MORNINGSTAR

Defense

Geopolitical tensions are driving a new supercycle for global defense markets.

Table of Contents

Morningstar Equity Research

Loredana Muharremi
Equity Analyst, European Defense & Aerospace

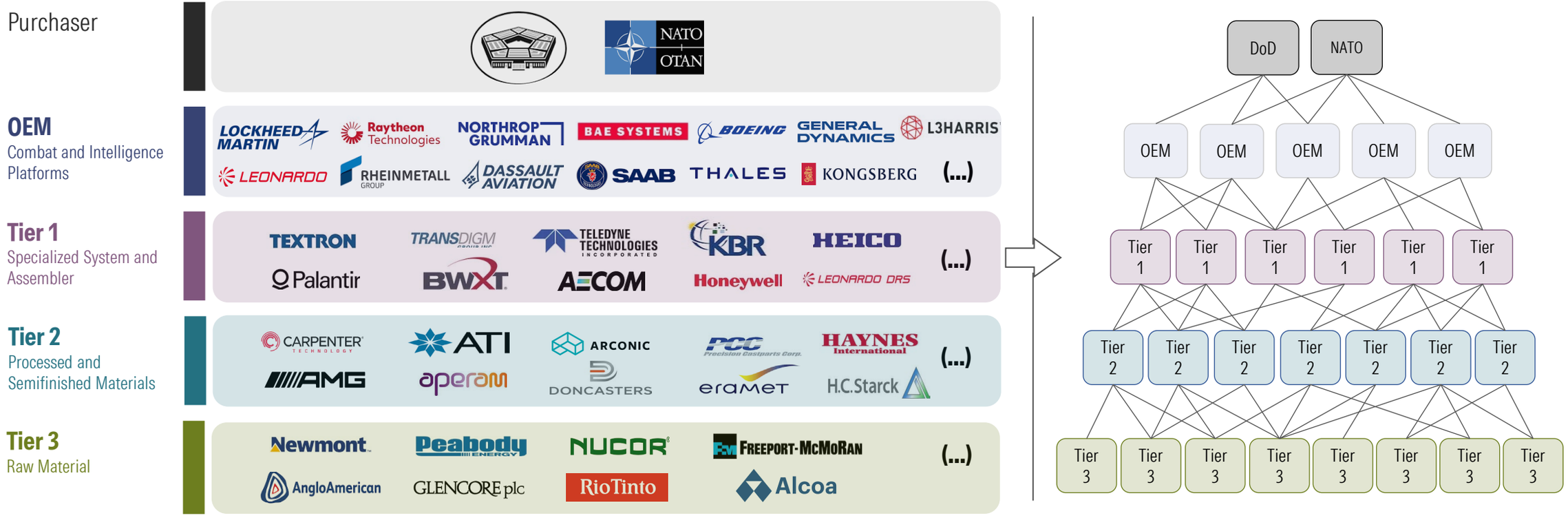
Nicolas Owens
Equity Analyst, US Defense & Aerospace

Andrea Burigana
Associate Equity Analyst

The Defense Industry Features Numerous Multitiered Supply Chains Functioning Simultaneously

The defense industry utilizes complex, multitiered supply chains tailored by technology and scope. The procurement structure involves numerous suppliers at each tier, each specializing in distinct components or processes, increasing complexity. Prime contractors oversee the overall design, development, and assembly of the final product. They are central to the network, collaborating with government entities and engaging lower-tier suppliers under risk-sharing agreements to manufacture defense equipment.

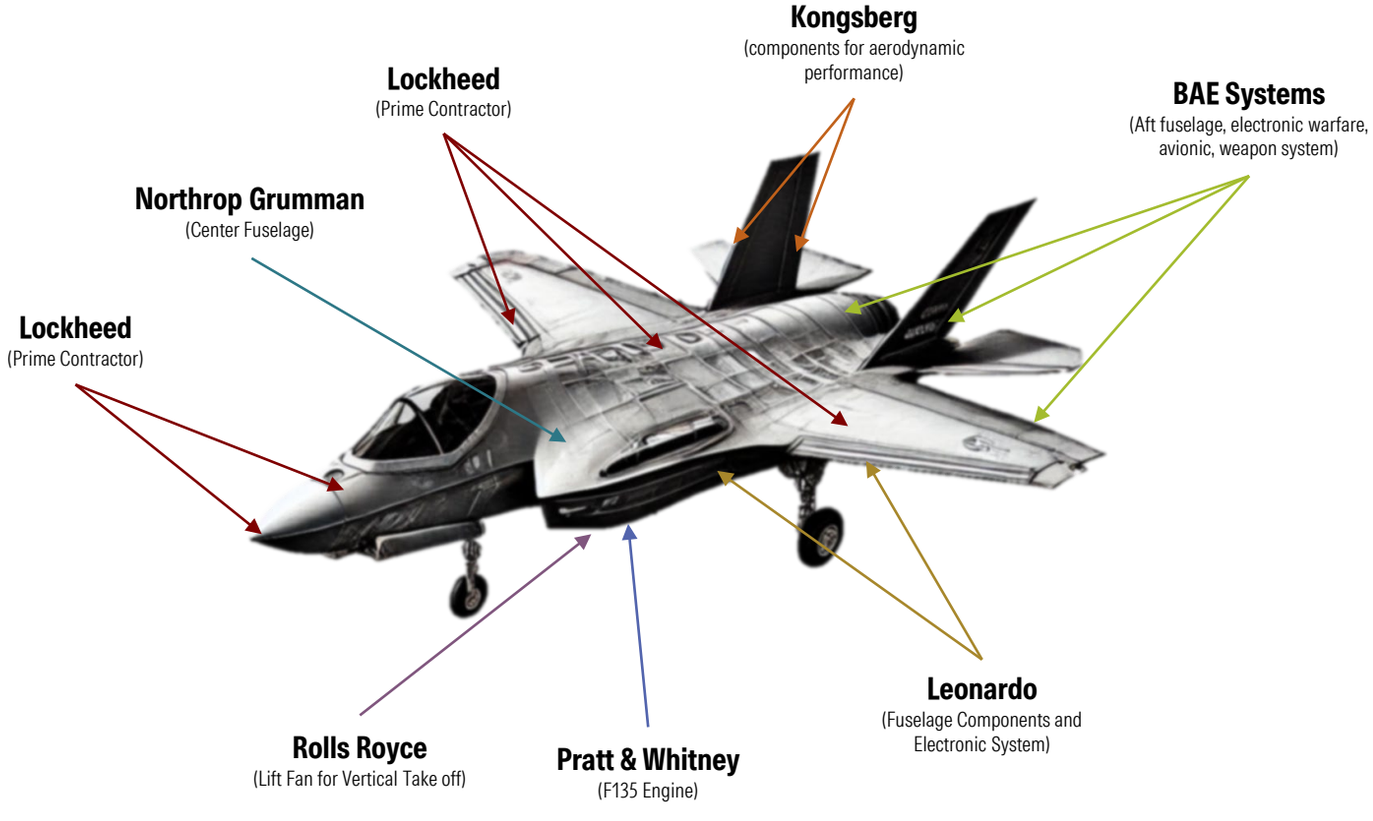
US and European Defense Supply Chain Structure and Relationships of Industry Players by Tier



Source: EU Commission: Defence industrial supply chains and the role of SMEs in the sector; Morningstar.

Supplier Interconnections and OEMs' Limited Oversight Beyond Tier 1 Create Supply Chain Complexity

F-35 Program: Led by Lockheed Martin, With 1,650 High-Tech Suppliers, Including Six OEMs as Tier 1 Partners



The Complexity of the Supply Depends on the Domain
Technological requirements and the scope of the project drive the complexity of the supply chain. Air domain has the highest complexity and the most international footprint. International subcontractors frequently leverage local expertise to comply with the political and economic agreements between the purchasing country and the supplying countries.

OEMs Can Act As Either Prime or Tier 1 Contractors
While Tier 2 and Tier 3 contractors have defined roles, original equipment manufacturers, while typically serving as prime contractors, can also operate as Tier 1 subcontractors, depending on project specifics and strategic partnerships.

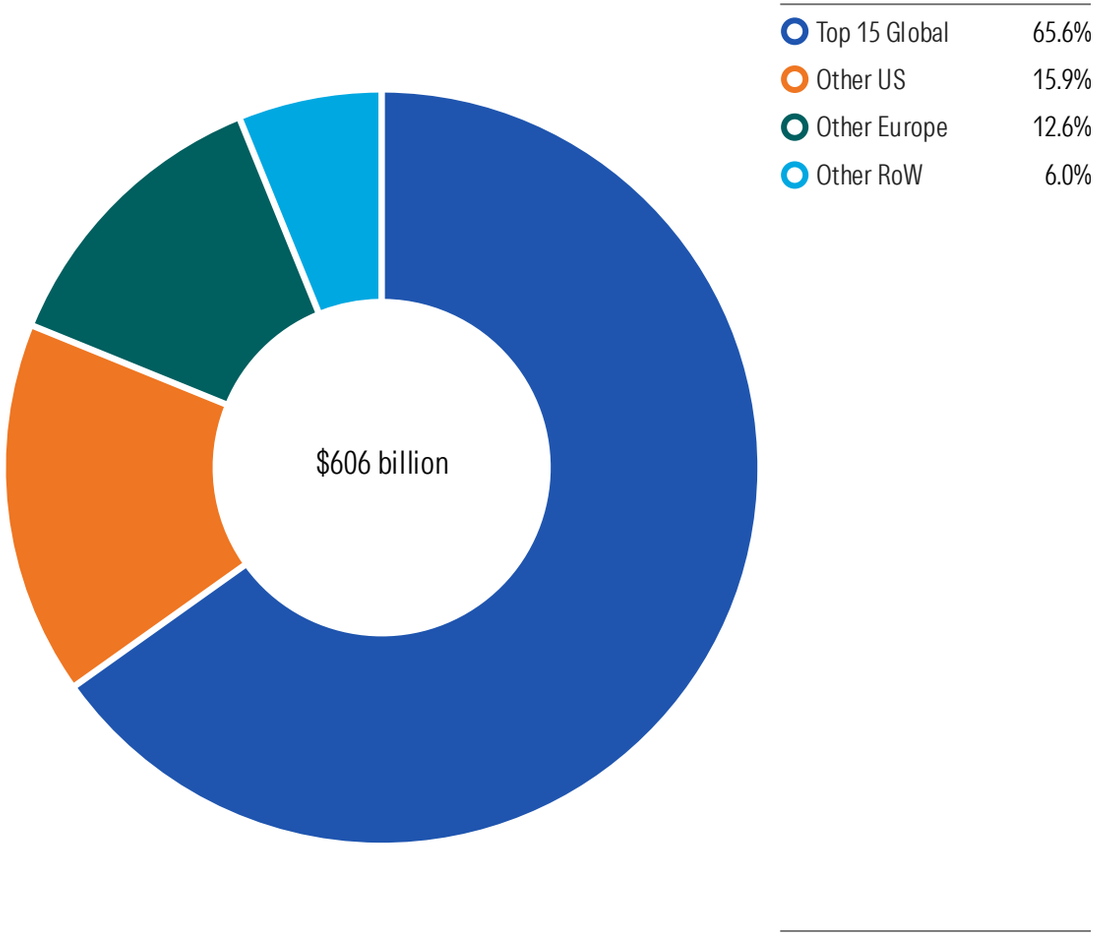
Risk-Sharing Is Becoming Increasingly Significant
These partnerships are strategic agreements in which the parties involved—typically government entities, prime contractors, and sometimes lower-tier suppliers—share the financial, technical, and operational risks associated with developing and producing defense equipment.

Source: Morningstar.

Fifteen Contractors Dominate Market, With US Companies Holding the Largest Share

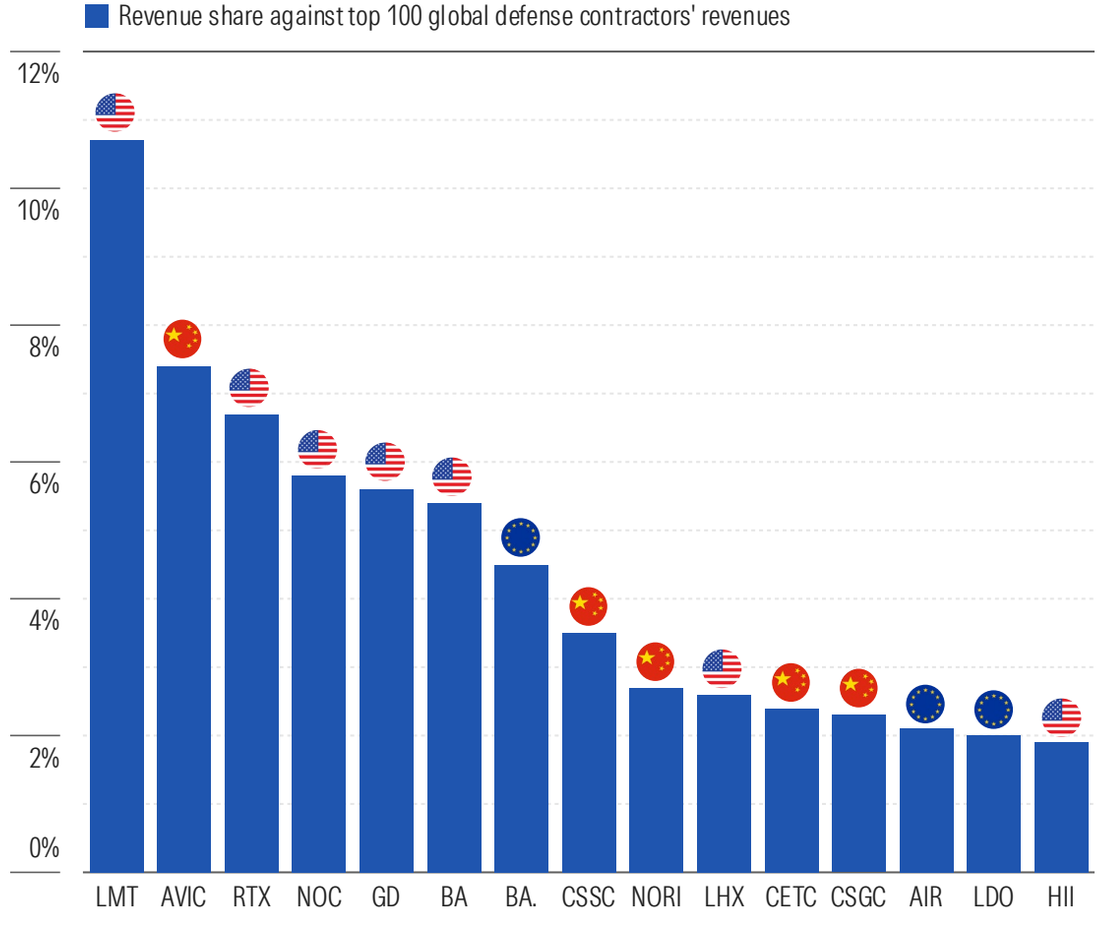
Global Top 100 Defense Contractors by Revenue Share, 2023

A few OEMs with expertise across multiple segments dominate the defense industry.



Top 15 Defense Contractor Revenue Share, 2023

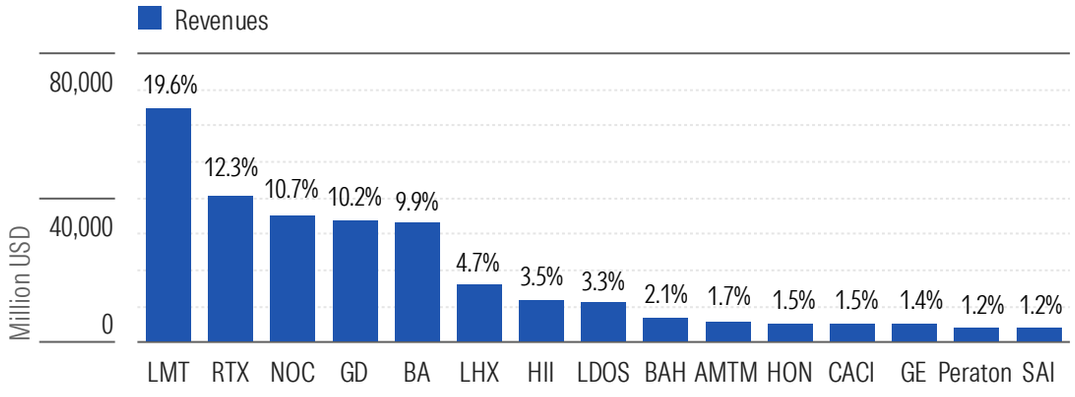
US companies make up 59% of the top 15 by revenue.



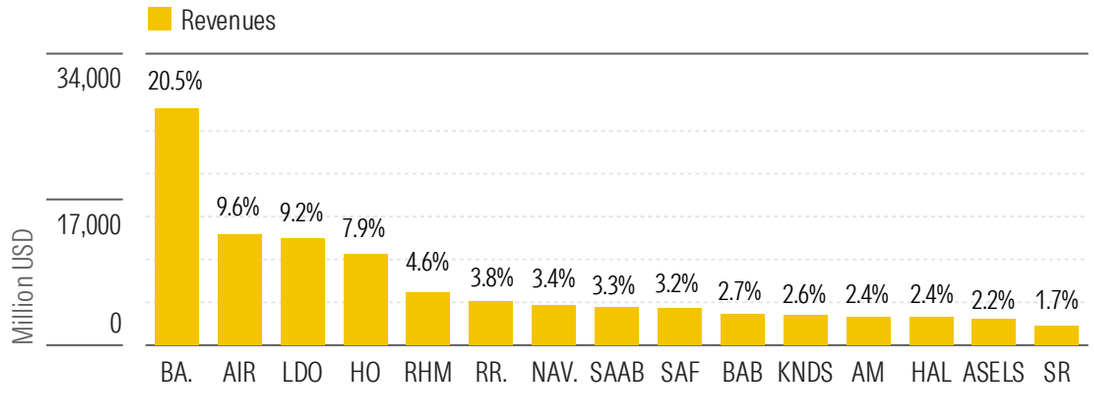
Source: Stockholm International Peace Research Institute, Morningstar.

Top 15 Contractors Largely Unchanged, and Strengthening Their Grip in the Past Decade

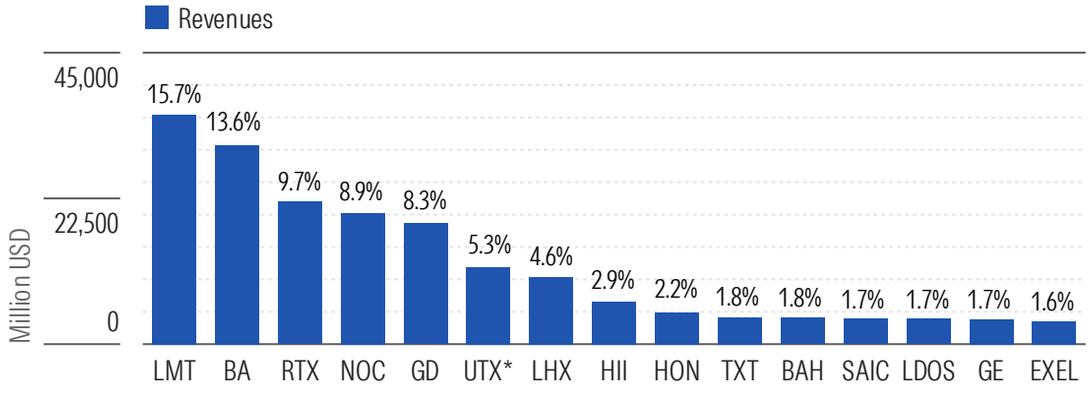
Top 15 US Firms' Revenue, Market Share 2023: Regional Top Five Hold Over 60%



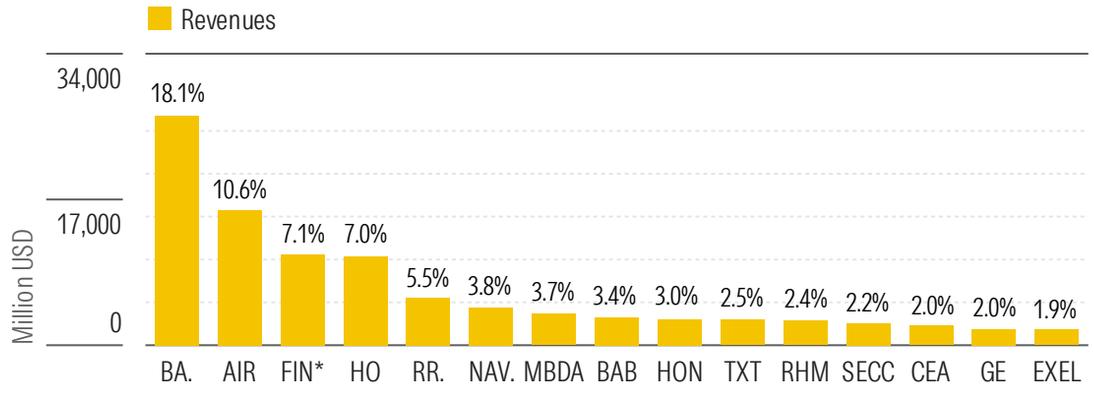
Top 15 EU Firms' Revenue and Market Share 2023: Regional Top Five Hold Over 50%



Top 15 US Firms' Revenue and Market Share 2013: Regional Top Five Hold Over 50%



Top 15 EU Firms' Revenue, Market Share 2013: Regional Top Five Hold Over 40%



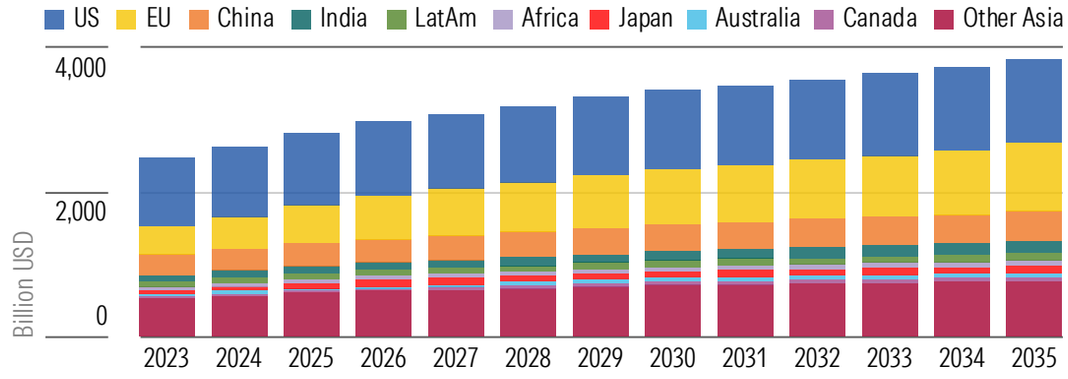
Source: SIPRI, Morningstar.
Note: Finmeccanica changed its name to Leonardo as of Jan. 1, 2017. United Technologies merged with Raytheon in April 2020.

Key Industry Themes

Geopolitical Tension Driving a New Defense Supercycle

Geopolitical tensions, including Russia's invasion of Ukraine and Indo-Pacific conflicts, are fueling a new global defense supercycle. European defense budgets are set to grow 6.8% annually from 2024 to 2035, outpacing the US (1.7%), Russia (3.2%), and China (3.1%) as Europe addresses decades of underinvestment and seeks greater independence from the US. Europe's share of global defense spending is projected to increase from 16% to 22% by 2030, stabilizing through 2035. Meanwhile, the US, having steadily increased defense spending since 2017, is projected to increase its budget in line with GDP, reaching 3.3% by 2035, down slightly from 3.5% in 2024. In the midterm, both regions will prioritize munitions and off-the-shelf equipment to meet near-term needs.

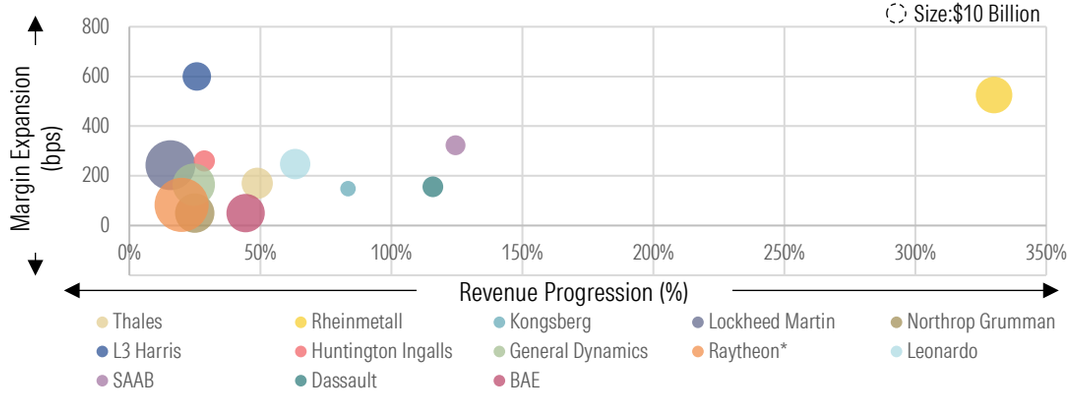
Global Defense Spending 2023-35 (in USD Billions)



Larger Equipment Fleet to Boost Future Profits Through Scale and Aftermarket

The increase in defense spending is expected to boost revenue and profitability for US and European companies, driven by economies of scale from increased production and higher-margin aftermarket services like maintenance and upgrades. In the US, the market share of the top four contractors is expected to decline slightly from 2023 record levels, creating opportunities for smaller OEMs as the US Department of Defense seeks greater diversification. In Europe, the emphasis will be on consolidating fragmented procurement by aiming to source at least 50% of defense equipment from within Europe. Additionally, Europe plans to unify its fragmented national technological and industrial base through collaborative efforts among governments and leading national defense companies.

US and European Contractors Revenue and Margin Evolution, 2024-30



Source: Thunder Said Energy, NATO, Morningstar.
Note: Includes civil business.

Industry Value Drivers

Simplified Financial Statement: Thales (Fiscal-Year 2024)

Pro Forma Income Statement (EUR Millions)	2024	% of Sales	
Revenue 1	20,577		
Cost of Goods Sold 2	13,447	*65%*	*of Sales*
Gross Profit	**7,130**		
Selling, General & Administrative Expenses	693		
Advertising & Marketing Expenses	1,590		
Research & Development 3	1,274	*6%*	*of Sales*
Depreciation & Amortization	1,155		
Adjusted Operating Income	**2,418**	*10%*	*of Sales*
Irregular Cash (Gains)/Losses	(80)		
Operating Income 4	**2,498**		
Net Interest Expense	178		
Income Tax Expense	247	*20%*	*Tax Rate*
(Minority Interest)	(5)		
Net Income	**2,068**		

1 **Revenue:** Defense contractors operate in a unique market where their primary customer is the government, leading to a limited customer base and revenue that is closely tied to fluctuating domestic defense budgets and policies. International sales are feasible but subject to strict regulations. Additionally, contractors' revenue is affected by demand surges during conflicts, supply chain disruptions, and the long lead times required for specialized components.

2 **Cost of Goods Sold:** Material costs account, on average, for 45%-65% of operating expenses, increasing during production ramp-ups due to higher work-in-progress inventory. To mitigate supply chain challenges, firms are strategically maintaining larger raw material inventories. Moreover, US and European procurement of some critical raw materials is highly dependent on non-allied countries, adding risk. Personnel costs, including specialized labor and security clearances, make up the second-largest operating expense, ranging from 20% to 30%.

3 **Research and Development:** Investment in R&D is substantial, at about 20% of sales, but most is capitalized, not expensed. Defense contractors benefit from a unique R&D funding model in which governmental clients subsidize most of it.

4 **Operating Income:** Profitability in defense contracting is significantly influenced by the structure of the contracts, which can be either cost-plus or fixed price. Cost-plus contracts reimburse the contractor for expenses plus a profit, with the government bearing the most financial risks. Fixed-price contracts set a predetermined price for the entire project, placing most of the risk on the contractor, but potentially leading to higher profitability.

Source: Company report, Morningstar.

Coverage List and Ratings

Morningstar's Defense Coverage

Company (Ticker)	Market Cap (Billions)	Moat Rating	Uncertainty Rating	Last Close	Fair Value Estimate	Star Rating	P/FVE	P/E	Yield	1-Year Return
Leonardo (LDO)	27 EUR	Narrow	High	47.59	62.60	★★★★	0.74	19.7 times	1.1%	110.9%
Thales Group (HO)	51 EUR	Wide	Medium	248.80	308.00	★★★★	0.80	50.9 times	1.5%	67.3%
Huntington Ingalls Industries (HII)	10 USD	Wide	Medium	255.35	316.00	★★★★	0.80	18.4 times	2.1%	-2.4%
Rheinmetall (RHM)	82 EUR	Wide	Medium	1841.00	2220.00	★★★★	0.82	95.3 times	0.4%	282.3%
BAE Systems (BA.)	6 GBP	Wide	Medium	1899.00	2250.00	★★★★	0.83	29.6 times	1.7%	52.6%
Northrop Grumman (NOC)	75 USD	Wide	Medium	523.83	620.00	★★★★	0.84	20.7times	1.8%	20.9%
Lockheed Martin (LMT)	110 USD	Wide	Medium	469.20	539.00	★★★★	0.87	20.2 times	2.8%	1.3%
General Dynamics (GD)	81 USD	Wide	Low	300.09	313.00	★★★★	0.96	20.8 times	2.0%	4.8%
Dassault Aviation (AM)	23 EUR	Wide	Medium	294.20	334.00	★★★	0.88	25.0 times	1.6%	78.6%
Kongsberg Gruppen (KOG)	280 NOK	Wide	Medium	318.10	320.00	★★★	0.99	44.5 times	0.6%	51.2%
L3 Harris Technologies (LHX)	50 USD	Narrow	Medium	265.51	254.00	★★★	1.04	31.5 times	1.8%	13.4%
Airbus SE (AIR)	146 EUR	Wide	Medium	185.28	165.00	★★★	1.10	33.1 times	1.1%	42.5%
Saab (SAAB B)	257 SEK	Wide	Medium	480.30	436.00	★★	1.09	55.5 times	0.4%	82.0%
RTX Corp (RTX)	202 USD	Wide	Medium	151.50	134.00	★★	1.12	44.4 times	1.8%	46.7%
Aerospace and Defense (Median)							**0.88**	**30.5 times**	**1.7%**	

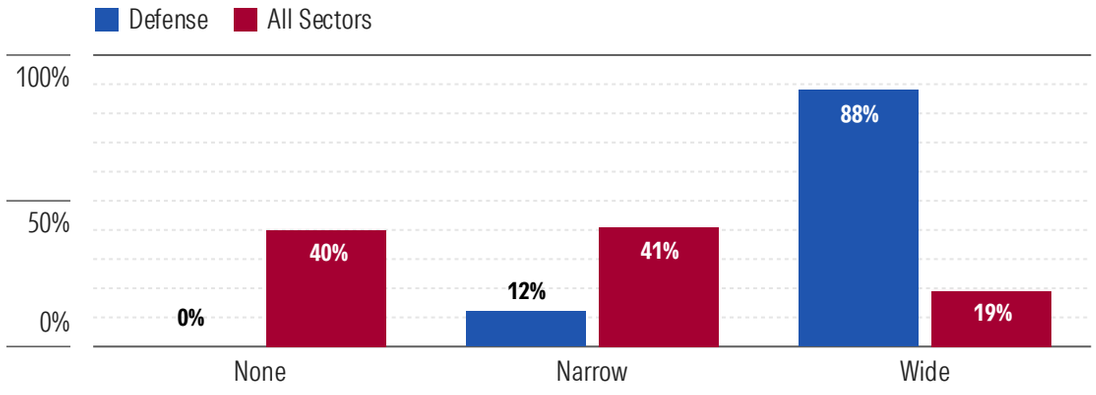
Source: PitchBook.

Economic Moat

Most companies have wide moats from intangible assets and switching costs.

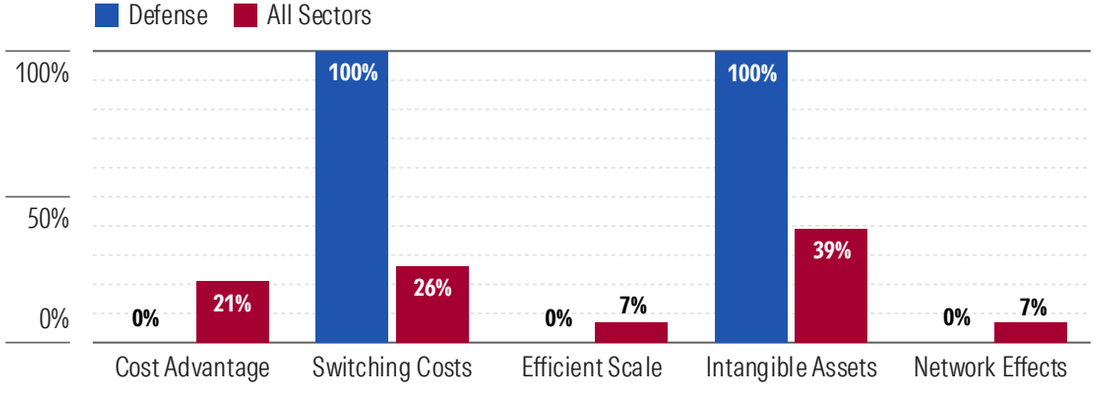
All Companies in Morningstar's Defense Coverage Have a Moat, With Most Boasting Wide Ratings

Defense Has the Highest Concentration of Wide-Moat Companies



Morningstar's defense industry coverage features the highest concentration of companies with economic moats, with predominantly wide moat ratings. Notably, all companies in our defense coverage possess a moat, with 88% (14 out of 16) classified as wide moat—significantly higher than the 19% average across all sectors in our coverage. Wide moats are particularly prominent among large defense contractors, driven by substantial intangible assets and high switching costs. Additionally, we believe the industry is at the early stage of a new decadelong defense budget upcycle, which is poised to reinforce the intensity of these competitive advantages.

Intangibles, Complemented by High Switching Costs, Underpin Strong Moats



All defense companies in our coverage benefit from intangible assets and switching costs shaped by the industry's unique structure. Government regulation and product complexity serve as significant barriers to entry, reinforced by decadeslong product cycles and contract structures that reduce risks for incumbents while effectively excluding alternative suppliers. Moreover, switching costs are considerable for risk-averse customers, who face significant time, costs, and uncertainty when making the transition to new products or suppliers. The strength of these competitive advantages varies, based on regional defense structures, platform characteristics—such as complexity and product life cycle—and the potential for aftermarket revenue generation.

Source: Morningstar.

Defense-Industry Structure and Requirements Foster Intangible Assets and High Switching Costs

Defense System Lifecycle: Leveraging Intangible Assets and Switching Costs

Concept and Technology Development

In this phase, government and military officials define requirements and provide the regulatory and strategic framework within which the project must operate. Defense contractors go through an intense bidding process, developing innovative technologies and conducting preliminary studies to assess feasibility and technology readiness.

Intangible Assets:

Stringent Regulatory Requirements
Stringent government regulations create high barriers to entry, demanding substantial resources and a deep understanding of legal frameworks, which pose challenges for new entrants.

Need for Advanced Technological Expertise
Companies must have a team with specialized skills and the ability to innovate continuously to keep up with fast-evolving technological requirements.

Development and Prototyping

Prime contractors proceed with the advanced development of the system design and technology demonstration. Governments select and award contracts for detailed development and prototyping.

Intangible Assets and Switching Costs:

Development Risk Sharing
Most R&D expenses are borne by clients and partners, minimizing the risk of unproductive R&D and safeguarding returns.

Production and Deployment

Low-rate initial production of the new system begins to test the manufacturing process, resolve any potential production issues, and prepare for full-rate production. Government gives the green light for full-scale production after successful demonstration and testing.

Intangible Assets and Switching Costs:

Intangible Assets From Contract Structures
Initial contracts are often cost-plus, minimizing financial risk for contractors by covering cost overruns. Over time, contracts transition to fixed-price agreements, enhancing profitability as production scales up and efficiencies of scale are realized.

Switching Costs From Contract Structures
The substantial capital and time investments made by defense customers in the early stages of a program make it unlikely for military forces to switch contractors midprogram.

Support and Maintenance

Ongoing maintenance and logistical support are provided to ensure operational readiness. Systems are periodically upgraded and modernized to maintain operational effectiveness and adapt to new challenges.

Switching Costs:

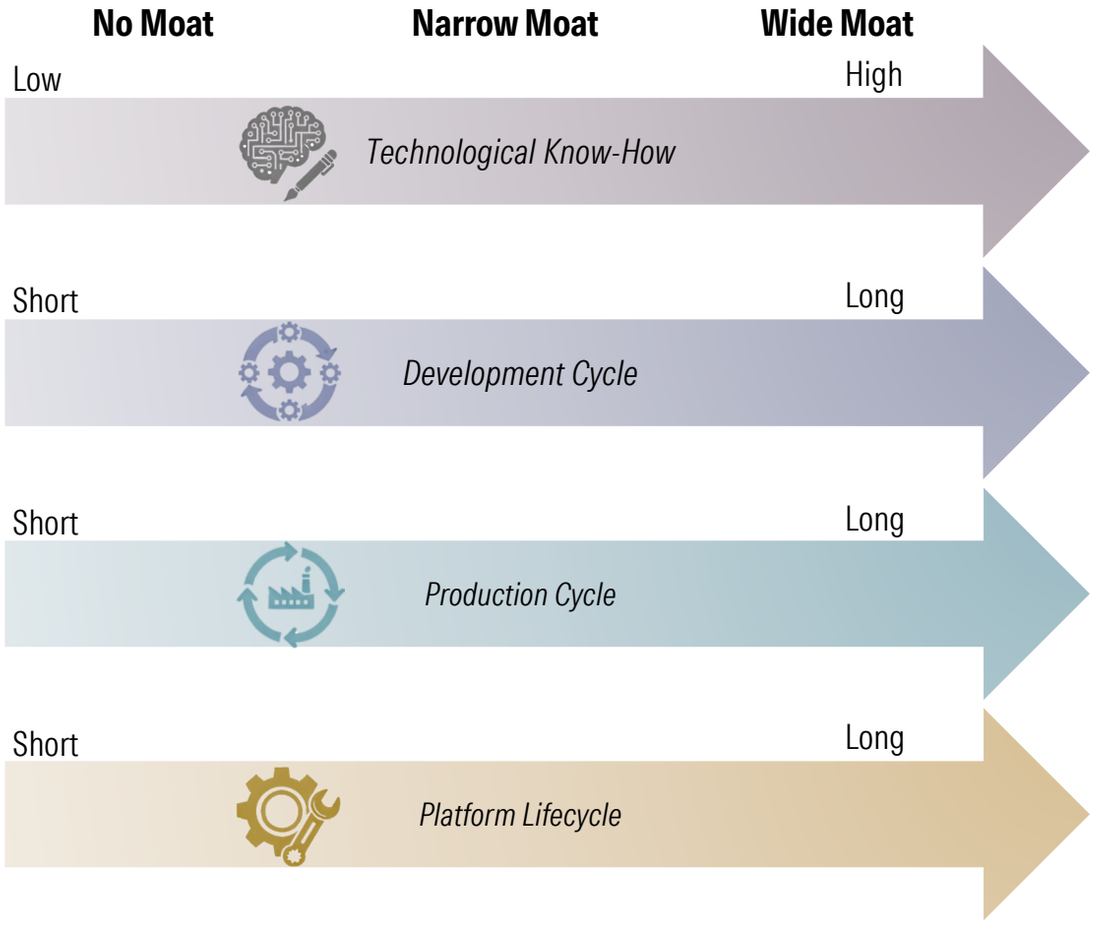
Switching Costs From Proprietary Rights
Due to proprietary rights in spare parts and services such as training, prime contractors secure recurring revenue from maintenance and upgrades required over the extended lifecycle of defense platforms.

