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Captain Europe: Five ways to forge the region's defense shield

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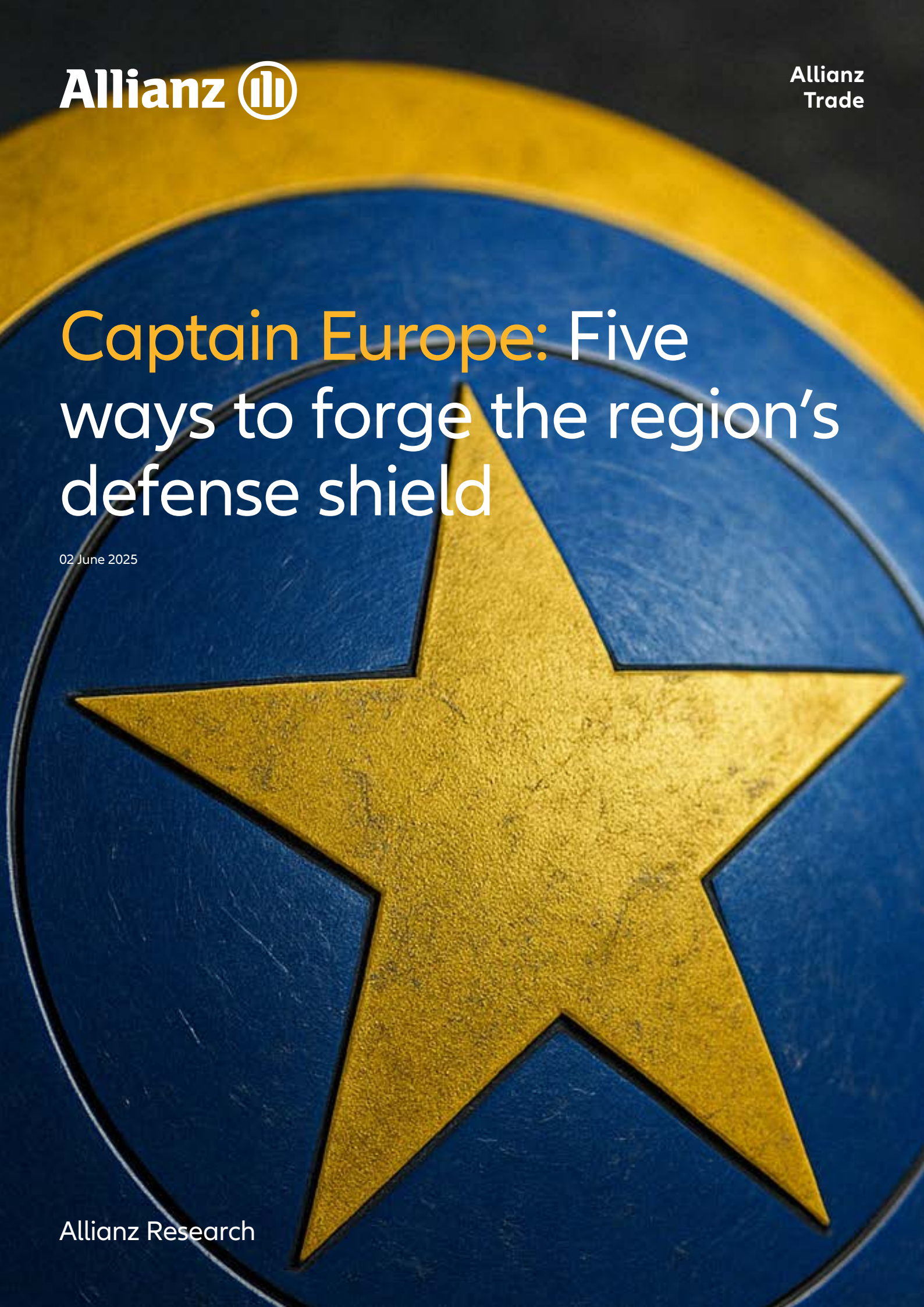

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Executive Summary

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Europe is on a path to a long-overdue reconstruction of its defense industrial base. Years of fragmentation, underinvestment and external dependencies have eroded its capacity to equip and sustain its own armed forces. The (geo-)political momentum for rearmament is now strong, but the region needs to get funding, strategy and implementation right. If Europe is to achieve genuine strategic autonomy, it must not only spend more but spend intelligently, coherently and with industrial sovereignty in mind. To do so, we suggest five ways with both short- and long-term levers, taking stock of blueprints from elsewhere, and highlight the pitfalls Europe needs to avoid.

1. **Increase defense spending and secure the money.** Europe's shortfalls in defense output stem from inconsistent and insufficient funding. The EU spends just around 2.2% of its GDP on defense, thus investment in R&D and production capacity lags badly behind the US and even mid-sized exporters like South Korea. Spending at 3% of GDP between 1993 and 2023 would have required EU member states to allocate an extra USD416bn in 2020 PPP terms a year to defense. Short-term fixes range from tapping into the NGEU funds or calling on the European Stability Mechanism (ESM), but states must be wary of falling into a debt trap and secure long-term financing for defense. We recommend that Europe secure a stronger and properly financed European Defense Fund over the long run. When spending, the region should be mindful of national hoarding of funds, avoid one-off style spending bursts and stay away from investing in legacy platforms.

