iran	12	Honduras	1	Brazil	5	Bulgaria	1
India	2	Nigeria	1	Tonga	2	Peru	1	Singapore	11	Guatemala	1	Pakistan	5	Bulgaria	1
Algeria	2	Morocco	4	Timor Oriental	2	Kuwait	2	Tonga	1	Colombia	6	Pakistan	5	Denmark	1
India	79	Greece	1	Western Samoa	1	Ireland	2	Singapore	8	United Arab Emirates	8	Greece	4	Denmark	1
Sri Lanka	2	France	30	Papua New Guinea	1	Spain	5	Oman	2	Kuwait	3	Greece	4	Kazakhstan	1
India	77	United Arab Emirates	2	Palau	1	Belgium	1	Canada	10	United Arab Emirates	5	Azerbaijan	3	Kazakhstan	1
Japan	77	Egypt	3	Oman	2	Australia	2	Canada	10	Peru	7	Azerbaijan	3		
Philippines	2	Belgium	1	Micronesia	2	Saudi Arabia	5	Mexico	10			Egypt	3	Grand total	1,363

NUMBER OF VESSELS PRODUCED BY COUNTRY AND BY PERIOD

	2024-2025	2022-2023	2020-2021	2018-2019	2016-2017	Total
 South Africa	1	4	2		2	9
 Algeria		0	0	0	1	1
 Germany	5	12	8	4	30	59
 Australia	8	10	9	4	4	35
 Azerbaijan				2	1	3
 Bangladesh		9		4	2	15
 Brazil	1	2	1	1		5
 Bulgaria	1					1
 Canada	3	2	3	2		10
 Chile	1	0			1	2
 China	84	31	45	87	116	363
 Colombia	1	1	1	1	4	8
 North Korea	2	3		1		6
 South Korea	11	6	12	11	16	56
 Croatia	1			1		2
 Denmark					1	1
 Egypt		2	1			3
 United Arab Emirates	1		4		3	8
 Ecuador					2	2
 Spain	3	6	4	4	1	18
 United States	38	32	30	32	29	161
 France	12	11	5	10	15	53
 Greece		1	1		2	4
 India	18	10	15	16	20	79

	2024-2025	2022-2023	2020-2021	2018-2019	2016-2017	Total
 Indonesia	2	13	11	6	10	42
 Iran	4	3	3	1	1	12
 Israel	2	6	1			9
 Italy	9	14	4	3	6	36
 Japan	11	16	13	16	21	77
 Kazakhstan					1	1
 Malaysia		1	3		3	7
 Mexico			1	3	6	10
 Myanmar	1		3		2	6
 Norway	1	2		1	1	5
 Pakistan		2	1	1	1	5
 Netherlands	3	1	1	4		9
 Peru	1		2	1	3	7
 Poland		3		2	1	6
 Portugal				2		2
 Romania	5		1	6	1	13
 United Kingdom	1	1	4	4	3	13
 Russia	31	21	20	23	17	112
 Singapore	1			5	5	11
 Sweden		1				1
 Taiwan	5	10	6		2	23
 Thailand				5	1	6
 Türkiye	12	6	7	5	1	31
 Venezuela				1		1
 Vietnam		1	5	1	7	14
Grand total	280	243	227	270	343	1,363

Military or coast guard vessels over 200 tonnes delivered between January 1, 2016, and December 31, 2025. Source: Flottes de combat.