Higher Earning Quality
Aftermarket revenue strengthens the moat as it increases the long-term stability and profitability of the division.

Source: Morningstar.

Moat Strength Is Tied to Platform Attributes

Determinants of Economic Moat for Defense Platforms



Technological Know-How Is a Formidable Barrier to Entry

The defense industry is characterized by lengthy sales cycles involving securing government contracts, followed by protracted and expensive product development and testing phases. The costs associated with research and development, testing, and gaining the necessary certifications can be prohibitively high, deterring new entrants.

Long Development Cycles Increases Switching Costs

Development programs in the defense industry can last from two years to several decades. Longer development cycles typically create a stronger economic moat due to high switching costs, making it more practical and cost effective for military clients to continue with existing contractors for modifications rather than starting new programs.

Long Production Cycles Create Monopolistic Advantages

We view short-cycle products like software less favorably than long-cycle products like defense hardware. Securing a contract for defense hardware often grants a company an effective monopoly over the product for the contract's duration due to the specialized requirements and complex nature of defense contracts, which limit the availability of viable alternatives.

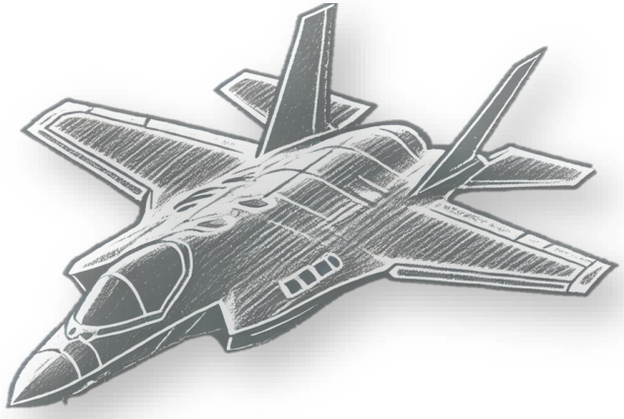
Platforms With Long Lifecycles Generate Aftermarket Opportunities

Some defense platforms can last for more than 20 years, generating aftermarket revenue that increases the division's long-term stability and profitability. This enduring advantage stems from significant switching costs due to the lack of alternatives and proprietary parts and services.

Source: Morningstar.

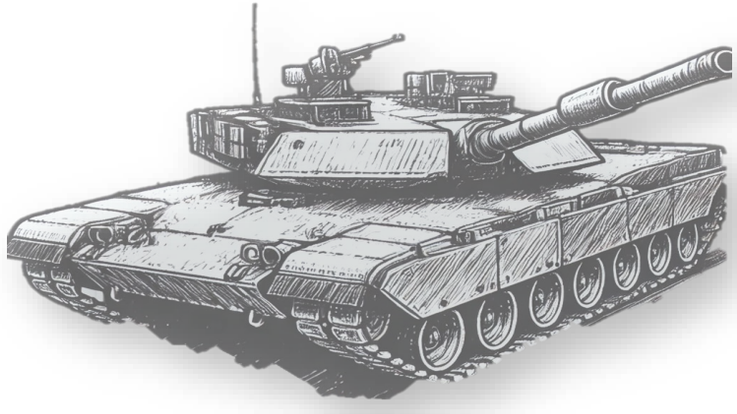
Moat Strength Sources for Selected Platforms

Air Platforms Support Wide Moats



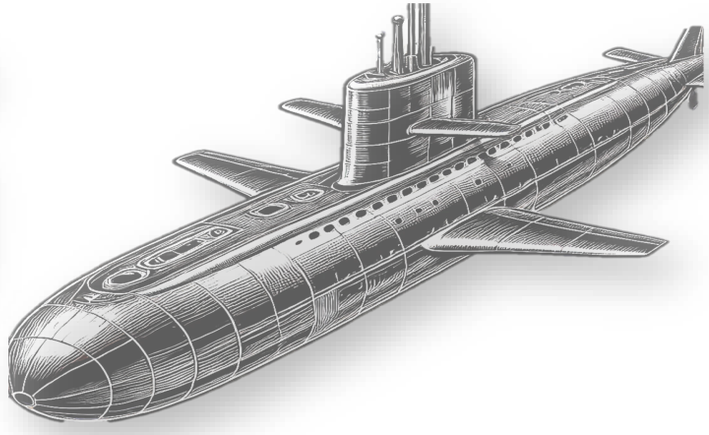
- Very high technical requirements.
- Lengthy development cycles of up to 20 years and material associated costs drive high switching costs.
- Monopolistic advantages from production cycles of up to 40 years. Very high switching costs due to the potentially lethal cost of product failure and difficulty of developing a suitable alternative.
- Long platform lifecycle of 35 years. Planes are sold in combination with support packages that generate high-margin recurring revenue over the plane's lifespan.

Land Vehicle Platforms Support Wide Moats



- Very high technical requirements.
- Lengthy development cycles around 10 years and associated costs drive high switching costs.
- Monopolistic advantages from production cycles of up to 20 years. Very high switching costs due to the potentially lethal cost of product failure and the difficulty of developing a suitable alternative.
- Long platform lifecycle of 45 years, which are sold in combination with support packages that generate high-margin recurring revenue over the plane's lifespan.

Submarine Platforms Support Wide Moats

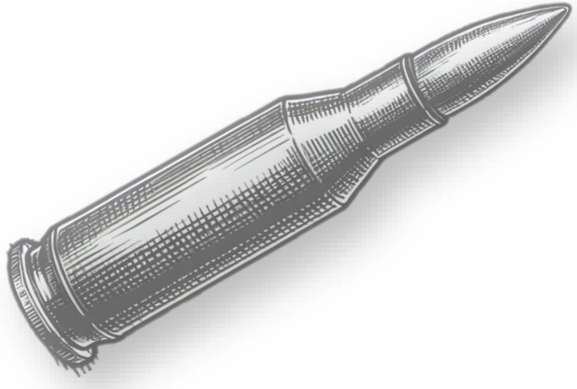


- Very high technical requirements.
- Lengthy development cycles as long as 10 years and associated costs drive high switching costs.
- Monopolistic advantages from production cycles of up to 20 years. Very high switching costs due to the potentially lethal cost of product failure and the difficulty of developing a suitable alternative.
- Long platform lifecycle of 40 years, which are sold in combination with support packages that generate high-margin recurring revenue over the plane's lifespan.

Source: Morningstar.

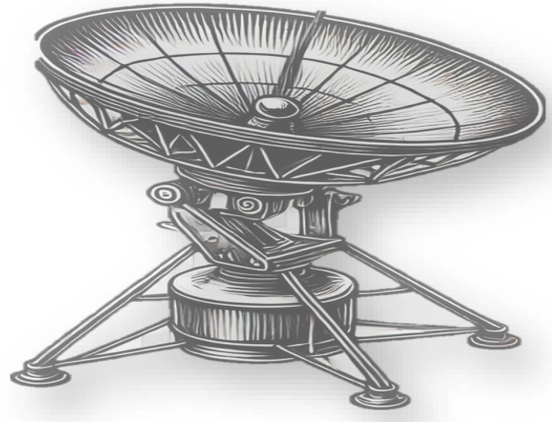
Moat Strength Sources for Selected Platforms

Munitions Support Narrow Moats



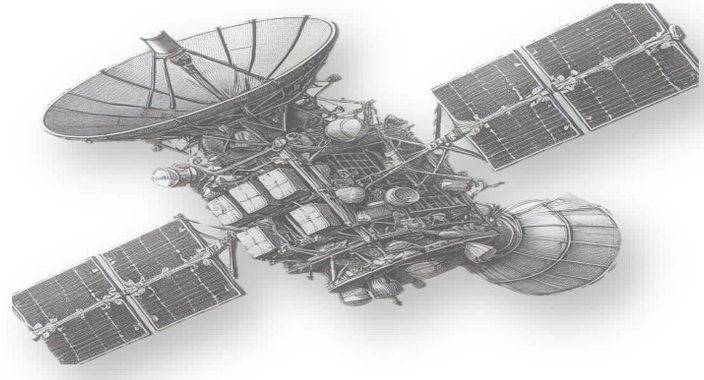
- Medium to high technical requirements.
- Short development cycles that range from one year to five years for entirely new systems.
- Short production cycles, as they require frequent replenishment due to regular use and detonation.
- The segment lacks aftermarket revenue. However, integration with long-life platforms as a sole-source provider provides recurring revenue streams as munitions are detonated, as well as opportunities for upgrades.

Electronic Systems Support Narrow Moats



- High technical requirements.
- Development cycle ranges from three to 10 years, depending on technology and its application.
- The segment is product dominated. However, securing a role as a sole-source provider of electronic warfare equipment for long-life platforms creates high switching costs.
- The segment lacks recurring aftermarket revenue. However, integration with long-life platforms provides opportunities for upgrades.

Cybersecurity Solutions Support Narrow Moats



- High technical requirements.
- Short development cycles of one to three years.
- The segment is highly fragmented and fiercely competitive, driven primarily by product differentiation. There are some switching costs associated with established relationships and classified work for the government.
- Short product lifecycle due to constantly evolving technological landscape. Segment lacks aftermarket revenue.

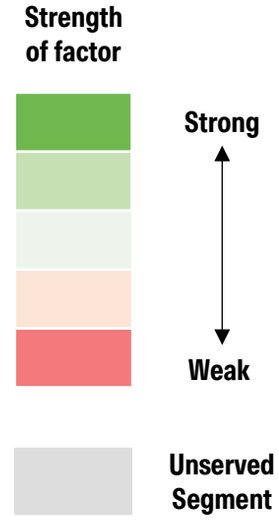
Source: Morningstar.

Morningstar's Defense Coverage

The Defense Sector Has the Highest Concentration of Wide-Moat Firms Thanks to High Barriers to Entry and High Switching Costs

Percentages in the table show the contribution of each market to the total company EBIT. The strength factor is based on segment characteristics and the portfolio composition within it.

	Moat Strength								
Companies	**Air**	**Electronic Systems**	**Maritime**	**Platforms and Services**	**Cyber and Intelligence**	**Weapons and Ammunition**	**Helicopters**	**Space**	**Average**
Lockheed Martin (LTM)	40%	22%				22%		16%	Wide
RTX Corp (RTX)	62%					21%		17%	Wide
Northrop Grumman (NOC)	24%	32%				14%		30%	Wide
General Dynamics (GD)	35%		19%	20%	26%				Wide
Huntington Ingalls (HII)			85%	10%	5%				Wide
BAE Systems (BA.)	39%	29%	12%	15%	5%				Wide
Leonardo (LDO)	24%	63%					38%		Narrow
Thales Group (HO)	20%	51%			29%				Wide
Dassault Aviation (AM)	70%*						30%*		Wide
Rheinmetall* (RHM)		14%		35%	7%	45%			Wide
Saab (SAAB B)	14%	32%	12%		41%				Wide
Kongsberg Gruppen (KOG)	60%		34%		1%				Wide



Source: Morningstar, company filings.

Note: Dassault Aviation's percentages are calculated based on revenue. Rheinmetall's percentages do not add up to 100% as part of the EBIT is realized in its material and composite civil segment.

Industry Basics

Understanding the drivers of defense spending: US and European markets.

National Defense Strategies Shaped by Deterrence Needs, Alliances, and Modernization Efforts

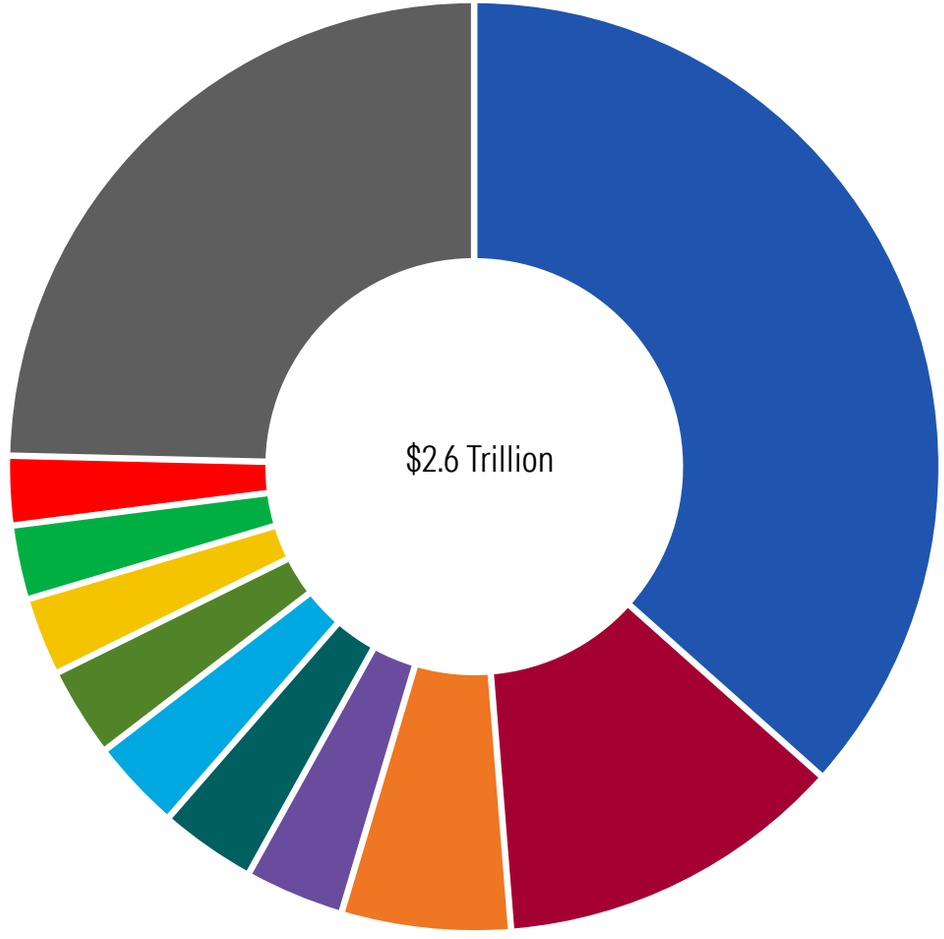
Ten Global Spenders Account for 75% of Total Spending
Military expenditures are concentrated within a small group of countries. The United States and China are the top two military spenders, accounting for approximately half of global military spending.

Deterrence Policies Driving Higher Spending in Defense
Nations invest in defense to deter potential adversaries through a credible threat of retaliation. Ongoing or escalating conflicts in specific regions often prompt nations to increase their defense budgets to ensure readiness and deter potential threats.

Alliances Are Pivotal in Shaping Defense Spending
Many international alliances have specific defense commitments. Each member must maintain a certain level of military capability to fulfill these obligations effectively.

Military Modernization Programs
As military equipment ages, countries must replace or upgrade their arsenals, which involves significant expenditure on new technologies and platforms.

Top 10 Global Defense Spenders in 2024

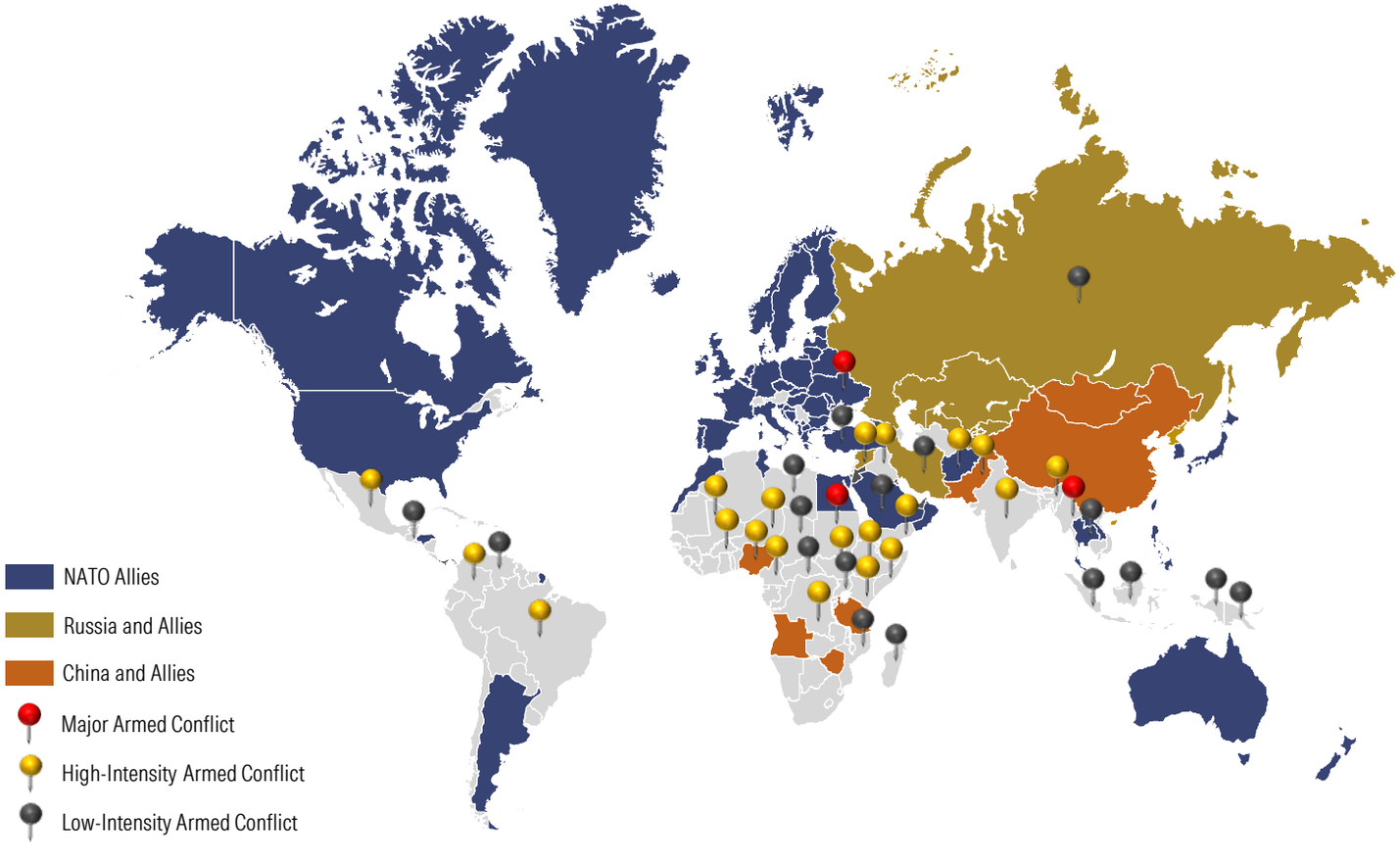


USA	37.2%
China	12.2%
Russia	5.8%
Germany	3.3%
India	3.2%
Saudi Arabia	3.0%
United Kingdom	3.0%
Ukraine	2.6%
France	2.4%
Japan	2.2%
Other	25.0%

Source: SIPRI, Morningstar.

Geopolitical Tensions and Security Threats Drive Defense Spending

Current Global Alliances and Ongoing Conflicts



Strategic Alliances and Cooperative Defense Projects

Russia's invasion of Ukraine and rising tensions in specific regions, such as the Indo-Pacific, due to increasing assertiveness by China, prompted countries to form alliances to ensure regional balance and enhance collective security.

NATO Expansion and Reinvigoration

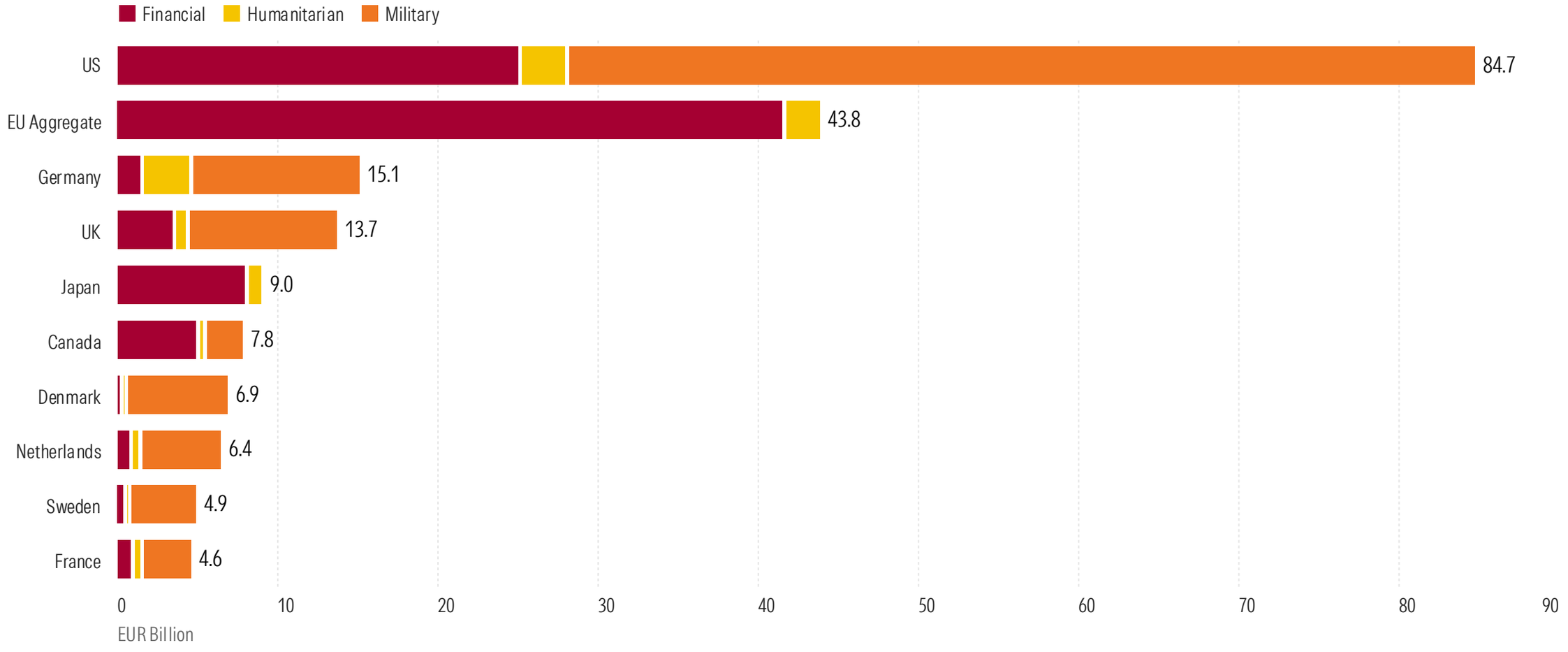
Finland and Sweden's entry into NATO expanded the alliance's presence along Russia's border, enhancing security in the Baltic and Nordic regions.

In response to growing security threats, NATO members have significantly raised their defense budgets. Most European NATO allies are expected to meet the 2% GDP spending target in 2024.

Source: SIPRI, Morningstar.

Alliances Shape Defense Budget Decisions: US, Germany, and UK Are Ukraine's Top Supporters

Support to Ukraine by Country, 2023 (EUR Billions)

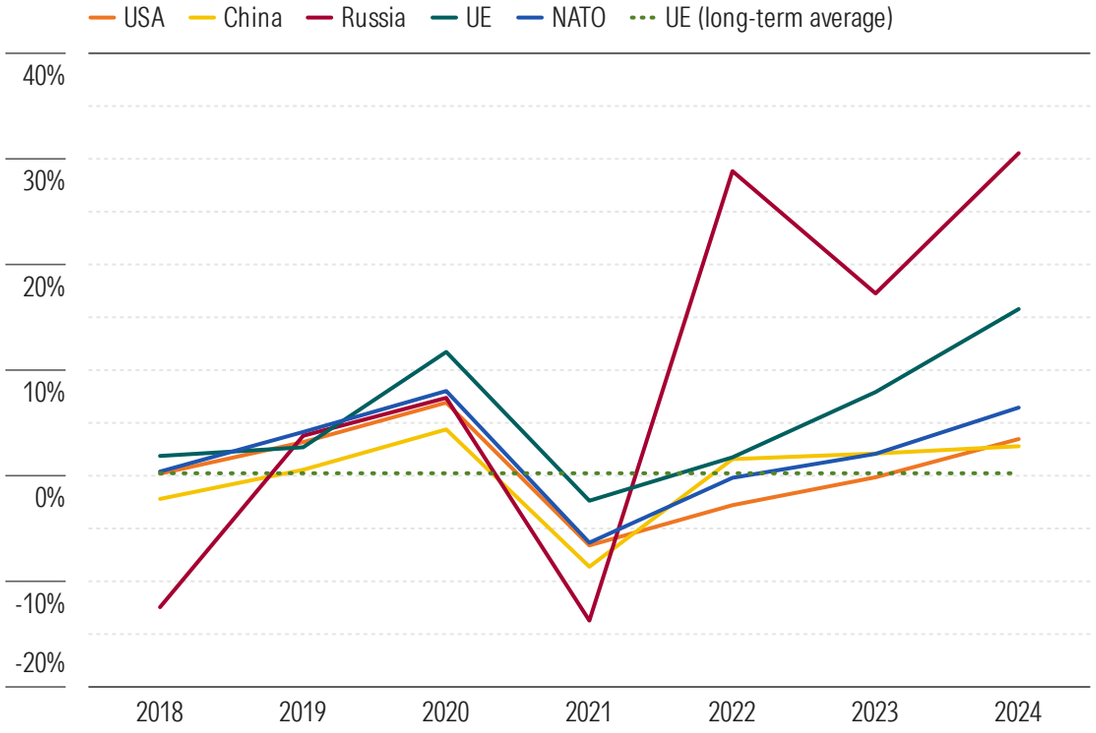


Source: Kiel Institute: Ukraine Support Tracker.

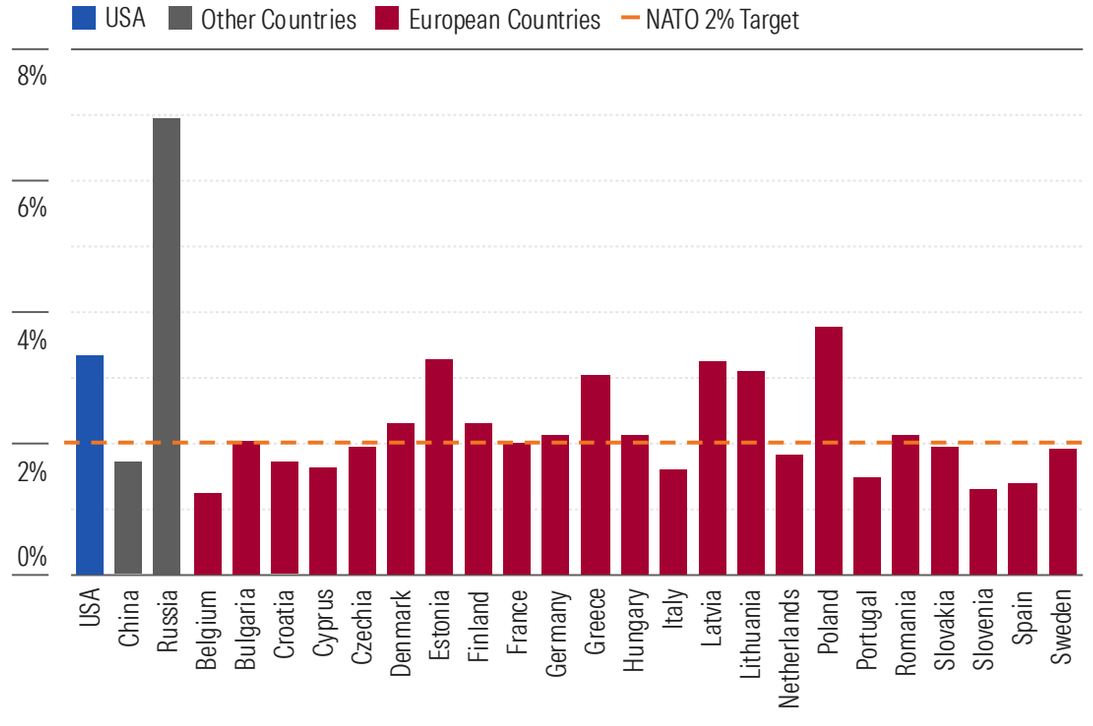
Defense Budgets Are Tied to Economic Cycles, but Are Shaped by Strategic Priorities

Defense budgets fluctuate with the GDP, rising in prosperous times but often constrained during downturns. However, strategic and geopolitical needs can override economic pressures. Over the past three years, European countries have significantly increased defense spending as a percentage of GDP, growing faster than China and the US. Despite this, in 2024, all EU countries remained behind Russia and the US (except for Poland), with only 10 of 27 reaching NATO's 2% threshold.

Growth in Defense Spending as Percentage of GDP



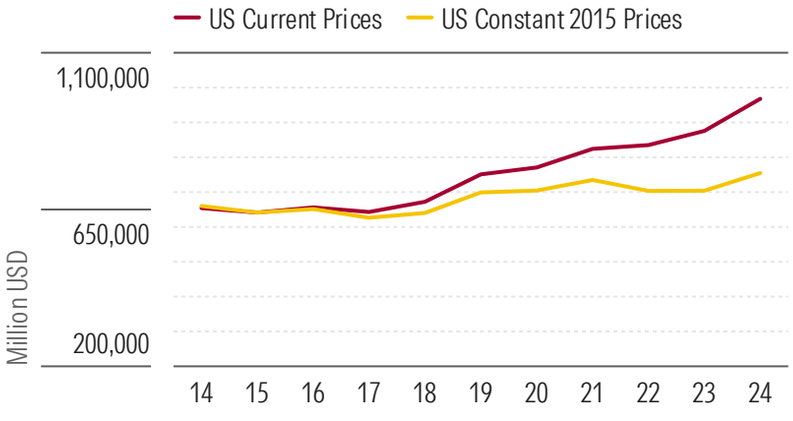
Defense Spending by Country as Percentage of GDP, 2024



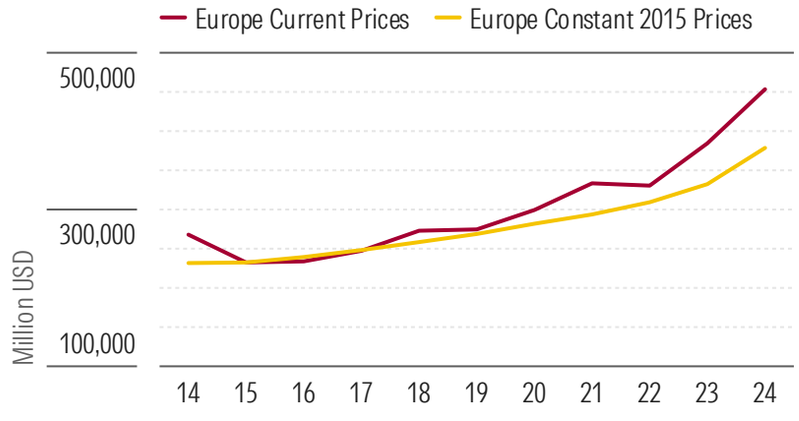
Source: SIPRI, Morningstar.

Inflation Strains Governments' Budgets and Real Spending

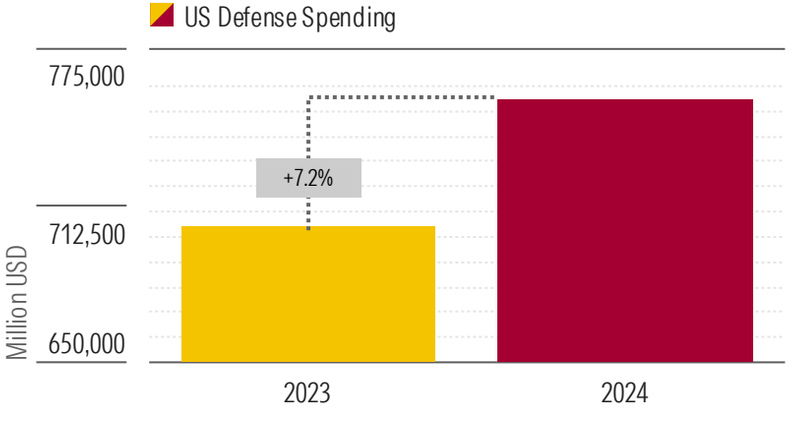
Inflation Impact on US Defense Spending, 2014-24



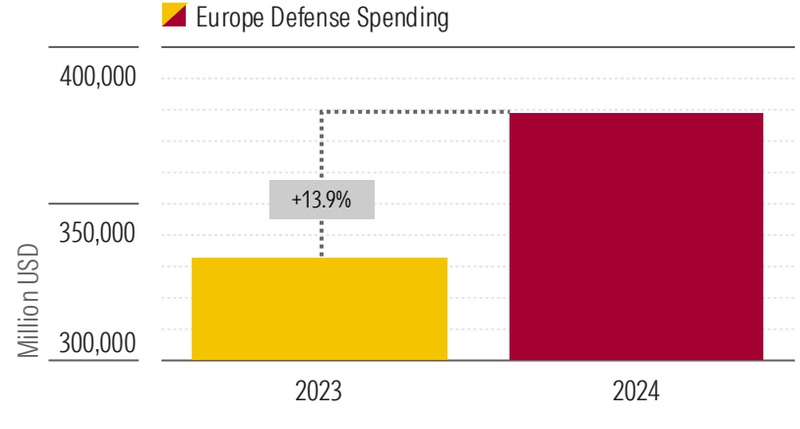
Inflation Impact on EU Defense Spending, 2014-24



US Defense Spending 2024 Versus 2023, in Real Terms



Europe Defense Spending 2024 Versus 2023, in Real Terms



Inflation Pressures Defense Budgets

Inflation reduces spending power and the impact of budget increases. Russia's invasion of Ukraine further affected global supply chains already weakened by covid-19 effects. Real defense spending from 2021 to 2024 is 22% lower than nominal in the US, and 13% lower in Europe.

Inflation Drives Higher Interest Rates

High interest rates limit economic growth.

Global Tensions Offset Inflation Pressure

Despite inflationary pressures on government deficits and budgets, European defense spending is projected to grow by 13.9% in real terms between 2023 and 2024, while US defense spending is expected to increase by 7.2%.

Source: SIPRI, Morningstar.

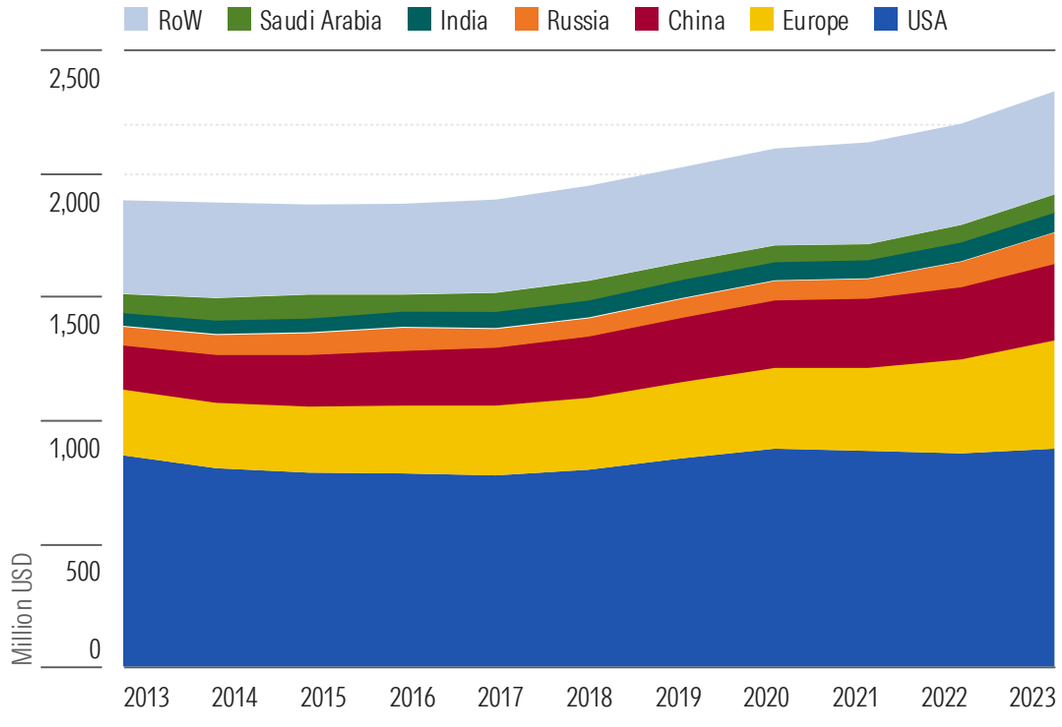
Industry Basics

Focus on US and European defense industry structure.

Global Real Defense Spending Increased by 12% Between 2022 and 2024, Driven Mainly by Europe and Russia

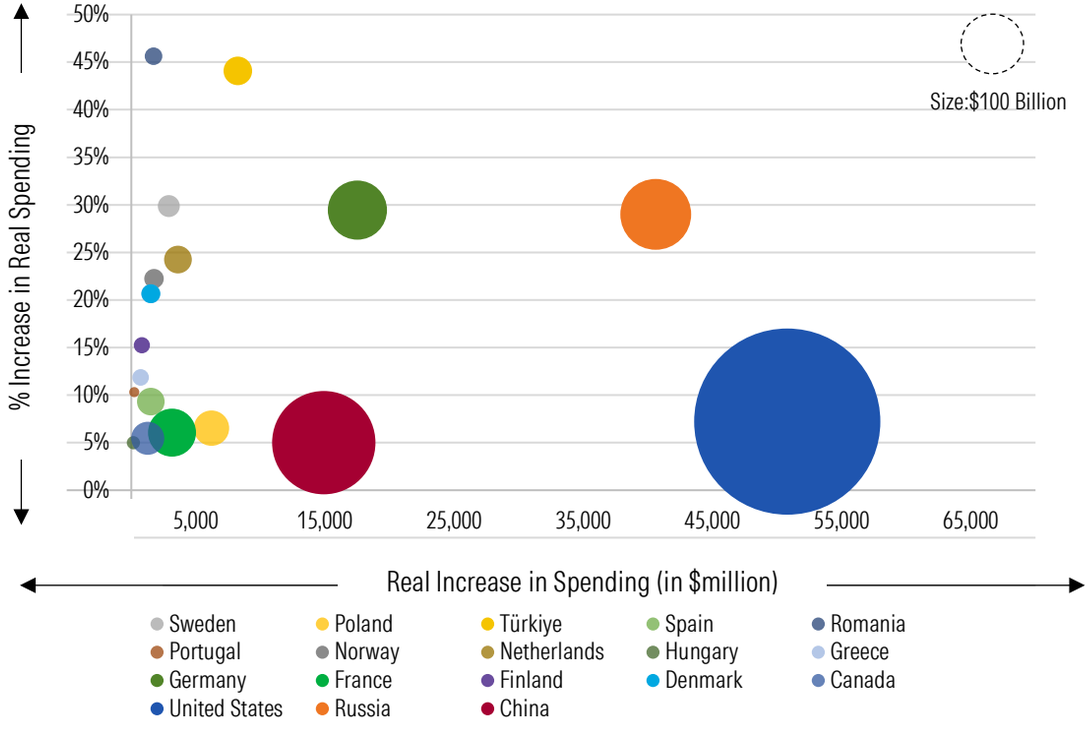
In 2023, global defense spending stood at around 2.4 trillion US dollars. The main contribution came from the US (38.4%), followed by the EU and China (with 13.2% and 12.4% respectively). As for individual countries, all the top 15 contributors increased their spending between 2022 and 2023, with the largest change recorded by Poland (a 106% increase) and Ukraine (a 57.2% increase). From 2021 to 2024, defense spending rose by 278 billion, with the US being the largest contributor to this change (51.6%) followed by Germany and Poland (12.8% and 7.1%, respectively).