2. **Buy European First and align industrial goals.** Europe's procurement remains national, duplicative and inefficient. EU states operate 17 types of tanks and over 20 types of fighter jets – versus one mainline model in the US. Joint procurement remains below 20% of total spending and in the last decade almost half of Europe's arms imports came from the US. This reliance on imports is also visible at the corporate level. The European defense sector is highly fragmented with a number of small players and the largest defense firms in Europe have on average 84% of suppliers based overseas (vs only 32% for US firms). Israel or South Korea offer blueprints, with procurement policies that enable the government to act as both industrial planners and buyers. US programs like the F-35 (i.e. pooled, multi-nation procurement) are another example. Building on the "Buying European Defense Act" proposed by the EU Commission, we suggest that the region should lean towards coordinated purchases and collaboration targets. The recent Security and Defense Partnership, which gives the UK access to EU mechanisms for jointly developing and buying military equipment, is a boost for the region's ambition as it allows UK defense giants to take part in the European rearmament program. In the longer term, Europe needs to integrate markets and standardize programs to mobilize firms across the EU and bolster a region-wide industry. "Flag planting" over interoperability, national bias in contracts and undermining smaller member states' participation should be avoided when implementing such policies.

3. **Arm Europe at scale and rebuild a complete defense supply chain.** Europe's defense industry is highly concentrated with a few very large players and a larger number of tier-2 and tier-3 suppliers. There are an estimated 2,500-3,000 firms in the sector in Europe in 2025 but this compares to 60,000 firms servicing defense in the US. With a large share of the supply chain located outside of their domestic base, relocating a comprehensive supply chain into the region is challenging and we estimate that it would take between three to five years for the EU to double its equipment capacities. To achieve this, European governments need to collaborate closely with industrial players. Countries like the US, South Korea and Israel have successfully managed to steer their industries towards growth both domestically and in global markets through a tight integration with government agencies. In the short run, we recommend that Europe increases production with a pragmatic approach (i.e. including strategic partnership with non-EU suppliers/countries) and stockpile as much as possible. Over the next five years, it should consolidate industries and secure supply chains by closely working with the industry and making sure SMEs and especially non-defense firms can pivot and participate in a region wide ecosystem. Over-reliance on a few countries for production should be avoided, red tape should be cut for strategic productions and countries should also resist handing out huge checks to domestic champions.

4. **Innovate to dominate and build a cutting-edge dual-use tech ecosystem.** Europe trails in defense tech innovation. Its total defense R&D is about EUR9.5bn per year with limited dual-use integration (vs USD140bn in the US). The US leads in AI, cyber and aerospace because of civil-military synergies (e.g. SpaceX, Palantir, MIT labs). Likewise, Israel's Talpiot program and elite R&D units have created world-class startups and missile defense systems. South Korea's state-led research center incubated core technologies later commercialized by private firms. In the short term, Europe needs to ramp-up R&D funding and leverage existing programs by pivoting them towards dual-use research. In the long-run, dual-use R&D should be institutionalized via innovation hubs, defense-tech accelerators and industrial research. Governments should co-fund emerging tech (e.g. AI, quantum etc.) with civilian spillovers. STEM workforce development and IP-sharing mechanisms across borders are also key to long-term autonomy. To successfully achieve this, Europe should shun siloed fundings, stay away from "moonshot" costly programs, include start-ups and smaller firms which often have higher innovation capacity and make sure to stop talent drain.

5. **Unify command through a cohesive governance.** Without policy alignment, even increased spending and efforts risk being squandered. Europe lacks unified export rules, shared planning, interoperability standards or a common regulatory framework. Europe's defense industry suffers from fragmented governance, weak enforcement of joint commitments, divergent export controls and industrial disaggregation. Procurement processes also need to be fast-tracked and streamlined to bolster efficiency. In contrast, the US benefits from centralized planning, unified procurement and coherent export policy. To build a "unifying command", Europe requires stronger institutional leadership, binding coordination mechanisms and consolidated industrial strategies.