VALUE OF VESSELS PRODUCED
BY COUNTRY AND BY PERIOD

	2024-2025	2022-2023	2020-2021	2018-2019	2016-2017	Total M\$
 South Africa	76	170	30		18	294
 Algeria					50	50
 Germany	1,060	4,970	3,466	1,225	4,095	14,816
 Australia	550	193	182	2,006	4,312	7,243
 Azerbaijan				118	59	177
 Bangladesh		38		20	40	98
 Brazil	1,000	1,035	1,000	35		3,070
 Bulgaria	275					275
 Canada	2,314	1,234	2,022	1,576		7,146
 Chile	210				54	264
 China	45,981	17,088	16,758	20,027	24,114	123,968
 Colombia	440	5	5	5	69	524
 North Korea	1,400	930		30		2,360
 South Korea	4,071	459	3,236	1,739	2,889	12,394
 Croatia	12			12		24
 Denmark					80	80
 Egypt		810	405			1,215
 United Arab Emirates	300		40		20	360
 Ecuador					10	10
 Spain	468	2,677	914	455	86	4,600
 United States	26,794	20,108	29,111	27,919	33,064	136,996
 France	4,238	4,046	3,069	2,714	4,088	18,155
 Greece		125	125		1,100	1,350
 India	6,012	6,597	1,970	2,309	4,291	21,179

	2024-2025	2022-2023	2020-2021	2018-2019	2016-2017	Total M\$
 Indonesia	126	373	602	128	777	2,006
 Iran	900	480	270	200	50	1,900
 Israel	40	120	60			220
 Italy	6,4077,575	2,400	2,440	3,640	22,462	
 Japan	2,978	3,301	5,386	3,619	3,390	18,674
 Kazakhstan					20	20
 Malaysia		52	42		42	136
 Mexico			423	141	92	656
 Myanmar	423		70		140	633
 Norway	206	412		30	30	678
 Pakistan		65	15	90	50	220
 Netherlands	47	11	15	50		123
 Peru	107		34	107	94	342
 Poland		605		225	86	916
 Portugal				160		160
 Romania	1,042		90	426	136	1,694
 United Kingdom	1,800	1,800	2,250	3,979	5,479	15,308
 Russia	10,830	6,850	8,499	4,898	3,201	34,735
 Singapore	4			1,000	950	1,954
 Sweden		300				300
 Taiwan	849	524	561		82	2,016
 Thailand				227	20	247
 Türkiye	2,973	1,509	720	753	203	6,158
 Venezuela				50		50
 Vietnam		9	69	200	498	776
Grand total	123,933	84,471	83,839	78,914	97,420	469,033

Value in millions of US dollars of combat, support, and paramilitary vessels exceeding 200 tonnes delivered between January 1, 2016, and December 31, 2025. Source: Flottes de combat.



MAJOR IMPORTING COUNTRIES AND THEIR SUPPLIERS BETWEEN 2016 AND 2025

COUNTRY	Millions of US dollars	United States	64	Australia	360	Spain	37	South Africa	30	Nicaragua	20
Egypt	9,250	Thailand	1,600	Singapore	350	Malaysia	144	Malta	47	Netherlands	20
Italy	4,800	China	1,600	Greece	660	China	144	Italy	47	Lithuania	12
Germany	3,100	Indonesia	1,502	France	660	Morocco	140	Tanzania	36	Netherlands	12
France	1,350	Italy	1,298	Bangladesh	640	France	140	South Africa	36	United Kingdom	11
Pakistan	4,792	Germany	204	China	640	Senegal	110	Mexico	30	Netherlands	11
China	3,232	Vietnam	1,300	Nigeria	449	France	110	Netherlands	30	Solomon Islands	10
Romania	810	Russia	1,300	Türkiye	240	Finland	90	Fidji	30	Australia	10
Türkiye	750	Philippines	1,214	China	180	Italy	90	Australia	30	Papua New Guinea	10
Qatar	4,755	South Korea	818	Vietnam	20	Peru	86	Romania	29	Australia	10
Italy	4,450	Israel	160	France	9	Spain	86	Türkiye	29	Vanuatu	10
Türkiye	305	Indonesia	100	Argentina	285	Kuwait	75	Poland	27	Australia	10
Algeria	3,285	Japan	86	France	285	Spain	55	France	27	Palau	10
Germany	2,000	France	50	Turkmenistan	250	United Arab Emirates	20	Tonga	24	Australia	10
Russia	600	United Arab Emirates	1,122	Türkiye	250	Jamaica	66	Australia	20	Western Samoa	10
China	360	France	850	Belgium	243	Vietnam	36	Singapore	4	Australia	10
Italy	300	Romania	272	France	184	Netherlands	30	Timor Oriental	20	Cook Islands	10
Poland	25	Singapore	902	Spain	59	Honduras	65	Australia	20	Australia	10
Saudi Arabia	2,770	Germany	902	Tunisia	200	Israel	60	Tuvalu	20	Guatemala	5
Spain	2,000	India	850	Romania	200	Colombia	5	Australia	20	Colombia	5
Germany	770	Australia	846	Sri Lanka	200	Angola	54	Micronesia	20		
Israel	2,523	Spain	846	India	200	France	54	Australia	20		
Germany	2,459	Oman	710	Ireland	195	Djibouti	50	Kiribati	20		
				United Kingdom	158	China	20	Australia	20		
										Grand total	41,834