Global Defense Spending 2013-23 USD Millions Constant Prices, Foreign Exchange



2024 Defense Spending and Growth Projections for Selected European Countries

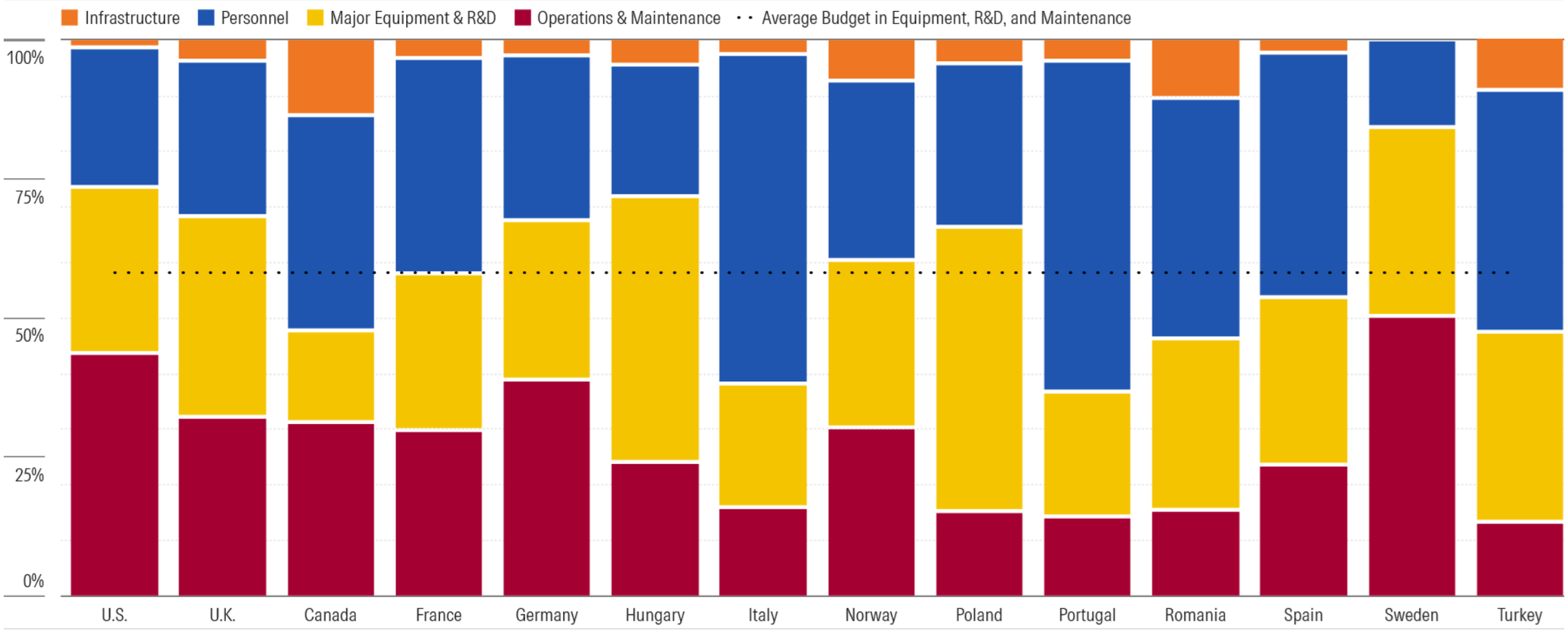
Bubble size represents total expected spending in 2024.



Source: SIPRI, Top 100 arms-producing and military services companies, 2022.

NATO Countries Allocate on Average 58% of Their Total Defense Budgets in Equipment, R&D, and Maintenance

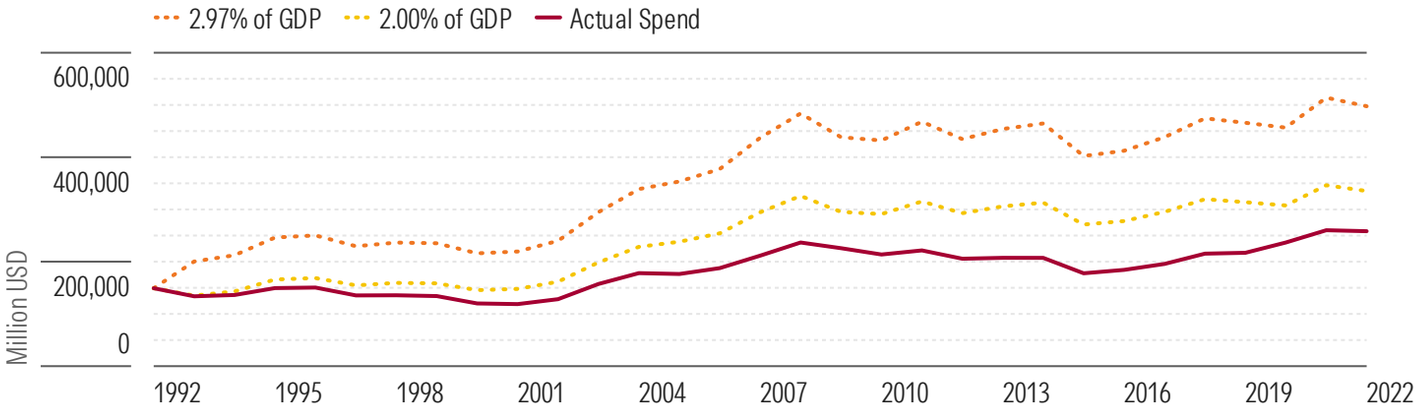
Main Categories of Defense Expenditure as a Percentage of Total Defense Budget for Selected NATO Countries in 2024



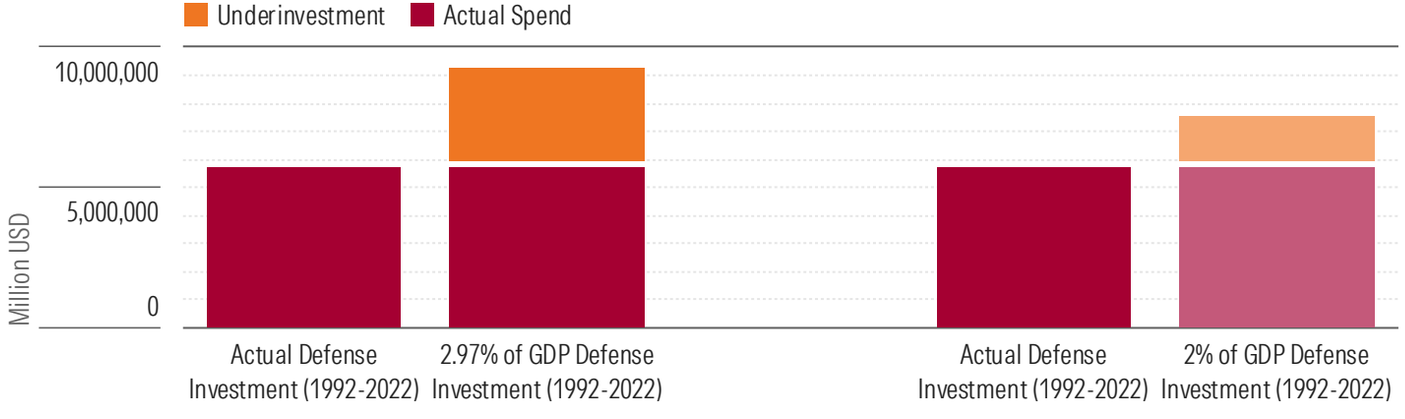
Source: NATO.

Europe's Current Investments at 2% of GDP Still Falls Short for Past Underinvestment

European Defense Underinvestment From 1992 (USD Millions)



Cumulative Investment Gap From 1992 to 2022 (USD Millions)



European Defense Underwent 30 Years of Underinvestment

During the Cold War, European nations typically spent about 3% of their GDP annually on defense. This changed in 1992, when the perceived threat decreased with the Soviet Union's collapse, leading many countries to significantly cut their defense budgets and reallocate funds to social programs.

In 2014, following Russia's annexation of Crimea, NATO allies committed to spending at least 2% of their GDP on defense and dedicating over 20% of their defense budgets to new equipment and R&D, with most countries reaching the target only in 2024.

Peace Divided Has Resulted in $5.4 Trillion Underinvestment

The historical underinvestment in defense is formally known as the Peace Dividend. From 1992 to 2022, European defense spending totaled $5.7 trillion—49% below what would have been spent at Cold War levels. Even relative to NATO's 2% previous target, the gap remains vast at $1.8 trillion.

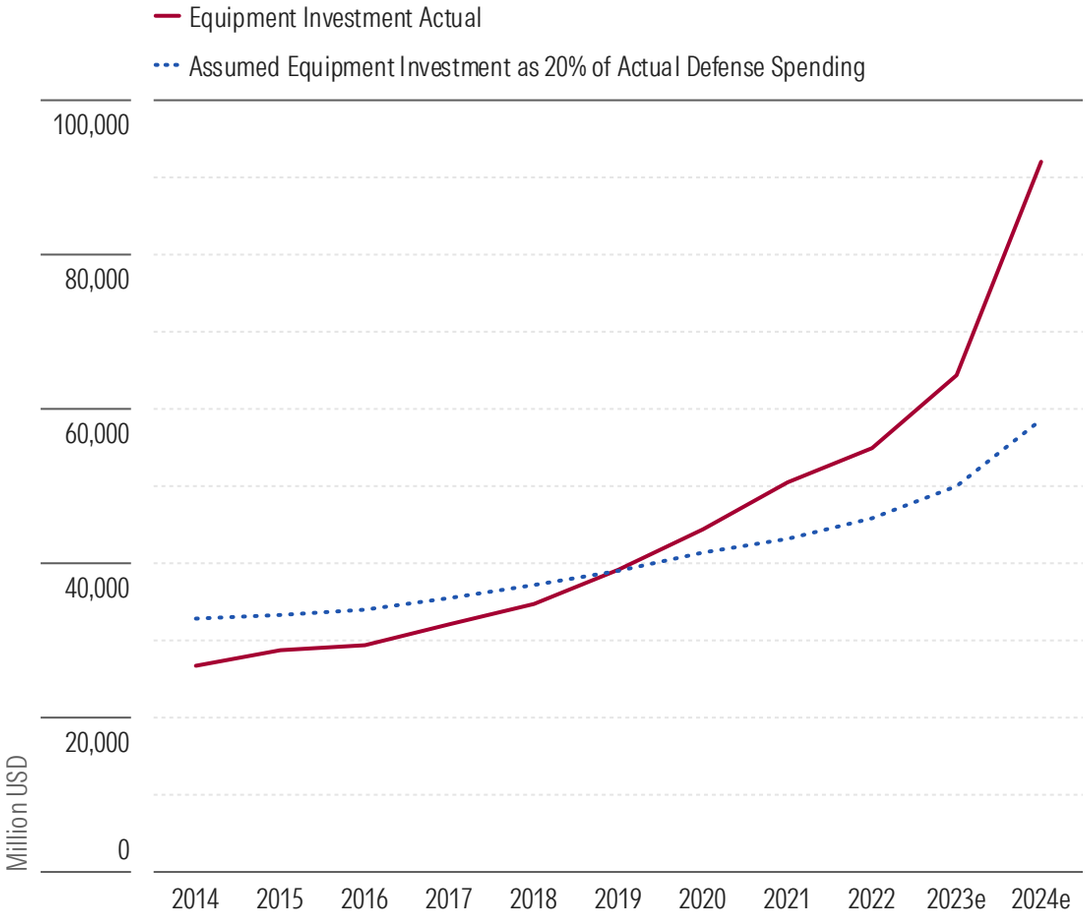
We estimate that NATO's new 3.5% GDP target will partially reverse the peace dividend by unlocking an additional $4 trillion in defense spending over the next decade relative to 2024 levels.

Source: NATO, July 2023, SIPRI, Morningstar.

European Spending Exceeds 20% Equipment Allocation, Yet Insufficient to Mitigate Peace Dividend Effects

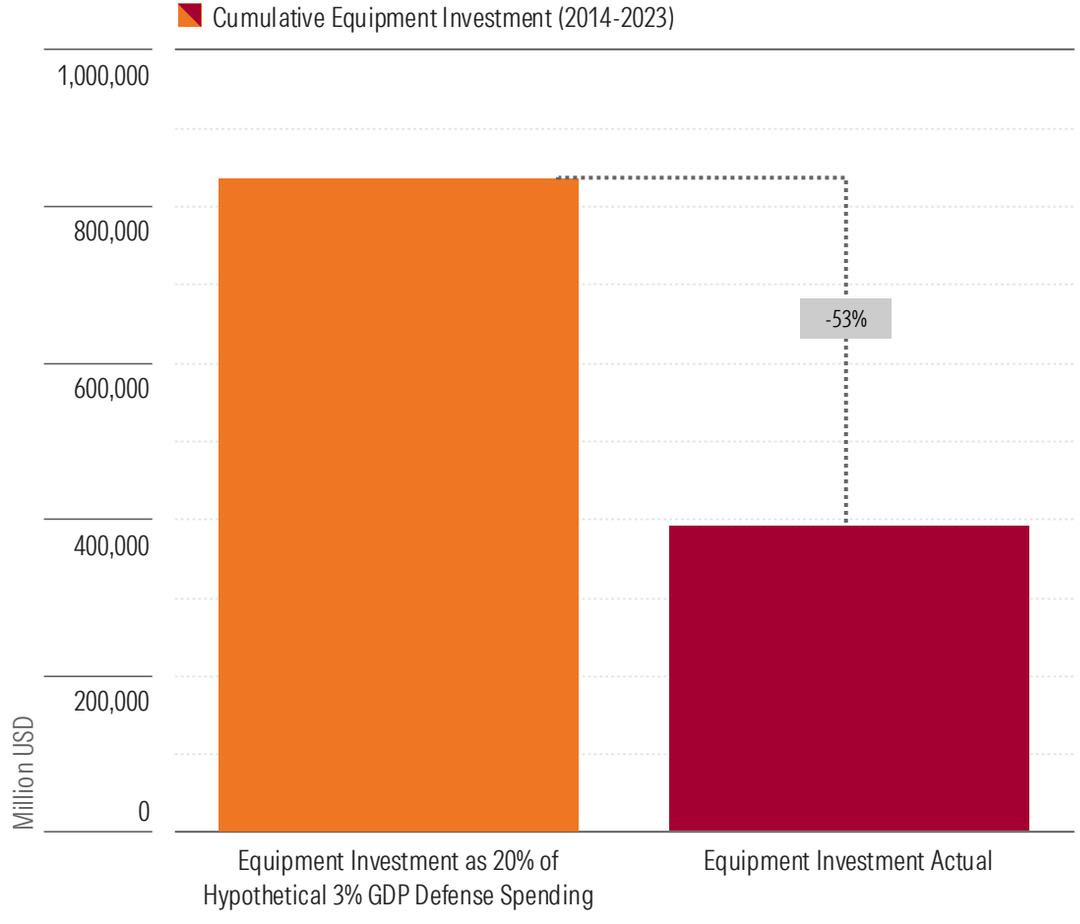
European Equipment Defense Investments (Constant 2015 prices)

European equipment spending has averaged 28% of total budgets in the past four years.



Equipment Investment: Actual vs. Assumed Without Peace Dividend Since 2014

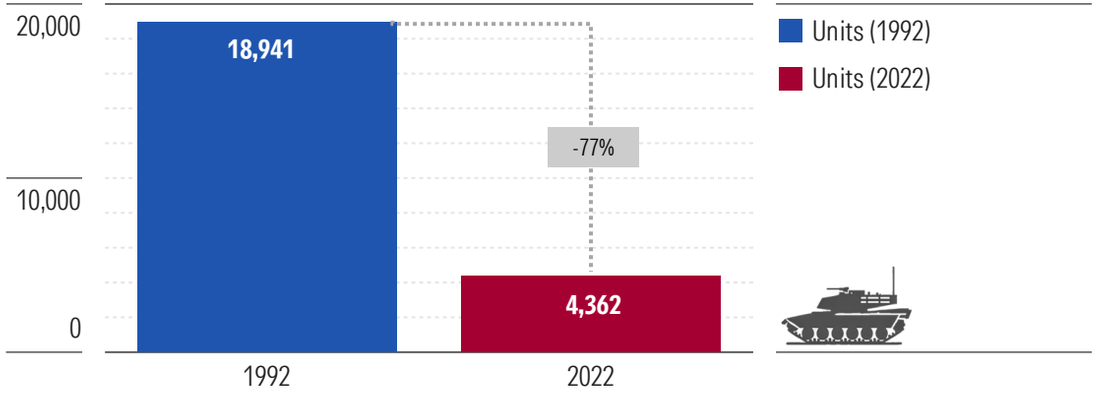
Cumulative equipment gap amounts to $443 billion (in constant 2015 prices).



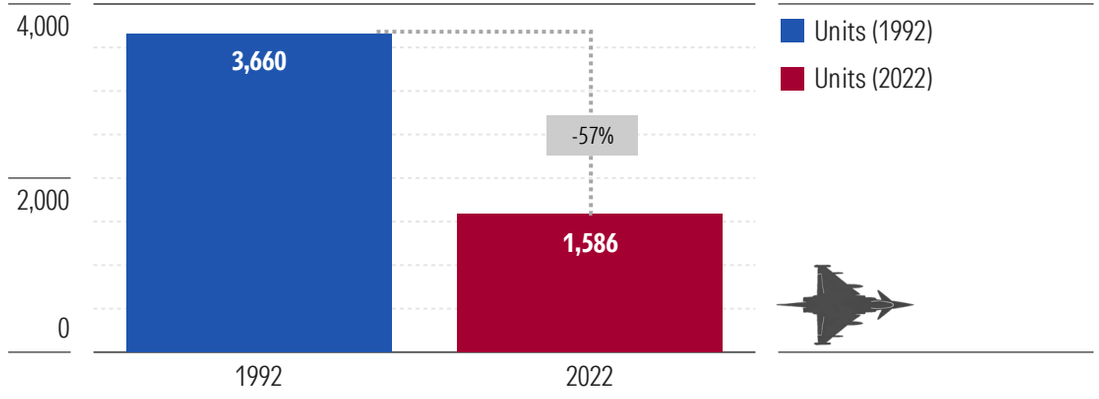
Source: SIPRI, NATO, Morningstar.

Peace Dividend Led to Substantially Lower Inventory in European Defense Platforms, Compared With Cold War

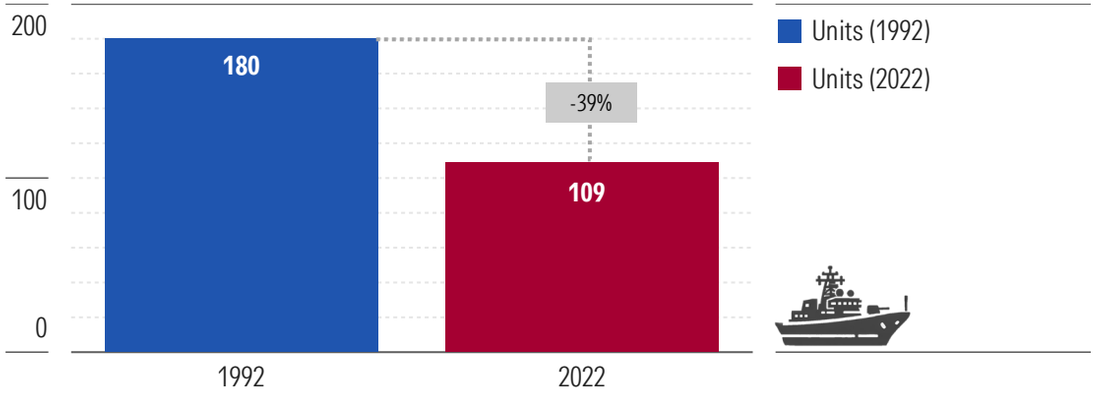
Main Battle Tank Inventory Levels in Selected European Countries (Units)



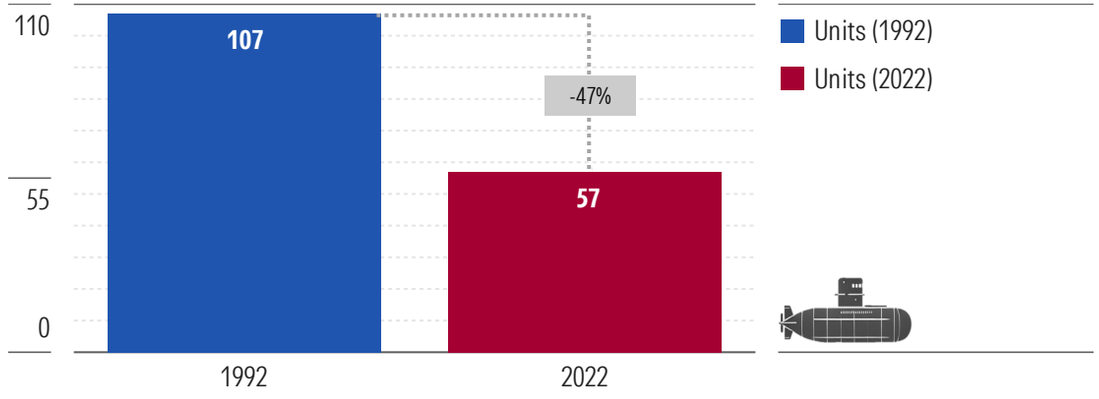
Fighter Aircraft Inventory Levels in Selected European Countries (Units)



Large Surface Combatant Inventory Levels in Selected European Countries (Units)



Submarine Inventory Levels in Selected European Countries (Units)



Source: McKinsey's analysis of data from The Military Balance 2023 by the International Institute for Strategic Studies.

US Industrial Base Concentrated Among Few Companies; European Base Concentrated Across Few Countries

Comparative Analysis of Defense Industry Policies and Market Dynamics Across US and Major European Countries

The top seven EU countries hold 80% of the relevant DTIB[1] capacities. We estimate US government absorbs about 80% of national production, compared with 45% for EU governments.

	Country								
Demand	Procurement policy	Buy domestic	Domestic preferred	Buy domestic	Buy domestic, but build European supply chains	Buy domestic	Buy domestic	Domestic preferred	Selective buy domestic
	Average market absorption rate[2]	75%-85%[3]	57%	40%	40%	40%	30%	>80%	50%
	Government influence over industry	Very High	High	Very High	Very High	Very High	High	Medium	High
	Equipment Turnover 2023 (Euro Billions)[4]	274	27	19	17	16	8	6	3
Supply	Capabilities range	Very High	High	Very High	Very High	Medium	Medium	Low	Medium
	DTIB structure	Concentrated, few prime companies	Dispersed, many major companies, highly internationalized	Dispersed, many medium companies, national duopolies	Dispersed, many major national champions	Concentrated, one prime contractor, highly internationalized	Concentrated, few prime companies	Concentrated, few prime companies	Concentrated, one prime contractor, many medium companies
	National primes/distribution	Lockheed Martin RTX Northrop Grumman General Dynamics L3Harris Technologies	BAE 40%-46% of national procurement	Rheinmetall, Airbus KMW, Diehl, TKMS	Thales, DCNS, Dassault, Airbus, Nexter	Bumar	Leonardo	Navantia INDRA	Saab 60%-65% of national procurement
	Export ranking SIPRI[5]	1	7	5	2	13	6	9	14

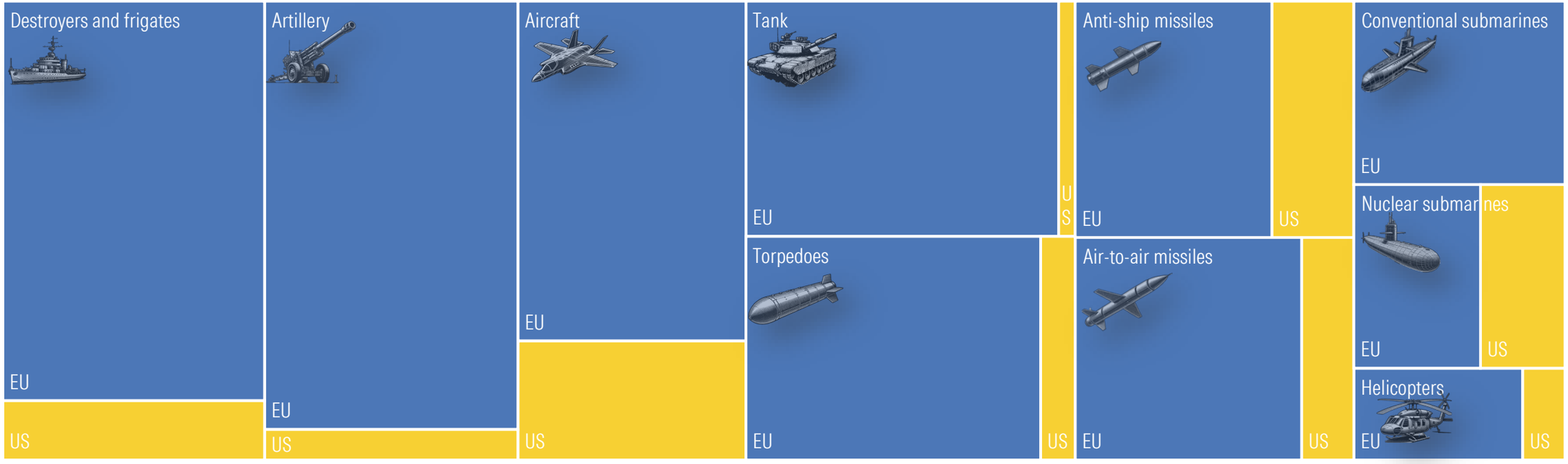
Very High High Medium Low

Source: Directorate-General for External Policies, Morningstar.
Notes: (1) DTIB: Defense Technological Industrial Base. (2) Percentage of national production absorbed by the national market, indicating the dependency of the national industry on it. (3) Morningstar estimates. (4) Equipment Turnover: Morningstar estimates based on SIPRI data. (5) SIPRI: Stockholm International Peace Research Institute.

National Armament Industries and Procurement Strategies Lead to Fragmented Platform Landscape in Europe

Europe's defense spending is highly fragmented, with 179 weapon systems compared with just 33 in the US, which increases complexity and cost. Despite spending half of what the US does on defense, fragmentation dilutes the impact, making it less efficient and less effective in achieving cohesive strategic objectives. In US, the number of defense prime contractors had shrunk from 51 to fewer than 10 Since the Cold War. Many segments of the US defense market are controlled by companies with monopoly or near-monopoly positions.

Different Weapon Systems for Selected Platforms, US Versus Europe (Box Size Represents Total Number of Systems)

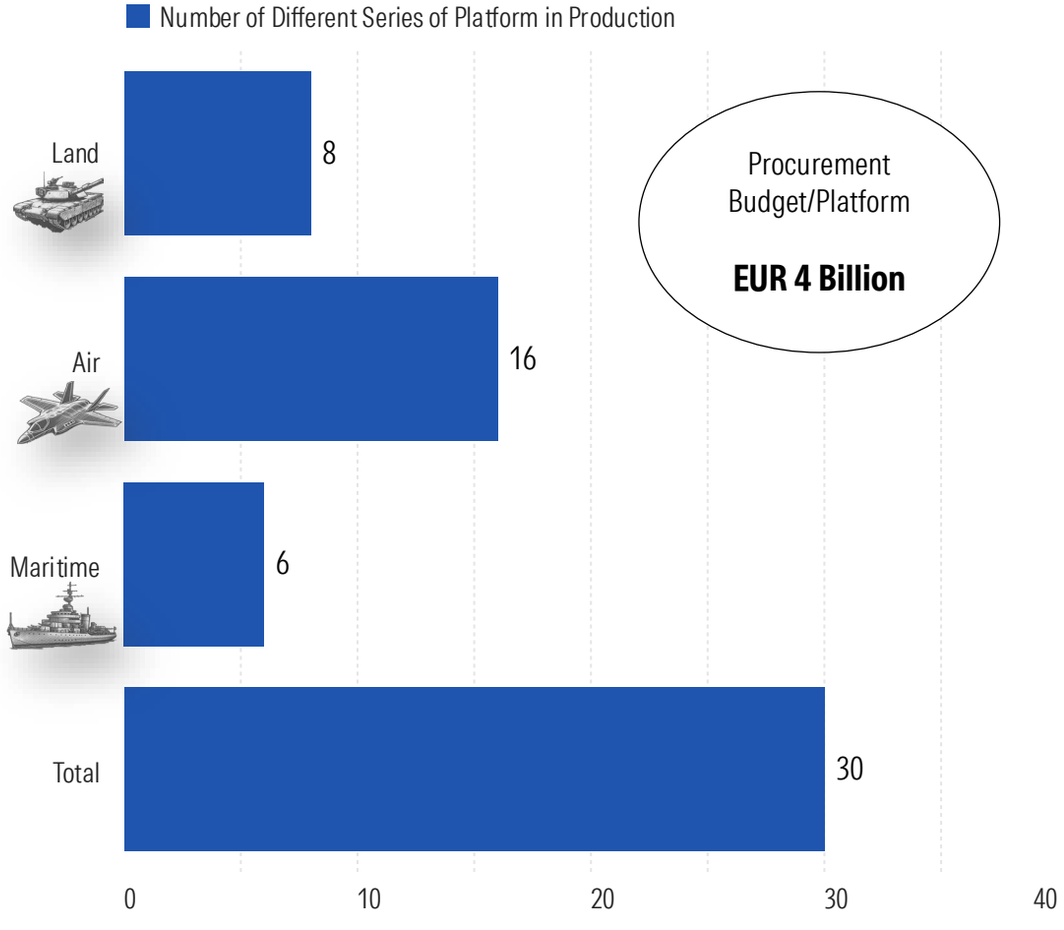


Source: McKinsey analysis leveraging The Military Balance 2023 Report; Morningstar.

Europe's Per-Platform Budget Is Only One-Fifth of the US', Despite Investing Half as Much in Total Equipment

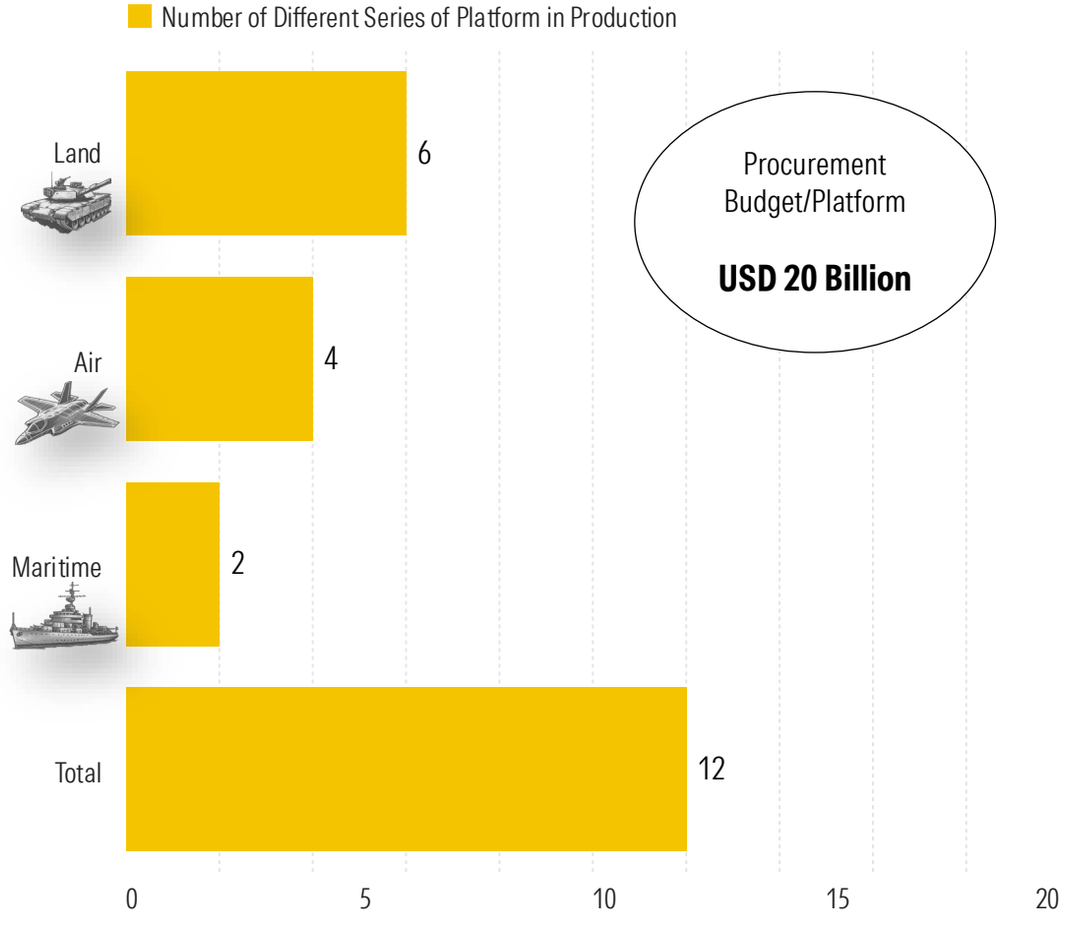
Europe Procurement: Number of Platforms and Budget per Platform in 2023

Total equipment budget in 2023 was around EUR 110 billion.



US Procurement: Number of Platforms and Budget per Platform in 2023

Total equipment budget in 2023 was around USD 250 billion.



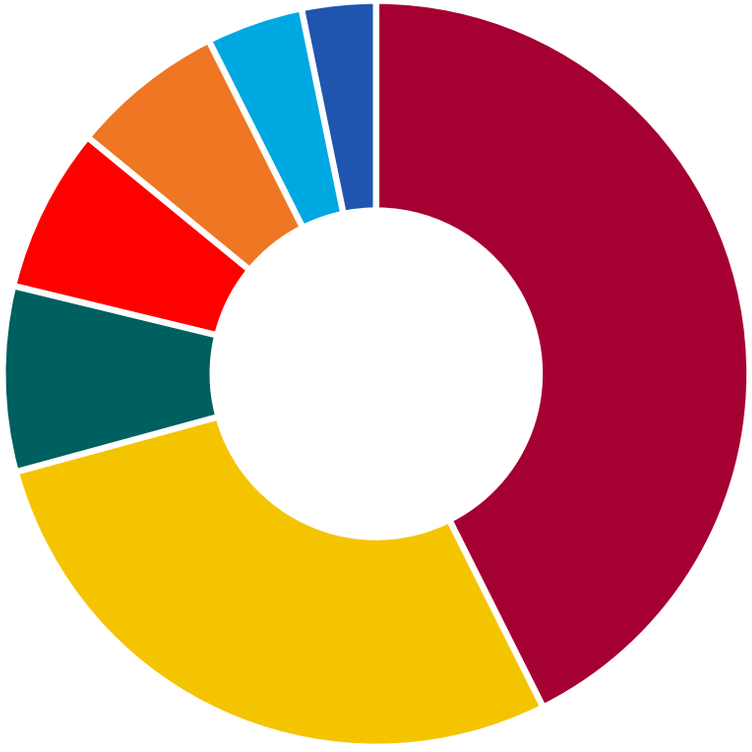
Source: Leonardo capital market day, 2023.

US Is Highly Self-Sufficient in Hardware Procurement; Europe Exports Are Slightly Higher Than Imports

The United States is the largest global exporter of arms, with export volumes about 20 times the volume of military hardware it imports. Europe is the second-largest region for exports, with few countries dominating the market.

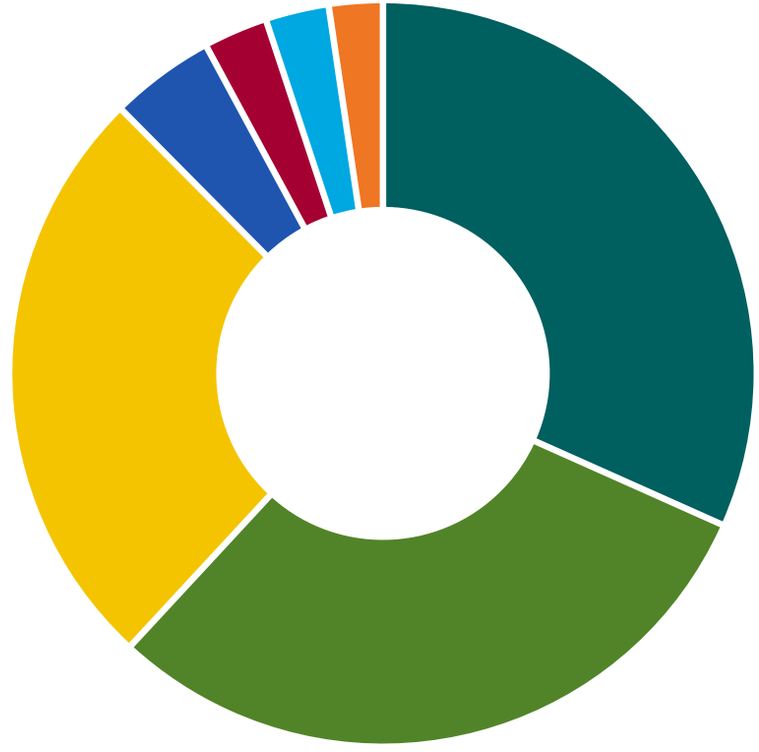
From 2021 to 2023, the Middle East and Asia were the primary importers of arms, predominantly sourcing from the US and European nations. Europe was the third-largest importer, with most of its imports from the US.