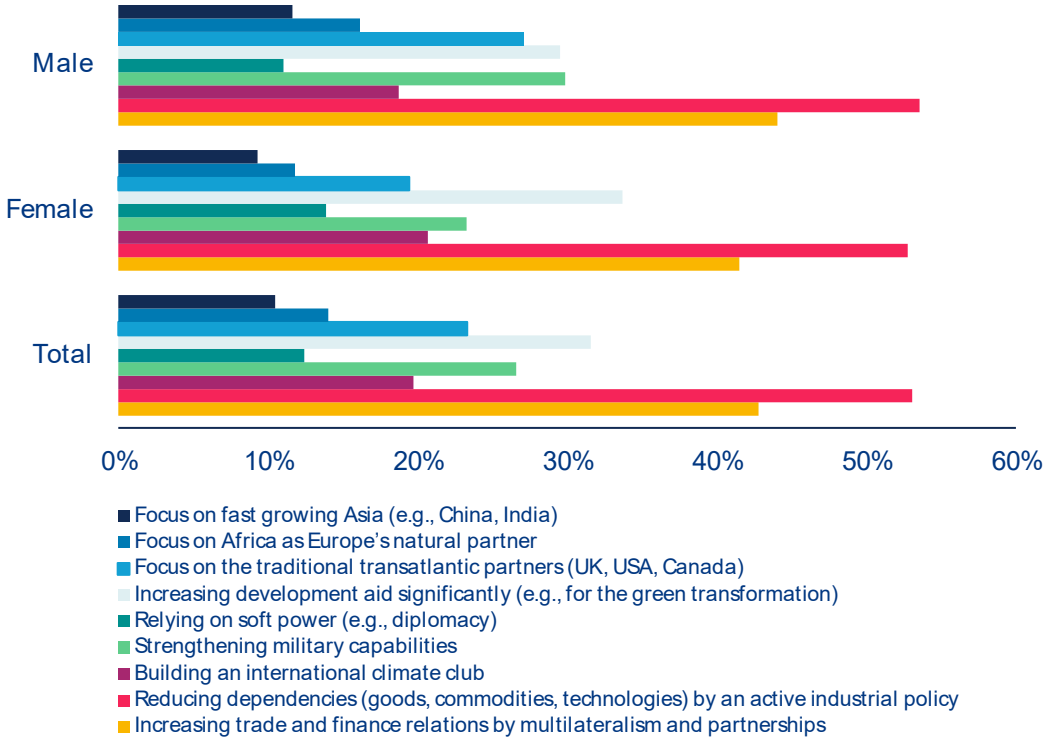
A paradigm shift in defense

EU member states are actively working to increase their defense spending, with Germany leading the way. Germany has voted to remove defense spending above 1% of GDP from the regular budget. The move is expected to raise defense spending from currently 2.1% of GDP to over 3%, financed by debt – a feasible approach given Germany's robust fiscal position. The increase is essential to modernize the army and is expected to boost GDP significantly in the short term as defense spending will be frontloaded – a pass-through to growth of +0.4pp per year is expected. While some funds may be used to purchase foreign defense equipment, a significant portion will benefit Germany's large defense industry. However, this effect may be temporary and is likely to fade after 2027 due to higher interest rates and labor costs from increased fiscal spending. France is considering increasing its defense budget also to up to 3.5% of GDP, although fiscal constraints pose a challenge. Italy plans to spend 1.6% of GDP on defense in 2025 and is exploring alternatives to cuts in social spending or tax increases. Spain plans to increase defense spending from 1.3% to 2% of GDP ahead of its 2029 target, adding EUR10bn a year, but remains the lowest spender among the 32 NATO members and is looking to the EU for financial solutions.

Defense and security are now emerging as top priorities in both policy and public perception. Last summer, well after the Russian invasion of Ukraine but before Donald Trump's re-election as US President, we surveyed 6,000 participants in Germany, France, Italy, Spain, Poland and Austria about the idea of a "Sovereign Europe", an independent and autonomous Europe that determines its own destiny. The reaction was rather mixed. Although 35% of respondents approved of the idea – and significantly more men (42%) than women (27%) – more were skeptical (37%) or opposed (14%).[1] The answers were similar when the participants were asked about the EU's foreign policy priorities. Strengthening defense capabilities was only in fourth place, after the call to strengthen development aid. Again, there is a clear gender gap: for men, defense is in third place with 30%, just ahead of development aid, while for women, it is well behind with 23%. At the same time, both genders still strongly believed in partnerships and multilateralism in 2024 (Figure 1). One US election later, the picture has changed fundamentally. Now, "defense and security" is the top priority for both men and women, according to the latest Eurobarometer.[2] This means that the EU is facing a far-reaching policy change, as defense has played only a minor role in European politics in recent decades.

[1] And 14% did not want to commit themselves. 2024_05_29-Allianz-Pulse-AZ.pdf.
[2] Eurobarometer EP Winter 2025 survey - March 2025 - - Eurobarometer survey.

Figure 1: Ready to defend?
In your view, what are the most important policies on which the new EU-Commission should focus to build a stronger Europe in the world? (max three answers possible)



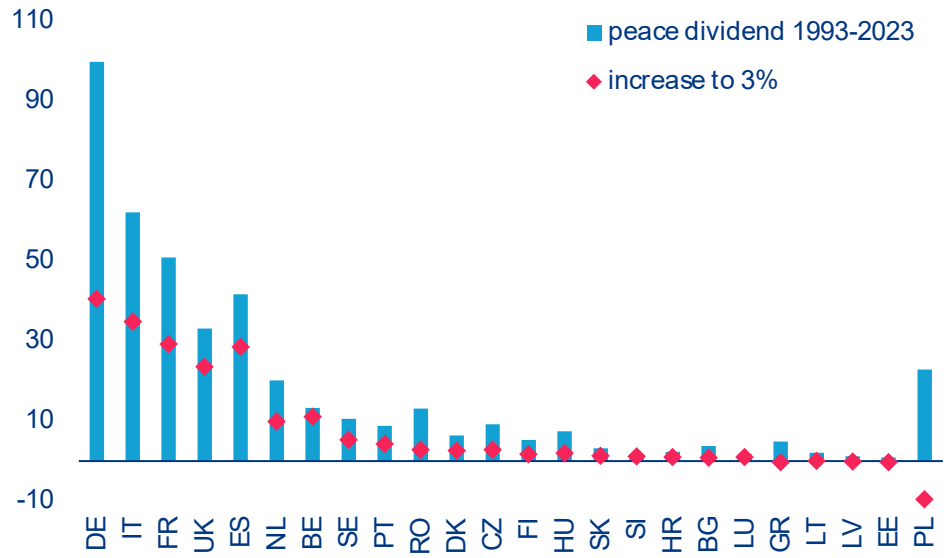
Source: Allianz Pulse 2024

However, Europe needs to address several risks to get it right on defense sovereignty. Decades of underinvestment, fragmented procurement and industrial disaggregation have left the continent overly dependent on external suppliers and ill-prepared for sustained high-intensity conflict. While recent initiatives mark a shift in political will, we outline five policy levers to build a strong, autonomous European defense sector. These levers are priorities grounded in current proposals from EU institutions and national governments. The recommendations address both the hard fundamentals (i.e. funding, production, procurement) and some of the enablers: innovation ecosystems, governance structures and civil-military integration. We also call for strong coordination among EU institutions and member states, particularly the heavyweights – France, Germany, Italy and Spain. Strategic autonomy cannot be decreed; it must be engineered: by scaling investment, buying European, arming at scale, innovating faster and unifying command.

1: Increase defense spending and secure the money

European countries have collectively saved billions of euros per year in recent decades – a post-war peace dividend – as they have cut defense spending and freed up resources for other priorities, including welfare systems. While the EU now spends just around 2.2% of its GDP on defense, European leaders are openly debating raising spending to as much as 3% of GDP or more over the next decade, a level not seen in continental Europe since the late 1960s. Spending at this level between 1993 and 2023 would have required EU member states to allocate an extra USD416bn in 2020 purchasing power parity (PPP) terms a year to defense. For Germany, which spent 2.1% of GDP on defense in 2024, the increase would have been USD99.8bn per year over the same period (Figure 2) – roughly equivalent to annual public spending on housing and local amenities. For Italy, the annual peace dividend over the past 30 years is USD62.2bn, for France USD50.9bn, for Spain USD41.2bn and for the UK USD33.2bn. This is in most cases more than what is needed to increase defense spending to 3%.