Over the past 10 years, five countries have alone accounted for nearly 50% of global imports of combat, auxiliary, or paramilitary vessels: Egypt, Pakistan, Qatar, Algeria, and Saudi Arabia. In addition to China, their main suppliers are European countries such as Italy, Germany, France, and Spain.

Note: the figures presented here may differ slightly from economic reality when a shipyard operates under license from a foreign designer. For example, regarding German-designed vessels built in Colombia—where contract details were unavailable—we attributed the entire value added to Colombia.

NUMBER OF UNITS PRODUCED
BY CATEGORY OF VESSELS AND PERIOD

		2024-2025	2022-2023	2020-2021	2018-2019	2016-2017	Total
	AG/WAG	14	5	3	6	4	32
	AGB/WAGB	4	1	2	1	4	12
	AGI/AGOS/AGM	2	5	2	3	2	14
	AGS/AGOR	6	5	4	9	5	29
	AH/WAH	2	1				3
	AOR/AE	12	5	5	5	5	32
	ASR/ATS/ATF	10	2	5	26	12	55
	AX		1	1	1	3	6
	CV/CVN	1	2		1	3	7
	DDG	24	13	15	16	17	85
	FFG	28	27	15	10	20	100
	FS/FFLG	27	23	36	25	24	135
	LHA/LHD	2	3	4		2	11
	LPD/LSD	10	5	2	9	5	31
	LSM/LCU	9	9	10	6	11	45
	LST	1	3	7	5	5	21
	M/LUSV	2					2
	ML		4			1	5
	MS/MH	3	8	7	1	6	25
	PC/WPC	22	40	44	63	93	262
	PM/PGG	14	19	6	6	8	53
	PS/WPS	48	39	36	63	84	270
	SSB	1	1	2			4
	SSBN/SSTN	3	5	2	2	1	13
	SSK	18	11	13	9	20	71
	SSN/SSGN	17	6	6	3	8	40
	Grand total	280	243	227	270	343	1,363

Military and coast guard vessels of over 200 tonnes delivered between January 1, 2016, and December 31, 2025. Source: Flottes de combat.

VALUE OF SHIPBUILDING IN MILLIONS US\$
BY CATEGORY OF VESSELS AND PERIOD

		2024-2025	2022-2023	2020-2021	2018-2019	2016-2017	Total
	AG/WAG	753	294	242	420	510	2,219
	AGB/WAGB	1,630	66	2,400	1,200	516	5,889
	AGI/AGOS/AGM	1,100	746	392	1,625	1,100	4,963
	AGS/AGOR	1,874	399	864	2,061	339	5,537
	AH/WAH	450	400				850
	AOR/AE	4,394	2,230	1,090	1,213	1,323	10,250
	ASR/ATS/ATF	2,880	733	133	5,833	2,654	12,233
	AX		90	90	25	410	615
	CV/CVN	6,000	8,200		3,600	18,100	35,900
	DDG	25,020	16,000	27,900	25,162	21,532	115,614
	FFG	13,518	11,824	6,097	5,007	8,534	45,060
	FS/FFLG	9,461	9,364	8,886	6,370	4,941	39,022
	LHA/LHD	3,500	3,200	5,765		1,050	13,515
	LPD/LSD	3,577	2,610	363	3,917	2,160	12,627
	LSM/LCU	453	134	351	306	550	1,794
	LST	70	35	292	707	588	1,992
	M/LUSV	250					250
	ML		28			150	178
	MS/MH	302	736	896	285	848	3,067
	PC/WPC	900	1,183	1,346	1,672	2,671	7,771
	PM/PGG	772	1,689	1,297	206	565	4,529
	PS/WPS	7,704	3,727	4,375	6,672	6,555	29,033
	SSB	620	800	1,240			2,660
	SSBN/SSTN	2,790	3,880	3,290	3,290	500	13,750
	SSK	8,546	5,933	6,260	3,942	8,623	33,304
	SSN/SSGN	27,370	10,170	10,270	5,400	13,200	66,410
	Grand total	123,933	84,471	83,839	78,914	97,420	469,033