Share of Global Arms Exports by Region, 2021-23 (Volumes in Billions, SIPRI TIV)



US	43.1%
EU	28.4%
RoW	7.9%
Russia	7.0%
China	6.5%
UK	4.0%
Israel	3.0%

Share of Global Arms Imports by Region, 2021-23 (Volumes in Billions, SIPRI TIV)

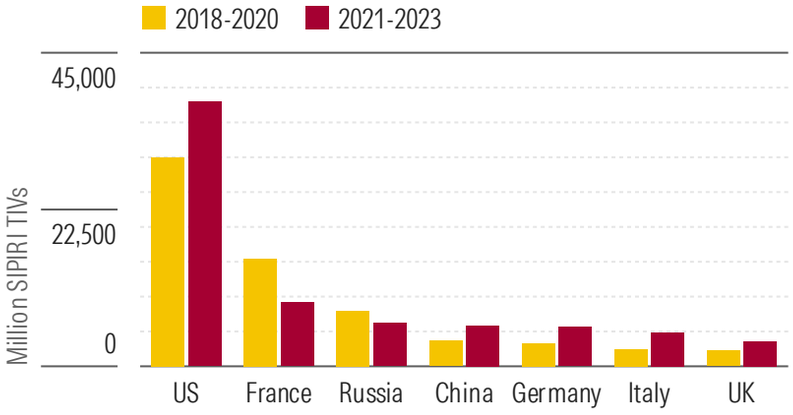


US	32.0%
EU	30.5%
RoW	25.9%
Russia	4.4%
China	2.6%
UK	2.5%
Israel	2.1%

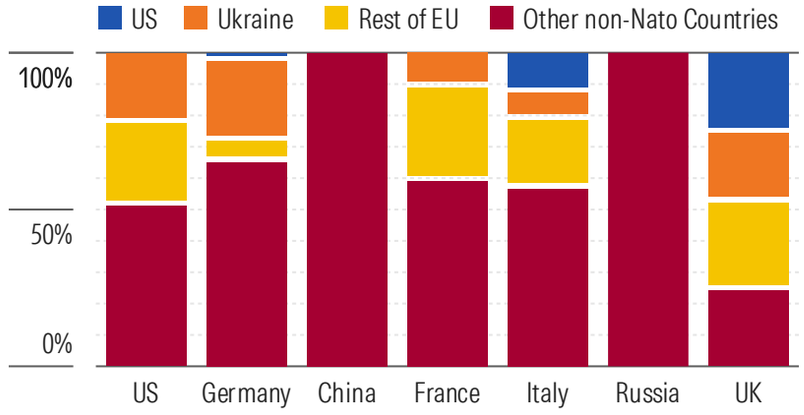
Source: SIPRI, Morningstar.
Note: Figures expressed in millions of SIPRI trend-indicator values, which is a measure of the volume of international transfer of major arms.

Exports Concentrated Among Few Countries and Growing Share of US Off-the-Shelf Equipment

Top Six Exporters of Major Arms, 2018-20 Versus 2021-23

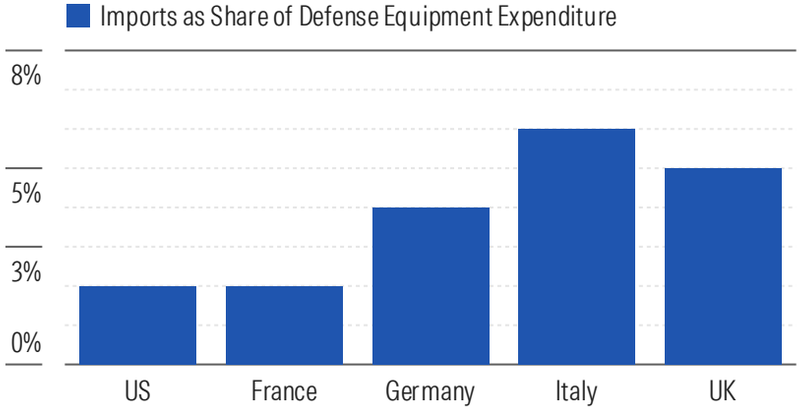


Distribution of Exports of the Top Six Exporters in 2021-23

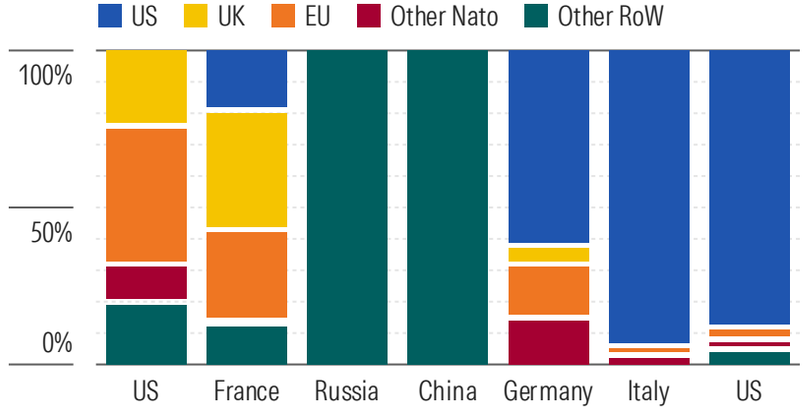


- The top six regional exporters account for around 80% of total global exports.
- Around 50% of US exports are to Europe, including 24% to Ukraine. The top four European DTIB*, dominate the European export market.
- Most exports from European countries were to non-European destinations.
- China and Belarus are Russia's top importers; Pakistan is China's largest.

US and European DTIB Share of Equipment Imports



Import Distribution of Leading Global Exporters (2021–23)

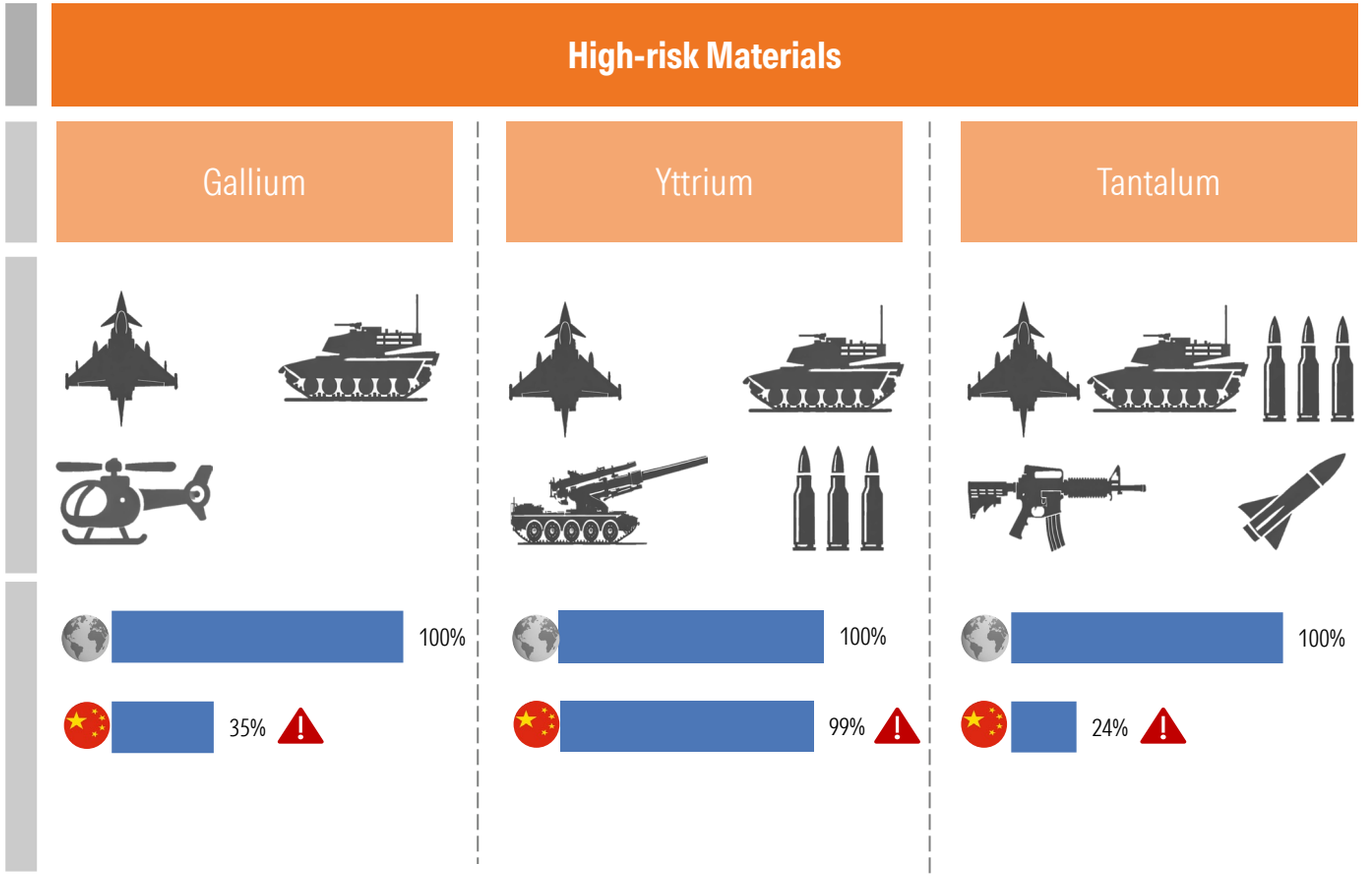


- Except for France, the other European DTIB* relied on US imports for more than 60% of their imports. Imports from other European countries represented only 3% of total imports for Italy, 4% for the UK, and 23% for Germany, with only France achieving the EDIS-suggested threshold of 50% intra-Europe procurement.

Source: EDIS: European Defense Industrial Strategy, SIPRI, Morningstar.
Notes: DTIB: Defense Technological Industrial Base.

US Supply Chain, While Self-Reliant on Equipment, Faces Dependency Risks for Critical Raw-Material Imports

Material Identified as High Risk in the US Defense Supply Chain



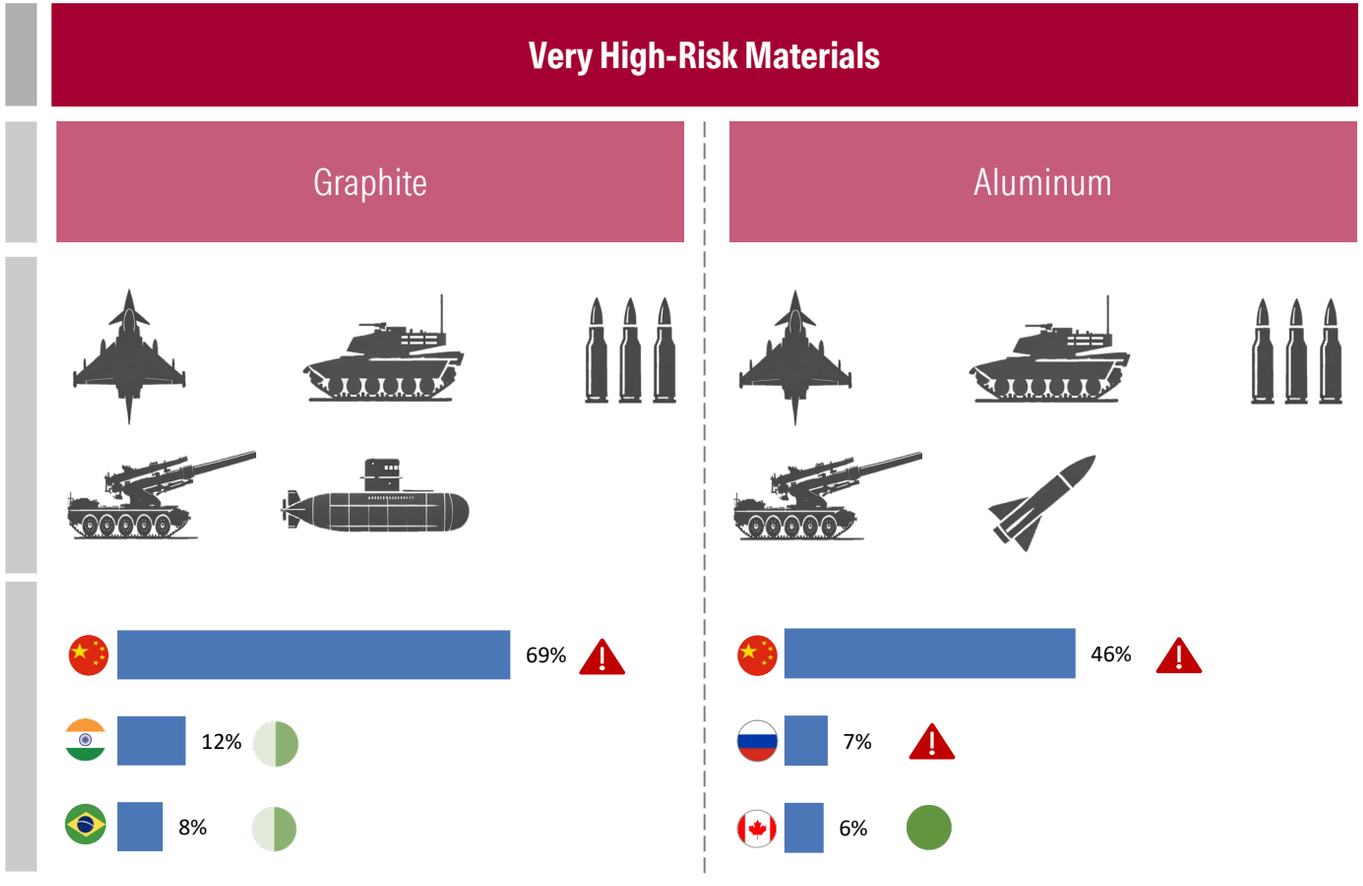
Dependency on China and single-source suppliers: The US is highly reliant on imported critical materials, creating vulnerabilities in its supply chain, especially given China's dominance in production. This dependency gives China leverage to disrupt supply in case of geopolitical tensions. Additionally, relying on single-source suppliers heightens the risk of shortages.

National defense preparedness and stockpile concerns: In emergency scenarios, the demand for critical materials spikes, exacerbating shortages and limiting the defense sector's ability to respond. The National Defense Stockpile (NDS) is designed to buffer these potential shortages but is underfunded and unable to hold adequate reserves of certain critical materials.

Source: Worldbank Comtrade, Morningstar.

European Supply Chain Faces Very High Dependency Risks for Critical Processed Material Imports

Material Identified as Very High Risk in European Defense Supply Chain



The Air Domain Is the Most Vulnerable

Air domain, including aircraft, missiles, and air defense systems, rely heavily on all the identified high-risk materials, making this domain particularly exposed to geopolitical risks and supply chain disruptions.

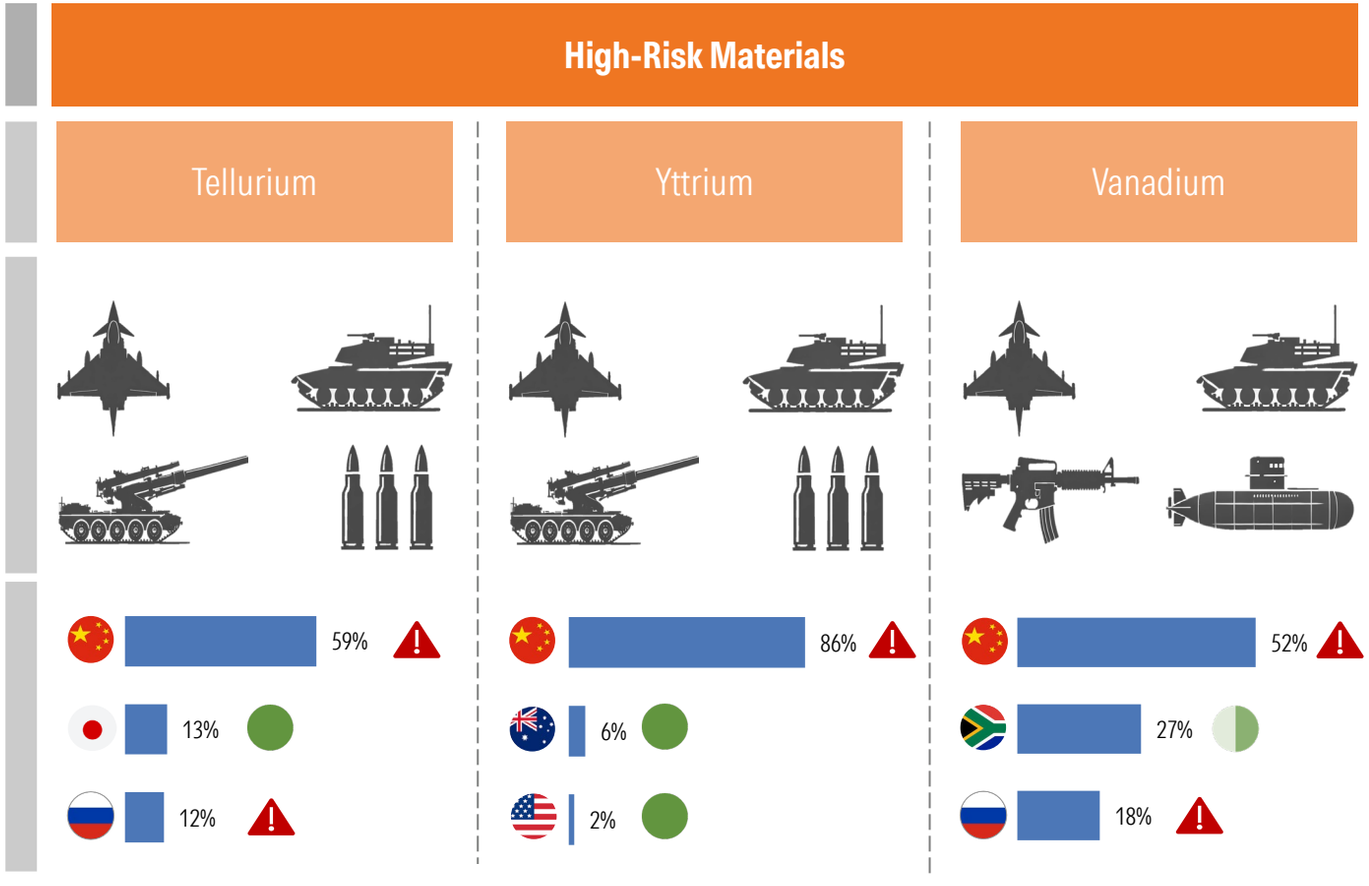
Aluminum, Graphite Identified Very High-Risk

These materials are the only two considered "very high-risk" due to the likelihood and impact of supply chain disruptions. Supply shortages and price volatility risk due to rising global demand driven by defense needs and the energy transition. Additionally, aluminum's energy-intensive production process makes it highly sensitive to energy price fluctuations, further threatening supply stability.

Source: Worldbank Comtrade, Morningstar.

There Are Also High Dependency Risks for Critical Raw-Material Imports in European Supply Chain

Material Identified as High Risk in the European Defense Supply Chain



Heavy Dependence on Nonallies

Europe's heavy reliance on China poses a significant risk. Rising geopolitical tensions between China and the EU increase the likelihood of supply disruptions. Escalating tensions, sanctions, or trade restrictions could have a severe impact on Europe's supply chain, a concern amplified by China's history of using economic leverage for political purposes.

Source: The Hague Center for Strategic Studies, Strategic raw materials for defence: Mapping European industry needs, January 2023, European Union Defence Industrial Strategy, Morningstar.

Building a Resilient Rare-Earth Supply Chain Will Require Scale, Long-Term Commitment, and Allied Coordination

Key Rare-Earth Elements in North America and Europe

Permitting delays and Processing Shortfalls Remain the Primary Constraints

China's dominance took 30 years to build; a meaningful Western response will require at least a decade. China produces over 60% of global rare-earth minerals and controls over 85% of refining, especially for heavy rare-earth elements, using export controls and licensing as geopolitical leverage, most recently tightening regulations in July 2024. Foreign access often required technology transfer, eroding Western processing expertise. Reliance on China for high-purity materials, combined with the high cost and complexity of rebuilding supply chains, has made reentry into the market difficult.

The US, Canada, and Europe have the geology to significantly reduce dependence on China for REEs, especially if they collaborate. While the US, Canada, Greenland, and European allies possess ample rare-earth deposits—including heavy REEs—the real challenge lies in scaling up refining, securing permits, and competing against China's low-cost production.

In US government contracts now favor non-Chinese REE components. The Pentagon and the US Army are funding REE separation tech, while the Inflation Reduction Act includes incentives for local sourcing of critical minerals. Mountain Pass Materials restarted production and is building magnet production capability in Texas.

Europe has no active REE mines, but its geological resources, along with Greenland's, could support decades of independence. The Critical Raw Materials Act sets binding targets to secure autonomy by 2030: at least 10% of rare-earth minerals must be mined, 40% processed, and 15% recycled within the union. The EU is forging partnerships, aiming to ensure independence from any single external source (greater than 65%).

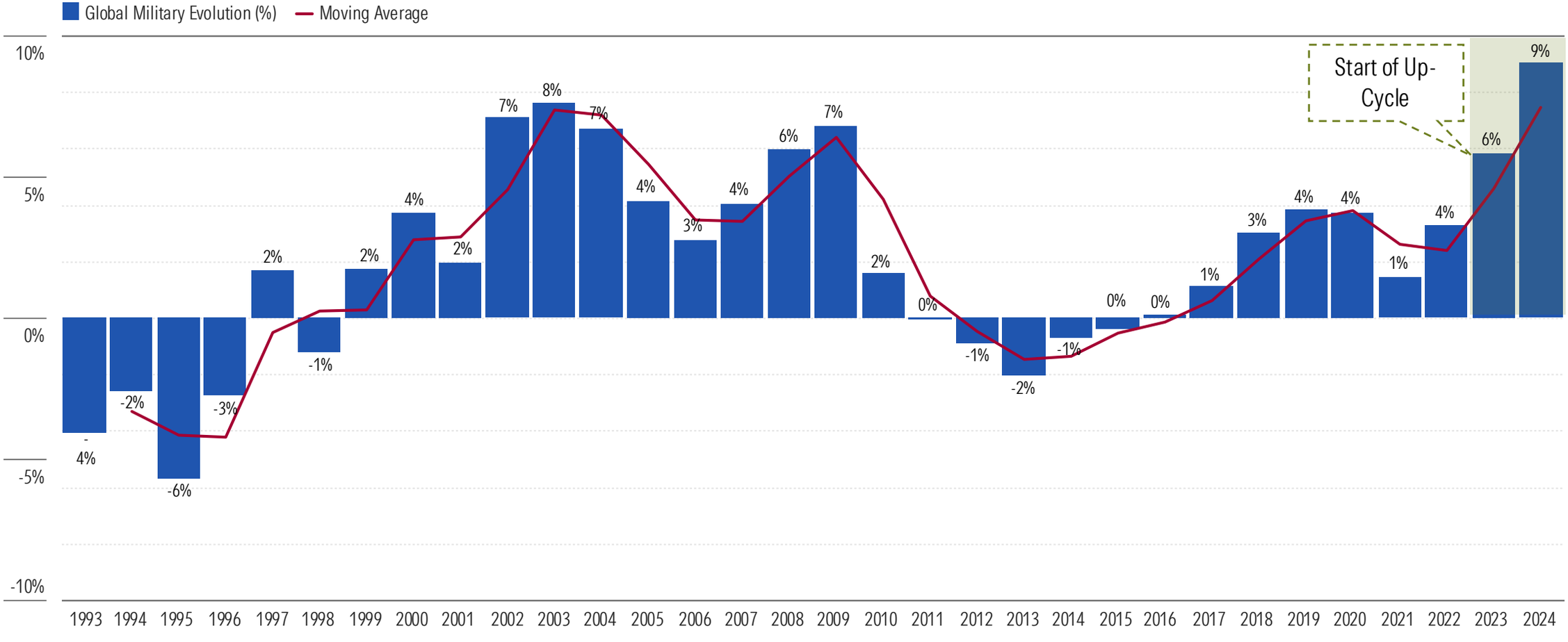
Source: EuRare; Jane's Defense; Morningstar.

Industry Outlook

New defense supercycle will boost revenue and profitability in US and Europe.

Defense Markets Are at the Initial Stage of a New Supercycle

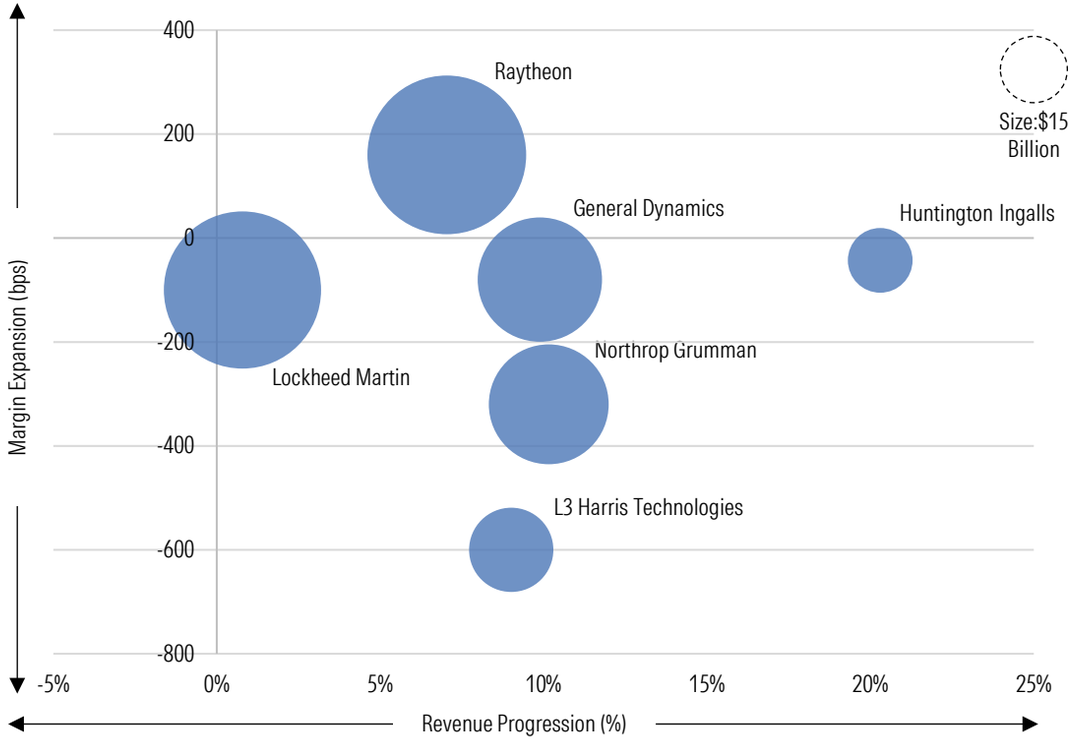
Global Military Spending Evolution (Percentage Increase/Decrease)



European Contractors Already Benefiting From Defense Upcycle; Benefits for US Companies Appearing From 2024

US Contractors' Revenue and Margin Evolution, 2021-23

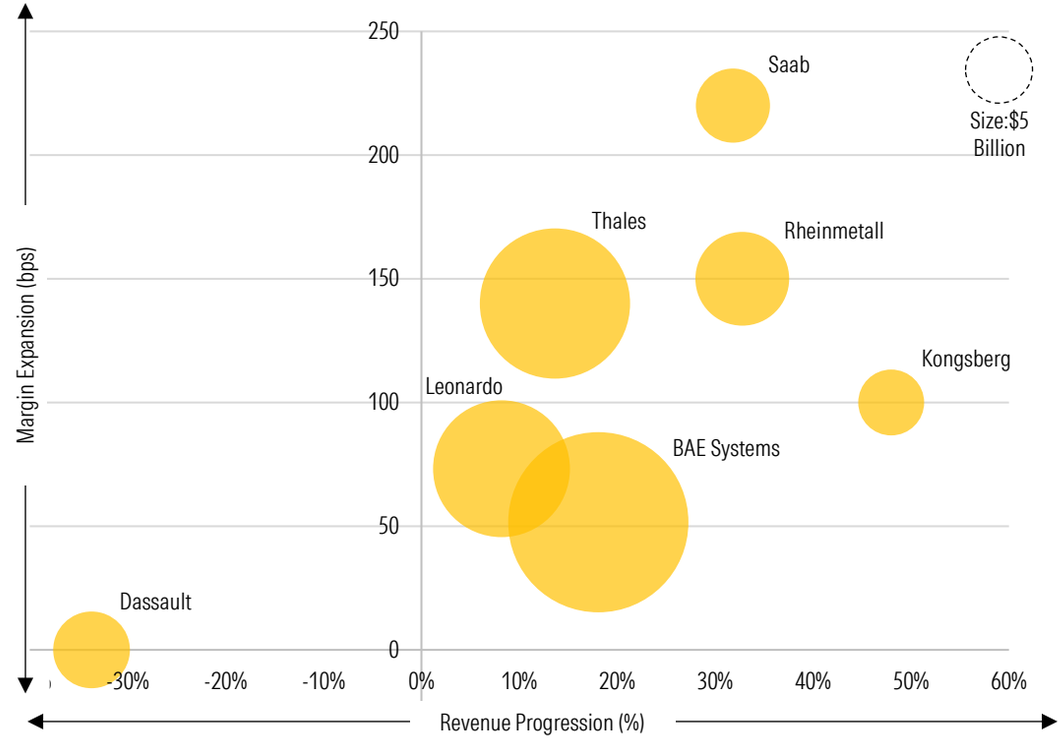
Bubble sizes represent 2023 revenue.



Defense spending increases made their way into prime contractors' top line, but a combination of cost growth and a high proportion of lower-margin development work in large programs muted margins in the period.

European Contractors' Revenue and Margin Evolution, 2021-23

Bubble sizes represent 2023 revenue.



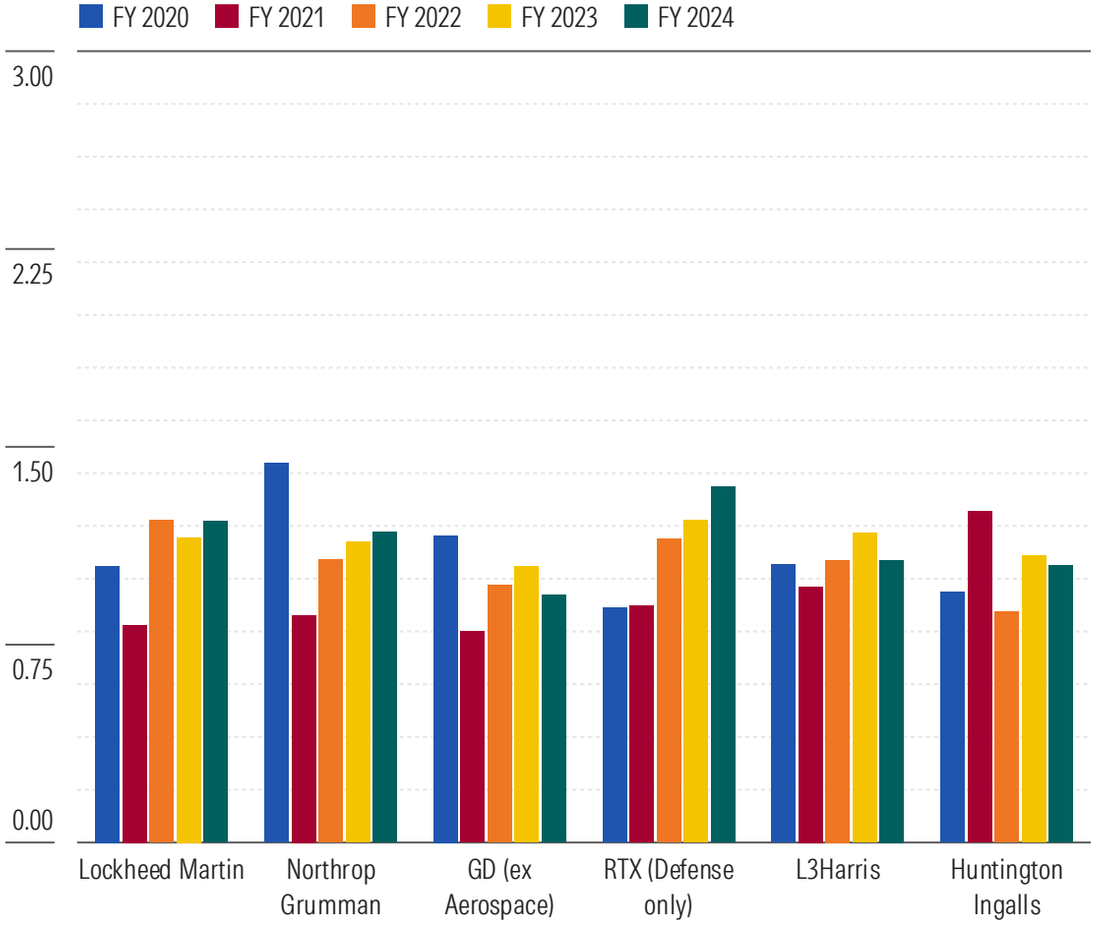
Spending increases have benefited European contractors, with sales increasing 20% on average from 2021 to 2023. Margin expansion was on average 120 basis points, as high defense spending fosters profitability with economies of scale as production ramps up.

Source: Morningstar.

Record Backlogs Confirm Further Revenue Expansion Supported by the Easing of Supply Chain Issues

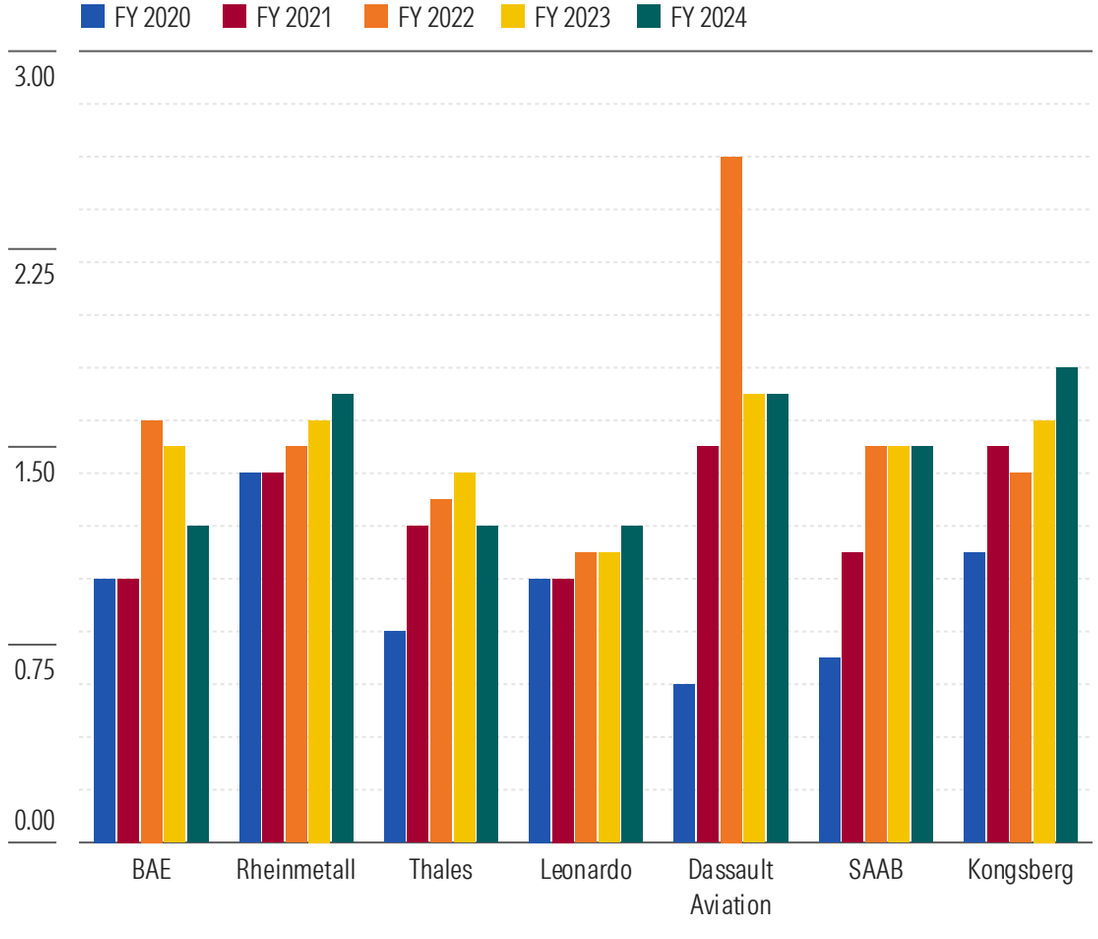
US Contractors Book/Bill, 2020–Third-Quarter 2024

US defense book/bill ratios have all surpassed 1 times after some dips in 2020-21.



European Contractors Book/Bill, 2020–Half-Year 2024

As revenue is increasing at double/high-single digits, backlog stays well above 1 times

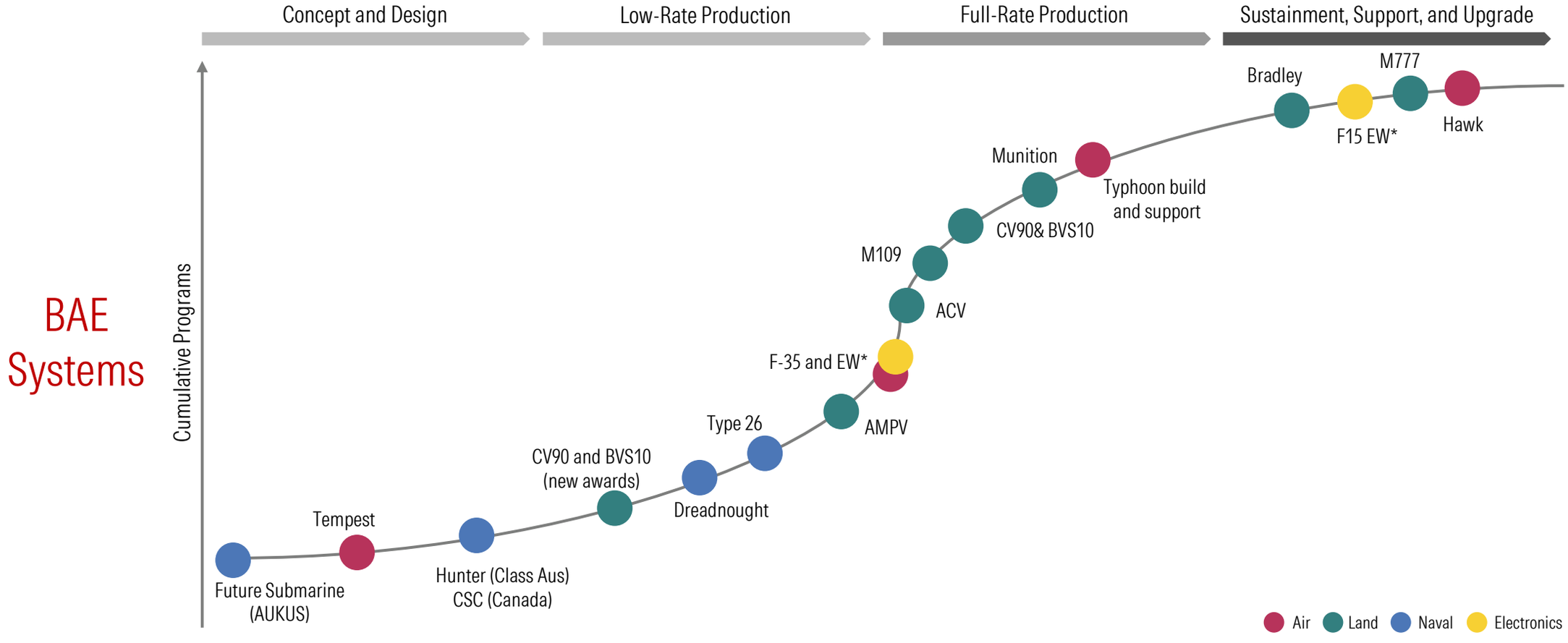


Source: Company reports, Morningstar. Data as of Nov. 24, 2024.

Accelerated Off-the-Shelf Procurement Drives Scale Efficiencies From Programs' Shift to Full-Rate Production

Budget Increases Are Driving Multidecade Programs to Move From Low to Full-Rate Production, Increasing Efficiency With Installed Base Supporting Future Aftermarket

Below is a BAE illustrative example, from 2023.