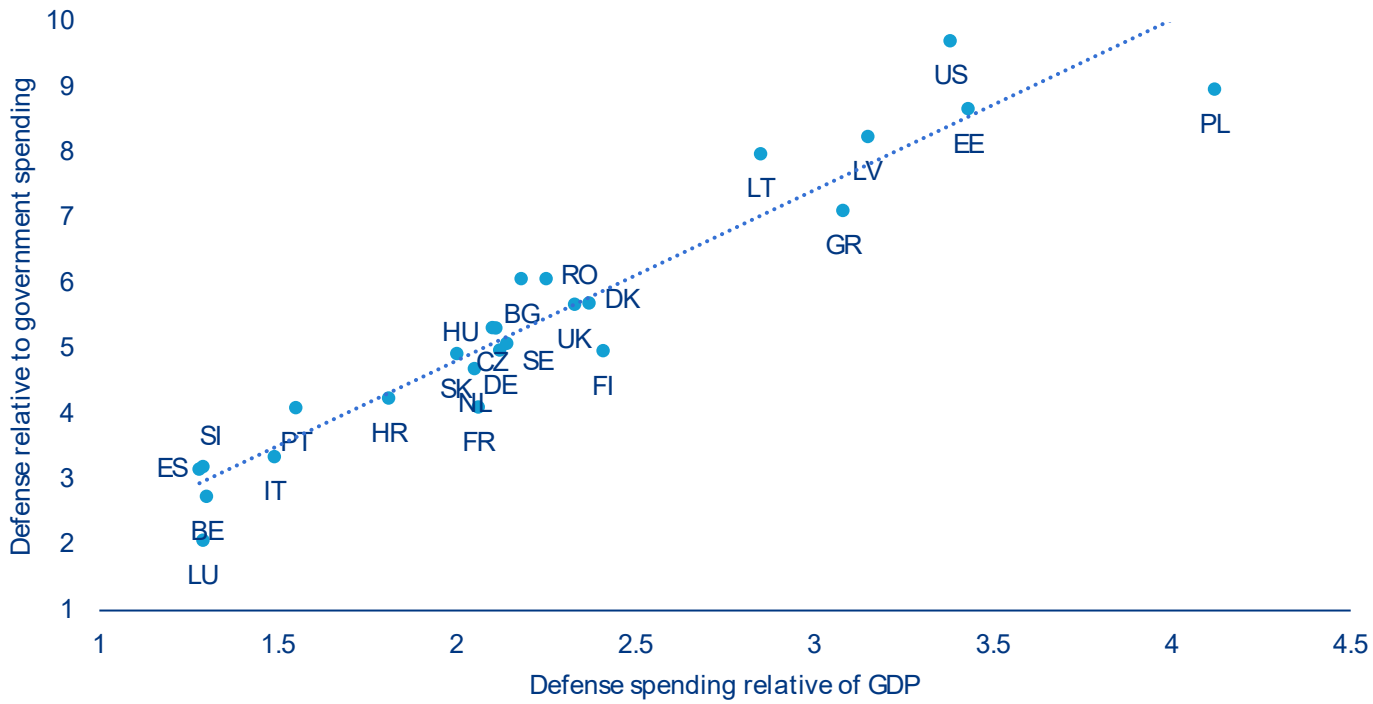
Figure 2: Postwar peace dividend average across 1993-2023 (in 2020 PPP USDbn) and needed increase to 3% defense spending (in 2024 USDbn)



Sources: SIPRI, NATO, WDI, LSEG Datastream, Allianz Research

It is a question of priorities: The EU now spends far more on welfare than on warfare. Europe enjoyed its years of low military spending thanks to a long period of protection from the US. European countries had to allocate between 4% and 5% of their general government spending to defense to reach the 2% NATO target in 2024 (Figure 3). This implies that more than 95% of government funds were still available for other policy areas. Across the EU, the share of social protection in total government spending has grown, rising from 31.9% in 1995 to 40.4% on the eve of the pandemic in 2019, but falling back to 37.1% in 2024. German government spending on social protection, which includes social assistance and pensions but excludes health care, was 19.7% of GDP in 2023, more than double that of the US's 8.0%. In France, the difference is even greater at 23.4%. While vital, Europe's expanded welfare states lack the economic growth to sustain them. Reversing decades-long declines in military spending – halved since 1963 and only recently reaching 2% of GDP – would require social spending cuts or higher borrowing, both of which pose major challenges for many European nations.