Military and coast guard vessels of over 200 tonnes delivered between January 1, 2016, and December 31, 2025. Source: Flottes de combat.

APPENDICES: ALL COMBAT SHIPS
IN SERVICE

COUNTRY	Aircraft carrier	Assault Helicopter carrier	Strategic submarine	Attack submarine	Large combat	Small combat	Offshore patrol vessel	Coastal patrol vessel	Mine warfare vessel	Large amphibious vessel	Other amphibious vessel	Grand total
CHINA	3	4	7	62	158	68	14	1	35	9	57	418
UNITED STATES OF AMERICA	11	9	14	54	111		4		4	29	47	283
RUSSIA			12	37	55	47	4	1	35		18	209
INDONESIA				4	21	25	16	35	11	8	28	148
INDIA	2		2	18	34	25	16	18		1	16	132
JAPAN	2	5		13	50	15			30		1	116
SOUTH KOREA		2	0	21	30	29			14		18	114
TÜRKIYE		1		13	26	17	16		14		23	110
NORTH KOREA			2	23	7	30		43				105
TAIWAN				4	25	49			11	3	6	98
EGYPT		2		8	19	21	1	24	3		5	83
IRAN				24	7	27		1		3	17	79
FRANCE	1	3	4	5	21		13	3	15		1	66
VIETNAM				6	5	21	5	12	6		11	66
GREECE				9	13	14	8	2	3		5	54
BRAZIL		1		5	8		7	22	4	2	2	51
BANGLADESH				2	13	2	8	13	5		8	51
MYANMAR				2	6	26	4	10	2	1		51
MEXICO					1	1	33	11			4	50
ITALY	1	1		8	16		9		9	3		47
AUSTRALIA		2		6	8		2	22	4	1		45
MALAYSIA				2	4	14	16		4	5		45
THAILAND	1			1	7		13	11	5	2	4	44
SINGAPORE				6	12	6	12		4	4		44
UNITED KINGDOM	2		4	5	13		8		6	3		41

COUNTRY	Aircraft carrier	Assault Helicopter carrier	Strategic submarine	Attack submarine	Large combat	Small combat	Offshore patrol vessel	Coastal patrol vessel	Mine warfare vessel	Large amphibious vessel	Other amphibious vessel	Grand total
UNITED ARAB EMIRATES					3	20			2	1	15	41
SPAIN		1		1	11		13	3	6	2		37
COLOMBIA				4	6		5	15			6	36
GERMANY				6	17				12			35
PAKISTAN				8	15	4		1	5			33
MOROCCO					7	4	6	12			4	33
SAUDI ARABIA					16	13			3			32
ROMANIA					7	3		15	7			32
PERU				6	7	8	1	4	1	2	1	30
CHILE				4	8	3	4	6		1	3	29
PHILIPPINES					7		7	3		2	10	29
POLAND				1	3	3	1		16		5	29
ALGERIA				6	9	7			3	1	2	28
ARGENTINA				2	13	2	11					28
NIGERIA					5	2	4	11	2		2	26
CANADA				4	12		5		4			25
ISRAEL				6	7	8			1		2	24
VENEZUELA					1	5	3	4			11	24
NORWAY				6	4	6	1		4			21
SWEDEN				4		9	1		6			20
NETHERLANDS				3	10			1	3	2		19
BAHRAIN					2	6	1	5			3	17
AZERBAIJAN					1			10	2		4	17
QATAR		1			4	10					1	16
PORTUGAL				2	6		4	4				16
SRI LANKA					3	2	2	8			1	16
FINLAND						8			8			16
OMAN					5		4	3			2	14
ECUADOR				2	2	9	1					14
BULGARIA					4	3			5		2	14