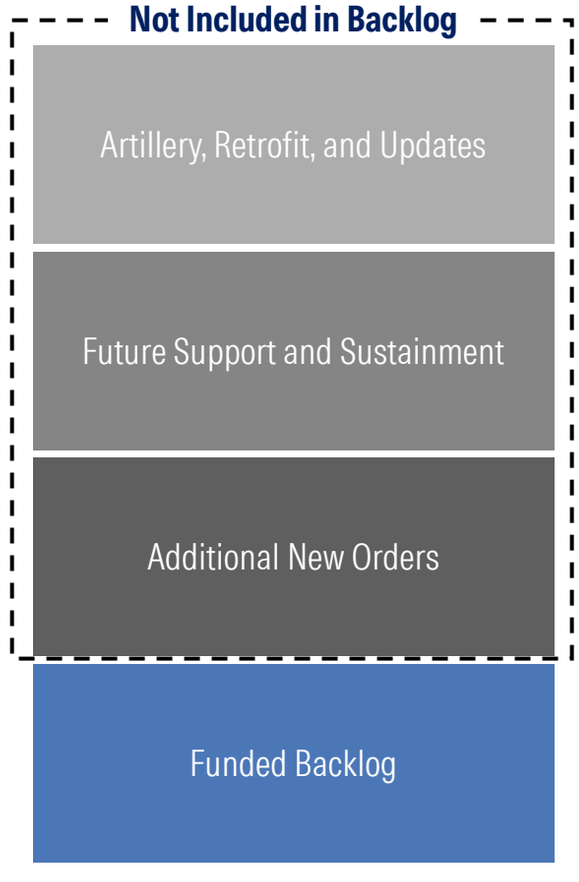


Source: BAE 2023 half-year earnings presentation.
*Electronic warfare.

Record Backlogs, However, Fail to Capture Additional Potential From Post-Sale Activities of Long-Life Platforms

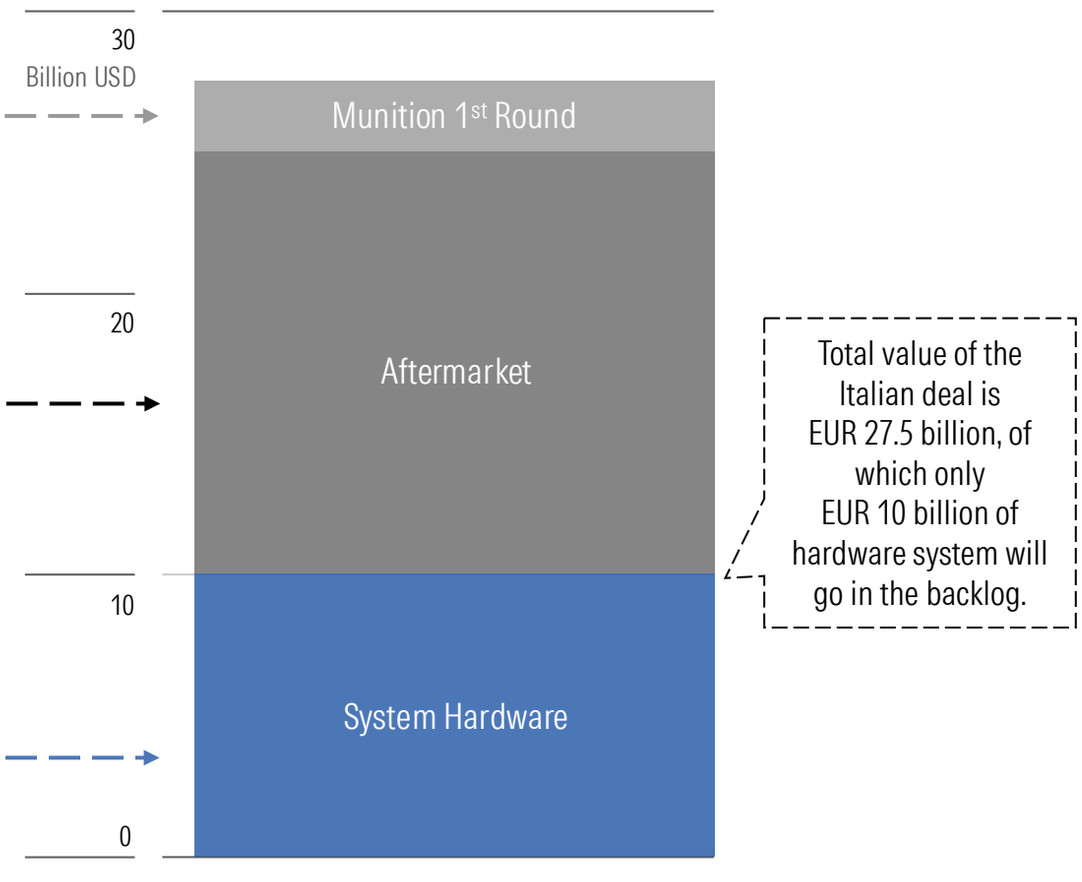
Backlog Doesn't Include Opportunities From Aftermarket and Retrofits

Defense company typical backlog shown below.



Total Value of Long-Life Platforms May Be More Than Twice the Reported Backlog

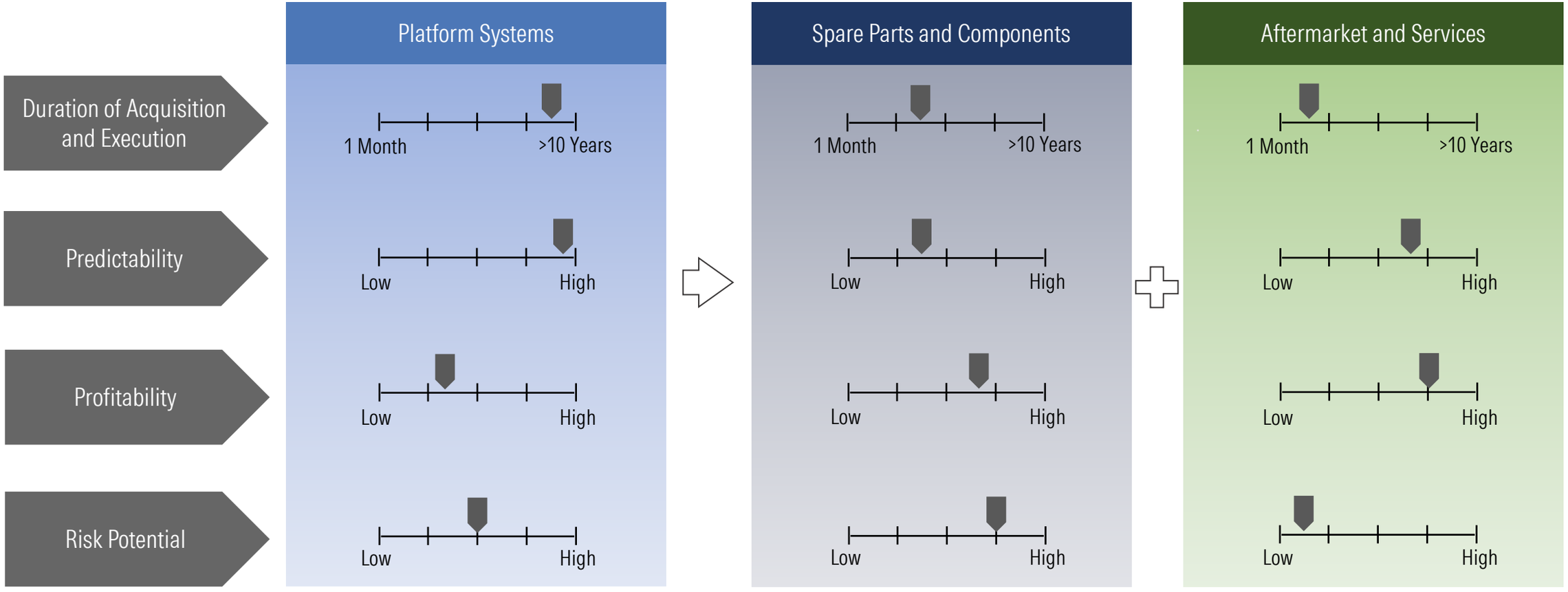
Rheinmetall- Leonardo JV backlog shown below.



Source: Morningstar, Rheinmetall.

Increased Platforms Drive Higher Spare-Parts, Aftermarket Revenue, Improving Mid- and Long-Term Profitability

Recent Platform Acquisition Unlocks Long-Term Multidecade Opportunities for High-Margin and Low-Risk Spare-Parts and Aftermarket Revenue



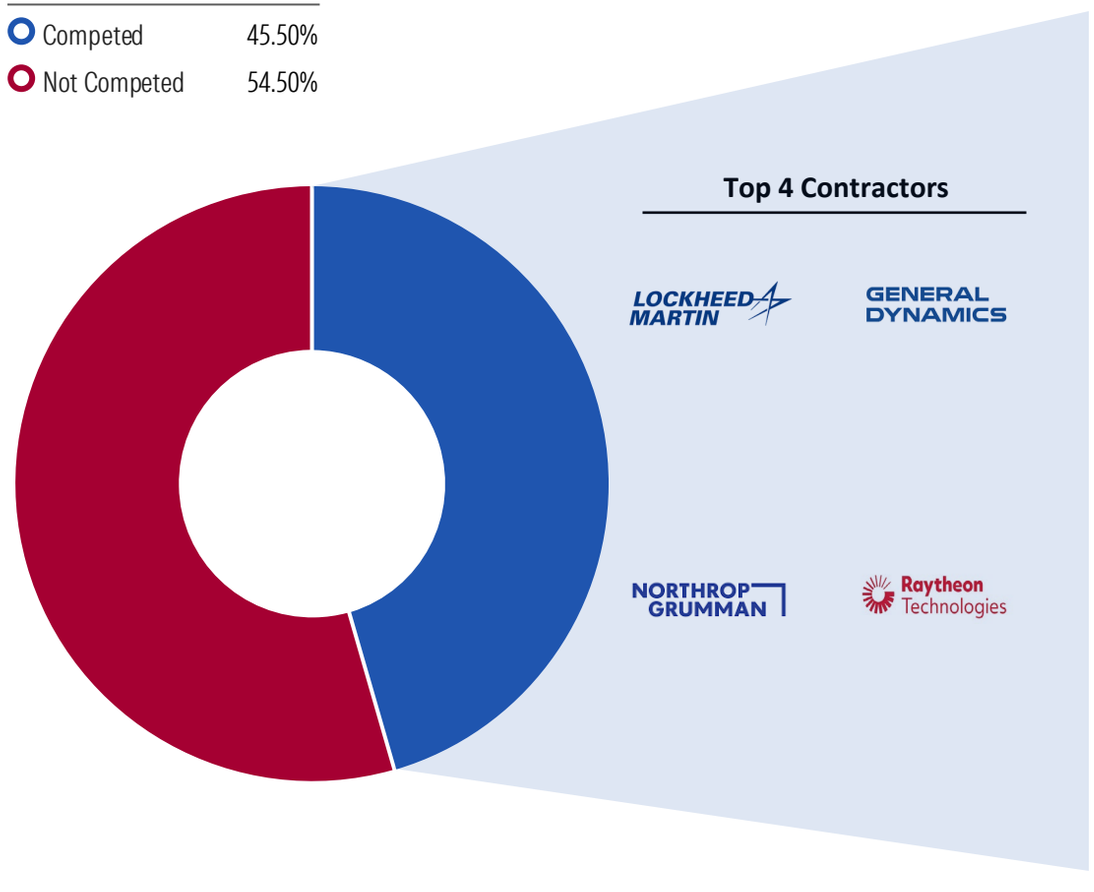
Source: Rheinmetall CMD.

Industry Outlook

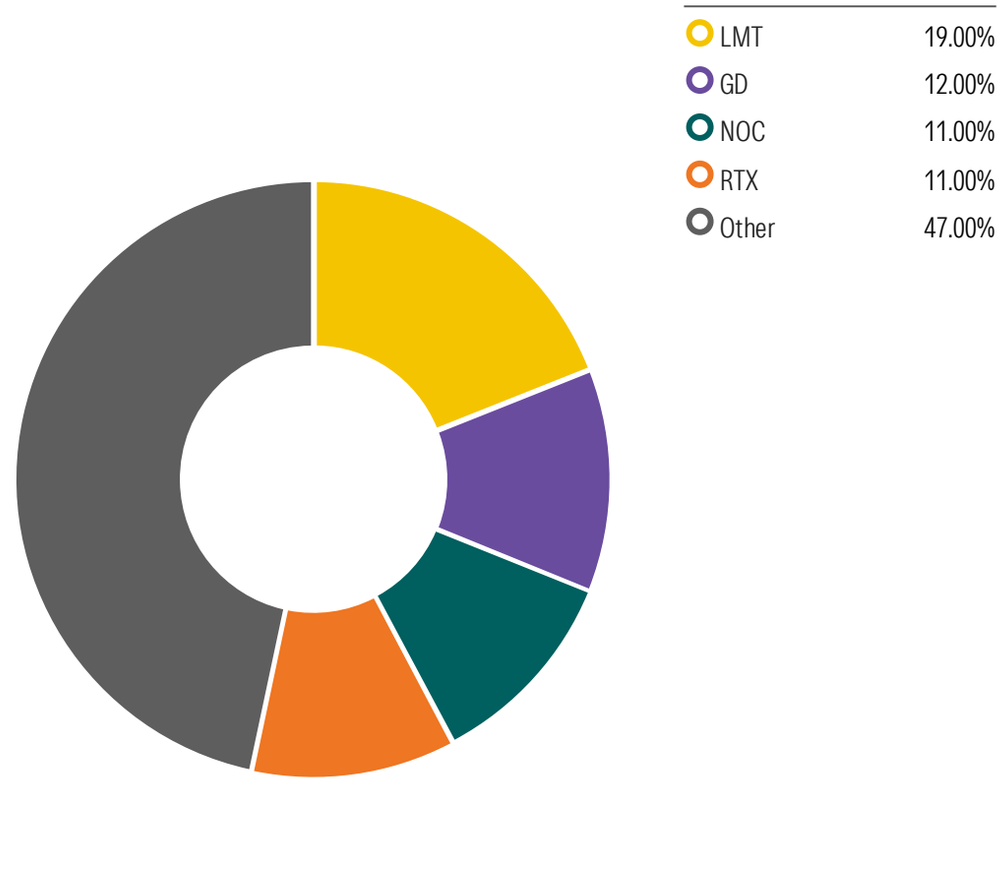
US Defense Budget Will Increase, DoD to Decrease Reliance on Top Contractors

US Procurement Concentrated Around Four Contractors

Defense Department Budget Accessible to Contractors Ranges From 40% to 46%



Top Four Accounted for 53% of Total Available Contracts for the FY 2024 Budget

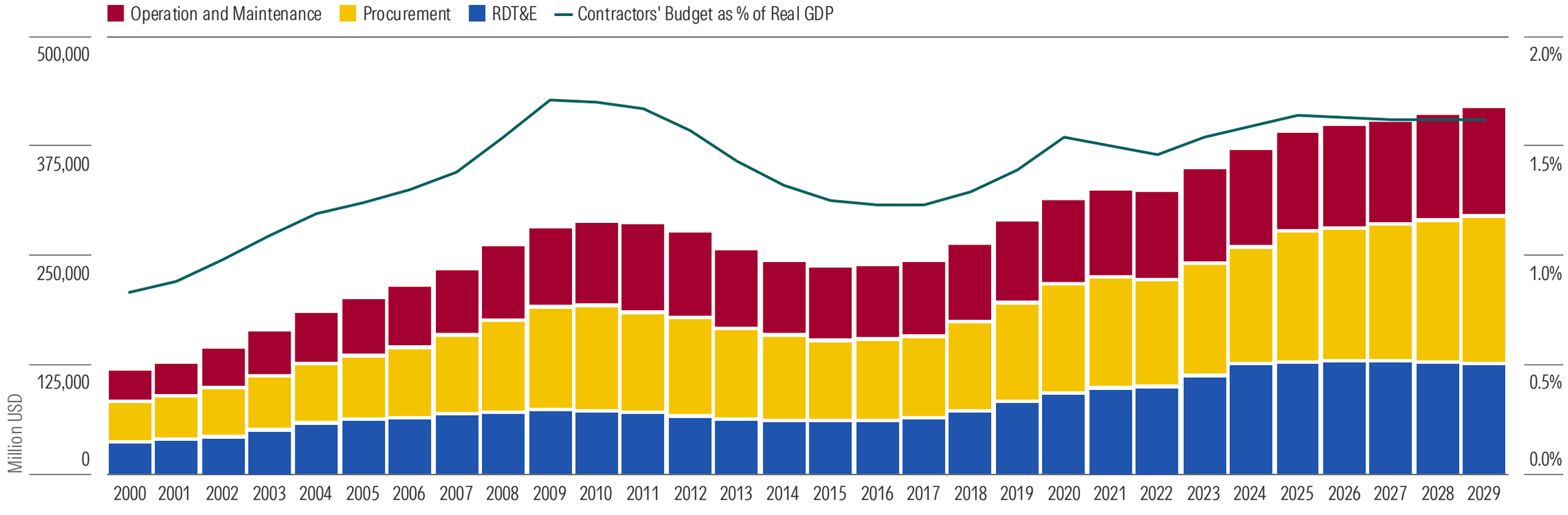


Source: US Department of Defense reports, company reports, Morningstar.

We Expect Available Contractors' Budget to Increase in Line With GDP, With a Higher Share of Procurement

The war in Ukraine has spurred efforts to revitalize US manufacturing, with approximately $68 billion of the $113 billion in aid allocated by Congress directed toward domestic defense firms. This funding aims to boost production capacity and replenish stockpiles. While procurement is expected to grow, R&D funding may slightly decline from current record levels, but it will remain above historical averages to support ongoing modernization. Maintenance represents the largest DoD investment area, of which contractors capture only around 35%.

US Defense Outlays Accessible to Defense Contractors Over Time

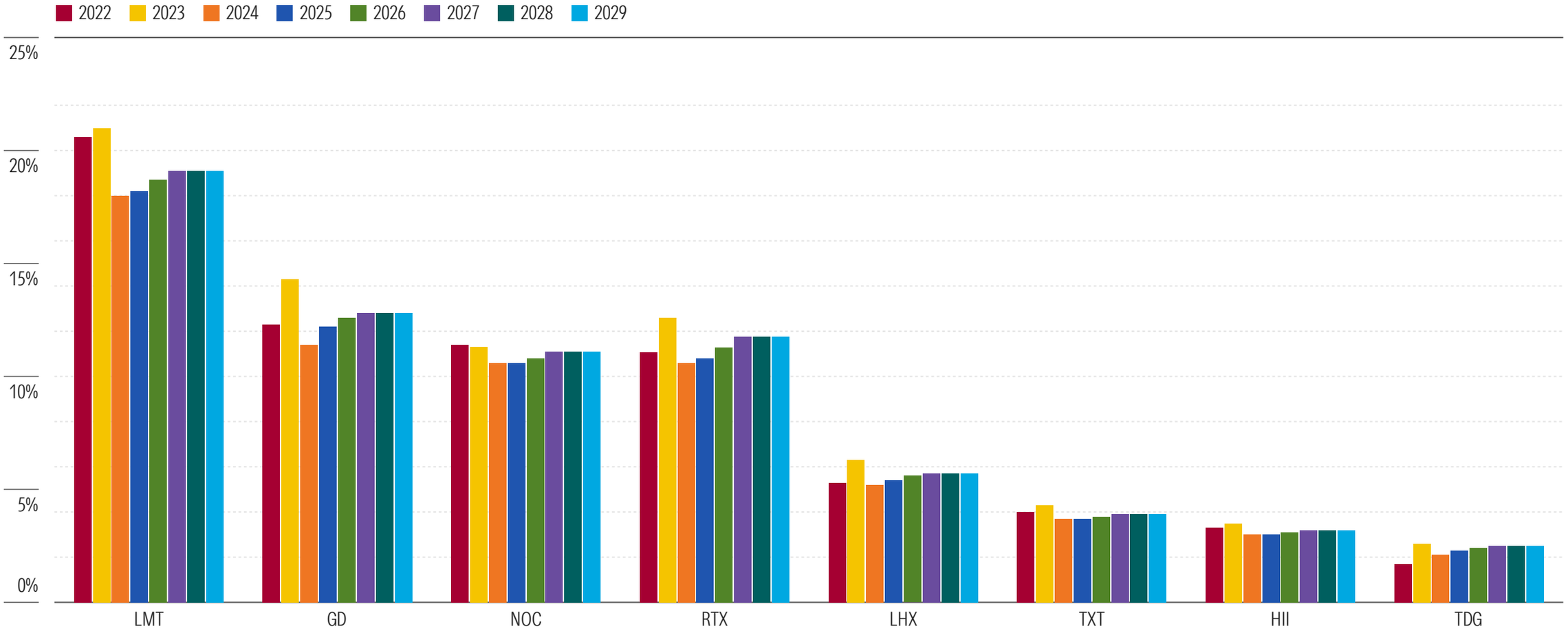


Source: DOD reports, Morningstar.

Revenue Share for Top Eight Contractors Expected to Decline From 2023 Highs; Relative Share Mainly Unchanged

US Defense Outlays Accessible to Defense Contractors Over Time (%); Data From 2025 Based on Morningstar Projection

In the long term there is upside potential for smaller contractors to capture a higher relative share of the budget as the DoD focuses on decreasing top-four contractors' concentration.



Source: Department of Defense reports, company reports, Morningstar.

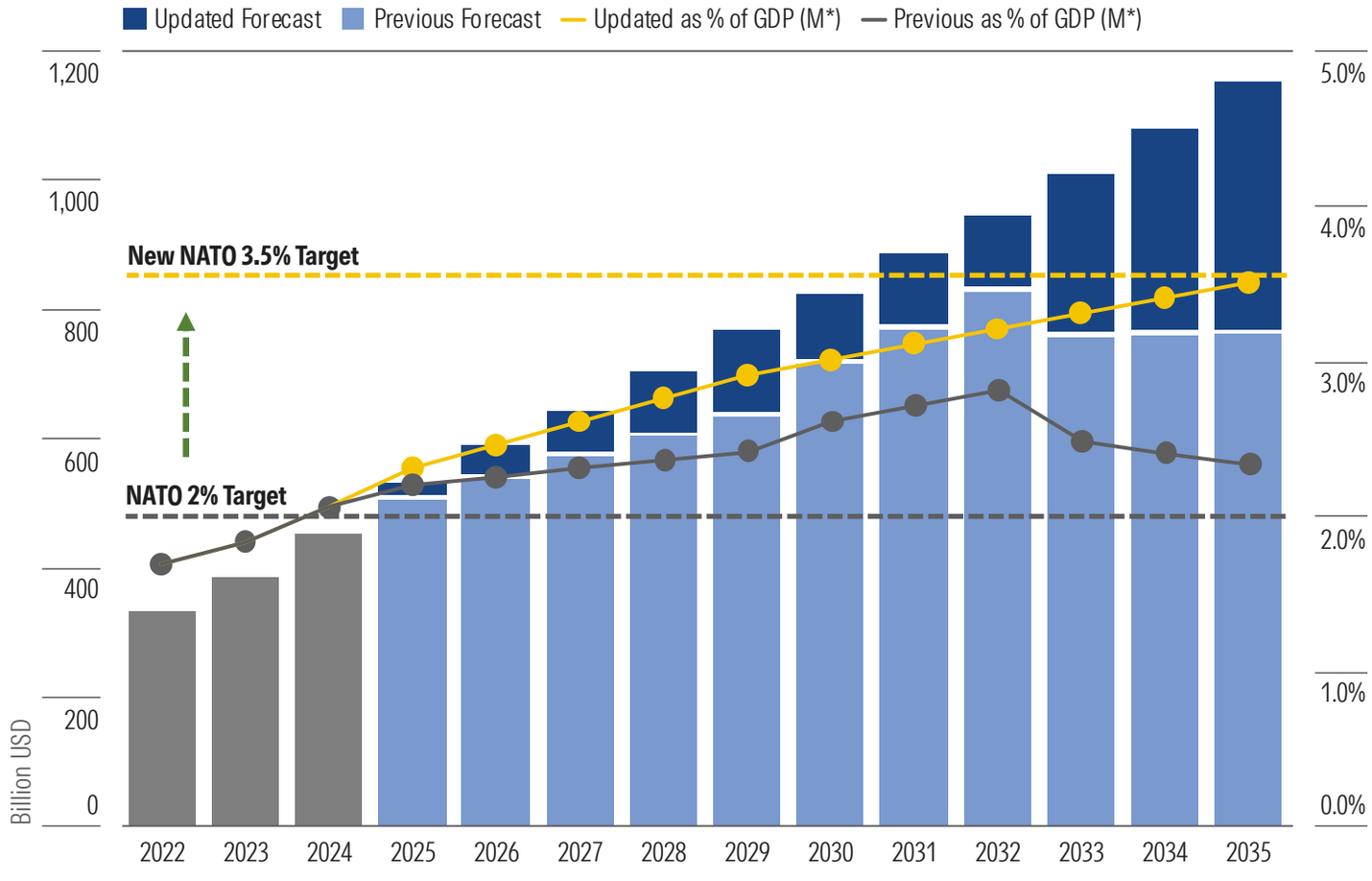
Industry Outlook

European defense budgets to reach 3.5% of GDP, up from 2% in 2024.

What Changed: Higher NATO Targets, Rising Equipment Share, and Structural Uplift in Long-Term Defense Spend

Europe's Core Defense Budget Target, as Share of GDP, Increased to 3.5% from 2%

We Expect Share of Equipment Spending to Increase to an average of 42% from recent 28%



In our previous publication, we argued that NATO's 2% of GDP defense target was insufficient to reverse decades of underinvestment. While we already assumed Europe would need to overshoot this threshold, reaching 2.4% by 2029 and 2.8% by 2032—driven by strategic urgency and Europe's push for autonomy from US—our view remained bounded by political willingness.

Since then, NATO has raised its defense spending target from 2% to allies to 3.5% of GDP to core defense, removing earlier constraints on willingness to pay. The increase was driven by intensification of geopolitical tensions, along with US pressure under Trump's administration. We now expect core defense to reach 3% by 2030 and 3.5% by 2035.

We raised our midterm equipment spending forecast for Europe to 42%, from 32% previously, to reflect European urgency in rebuilding scale and capacity amid strained inventories and decrease reliance of US support.

We expect long-term spending to remain structurally above our prior 2% of GDP baseline, driven by the need to rebuild inventories, and strengthen overall readiness.

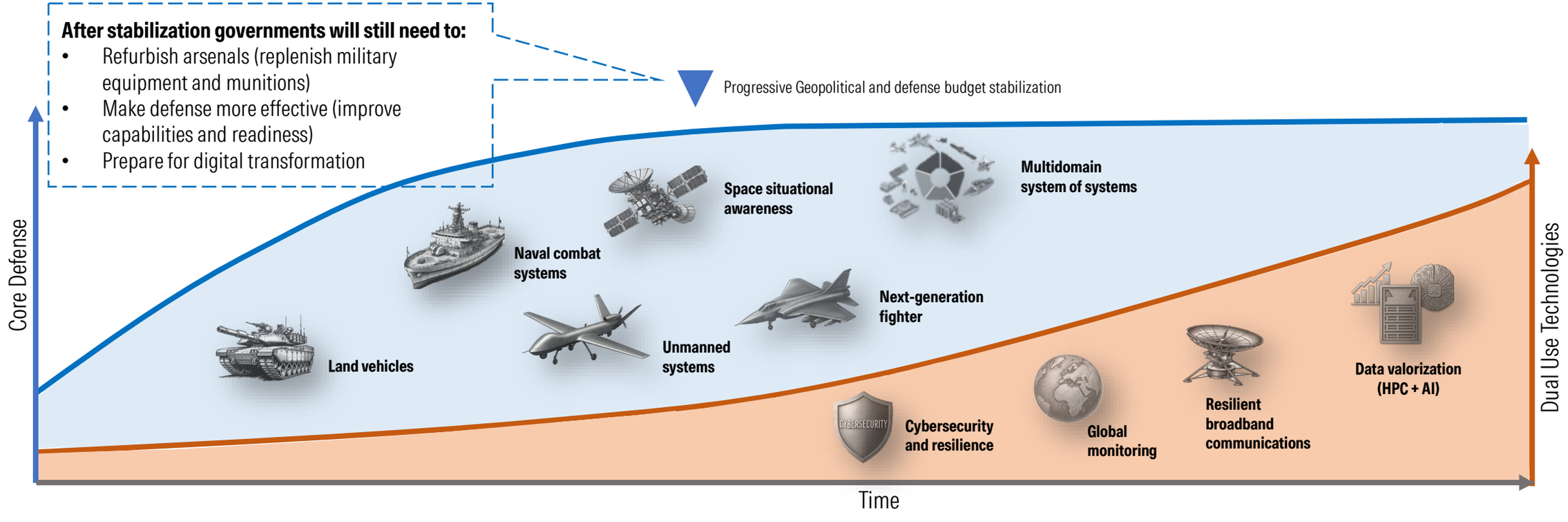
Source: International Monetary Fund; NATO defense spending data, Rheinmetall annual report, Morningstar.
M*: Morningstar forecast.

NATO Budget Increase Expands Core Defense While Unlocking Dual-Use Opportunities

NATO's 5% GDP target by 2035 earmarks 3.5% for core defense, directly accessible to contractors. The remaining 1.5% funds broader security infrastructure, not accessible to contractors, but also enables investment in dual-use and cyber-resilient technologies. Over time, defense priorities will shift away from traditional platforms toward more advanced and integrated systems. Governments will need to strengthen critical infrastructure with emerging technologies, driving a transition to dual-use (military and civilian) security.

From Core Defense to Dual Use Global Security- Dual-use Technologies are Gaining Strategic Importance as Innovation Becomes Central to Capability Growth

Not in Scale

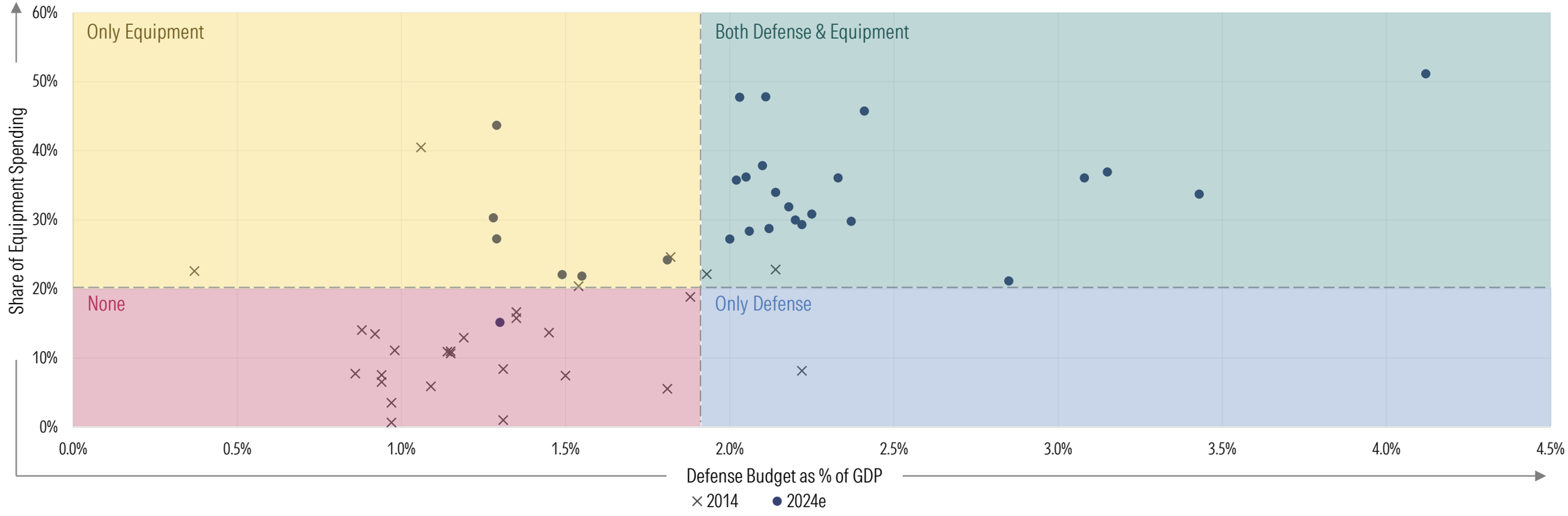


Source: Leonardo Industrial Plan 2025-29; Morningstar.

European Nations Are Increasing Overall Defense Spending While Allocating a Greater Share to Investments

In 2024, only seven EU countries, including Italy and Spain, missed the 2% GDP benchmark for defense spending, while the EU collectively exceeded the 20% investment target for the fourth year, reaching 24.2%. Despite record-high spending, R&D investment has declined in favor of off-the-shelf equipment, with only Germany and France meeting the 2% R&D benchmark. Collaborative initiatives like the EDA and European Defence Fund are crucial for addressing this gap and fostering future growth.

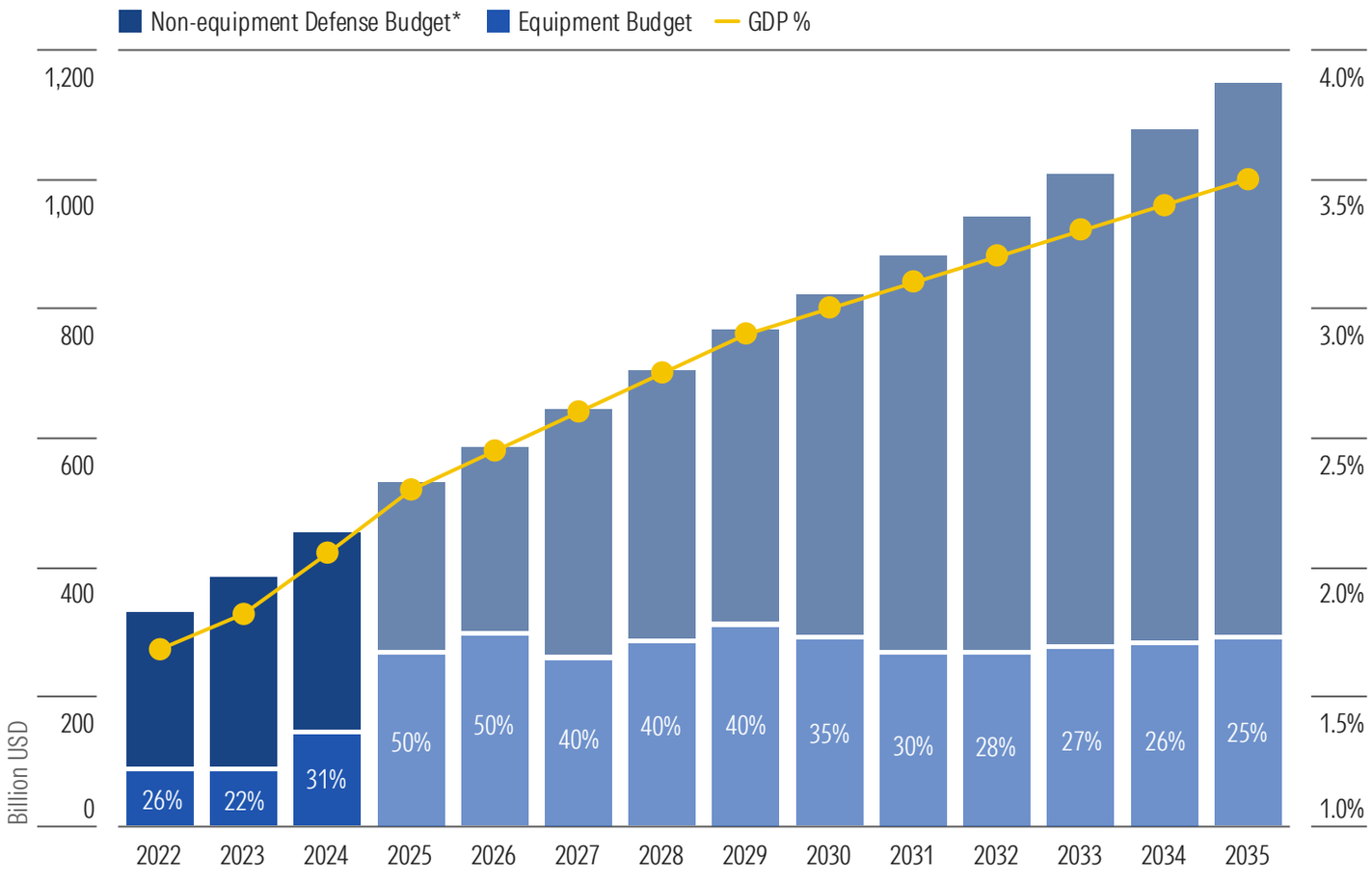
Comparison of European Countries Defense and Equipment Spending in 2014 Versus 2024, Categorized by Compliance With NATO Spending Commitments



Source: Bruegel, A European Defence Industrial Strategy in a Hostile World, NATO, Morningstar.
Note: EDA: European Defence Agency.

Europe's Defense Rebuild to Drive Equipment-Led Growth Through 2035

European Countries' Defense Budget to Reach 3.5% of GDP With Increased Share of Equipment in the Midterm



Defense super-cycle to unlock $1.7 trillion Opportunity by 2030. We project European defense spending will reach 3.2% of GDP by 2032 (USD ~900 billion), climbing to 3.5% by 2035 before stabilizing.

Equipment has averaged 28% of defense budgets in recent years, rising to 31% in 2024—still inadequate after decades of underinvestment. We expect a mid-term pivot toward inventory replenishment, pushing equipment to a meaningful increase in the midterm to then stabilize again around the historical rate of 25% by 2035 as personnel and R&D take precedence. This reallocation could unlock USD 1.7 trillion in cumulative equipment outlays by 2030, and up to USD 3 trillion over the next decade—primarily benefiting European contractors.