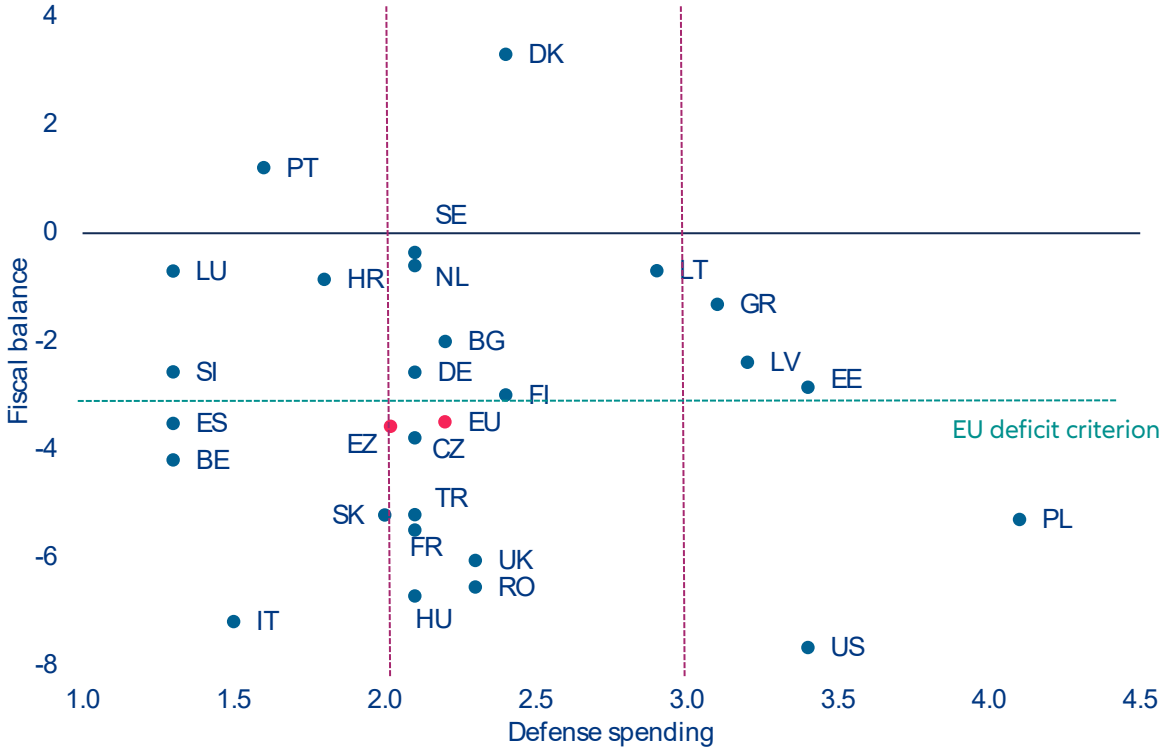
Figure 3: Defense spending and fiscal balance, in % of GDP 2024



Sources: ECB, Nato, LSEG Datastream, Allianz Research

Fiscal constraints make it hard for many European countries to afford higher defense spending, especially since most military equipment is imported and does not necessarily boost growth. At present only two (Poland and Greece) out of the ten larger countries in the EU spend more than 3% of GDP on defense and are in line with the US. While Germany has recently solved its fiscal constraint, at least for defense spending, by exempting everything >1% from the debt brake, many European countries will struggle to meet a higher target without breaching EU deficit rules, especially France, Spain, Belgium and Italy (Figure 4). Increasing military spending from 2.2% of GDP for the EU on average in 2024 to 3% of GDP requires spending of +0.8% of GDP for Germany and up to +1.25% of GDP for Spain annually. Based on 2024 numbers, the structural increase in government spending could range around EUR107.6bn across the EU annually, ranging from EUR11.4bn in France, EUR13.7bn in Germany and EUR16.5bn in Spain to EUR19.5bn in Italy. There is a risk that this would lead to higher fiscal deficits unless offset by other measures.

Figure 4: Defense spending and fiscal balance, in % of GDP 2024



Sources: ECB, Nato, LSEG Datastream, Allianz Research

The newly proposed NATO target of 5% of GDP for defense spending by 2032 – comprising 3.5% for military expenditure and 1.5% for infrastructure and cyber security – represents a substantial increase in Europe's collective security objectives. For many EU countries, even reaching the 3.5% defense spending target will require substantial fiscal effort. Germany, for example, would need to increase its defense budget by an estimated USD63.5bn at 2024 levels, while Italy and France would require an additional USD46.5bn and USD44.9bn, respectively. Some countries, such as Poland, Lithuania and Estonia, have already announced ambitious plans, with Lithuania projecting 5–6% of GDP by 2026 and Estonia aiming to exceed 4% within the same timeframe. Germany has announced plans to increase defense spending stepwise by +0.2pp per year, with the aim of reaching 3.5% by 2032. This could cost an additional EUR9bn each year, on top of the current 2.1% of GDP. However, others, especially those starting from a low base such as Spain, Belgium and Slovenia, face gaps of over 2pps. Closing these gaps will require either robust economic growth or politically challenging reallocations of national budgets. For fiscally constrained economies such as Italy, Hungary and Romania, this could be particularly challenging, especially given ongoing consolidation pressures.

In order to accommodate this rapid increase in defense investment without breaching EU fiscal rules, the European Commission has proposed the coordinated activation of the national escape clause under the Stability and Growth Pact. This mechanism allows member states to temporarily exceed their fiscal targets by up to 1.5% of GDP annually for defense spending between 2025 and 2028. As of May 2025, 16 EU countries, including Belgium, Bulgaria, Croatia, the Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Latvia, Lithuania, Poland, Portugal, Slovakia and Slovenia, had requested to invoke this clause. However, others, such as France, Italy and Spain, have not yet formally applied, although Spain has announced increases in defense spending. The clause provides countries with much-needed flexibility to increase defense spending in the face of mounting security threats. The European Commission is currently evaluating these requests and is expected to issue final recommendations by July 2025. This initiative highlights the need for a delicate balancing act between maintaining fiscal prudence and urgently reinforcing Europe's defense readiness.