COUNTRY	Aircraft carrier	Assault Helicopter carrier	Strategic submarine	Attack submarine	Large combat	Small combat	Offshore patrol vessel	Coastal patrol vessel	Mine warfare vessel	Large amphibious vessel	Other amphibious vessel	Grand total
DENMARK					9		3		1			13
SOUTH AFRICA			3		4		3	1	2			13
KUWAIT						10					3	13
TURKMENISTAN						3		9				12
TUNISIA						6	4	1				11
SYRIA						6			2		3	11
BRUNEI				4				4			2	10
GHANA							3	6				9
IRELAND							6	2				8
BELGIUM					2		2		4			8
KENYA							4	2			2	8
UKRAINE								1	7			8
TANZANIA								8				8
NEW ZEALAND					2		2	2		1		7
EQUATORIAL GUINEA					2			4			1	7
LITHUANIA							4		3			7
CROATIA						5					2	7
BAHAMAS								6			1	7
DJIBOUTI								3			3	6
ERITREA											6	6
CUBA						2	3					5
NAMIBIA							1	4				5
MAURITANIA								4			1	5
ESTONIA							1	1	3			5
SENEGAL							3				2	5
LATVIA									5			5
IRAQ						1		4				5
LIBYA					1	1					2	4
PANAMA							1	1			2	4
CAMEROON								4				4

COUNTRY	Aircraft carrier	Assault Helicopter carrier	Strategic submarine	Attack submarine	Large combat	Small combat	Offshore patrol vessel	Coastal patrol vessel	Mine warfare vessel	Large amphibious vessel	Other amphibious vessel	Grand total
CONGO								4				4
CAMBODIA					0			4				4
DOMINICAN REPUBLIC							1	2				3
MAURITIUS							1	2				3
LEBANON								1			2	3
SUDAN								3				3
MALTA							1	1				2
ANGOLA											2	2
CYPRUS							2					2
URUGUAY									2			2
CÔTE D'IVOIRE								2				2
MONTENEGRO								2				2
SEYCHELLES								2				2
ALBANIA							1					1
GUYANA							1					1
GUATEMALA											1	1
HONDURAS											1	1
NICARAGUA								1				1
SLOVENIA								1				1
PAPUA NEW GUINEA											1	1
SURINAM								1				1
PALAU								1				1
BENIN								1				1
GABON								1				1
PARAGUAY								1				1
KIRIBATI								1				1
WESTERN SAMOA								1				1
Grand total	23	32	45	406	889	606	330	433	343	86	382	3,575

METHODOLOGY

This study is based on data collected and published by Flottes de combat (Naval Fleets), a digital monitoring and intelligence tool published by Infomer —Groupe Ouest-France. Established in 1897, *Flottes de combat* currently lists nearly 17,000 naval platforms, along with their weapons, equipment, and shipborne or shore-based aircraft.

Platforms. The Euronaval study on global naval shipbuilding covers all units exceeding 200 tonnes delivered to the navies or paramilitary naval forces of any country (coast guards, border guards, militias, maritime and navigation police, etc.).

However, in Part I (orders of battle and fleet tonnage), only combat and amphibious vessels are counted.

Vessel classification. The categories and acronyms used in this study adopt a simplified version of NATO nomenclature (see the NATO codes used on the following page). The prefix “W” is used to designate paramilitary or civil vessels of interest.