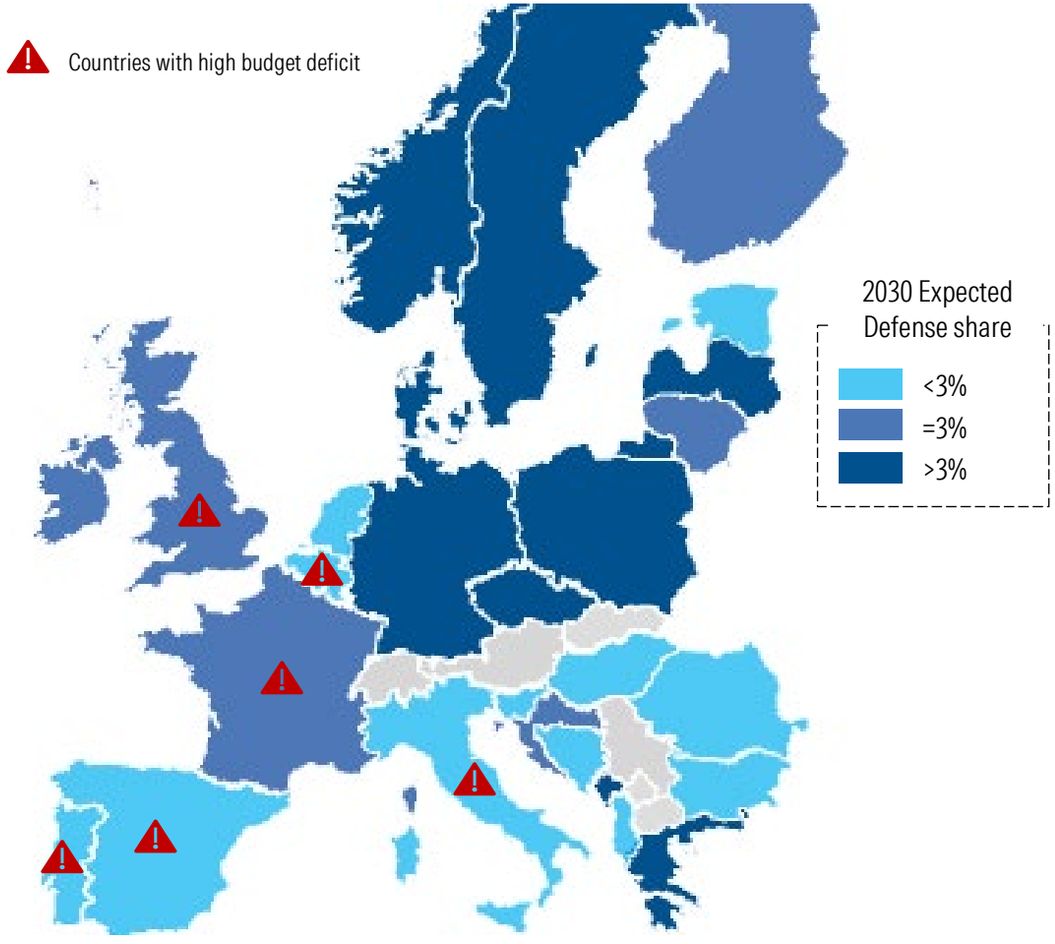
We believe most of this structural spending increase is already reflected in Industry forecast. Further upside will depend on greater clarity—on how the funds will be allocated, and how high-deficit countries will implement their spending plans.

Source: International Monetary Fund; NATO defense spending data; Rheinmetall annual report; Morningstar analysis.
*Note: R&D, maintenance, personnel, and infrastructure.

Europe's Defense Buildup Faces Uneven Path Without Further Support, Despite Ambitious Targets

High-Deficit Countries Will Struggle to Meet Target Without External Support

As a Percentage of GDP



- We believe implementation will be highly uneven. The goal is nonbinding and fiscal constraints will remain a major obstacle. For now, support comes mainly through temporary fiscal flexibility under the EU's ReArm Europe plan. But this flexibility is limited, both in scope and duration. It lasts only four years and is benchmarked to 2021 spending levels.
- Germany is set to meet NATO's 3.5% GDP defense spending goal in 2029, after amending its budget rules to exempt all military spending above 1% of GDP from the debt brake. Rheinmetall is poised to capture more than 50% of the equipment spending.
- We expect France to reach 3% of GDP in 2030 despite rising budget deficits, with national champions Thales and Dassault set to benefit significantly.
- The UK plans to raise defense spending to 3% of GDP by 2030, up from the current 2.3%. We expect this increase to benefit national champion BAE Systems, which we projected to capture approximately 45% of the equipment budget.
- Italy is one of the few European countries with 2024 defense budget below NATO's 2% target at 1.6% of GDP. Spending is projected to rise to 2% in 2025 and 2.8% by 2030. Key priorities include the procurement of Lynx vehicles and Panther tanks through the Rheinmetall-Leonardo joint venture, as well as 25 F-35s and 24 Eurofighters, where Leonardo will benefit from its Tier 1 role in both programs.
- Sweden has committed to significantly increasing defense spending, aiming to reach NATO's 3.5% GDP in 2030. We expect national champion Saab to capture an estimated 60% of the equipment budget. Additionally, BAE Systems is also poised to benefit from it, through Sweden's combat vehicle upgrades.

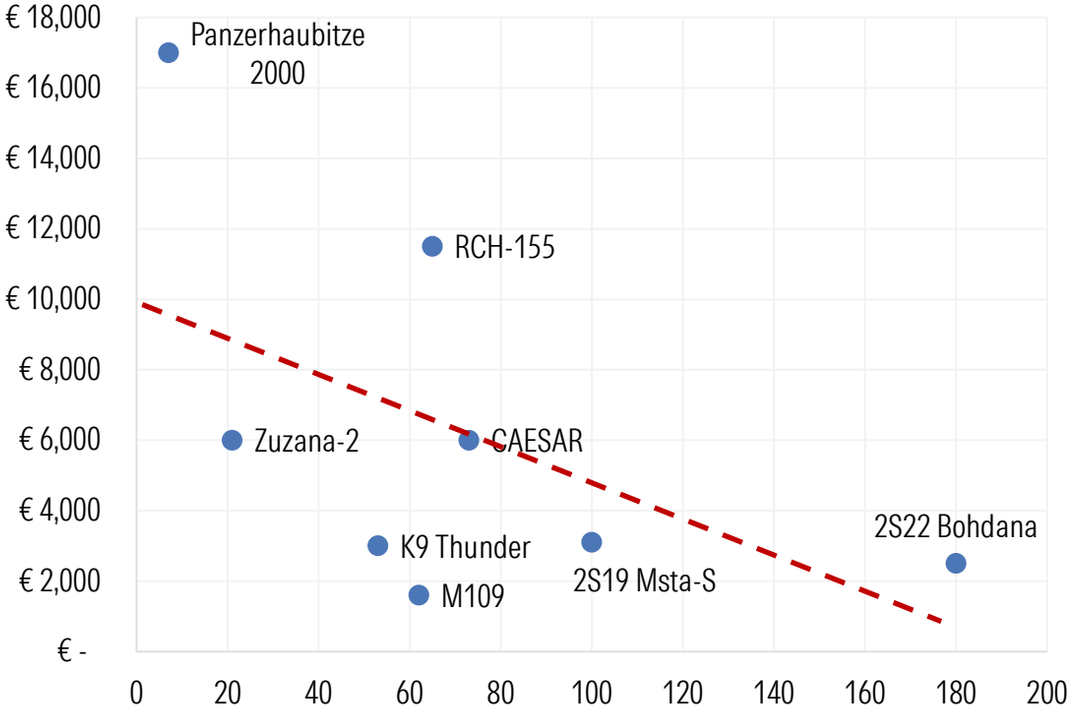
Source: International Monetary Fund, NATO defense spending data, Morningstar.

Joint Defense Projects Could Further Boost Efficiency for Contractors While Reducing Costs for Governments

We see consolidation as a key pillar of Europe's defense transformation. It will help the EU meet NATO targets, cut government costs by up to 30%, and unlock economies of scale and aftermarket revenue—potentially driving a further rerating of European contractors. Europe's EUR 150 billion joint procurement fund helps ease the load on high-deficit states but remains insufficient on its own. Momentum is building around complementary tools, with consolidation also driven by contractors accelerating cross-border JVs for next-gen platforms.

Scale Economies Example: EU Howitzer Unit Cost and Annual Production Capacity

The EDIS* requires 40% of equipment to be pooled by 2030 with 60% sourced in EU



Multiple Collaborations Are Underway in Air, Land, Missile, and Electronic Systems

FCAS

Aims to develop next-generation fighter aircraft to replace Eurofighter Typhoons and Rafales by 2040.

GCAP

Focused specifically on next-generation combat aircraft. Not as comprehensive as FCAS, which is a complete ecosystem.

MGCS

Aims to develop next-generation land platform and systems, including gun, turret, and ammunition, by 2040.

MBDA

Leading European missile manufacturer. The JV also involves developing the Future Cruise/Anti-Ship Weapon program.

RHM-LDO

Strategic partnership between Leonardo and Rheinmetall, to develop military combat vehicles in Europe.

ESSI

(Led by Germany; 21 nations)

The project aims to create an integrated European air defense system with shared procurement and operational capabilities.

Source: Bruegel, A European Defence Industrial Strategy in a Hostile World; Morningstar.
*EDIS: European Defense Industrial Strategy.

Industry Outlook

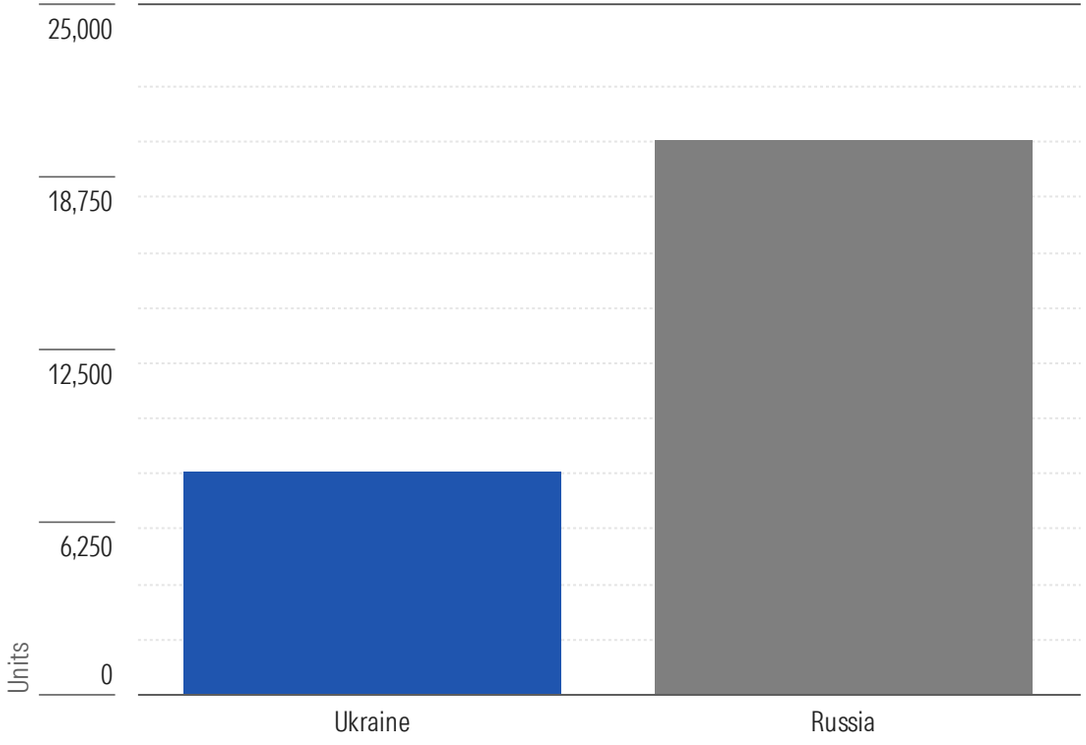
Focus on Selected Segments: Artillery, Air, Space Land, Naval, and Private Capital

Artillery Demand Results in Double-Digit, Multibillion Opportunity in the Midterm Even Without Ukraine War

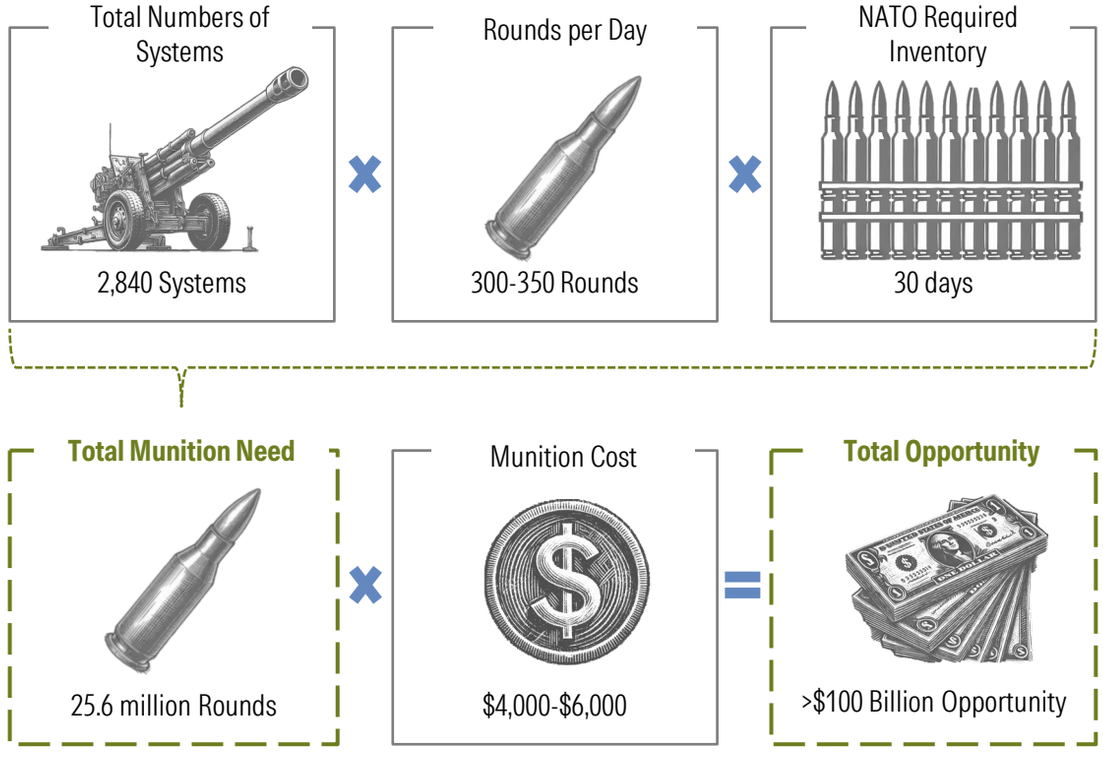
Ukraine uses 110,000 artillery shells monthly but needs up to 600,000 for optimal operations. Assuming the war will continue for another six months, this demand could cost more than $14.4 billion. Each shell costs between $4,000 and $6,000.

Even with the end of the Ukraine war, NATO's 30-day stockpile mandate for high-intensity conflict implies major restocking needs. Assuming 300 rounds per system per day, minimum ammunition sales could exceed $100 billion.

Ukraine and Russia 155 mm Daily Round Consumption



US and Europe 155 mm Ammunition Requirement Based on High-Intensity Conflict

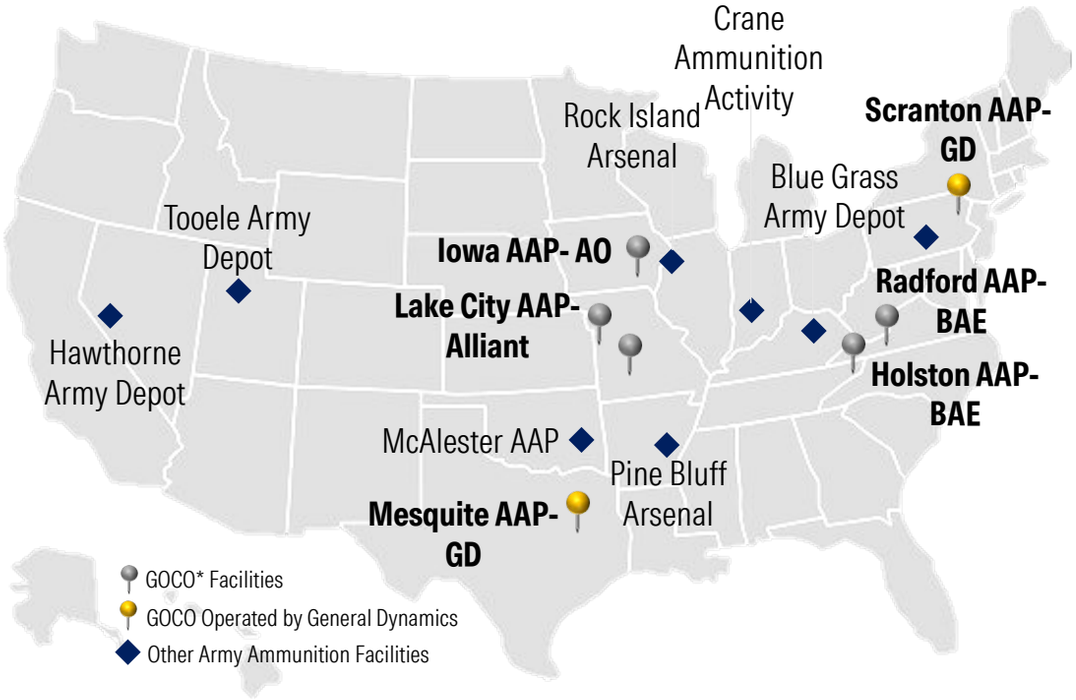


Source: Morningstar.

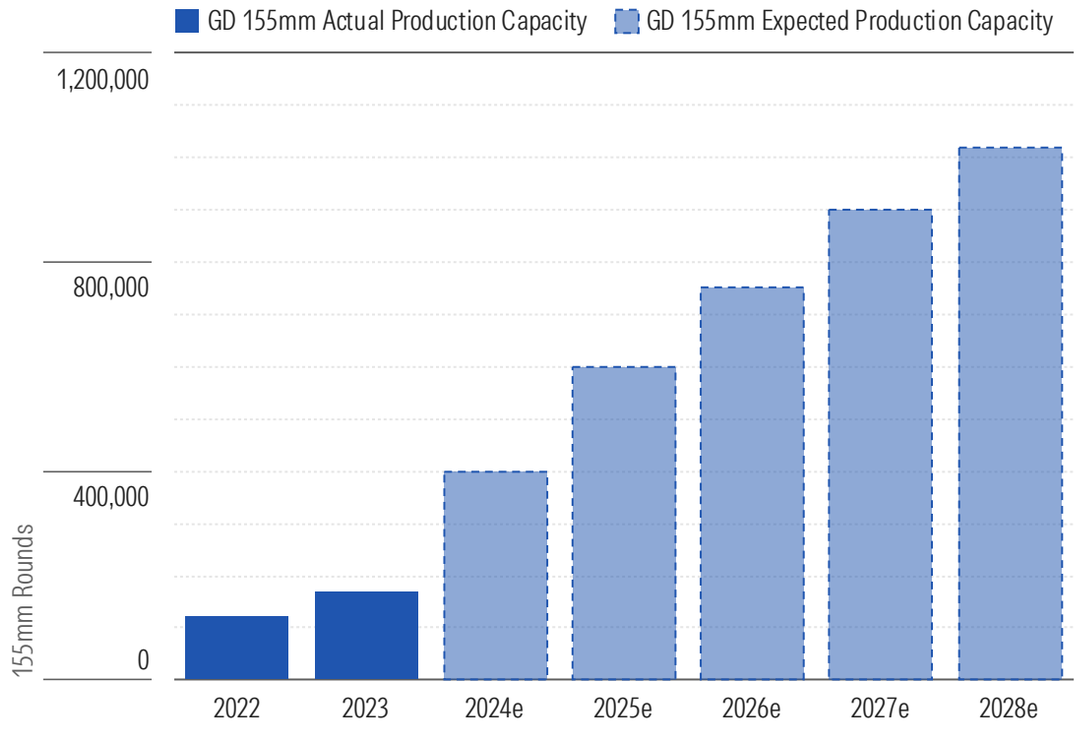
In the US, There Are Around $55 Billion in Opportunities in the 155mm Artillery Ecosystem

To meet NATO's 30-day stockpiles requirement, we expect the US will need 14 million 155mm artillery shells for its 1,500 systems in service. Key beneficiaries include General Dynamics (shell production), American Ordnance (propellant), and Day & Zimmermann (assembly). Production rose from 168,000 rounds in 2023 to 400,000 by late 2024, with plans to hit 600,000 by 2025 through General Dynamics' Texas facility. By 2028, the DOD aims to exceed 1 million rounds annually, incentivizing capacity expansion by introducing framework contracts.

US 155mm Ammunition Production Sites



General Dynamics Production Capacity Increase



Source: General Dynamics; Morningstar.
Government Owned Contractor Operated facilities: The GOCO facilities are specifically designed for ammunition production, while the other facilities serve various purposes including storage, distribution, and demilitarization of ammunition.

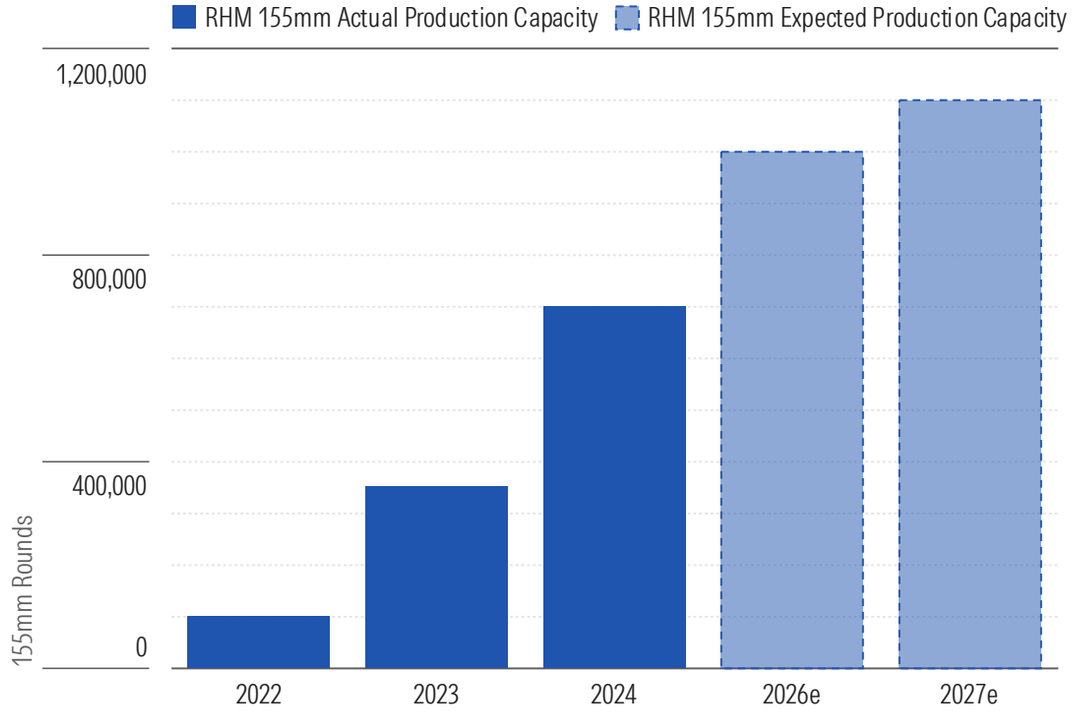
See Important Disclosures at the end of this report.

European 155 mm Replenishment Worth USD 50 Billion, With Potential to Double as Ukraine Needs Increase

The EU pledged 1.5 million 155 mm shells to Ukraine by end-2024 but fell short. We estimate 2024 European output at 960,000, including 700,000 from Rheinmetall. Replenishing stocks for the 1,300 systems (including Ukraine) presents more than $50 billion opportunity, however If Ukraine's recent demand of 1.5 million shells annually for 10 years materializes, it would add another USD 40 billion. Rheinmetall, the largest global and fully vertically integrated producer, is set to benefit the most.

European 155 mm Ammunition Production Sites

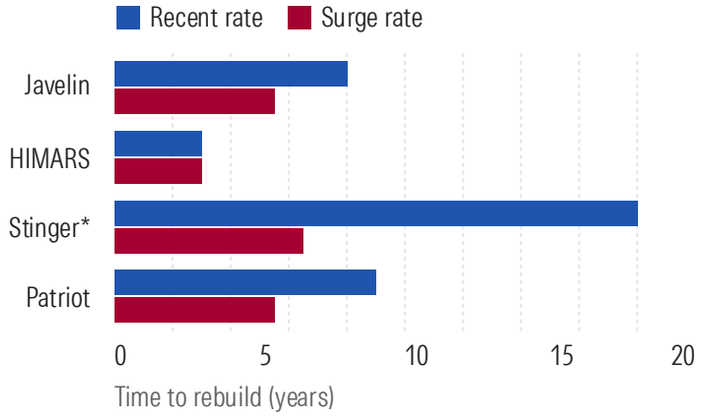
Rheinmetall Production Capacity Increase



Source: International Institute for Strategic Studies, Morningstar.

NATO Ramps Up Missile Output Amid US Inventory Strain and Europe's Capacity Gap With Russia

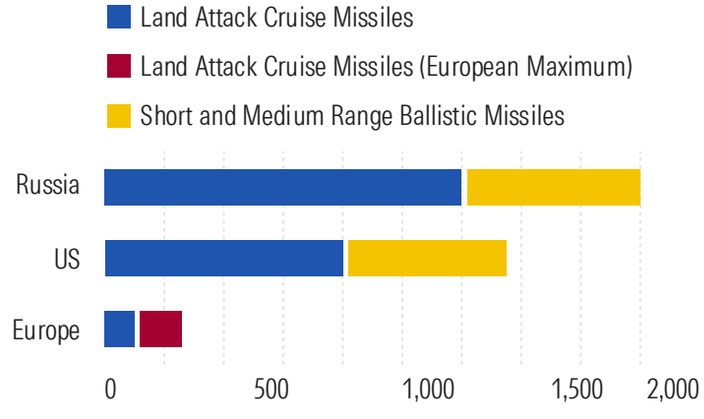
US Quickly Depleting Already Thin Stockpiles (2023)



America's missile consumption in current conflicts far exceeds production capacity, potentially leaving the military unprepared for larger-scale conflicts, particularly with peers like China. For years, US defense planning prioritized counterterrorism leading to underinvestment in high-end precision munitions and limited capacity to surge production.

The US is now depleting missiles faster than it can produce them—driven by crises in the Middle East and ongoing support for Ukraine and Israel. Building high-end precision-guided munitions takes two to three years, plus time to expand manufacturing capacity.'

EU Interceptors Output Lags Russia's Missile Capacity



Europe is struggling to keep pace with production of interceptors—missiles designed to shoot down incoming threats—as Russia ramps up production past 1,000 missiles annually. With limited access to US Patriots, expected to increase to 1,100 annual units by 2027, and low Aster output (270–300 per year), supply is falling short.

Since intercepting a single threat often requires multiple costly missiles, Europe will need to prioritize investment in long-range strike capabilities.

Long-range Shortfall Undermines EU Air Defense

Company	Program(s)	Strategic Role
MBDA	Storm Shadow, Aster30, CAMM	Flagship but lack volume. Storm Shadow is for precision strike, while Aster and CAMM serve as interceptors.
SAAB	RBS-15 + land-attack variant	One of the few developing new long-range precision strike
KONGSBERG	NSM, JSM	Precision strike with strong tactical role in naval and F35; insufficient for strategic depth
RHEINMETALL	PAC-3 JV with Lockheed	Interceptor. Poised to reduce US dependency via co-production.

Europe's missile sector is in urgent overhaul. Without scale in long-range missiles and coordinated procurement Europe lacks credible deterrence. The next three years are decisive. Europe's layered air defense backbone covers short-, medium-, and long-range threats, with MBDA (Airbus, BAE , Leonardo), Kongsberg, and Saab driving the push, but success depends on government's backed multiyear production ramp-up and embedded innovation.

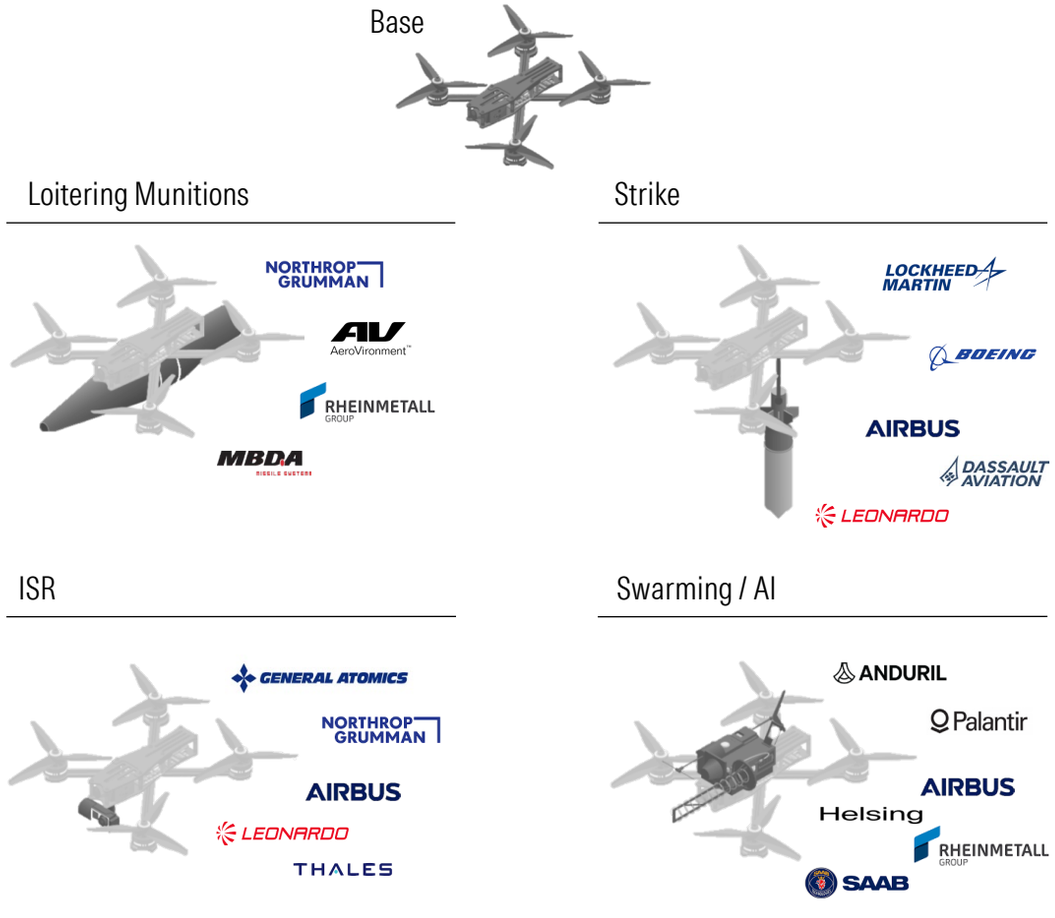
Rheinmetall and Lockheed plan to establish a European annual production of 250–300 PAC-3, targeting to meet regional demand pending JV approval.

Source: Center for European Policy Analysis; Center for Strategic & International Studies; Morningstar.
*Stinger: Surge rate assumed in line with historical rate

Drone Disruption Reshapes Defense Industry Structure; Primes and Startups, Racing to Lead the Drone Battlefield

US and European Prime Contractors by Drone Role

NATO is Prioritizing Modular, AI-enabled ISR, Loitering Munitions, and Swarm Drones

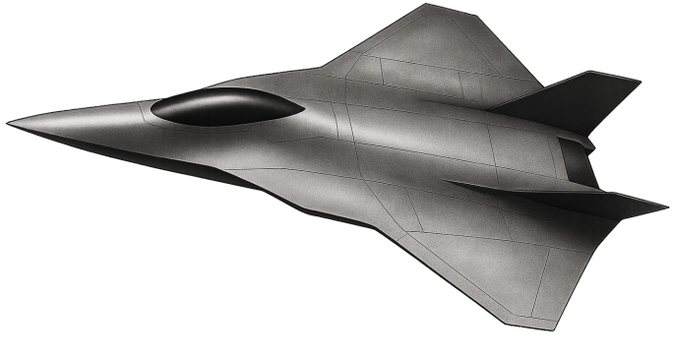


- The Ukraine war revealed that air defense cannot scale without drone parity forcing a rethink of global defense strategy by showing that agile, cheap, rapidly iterated drones are often more effective than complex, slow, and expensive traditional systems. Without shifting to scalable, cost-effective drone and counter-drone systems, NATO risks being outpaced in future high-intensity conflicts.
- The drone sector is evolving from experimental technology into essential battlefield infrastructure, giving lasting advantages to firms that secure leadership early in this pivotal phase. ISR and loitering munitions are fastest-growing niches, with rising demand across NATO countries.
- The new battlefield approach emphasizes rapid iteration over precision. Ukraine proved that drone innovation is fast, cheap, and decisive. The winner is not who builds the best drone, but who builds the most adaptable one, the fastest. Agile firms like Anduril, AeroVironment, and Helsing are now winning contracts and market share at the expense of incumbents like Lockheed, BAE, and Raytheon.
- Traditional defense primes are forming joint ventures and pursuing bolt-on M&A with startups, to keep pace with fast-moving drone innovation. These deals give primes access to cutting-edge software and autonomy, while startups gain access to government procurement channels, long-term contracts, and credibility.
- The US leads in drone fleet size and capability, while China dominates in production volume, especially for commercial drones. Russia is ramping up military drone output but depends on Chinese tech and still trails US in volume quality. The EU is progressing through joint programs but remains limited by fragmentation and slow procurement.

Source: Center for Strategic and International Studies; Morningstar.

Sixth-Gen Delays Deepen Fifth-Gen Lock-In and 4.5-Gen Relevance; MRO & Upgrades to Drive Revenue and EBIT

Sixth-Gen Delays Underscore Execution and Cost Risks



Next-generation fighter programs are progressing unevenly. The US NGAD program was paused in 2024 amid cost reassessment and only partially advanced with the F-47 award in 2025, while European sixth-gen projects—FCAS and GCAP—continue to move forward, albeit at different speeds. GCAP has made concrete progress on workshare and is expected to double investment over the mid-term. China's unveiling of prototypes signals intent, though operational timelines remain unclear. Meanwhile, engine programs led by GE and Pratt & Whitney are advancing, but no platform is likely to reach operational maturity before 2032.

F-35 Still Leads; Support and Upgrades Sustain EBIT

F-35 (US)

- Over 1,000 units delivered to 19 countries.
- Block 4 upgrades to drive capability and margin expansion through 2040+

J-20 (China)

- In production, but engine issues and sensor integration remain key limitations.
- No confirmed exports.

Su-57 (Russia)

- Very limited production, estimated <30 units fielded.
- Export constrained by sanctions. Algeria is first confirmed foreign buyer.

F-35 remains the dominant fifth-gen platform, with 110 deliveries in 2024 and continued momentum into 2025. Trilateral drills with Australia, Japan, and the US cemented its role in the Pacific, while new European approvals extended its footprint. Fleet entrenchment makes replacement cycles sticky, even amid geopolitical shifts.

Long-term margins will be driven by sustainment, Block 4 upgrades, and broader Command-and-control and ISR integration—supporting contractor Lockheed Martin and suppliers Northrop, L3Harris, and RTX.

4.5-Gen Upgrades Are a Durable Bridge

Eurofighter

- Consortium of BAE, Airbus , and Leonardo.
- In service fleet of 570 aircraft operated by nine countries
- Backlog of 102 jets as of mid 2025.

Rafale

- Rafale is produced by Dassault, with Thales as the lead supplier for EW and radar.
- 533 total orders (299 export, 234 France), 246 jets to be delivered as of 2025.

Grippen E/F

- Gripen E orders total 135 units across Sweden, Brazil, and Colombia.
- Hungary and Czech Republic continue operating earlier C/D variants.

Legacy fighters remain strategically relevant, with upgrade adaptability supporting mid-term revenue visibility for Airbus, Dassault, BAE, Saab, Leonardo and Thales. Sustainment and software-driven enhancements will anchor long-term margins.

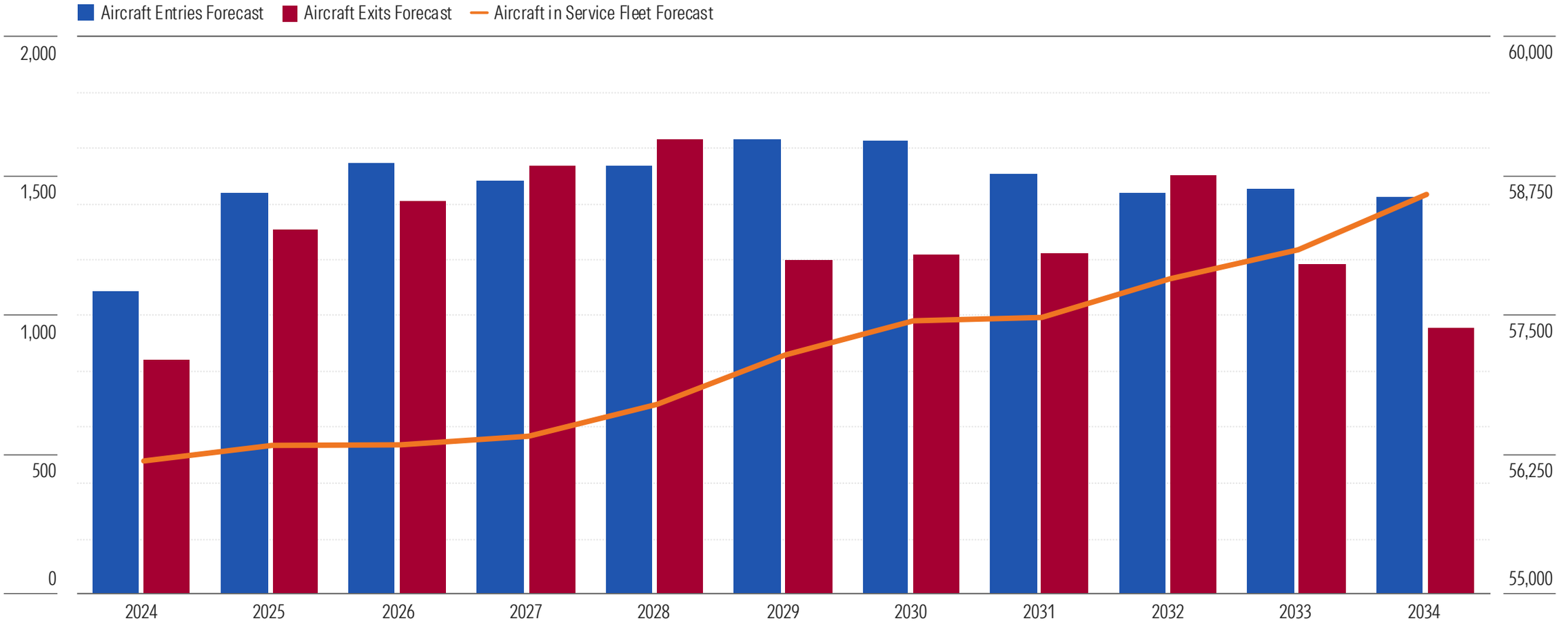
Rafale F5 and Typhoon Tranche 4–5 upgrades align with NATO ISR and sensor standards, while Gripen E/F marks a step-change in 4.5 gen capability vs. previous versions.

Interoperability is now a procurement driver, favoring platforms with coalition-ready architectures.

Source: Jane's Defense; Morningstar.