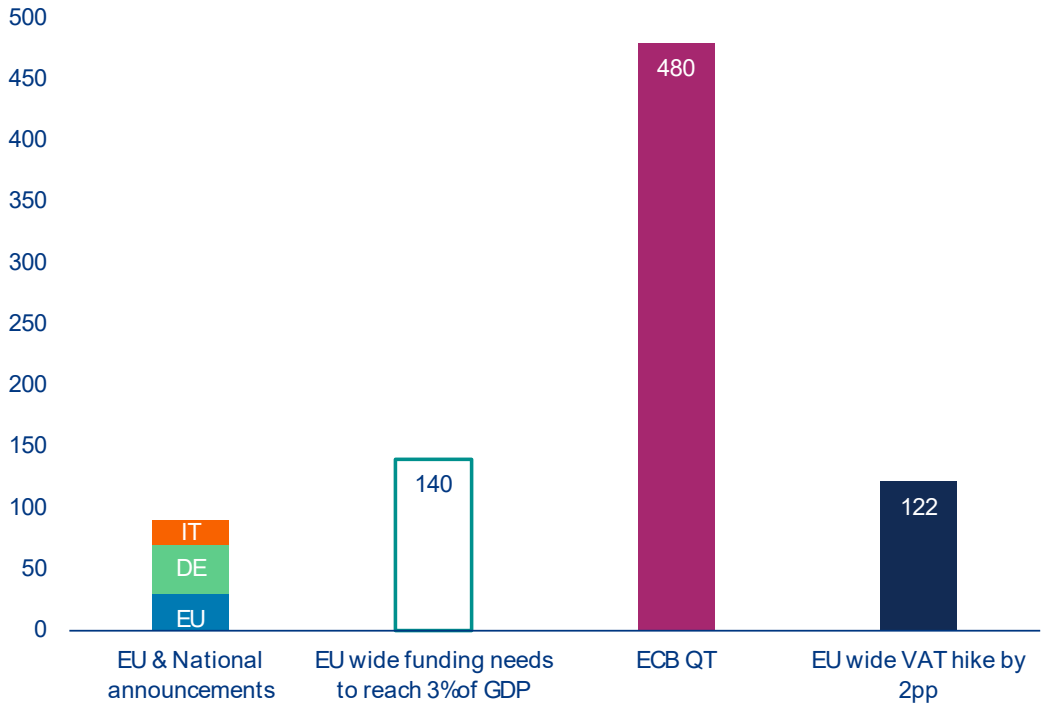
It is time to secure the money. A short-term solution is repurposing the remaining EUR90bn (0.6% of EU GDP) from the Next Generation EU (NGEU) fund for military spending, offering temporary loans to member states with high borrowing costs until 2026. In May 2025, the EU Commission signalled greater flexibility in reallocating funds within national plans. Poland may set a precedent, expected to gain approval to shift EUR6bn from green transition projects to dual-use defense initiatives. The funds will be managed through a special vehicle under Poland's development bank to effectively bypass the 2026 spending deadline. Expanding the role of institutions like KfW, CDC or Cassa may thus also offer other governments a similar path to buy time while staying within EU rules. Leveraging the European Stability Mechanism (ESM) could activate a specific lending facility directed to the support of military spending but can only temporarily substitute the issuance of domestic debt. But the EU has unveiled a roadmap to enhance its defense capabilities in light of escalating external security threats. A key element of the new strategy is the ReArm Europe Plan, which encourages increased defense spending to reduce reliance on US security. The financial framework includes joint EU loans backed by the EU budget, branded as SAFE (Security and Action for Europe), with an initial ceiling of EUR150bn. Additionally, an escape clause from the Stability and Growth Pact allows member states to exclude up to 1.5% of defense spending from national debt assessments clause – a temporary solution, leaving long-term funding issues unresolved. The plan also involves relaxing existing EU funding rules, mobilizing private capital and adjusting European Investment Bank (EIB) regulations for defense R&D, promoting joint procurement to reduce duplication and implementing a "Buy European Defense Act" to strengthen local defense industries. The EU's ambition is to generate up to EUR800bn in defense funding, contingent on member states' commitment to the initiative. While EU financial tools and incentives have the potential to drive progress, they are not a standalone solution.

But the EU should not tap into the debt trap. EU outstanding debt will rise further on additional NGEU issuance and potentially defense spending, posing a threat to future EU budgets. Remaining NGEU funding will require additional bond issuance of roughly EUR300bn until 2026. If this money is not redirected towards defense, an additional EUR140bn could come on top. While feasible, this also means that the EU will have to make room in its budget for increased debt servicing going forward. A back of the envelope calculation of a total of EUR1trn of debt outstanding at an assumed interest rate of 3% would lead to EUR30bn in debt servicing per year. This is equivalent to a staggering 20% of the EU's 2025 revenues – a sharp rise from virtually zero in 2020, when debt was lower and interest rates close to zero.[3]

While debt financing either using EU or national resources seems plausible in the short run, at some point, a structural solution has to be found either by raising taxes or cutting spending elsewhere. One option would be to raise the VAT in the EU collectively. A back of an envelope calculation suggests that the average VAT would need to be raised by around 2.3pps to 24% to finance EUR120bn of annual spending (Figure 5). However, implementing such a move would have significant economic and social implications, potentially affecting consumer spending, business operations and overall economic growth negatively. As a result, issuing new debt appears the more likely route in the short term. While this raises concerns about debt sustainability and the potential for rising bond yields – recalling tensions during the Eurozone crisis –the European Central Bank (ECB) still holds substantial policy space. For instance, the ECB is currently reducing its balance sheet through quantitative tightening (QT) at a pace of EUR40bn per month, or EUR480bn per year. Simply halting QT would more than offset the anticipated increase in net issuance from higher defense spending. This suggests the ECB could stabilize markets if needed, without immediately resorting to politically sensitive quantitative easing. In sum, while the financing challenge is real, the combination of flexible ECB policy and measured debt issuance can make the defense spending target manageable.

[3] EUR1trn would be the amount of debt issued by the EU only (i.e. excluding ESM/EFSF) if the remaining NGEU would be funded plus an additional EUR140bn for defense on top.

Figure 5: Already announced vs needed annual spending, in EURbn



Sources: Allianz Research

Our recommendations

European defense must undergo an exceptional surge in spending to strengthen capabilities and autonomy. Despite rising budgets, Europe still spends far less on defense R&D and procurement than global competitors. A significant funding boost – intelligently allocated – is the foundational lever enabling all others.