Exclusions. This study does not cover units with a tonnage of less than 200 tonnes, even though they may constitute the bulk of combat capabilities for certain forces. Furthermore, Parts II and IV (shipbuilding activities) only include platforms built specifically for military or paramilitary use. Vessels resulting from the conversion of merchant ships (tankers, container ships, or offshore oil support vessels) are excluded.

Number of units. In Part I (orders of battle), only vessels **officially commissioned** by December 31, 2025, are included. In the remainder of the study (shipbuilding activities), all units delivered by that date are counted—meaning those for

which **ownership has officially** been transferred from the shipyard to the client (often a defense procurement agency, or sometimes the end-user service itself).

Tonnage. Calculated tonnages are based on the vessels’ light displacement or, for submarines, their surfaced displacement.

Values. Construction and program costs are derived from information published at the time of acquisition or in program status reports. For countries that do not disclose this information (Algeria, Bangladesh, China, Colombia, North Korea, Indonesia, Iran, Pakistan, Vietnam, etc.), costs are estimated based on assessments of the price of onboard systems and local production costs.

Exchange rates. All values are expressed in US dollars, converted at the rates prevailing in June 2026. In the case of Russia, the relatively low values for domestic programs reflect the weakness of the ruble; values for exported vessels may be higher.

For a given type of vessel, values may also vary depending on the country of construction, as illustrated by the output of the Dutch group Damen in South Africa, Colombia, Cuba, the United States, Indonesia, Mexico, Vietnam, and, of course, the Netherlands.

GLOSSARY

The statistics in this study use a simplified NATO classification to describe the main types of vessels over 200 tonnes delivered to or in service with navies worldwide (see the first column of the table below).

Furthermore, to facilitate comparison between the orders of battle or production outputs of different countries, we have created generic categories corresponding to the primary functions of military and coast guard vessels (see the third column).

Unless otherwise specified, the threshold between “large combatant” and “small combatant” is set at 1,000 tonnes light displacement, and the threshold between “offshore patrol vessel” and “coastal patrol vessel” at 500 tonnes.

NATO type	Designation	Category
CVN	Nuclear Aircraft Carrier	Aircraft carrier
CV	Aircraft Carrier	Aircraft carrier
LHA/LHD	Landing ship helicopter	Assault helicopter carrier
SSBN	Nuclear Ballistic Missile Submarine	Strategic submarines
SSTN	Nuclear Strategic Torpedo Submarine	Strategic submarines
SSB	Conventional Ballistic Missile Submarine	Strategic submarines
SSN/SSGN	Nuclear Powered Attack Submarine	Attack submarine
SSK	Attack Submarine (non nuclear)	Attack submarine
DDG	Destroyer Guided Missile	Major combattant
FFG	Frigate Guided Missile	Major combattant
FFLG	Corvette Guided Missile	Major combattant
PGG/PM	Missile Patrol boat	Small combatant
MUSV/LUSV	Medium/Large Unmanned surface vessel	Small combatant
LPD	Landing Platform Dock	Large amphibious ship
LSD	Landing Ship Dock	Large amphibious ship
LST	Landing Ship Tank	Other amphibious ship
LSM	Landing Ship Medium	Other amphibious ship
LCU	Landing Craft Utility	Other amphibious ship
PS/WPS	Patrol ship	Offshore patrol vessel
PC/WPC	Patrol Craft	Coastal patrol vessels
MS/MH	Mine Countermeasures Vessel	Mine warfare
ML	Mine layer	Mine warfare
AOR/AE	Replenishment Ship	Auxiliary ship
ARS/ATS/ATF	Rescue/Towing Ship	Auxiliary ship
AGS/AGOR	Research/Oceanographic Vessel	Auxiliary ship
AGI/AGOS/AGM	Intelligence/Instrumentation Ship	Auxiliary ship
AH	Hospital ship	Auxiliary ship
AX	Training Ship	Auxiliary ship
AG/WAG	Auxiliary miscellaneous	Auxiliary ship
AGB/WAGB	Icebreaker	Icebreaker

Note: the prefix W refers to coast guard, paramilitary, or civilian ships

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