Global Aircraft Fleet Expected to Grow by 4% in the Next Decade, With New Builds Amounting to Around 15,000

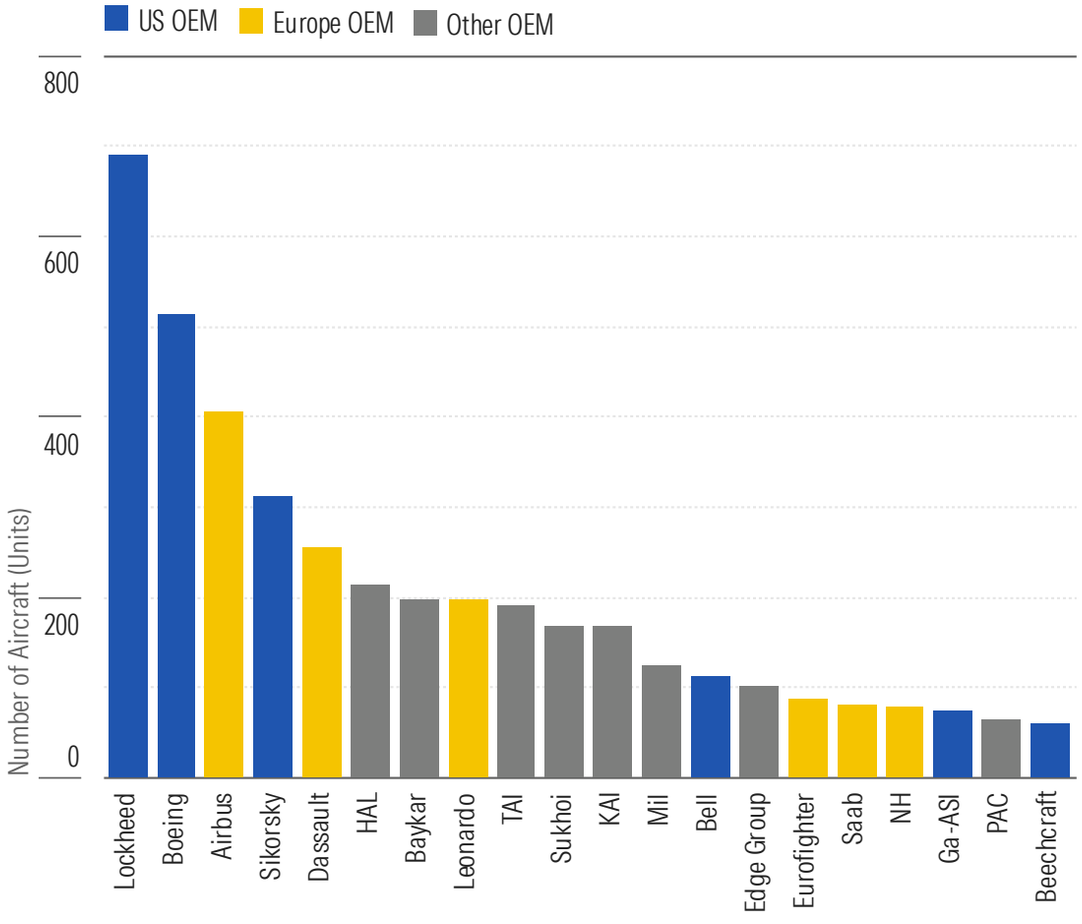
Projected Global Aircraft Fleet, Deliveries, and Exits 2024-34



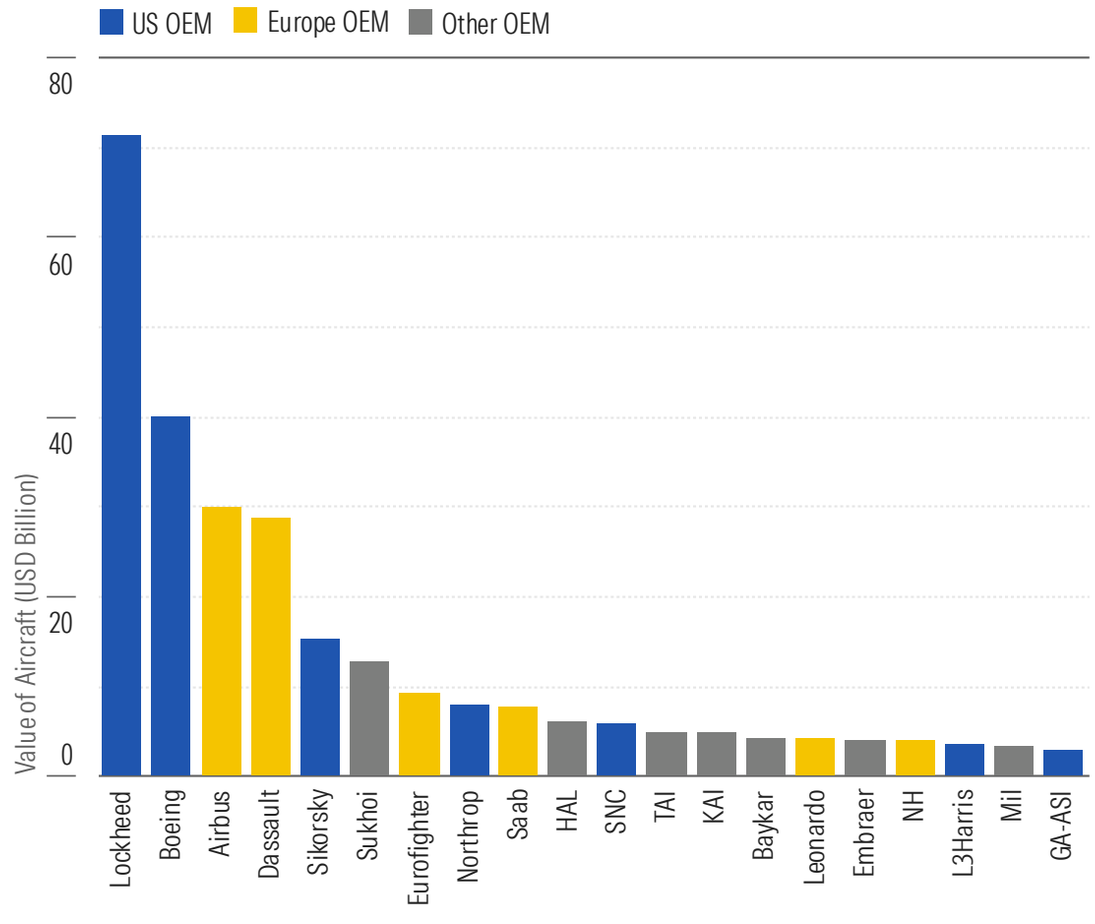
Source: Aviation Week.

7,000 Military Aircraft Under Contract in Next Decade; Top 20 Contractors Earning 84% of Total $300 Billion Opportunity

OEM Order Book 2024-34 Number of Aircraft



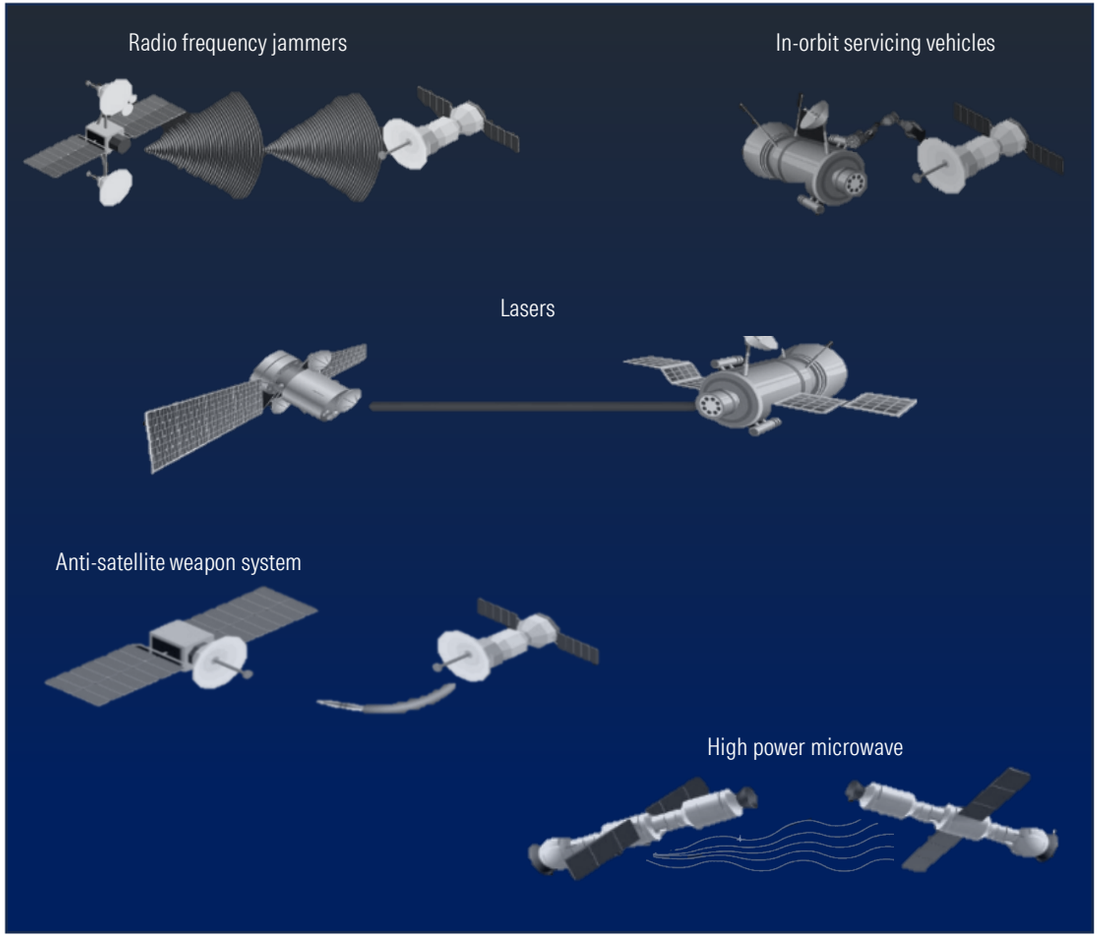
OEM Order Book 2024-34 Value of Aircraft (in USD Billions)



Source: Aviation Week.

Surging Defense Investment Is Turning Space Into a Strategic Growth Market

Space Capabilities Are Expanding Rapidly Across Major Powers

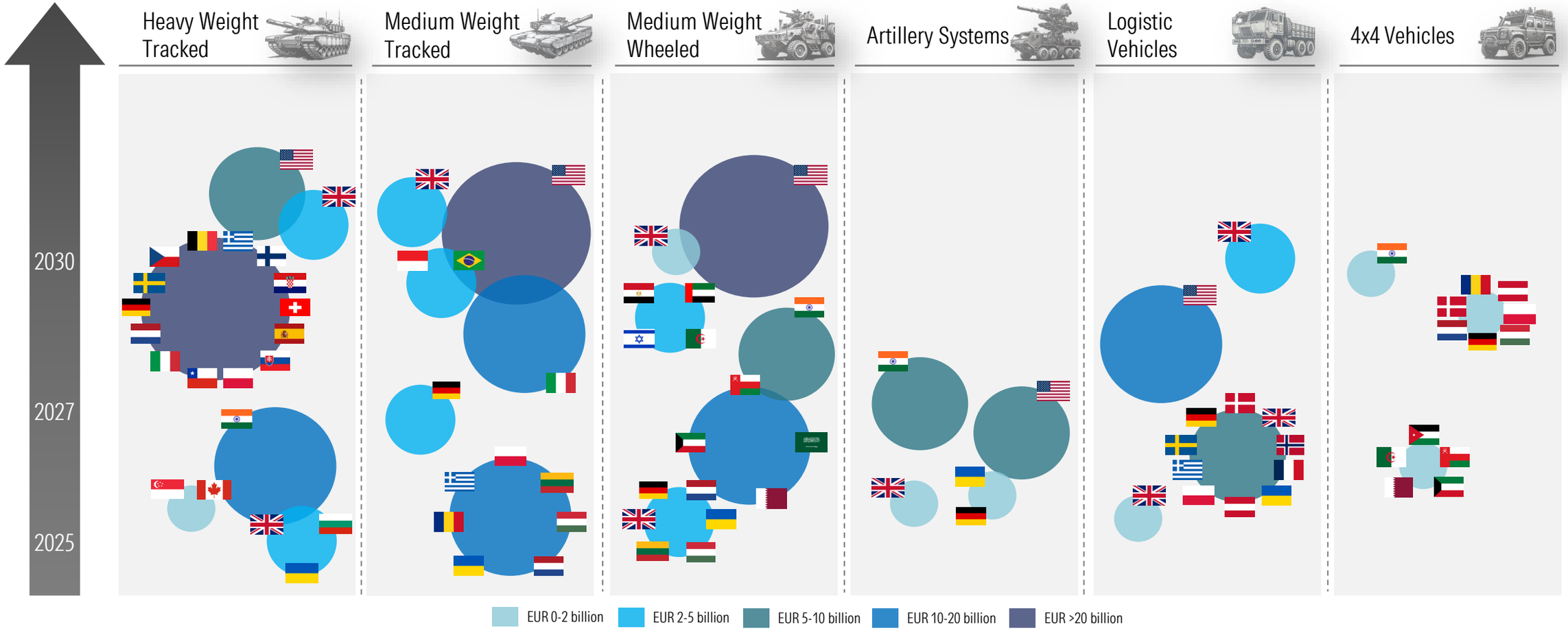


- The global space defense market is projected to grow at high-single CAGR through the late 2020s and mid 2030s. Growing tensions between space-capable nations are driving demand for satellite-based surveillance, missile defense, anti-satellite weapons, and more resilient space architectures..
- The US leads global space investment, accounting for 64% of total spending in 2023, driven by large-scale satellite deployments aimed at enhancing missile warning systems and secure communications through resilient, cost-efficient coverage. This strategy makes it costly for adversaries to disrupt US space assets and supports a surge in offensive capabilities like jammers and lasers. Key contractors poised to benefit include L3Harris, BAE, Northrop Grumman, Lockheed and Raytheon.
- Europe's total space budget in 2023 was around one-sixth that of the US, with approximately 85% still directed toward civilian programs. While military space is now expanding due to rising security concerns and the need for strategic autonomy, investment levels will need to further increase for Europe to close capability gaps with Russia and China. Europe's leading firms (Airbus, Thales, Leonardo, Eutelsat, and BAE) are increasingly focused on dual-use and defence space, but their scale and integration lag behind US peers. France is leading Europe's push into military space with a EUR 6 billion plan to defend its satellites using patrol spacecraft, space monitoring, and laser systems..
- China and Russia are expanding cooperation, aiming to counterbalance US dominance and present a united front in space defense by prioritizing counterspace capabilities, missile defense, and space-based surveillance.

Source: Jane's Defense April 2024 Issue; ESA Report on Space Economy 2024; Morningstar.

Land Systems Represent Over $300 Billion Opportunity for Western Countries Through 2030

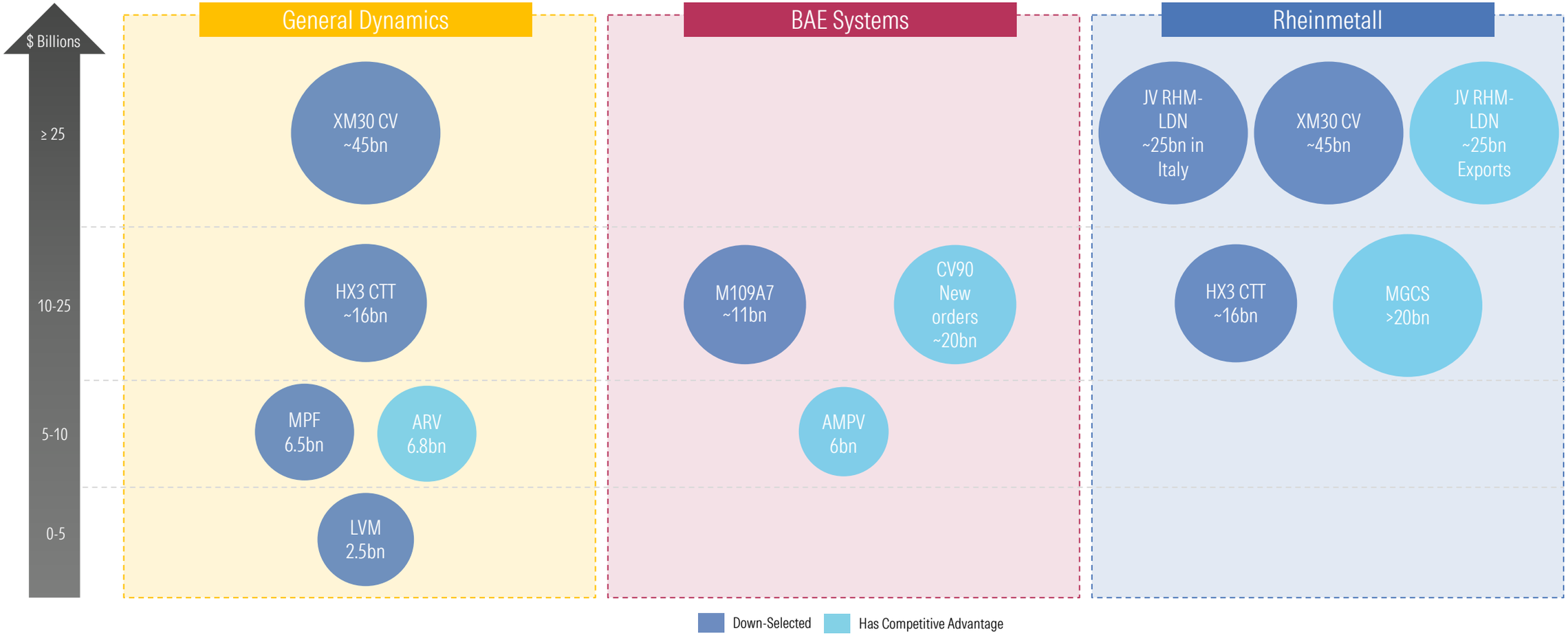
Land System Opportunities in Western Countries From 2025 to 2030



Source: Rheinmetall capital markets day 2024.

General Dynamics, Rheinmetall, and BAE Poised to Benefit Most From Rising Land Defense Spending

Midterm Growth Opportunities for Selected Land Defense Contractors



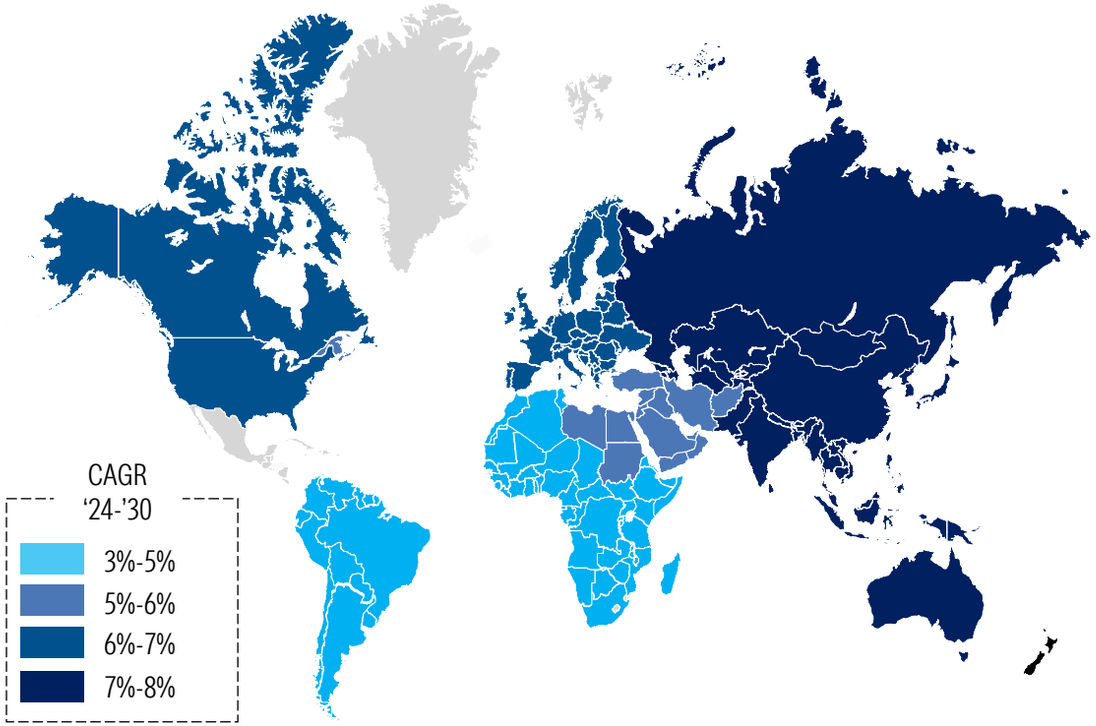
Source: Company filings, US Department of the Army, Congressional Research Service, Morningstar.
Note: Down-selected refers to the process where a contracting authority (for example, a government or defense agency) narrows down the pool of competing bidders to a smaller group of finalists to advance to the next stage of the bidding process.

Higher Defense Budgets Expected to Fuel Growth in Naval Defense Spending

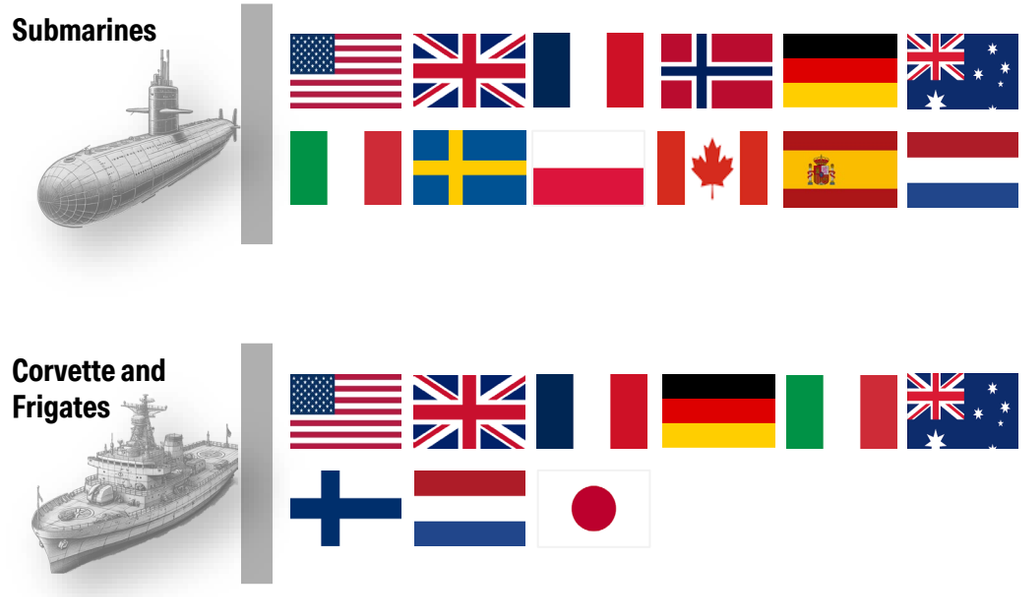
The expansion of defense budgets is anticipated to significantly boost naval defense. We expect the total global naval defense budget to increase at a CAGR of 6.3% between 2024 and 2030, primarily driven by increased investments in Europe and the Asia-Pacific region. Demand is driven by submarine fleet modernization, intelligence-gathering vessels, multidomain surface combatants, and undersea infrastructure protection capabilities, with increased interest for advanced uncrewed underwater vehicles

Navy Procurement Budgets

CAGR 2024-30 by continent.



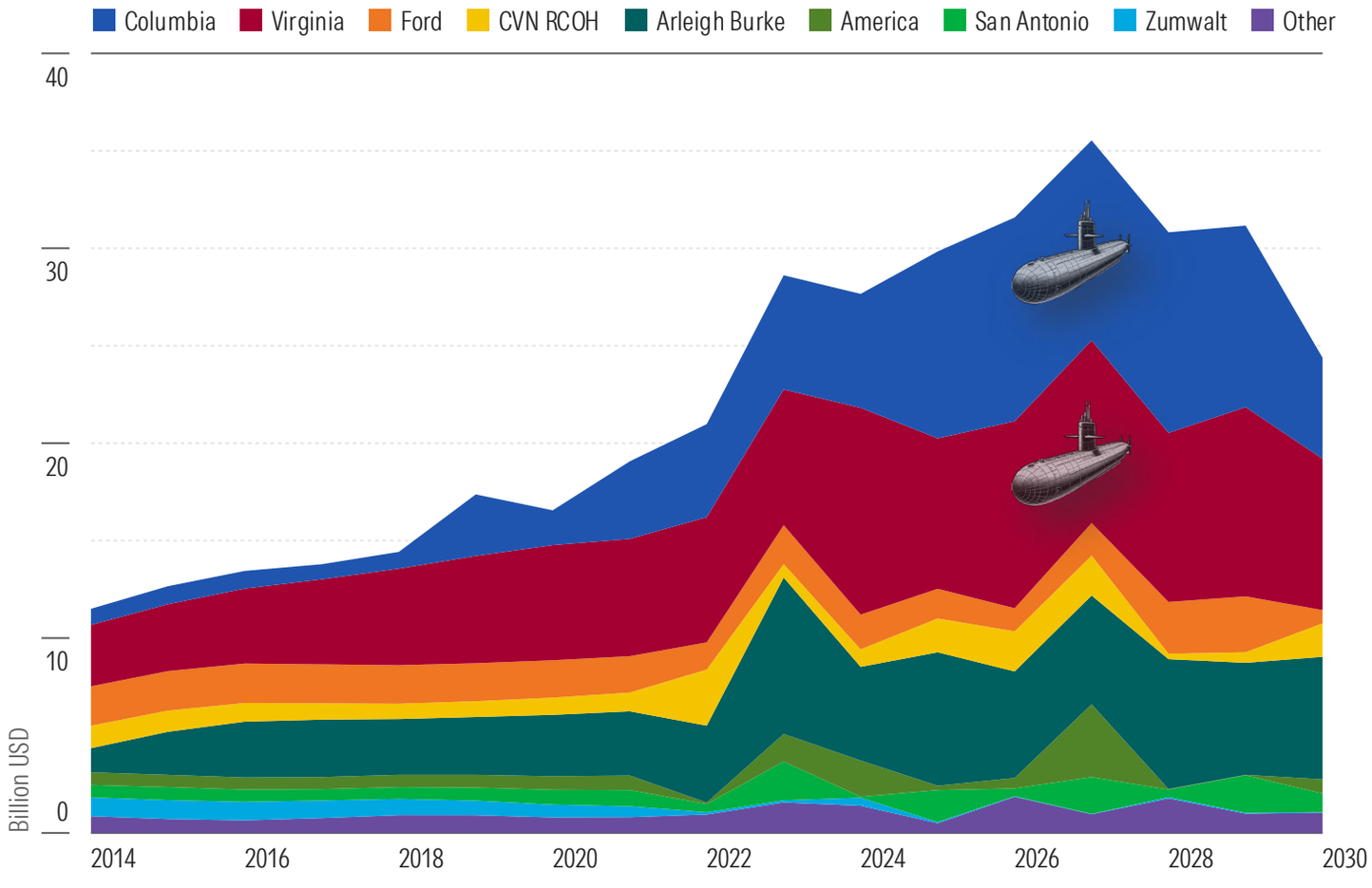
NATO Members' Submarine and Combat Ship Initiatives



Source: Morningstar (left).

We Project the US Naval Is an $180 Billion Opportunity Through 2030, With Submarines Accounting for 60%

Total Naval Opportunities for US Shipbuilders



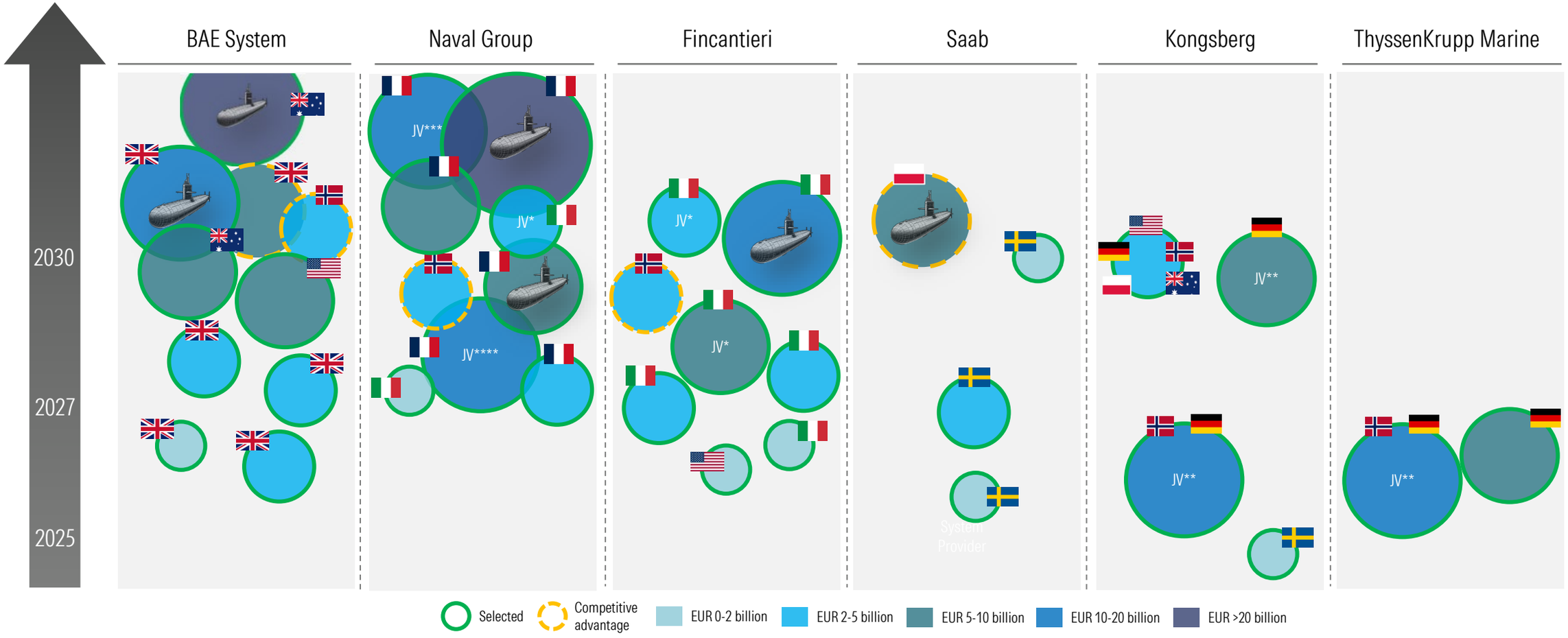
- In response to the pandemic's disruption of the labor force and the industrial supply chain, the US Navy began increasing its budgeted cost to acquire Virginia class submarines. The budgeted cost grew 1% between ship submersible submarine 784 and SSN 799 and is projected to grow 5.2% between boats 799 and 822, including additional funds for boats already under construction.
- HII, General Dynamics, and the Navy are negotiating a contract for 17 submarines, including four Columbia-class ballistic missile subs, the last two Block V and 11.
- We estimate General Dynamics' electric boat shipyard and HII will each receive approximately 33% of the budgeted cost of each Virginia-class submarine as revenue; a cumulative similar share will go to the remaining contractors.

Source: US Department of the Navy; Morningstar. Data as of Dec. 3, 2024.

We Project the European Naval Sector Is Around $220 Billion Opportunity Through 2030-32

Europe's Naval Posture Is Being Radically Reshaped Through a Pan-European Recapitalization Wave, With Focus On Submarines And Baltic Sea Militarization

Top Six European shipbuilders; size of circle represents total project value.



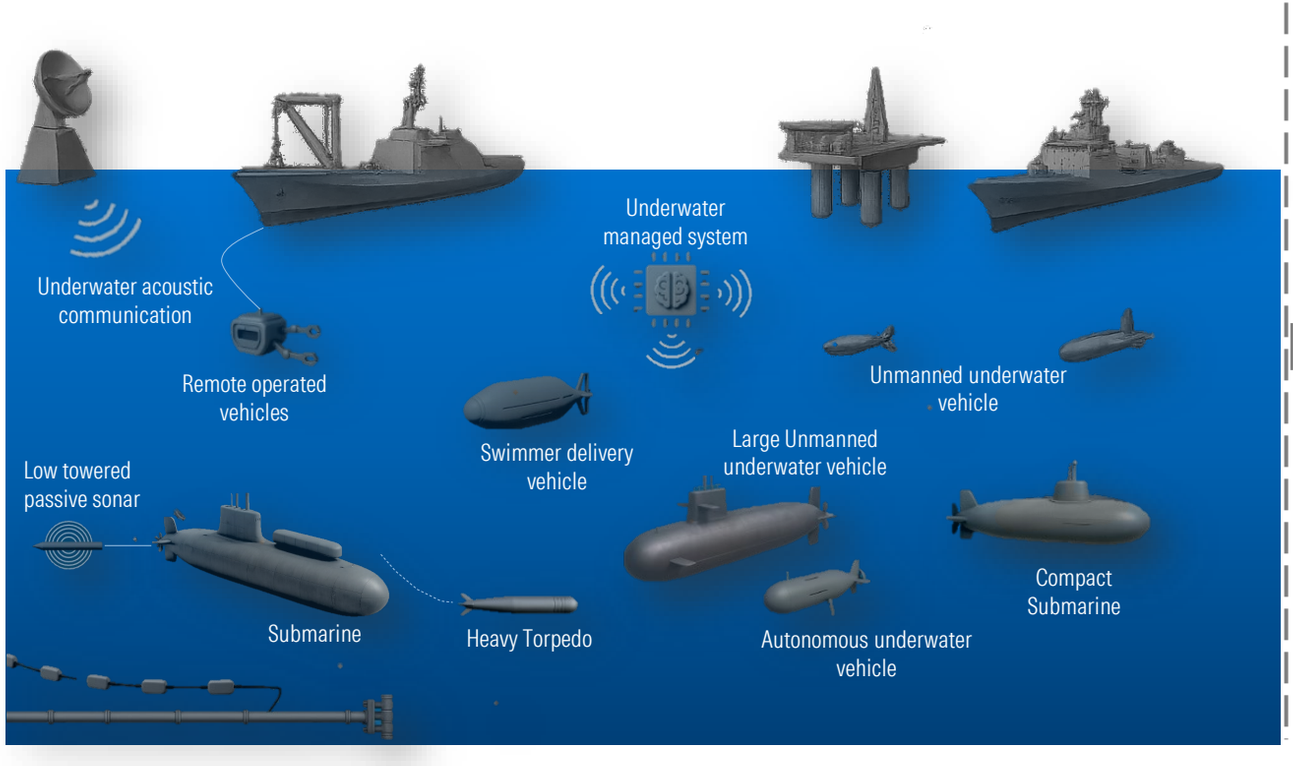
Source: Company reports, Morningstar.

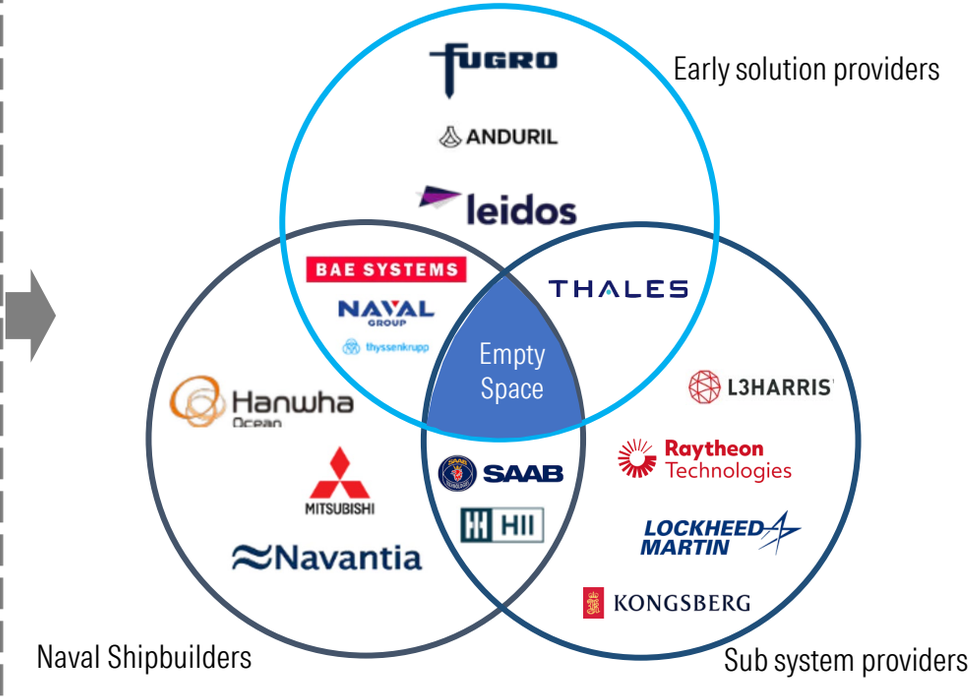
*Joint Venture between Orizzonte Sistemi Navali (OSN: Fincantieri 51%, Leonardo 49%); **Collaboration between TKMS and Kongsberg; ***Naval Group, Chantiers de l'Atlantique, TechnicAtome

NATO Seabed Defense Market Is Nascent but Fast-Growing, Driven by Strategic Urgency and Threat Escalation

The NATO seabed defense market is still in its early stages but is scaling rapidly—driven by strategic urgency, hybrid threats, and rising geopolitical risks. Much like the early days of cybersecurity, it is both mission-critical and fragmented, favoring agile, dual-use integrators. Contractors that can deliver UUV, modular communication system, AI surveillance platforms, and naval retrofit, quickly will benefit from first movers advantage emerging a market leaders.

Seabed Defense to Grow Above 20% CAGR as Regulation, Demand, and Innovation Reshape the Landscape and Pave the Way for Market Leader to Emerge

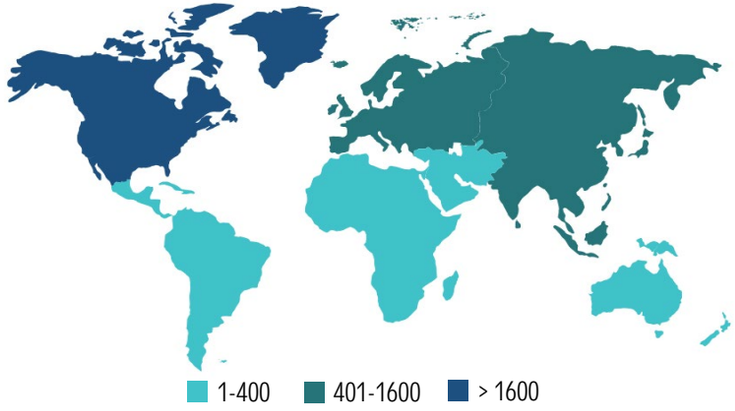




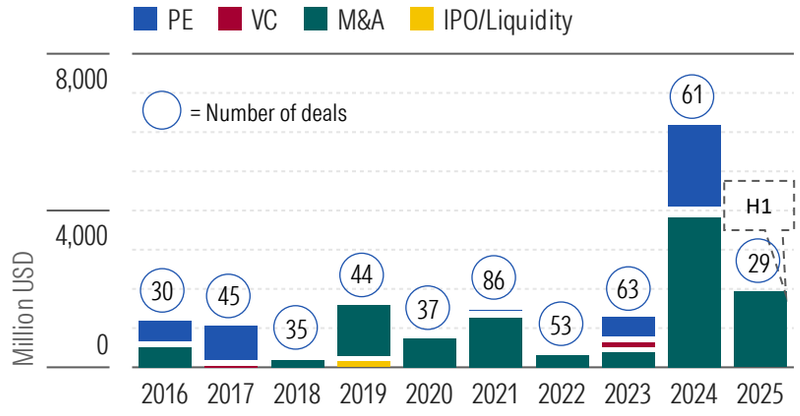
Source: Fincantieri CMD 2025; Jane's Defense,; Morningstar Analysis

Private Capital Surges Into Defense Tech as US Leads in Scale and Europe Accelerates on NATO Tailwinds

Private Company Density Highlights Global Imbalance



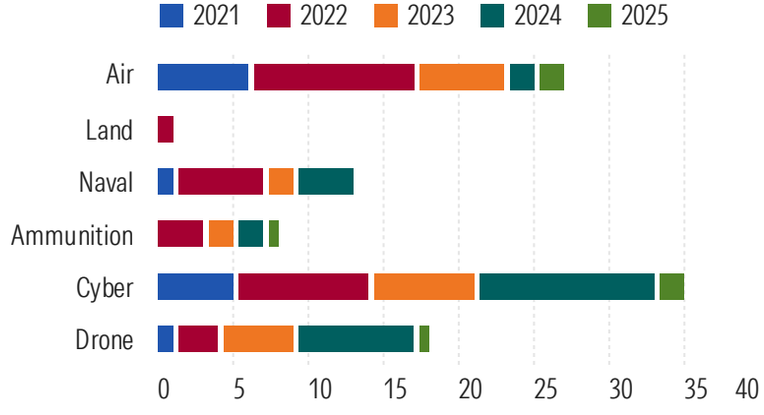
US and Europe Activity Volume Increased 136% Since 2022



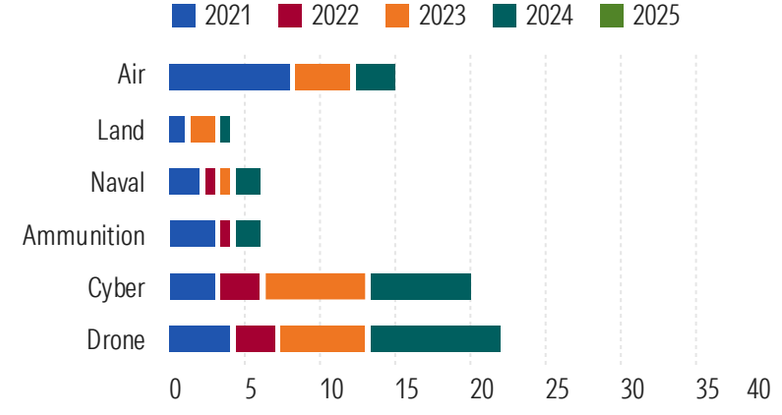
The defense tech landscape is heavily concentrated in the US, which leads in innovation and private capital engagement. Europe is scaling quickly, but the rest of the world still lags far behind.