- **In the short run, Europe must commit to higher spending and new funding tools.** All member states should at least meet the 2% of GDP benchmark, with major players like Germany leveraging special funds (EUR100bn) and France delivering on the EUR413bn military 2024-2030 program law voted in 2023. To secure the additional EUR500bn that the EU Commission estimated necessary to meet capability demands over the next decade, the EU and member states need to find innovative and sustainable financing instruments.

- **Over the long-term, Europe needs to establish sustainable and coordinated investment.** The EU should institutionalize defense funding in its budgets and financial frameworks. This could include a permanent European Defense Fund beyond 2027 (building on the current EUR8bn EDF). Member States should also plan for "higher than 2%" spending levels by 2030 to credibly close critical gaps. National contributions should be coordinated to avoid overlaps: for example, France and Italy could synchronize investments in naval shipyards, and Germany and Spain in ground combat systems. Over the long run, aligning fiscal effort at EU level will ensure stable funding for modernization, reducing dependence on ad-hoc national boosts.

- **Countries must stay clear of nationalist implementations and short-term spending bursts**. Member states should resist channeling their defense spending into purely domestic projects. Cross-border investment and partnerships are key to develop a strong European defense ecosystem. Likewise, countries should not invest in legacy platforms, even if they are domestically developed. Another pitfall to avoid is a short-term spending burst: countries must avoid one-off stimulus-like defense spending. This is particularly relevant as the geopolitical landscape and especially US foreign policy could shift over the next few years.

Box 1: Bridging the gap – the role of private capital

While defense is a public good, there are many opportunities for private capital to help rebuild military capabilities. For a start, private sector investment can free up government resources needed for defense priorities by investing more in other areas, such as education or civilian infrastructure. Indeed, capital is plentiful. The European institutional investor market is deep, with a total size of EUR16trn. But only 5% (insurance companies: 2%) is allocated to infrastructure equity. In Canada, for example, it is 10%.

Moreover, defense is more than tanks... It also means independence in strategic raw materials, intermediates (e.g. for pharmaceuticals), energy and infrastructure (e.g. telecommunications). Therefore, the green and digital transformation is part of EU's defense transition – with a big role for institutional investors. Increased infrastructure investment by EU institutions could significantly reduce the financial burden of infrastructure on the state: A 10% allocation to infrastructure would free up EUR800bn in additional capital.

...and today's wars are hybrid. The resilience of critical infrastructure is part of Europe's defense transformation – and insurers have an important role to play in this regard. Insurers can provide comprehensive solutions for risk mitigation and prevention. Such resilience measures are critical for de-risking investments, keeping projects bankable and insurable and thus mobilizing the trillions of euros needed for the transformation.

But there are a number of hurdles to overcome before large-scale private investment in defense and infrastructure assets can be unleashed. There is certainly no shortage of financial instruments. Public-private partnerships, blended finance, guarantees or bond issues work for any kind of investment that is strategic for a country, including defense. But suitable projects are rare. The key is internationally competitive risk-adjusted returns, such as business models or concessions with limited/defined price and volume risks. Multilateral institutions (e.g. EIB, KfW) could play a crucial role here and the EIB already changed course in May 2024, no longer excluding the defense industry. But these institutions need to focus on (risky) projects that are difficult to finance with private capital. Otherwise, private investors could be crowded out of projects that are already financially viable. Simplifying and speeding up administrative, planning and approval procedures is crucial. Local authorities often lack the necessary planning capacity.

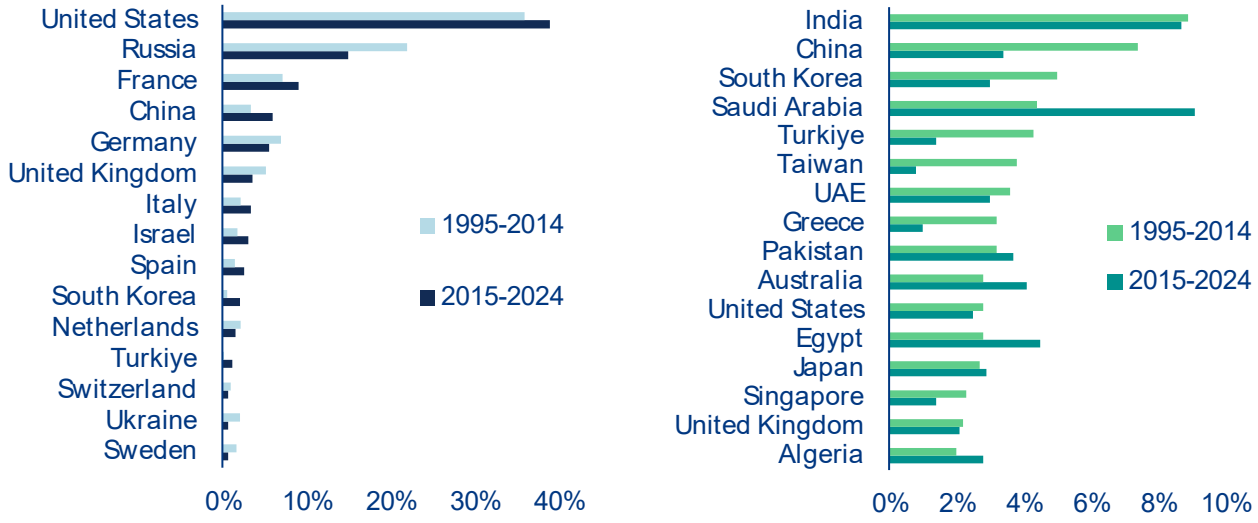
And the elephant in the room: sustainability reporting. On paper, the EU's sustainable finance rules are not particularly restrictive. They primarily exclude so-called "controversial weapons" such as anti-personnel mines, the production of which has (so far) hardly played a role in Europe. More decisive are self-imposed restrictions, for reasons of reputation, which often also include nuclear weapons (which are not among the controversial weapons). As a result, in 2021, around 14% of all retail assets under management were subject to restrictions on investment in weapons production. The comparable figure for the US is 1%.[4] Therefore, to unlock private investments, further clarification and guidance from EU regulation (e.g. SFDR) is needed on how to deal with defense companies, not least nuclear weapons. An active approach could promote ESG criteria in defense sector investments to attract responsible investors and thus ease reputational concerns for private asset owners and managers.