In US and EU, bolt-on M&A has surged since 2022 as primes acquire new tech and startups gain access to defense procurement—while average deal value climbs as rising budgets and cash flow fuel strategic, high-value acquisitions despite fewer transactions.

Cyber and Drone Sectors Dominate US Startup Formation



Europe's Startup Market Awakening, Driven by NATO Push



Subsector composition favors tech-first areas. Drones and cyber are leading private formation—consistent with dual-use applicability, speed-to-market, and scalability.

European and US company formation shows similar trends (cyber/drone), but scale in Europe remains small. We believe that a European defense single market and centralized procurement would unlock further private capital by de-risk larger-scale private investment.

Source(s): PitchBook, Morningstar Research Services LLC.

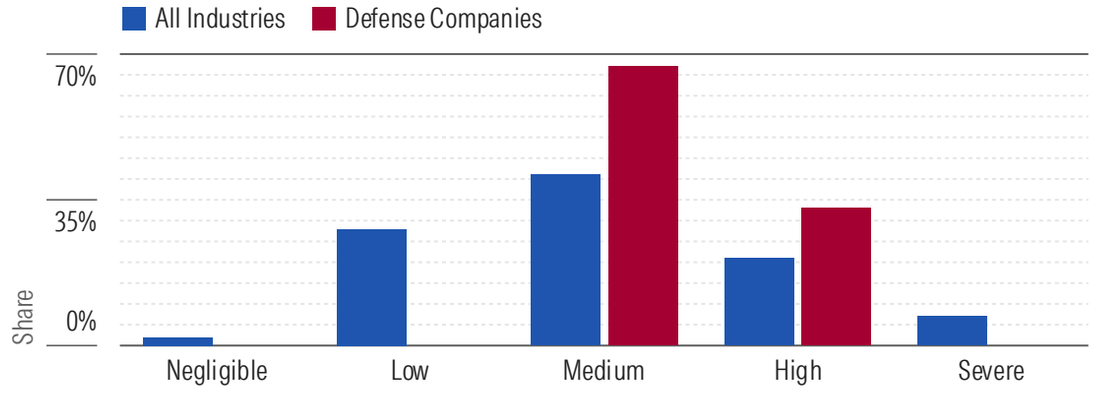
ESG Snapshot

ESG Clarity and Rising Defense Budgets to Drive Future Investability of Defense Stocks

Main ESG Risks for Defense Companies Are Connected to Carbon Footprint, and Product and Business Ethics

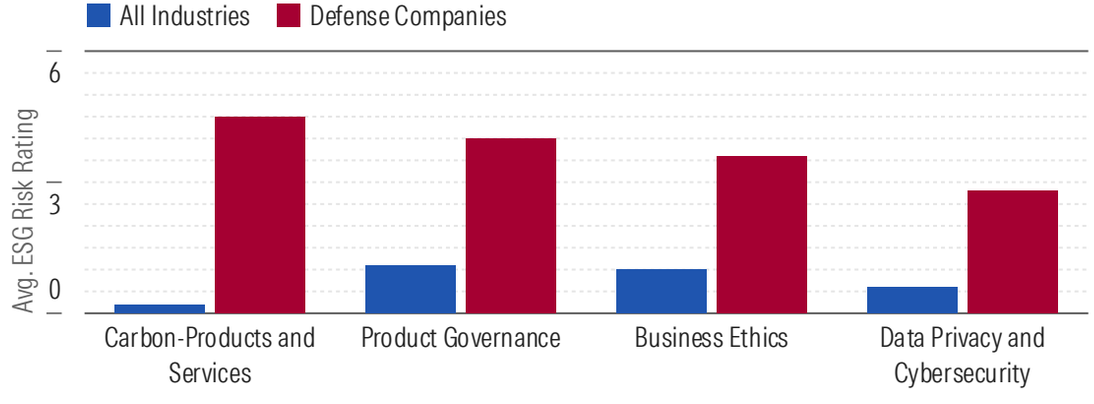
The portfolio has a Medium Risk Rating, with 68% of companies classified as medium risk and 34% as high risk. The defense sector faces heightened ESG risks due to its reliance on highly regulated markets, stringent government oversight, and the sensitive nature of its products. Quality and safety are critical, as failures can have severe human and operational consequences. Additionally, the sector's substantial environmental impact—from resource-intensive manufacturing to operational emissions—further elevates its risk profile. Managing human rights issues and ethical standards across complex, global supply chains is essential, given the industry's reliance on materials from regions with weaker labor protections.

ESG Rating Distribution



Defense companies have a significant impact on the environment, with equipment production and fossil fuel-dependent operations contributing more than 5% of global emissions. This figure is expected to grow as military spending increases amid rising conflicts. Product governance and safety are key ESG risks, driven by stringent regulatory standards and the high-risk nature of their products. Failures can result in significant financial losses, including billions in stoppages, recalls, and reimbursements. Business ethics is another major ESG risk, particularly in human rights, as complex supply chains often rely on raw materials from conflict-affected regions where forced labor and abuses are common. Finally, defense companies face rising cybersecurity risks from managing sensitive government data and adopting advanced technologies like AI-powered drones.

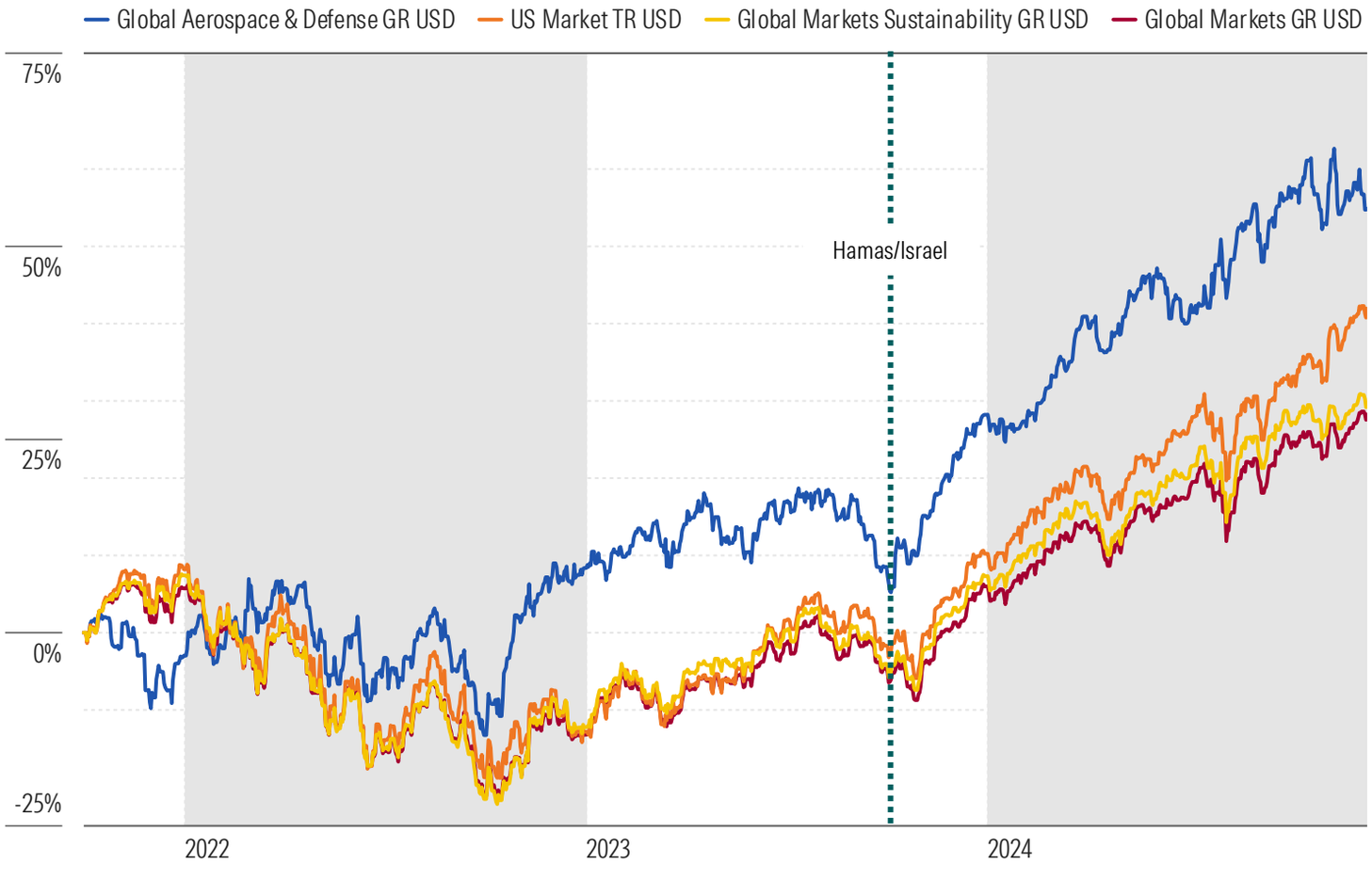
Carbon Footprint, Product, and Business Ethics Compose Primary Issues



Source: Sustainalytics. Data as of December 2024.

We Expect Enhanced ESG Clarity and Rising Defense Budgets to Drive Future Investability of Defense Stocks

Defense Companies' Recent Returns Outpace Global Market and Global Sustainability Benchmarks



Current geopolitical events are reshaping the traditional ESG stance on defense stocks, shifting from exclusion due to weaponry and conflict to recognizing their strategic importance in safeguarding a free society. In the past few years, we have seen no evidence that investors are shunning firms in the defense industry. On the contrary, in the three years through Sept. 30, 2024, the Morningstar Global Aerospace and Defense Index has returned 56.4%, the return of the Morningstar Global Market Index, and it has handily outperformed Global Sustainability and the US total market.

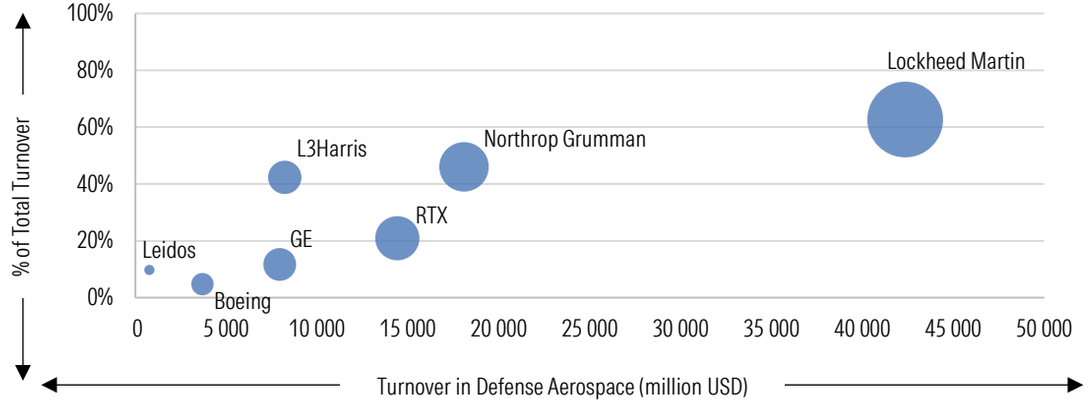
European policymakers are adapting ESG frameworks. Proposals include refining the EU green Taxonomy. Crucially, the taxonomy specifies that only controversial weapons (for example, nuclear, chemical, biological) are socially harmful. Most European prime contractors have little to no involvement in producing these classified weapons, with BAE and Thales' limited exposure to white phosphorus (less than 0.1% of sales) already being phased out. We expect further regulatory evolution as NATO countries seek to reconcile sustainability with security imperatives. Defense companies that excel in ESG transparency, innovation, and ethical practices are likely to attract more capital and public support

Source: Morningstar.

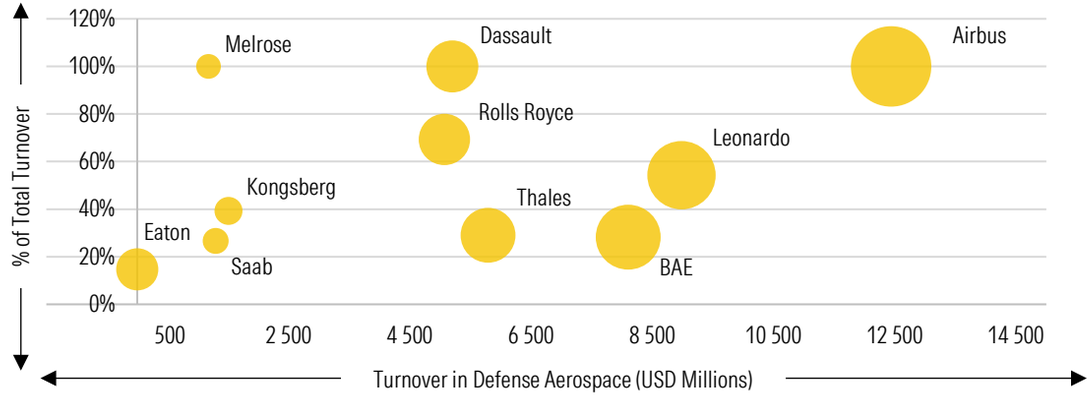
Appendix

Defense Aerospace Sector Leads in Turnover and Is Dominated by Few Diversified Key Integrators

US Aerospace: Contractors' Relative Sector Size and Cross-Sector Diversification



Europe Aerospace: Contractor Relative Sector Size, Cross-Sector Diversification



The aerospace sector's industrial capabilities are considered essential for national security. Aerospace leads in turnover among US and European defense sectors, with USD 108.6 billion generated by the top US firms in 2023, and USD 59.6 billion generated by the top companies in Europe.

Aerospace Sector Organized Around Few Key Integrators

Major Integrators are supported by a network of specialized manufacturers. In the US, there are three major integrators, including Lockheed, Northrop, and RTX. In Europe, the main contractors are BAE, Airbus, Dassault, Leonardo, and Saab, primarily based in the UK, Italy, and France. Major European integrators such as BAE, Airbus, and Leonardo closely compete with their US counterparts regarding size and revenue. However, the most influential and largest aerospace players remain in the US.

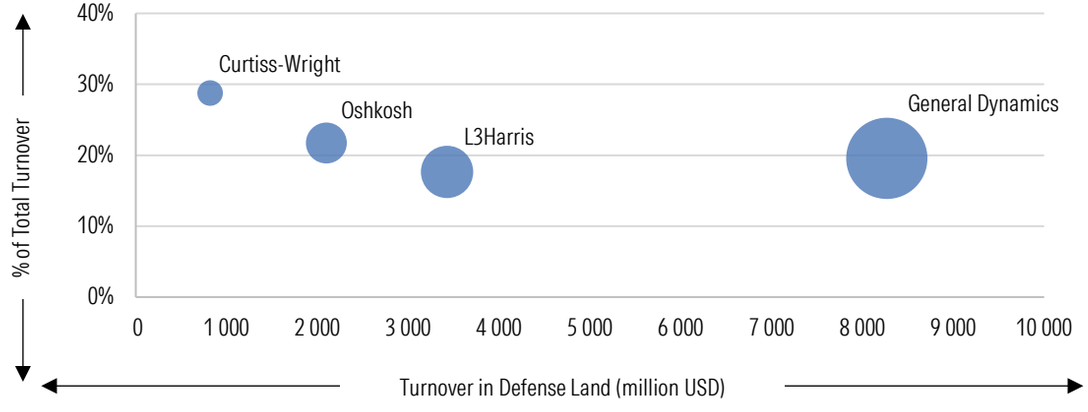
High Cross-Sector Diversification and Average Defense Dependence

In Europe and US defense companies participating in aerospace activities, have high cross-sector differentiation, with Airbus and Dassault as notable exceptions focused almost entirely on aerospace. The sector also boasts considerable portfolio diversification, averaging involvement in four subsectors, reaching up to seven, contrasting with US firms that typically cover three and a half subsectors. Regarding defense dependence, European companies rely on defense, for about 50% of turnover is defense-related. Excluding Airbus and the engine OEMS Safran and Rolls Royce, the percentage increases to around 70%, with Saab and BAE Systems primarily focused on the military. The US sector is even less defense-dependent, with defense contributing 41% to total aerospace turnover.

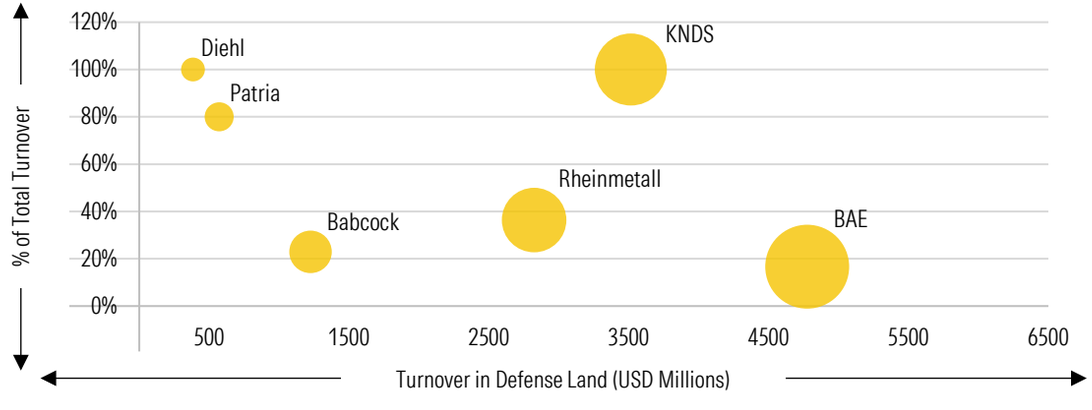
Source: Company reports, Morningstar.

Land Sector Concentrated in US, Nationalized in Europe; Limited Civil Applications, Low Player Diversification

US Land: Contractors' Relative Sector Size and Cross-Sector Diversification



Europe Land: Contractors' Relative Sector Size and Cross-Sector Diversification



The top US firms in this sector had a combined turnover of about USD 11 billion in 2023 with General Dynamics accounting for 74% of it. Top European firms' turnover was around USD 9 billion, with BAE Systems accounting for 54% of it.

The Sector Is Highly Consolidated in US, While in Europe Remains Nationalized

The high fragmentation in Europe leads to a landscape of many companies that specialize in similar products but often do not compete directly because of national protections for domestic suppliers. The European land armament sector includes around a dozen key companies, mainly based in the UK, Germany, and France, with major players like BAE Systems, Rheinmetall, and KMW. Smaller companies, such as Patria, contribute as system integrators.

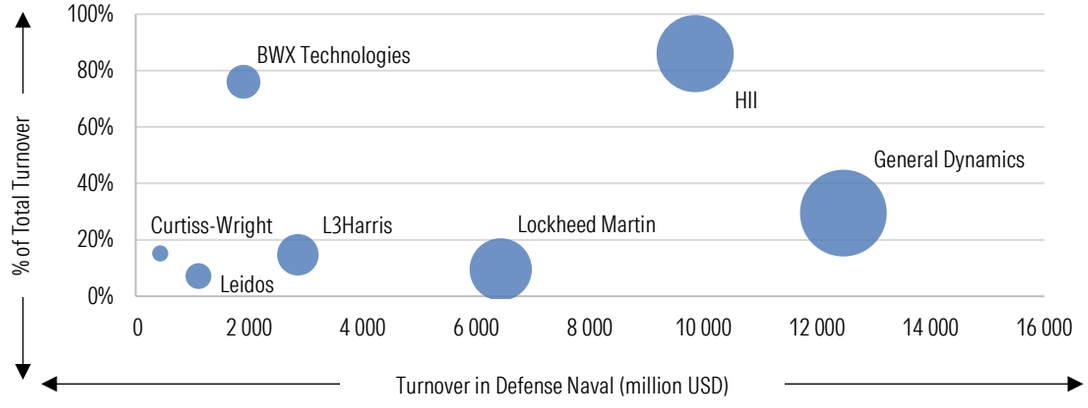
Average Cross-Sector Diversification and High Defense Dependence

The sector is less diversified, with some companies like KNDS in Europe focusing solely on land systems, including land warfare equipment such as vehicles, small arms, and ammunition, while larger firms like General Dynamics, BAE, and Rheinmetall cover a broader defense spectrum. This sector is not highly R&D-intensive, and civilian applications of military technology are limited, often involving adaptations of civilian platforms for military use rather than the other way around. In terms of dependence on defense contracts, the sector relies almost entirely on defense spending.

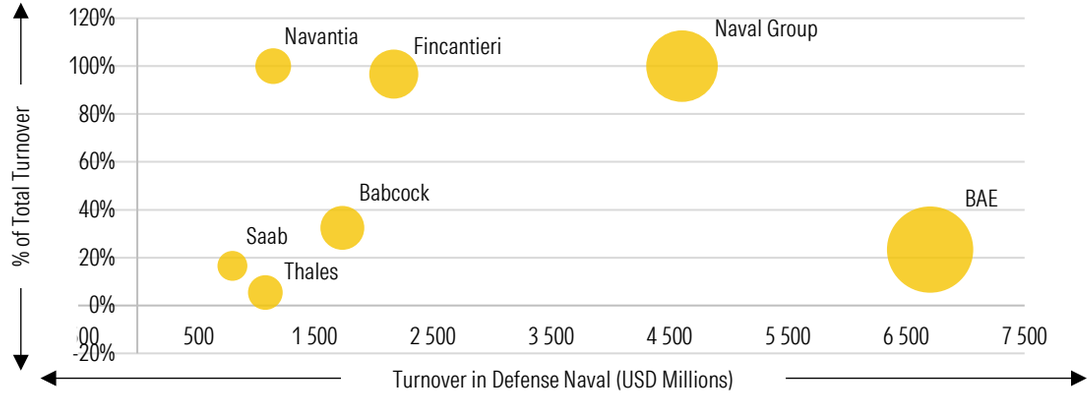
Source: Company reports, Morningstar.

Naval Sector Features High Defense Dependence and Reliance on Smaller, Specialized Suppliers

US Naval: Contractors' Relative Sector Size and Cross-Sector Diversification



Europe Naval: Contractors' Relative Sector Size and Cross-Sector Diversification



The naval sector is a critical part of a nation's defense infrastructure and is characterized by significant consolidation and specialization. Overall, the top US firms had a total turnover of USD 41.9 billion in 2023, while the top European naval sector, had a turnover of USD 14.4 billion.

High Cross-Sector Diversification and High Defense Dependence

The US has three major shipbuilders, including General Dynamics and Huntington Ingalls Industries. Among the major players, only Huntington Ingalls derives more than 50% of its revenue from naval, with the other highly diversifying across multiple subsectors. European naval majors, despite their influence, are relatively smaller compared with their global counterparts. These major firms are highly specialized in the naval sector, with most, like Naval Group, Navantia, and Fincantieri, dedicating 100% of their military activities to naval operations. BAE Systems, Kongsberg, and Babcock are an exception, significantly diversified beyond the naval sector. Both the US and European naval defense contractors are heavily reliant on defense for almost all their revenue, with a few exceptions such as Fincantieri in Europe.

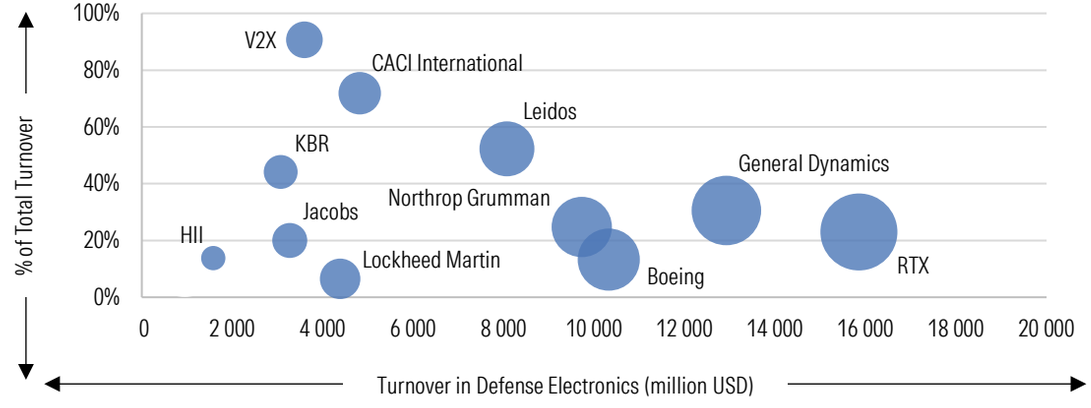
Military Ships Are Heavily Reliant on Smaller, Specialized Suppliers

A distinctive aspect of the sector is the reliance on a diverse range of suppliers, including small and midsize enterprises from various industries like electronics, weapons, and radars, which are integral to the construction of military vessels. For instance, combat systems—electronics, navigation, and weapons—account for 60%-70% of the total cost of military ships, as opposed to 20% on commercial ships.

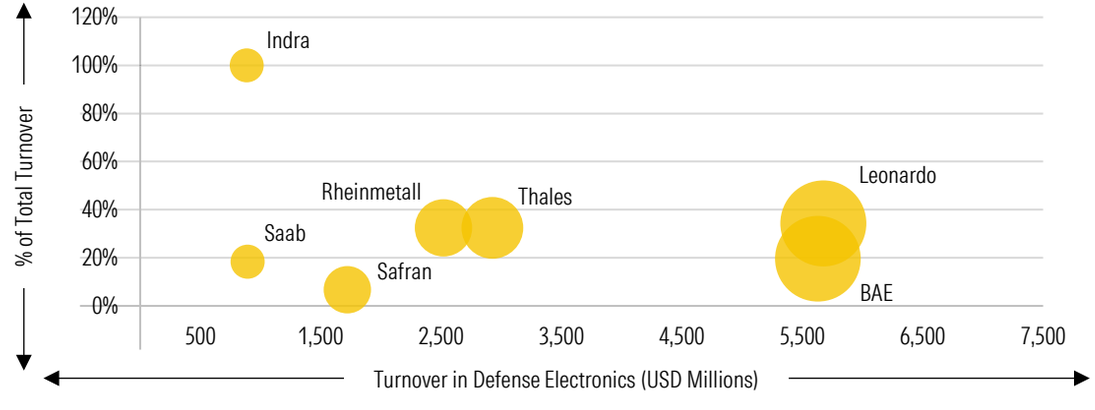
Source: Company reports, Morningstar.

Electronics Sector Features Extensive Cross-Platform Diversification and Significant Dual-Use Opportunities

US Electronics: Contractors' Relative Sector Size and Cross-Sector Diversification



Europe Electronics: Contractors' Relative Sector Size, Cross-Sector Diversification



The European electronics sector is crucial within the defense industry because of its extensive use across all air, land, and naval platforms delivering high-quality products, including air defense systems, radar, sonar, avionics, and C4I systems.

High Cross-Sector Diversification and Low Defense Dependence

The major companies in this sector are not solely focused on military electronics but have diversified interests across different sectors, which helps them mitigate risk and stabilize revenue. Moreover, the electronics sector exhibits a low dependence on defense contracts compared with other areas, like naval or land systems, because of the significant dual-use potential of electronic products used in civilian and military applications. In Europe, defense revenue accounts for only 50% of electronic segment revenue, while in the US, it accounts for around 40%.

Source: Company reports, Morningstar.

General Disclosure

"Morningstar" is used throughout this section to refer to Morningstar, Inc., and/or its affiliates, as applicable. Unless otherwise provided in a separate agreement, recipients of this report may only use it in the country in which the Morningstar distributor is based. Unless stated otherwise, the original distributor of the report is Morningstar Research Services LLC, a USA-domiciled financial institution.

This report is for informational purposes only, should not be the sole piece of information used in making an investment decision, and has no regard to the specific investment objectives, financial situation, or particular needs of any specific recipient. This publication is intended to provide information to assist investors in making their own investment decisions, not to provide investment advice to any specific investor. Therefore, investments discussed and recommendations made herein may not be suitable for all investors; recipients must exercise their own independent judgment as to the suitability of such investments and recommendations in the light of their own investment objectives, experience, taxation status, and financial position.

The information, data, analyses, and opinions presented herein are not warranted to be accurate, correct, complete, or timely. Unless otherwise provided in a separate agreement, neither Morningstar, Inc., nor the Equity Research Group represents that the report contents meet all of the presentation and/or disclosure standards applicable in the jurisdiction the recipient is located.

Except as otherwise required by law or provided for in a separate agreement, the analyst, Morningstar, Inc., and the Equity Research Group and their officers, directors, and employees shall not be responsible or liable for any trading decisions, damages, or other losses resulting from, or related to, the information, data, analyses, or opinions within the report. The Equity Research Group encourages recipients of this report to read all relevant issue documents—a prospectus, for example) pertaining to the security concerned, including without limitation, information relevant to its investment objectives, risks, and costs before making an investment decision and when deemed necessary, to seek the advice of a legal, tax, and/or accounting professional.

The report and its contents are not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country, or other jurisdiction where such distribution, publication, availability, or use would be contrary to law or regulation or that would subject Morningstar, Inc., or its affiliates to any registration or licensing requirements in such jurisdiction.

Where this report is made available in a language other than English and in the case of inconsistencies between the English and translated versions of the report, the English version will control and supersede any ambiguities associated with any part or section of a report that has been issued in a foreign language. Neither the analyst, Morningstar, Inc., nor the Equity Research Group guarantees the accuracy of the translations.

This report may be distributed in certain localities, countries, and/or jurisdictions ("territories") by independent third parties or independent intermediaries and/or distributors ("distributors"). Such distributors are not acting as agents or representatives of the analyst, Morningstar, Inc., or the Equity Research Group. In territories where a distributor distributes our report, the distributor is solely responsible for complying with all applicable regulations, laws, rules, circulars, codes, and guidelines established by local and/or regional regulatory bodies, including laws in connection with the distribution of third-party research reports.

Conflicts of Interest

- No material interests are held by the analyst or their immediate family with respect to the securities subject of this investment research report.
- Morningstar, Inc., may hold a long position in the securities subject of this investment research report that exceeds 0.5% of the total issued share capital of the security. To determine if such is the case, please click https://www.morningstar.com/company/disclosures/holdings.
- Analysts' compensation is derived from Morningstar, Inc.'s overall earnings and consists of salary, bonus, and in some cases restricted stock.
- Morningstar's overall earnings are generated in part by the activities of the Investment Management and Research groups, and other affiliates, that provide services to product issuers.
- Neither Morningstar, Inc., nor the Equity Research Group receives commissions, compensation, or other material benefits in connection with providing research, nor do they charge companies to be rated.
- Morningstar employees may not pursue business or employment opportunities outside Morningstar within the investment industry (including, but not limited to, working as a financial planner, an investment professional or investment professional representative, a broker/dealer or broker/dealer agent, a financial writer, reporter, or analyst) without the approval of Morningstar's Legal and if applicable, Compliance teams.
- Neither Morningstar, Inc., nor the Equity Research Group is a market maker or a liquidity provider of the securities noted within this report.
- Neither Morningstar, Inc., nor the Equity Research Group has been a lead manager or co-lead manager over the previous 12 months of any publicly disclosed offer of financial instruments of the issuer.
- Morningstar, Inc.'s Investment Management group has arrangements with financial institutions to provide portfolio management/investment advice, some of which an analyst may issue investment research reports on. In addition, the Investment Management group creates and maintains model portfolios whose underlying holdings can include financial products, including securities that may be the subject of this report. However, analysts do not have authority over Morningstar's Investment Management group's business arrangements or allow employees from the Investment Management group to participate or influence the analysis or opinion prepared by them.
- Morningstar, Inc., is a publicly traded company (ticker: MORN) and thus a financial institution the security of which is the subject of this report may own more than 5% of Morningstar, Inc.'s total outstanding shares. Please access Morningstar, Inc.'s proxy statement, "Security Ownership of Certain Beneficial Owners and Management" section at https://shareholders.morningstar.com/investor-relations/financials/sec-filings/default.aspx.

Morningstar may provide the product issuer or its related entities with services or products for a fee and on an arm's-length basis, including software products and licenses, research and consulting services, data services, licenses to republish our ratings and research in their promotional material, event sponsorship, and website advertising.

Further information on Morningstar's conflict-of-interest policies is available at http://global.morningstar.com/equitydisclosures. Please note analysts are subject to the CFA Institute's Code of Ethics and Standards of Professional Conduct.
For a list of securities the Equity Research Group currently covers and provides written analysis on, or for historical analysis of covered securities, including fair value estimates, please contact your local Morningstar office. Morningstar Equity Research methodologies can be found at Investor Relations | Morningstar, Inc.

For recipients in Australia: This report has been issued and distributed in Australia by Morningstar Australasia Pty. Ltd. (ABN: 95 090 665 544; ASFL: 240892). Morningstar Australasia Pty. Ltd. is the provider of the general advice ("the service") and takes responsibility for the production of this report. The service is provided through the research of investment products. To the extent the report contains general advice, it has been prepared without reference to an investor's objectives, financial situation, or needs. Investors should consider the advice in light of these matters and, if applicable, the relevant Product Disclosure Statement before making any decision to invest. Refer to our Financial Services Guide, or FSG, for more information at http://www.morningstar.com.au/s/fsg.pdf.

For recipients in New Zealand: This report has been issued and distributed by Morningstar Australasia Pty Ltd and/or Morningstar Research Ltd (together "Morningstar"). This report has been prepared and is intended for distribution in New Zealand to wholesale clients only and has not been prepared for use by New Zealand retail clients (as those terms are defined in the Financial Markets Conduct Act 2013).

The information, views and any recommendations in this material are provided for general information purposes only, and solely relate to the companies and investment opportunities specified within. Our reports do not take into account any particular investor's financial situation, objectives or appetite for risk, meaning no representation may be implied as to the suitability of any financial product mentioned for any particular investor. We recommend seeking financial advice before making any investment decision.

For recipients in Canada: This research is not prepared subject to Canadian disclosure requirements.

For recipients in Europe: This report is distributed by Morningstar Holland B.V., a wholly-owned subsidiary of Morningstar, Inc. Morningstar Holland B.V. is not required to be regulatory by the European Securities and Markets Authority for the provision of investment research data. The analyst/s involved in the creation of the report do not take into account any particular investor's financial situation, objectives or appetite for risk, meaning no representation may be implied as to the suitability of any financial product mentioned for any particular investor. Registered address: Haaksbergweg 58, 9th Floor, 1101 BZ Amsterdam, North Holland, Netherlands.

General Disclosure Continued

For recipients in Hong Kong: The report is distributed by Morningstar Investment Management Asia Limited, which is regulated by the Hong Kong Securities and Futures Commission to provide investment research and investment advisory services to professional investors only. Neither Morningstar Investment Management Asia Limited nor its representatives are acting or will be deemed to be acting as an investment advisor to any recipients of this information unless expressly agreed to by Morningstar Investment Management Asia Limited.

For recipients in India: Morningstar Investment Research India Private Limited (registered with SEBI as a research analyst, registration number INH000008686) does not engage in research services on securities listed or proposed to be listed on stock exchanges in India.

For recipients in Japan: The report is distributed by Morningstar Japan, Inc. for informational purposes only. Neither Morningstar Japan, Inc. nor its representatives are acting or will be deemed to be acting as an investment advisor to any recipients of this information.

For recipients in Korea: This report is distributed by Morningstar Korea Ltd., which has filed to the Financial Services Committee, for informational purposes only. Neither Morningstar Korea Ltd. nor its representatives are acting or will be deemed to be acting as an investment advisor to any recipients of this information.

For recipients in Singapore: The Report is intended for Institutional Investor audiences and is distributed by Morningstar Investment Adviser Singapore Pte. Limited, which is licensed by the Monetary Authority of Singapore to provide financial advisory services in Singapore. Morningstar Investment Adviser Singapore Pte. Limited is the entity responsible for the creation and distribution of the research services described in this Report. This content is provided for informational purposes only and may be shared or redistributed by Institutional Investors to their clients or other permitted persons, subject to obtaining the appropriate license from Morningstar. Redistribution of this content is subject to any applicable conditions or limitations, including those agreed commercially or contractually with Morningstar. The person who shares or redistributes this content shall be solely responsible for compliance with all relevant legal and regulatory obligations in the jurisdictions in which the material is made available. Investors should consult a financial adviser regarding the suitability of any investment product, taking into account their specific investment objectives, financial situation or particular needs, before making any investment decision. Morningstar, Inc., and its affiliates rely on certain exemptions (Financial Advisers Regulations, Section 27(1)(e), Section 32B and 32C) to provide its investment research to recipients in Singapore.

For recipients in the United Kingdom: This report is distributed by Morningstar UK Ltd, a wholly-owned subsidiary of Morningstar, Inc. Morningstar UK Ltd. is not required to be registered nor authorized by the Financial Conduct Authority for the distribution of investment research data. The analyst/s involved in the creation of the report do not take into account any particular investor's financial situation, objectives or appetite for risk, meaning no representation may be implied as to the suitability of any financial product mentioned for any particular investor. There are information barriers in place between Morningstar UK Ltd and Morningstar regulated entities based in the UK. Registered address: 1 Oliver's Yard 55-71 City Road London EC1Y 1HQ.

22 West Washington Street
Chicago, IL 60602 USA

About Morningstar® Equity Research™

Morningstar Equity Research provides independent, fundamental equity research differentiated by a consistent focus on durable competitive advantages, or economic moats.