[4] See Sustainability rules are not a block on EU defence financing, but reputational fears are.

2: Buy European first and align industrial goals

A challenge is that most military goods are imported from abroad and military production is concentrated in a small number of countries. These countries might benefit from increased demand for their defense exports but if all countries raise defense spending, then the leakage through imports will be lower. The US and Russia alone accounted for 54% of global arms exports in the last decade and seven countries exported more than 80% of all global arms (US, Russia, France, China, Germany, Italy and the UK). Compared to 1995-2014, the US has even increased its share by +3pps from 36% to 39% (Figure 6, left) while Russia lost out from 22% to now 15%. An expansion of defense expenditure might entail substantially more arms imports, but given the shift in US foreign policy, these might turn to other sources. On the importing side, the top five importers (Saudi Arabia, India, Qatar, Egypt, Ukraine) account for 32% of global arms imports (Figure 6, right), but EU member states also import nearly 80% of their military equipment.

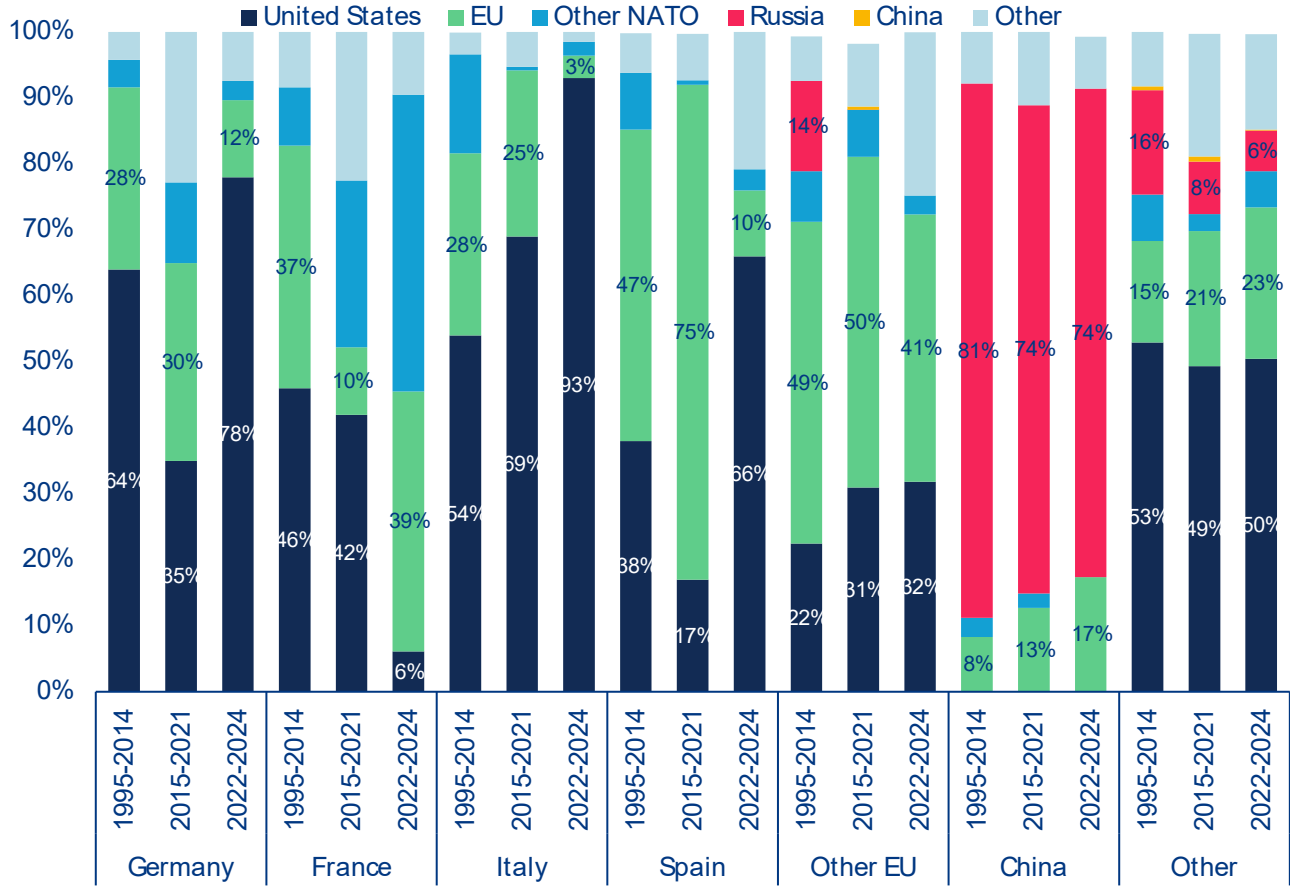
Figure 6: Top 15 arms exporters (left) and importers (right), in % of total arms exports/imports



Sources: SIPRI, Allianz Research

Europe's dependence on defense imports, particularly from the US, may not last for long. In the last decade, almost half of Europe's arms imports came from the US, up from 45% between 1995 and 2014. A third came from within Europe, which had a larger share of 38% over the previous period, while around 10% came from other NATO members. While France has reduced its dependence on the US in recent years (from 46% to 42% post-Crimea and then 6% post-Ukraine invasion, Figure 7), countries such as Germany (up +14pp), Italy (up +22pps), Slovakia (up +72pps), Denmark (up +44pps) and the Netherlands (up +39pps) have increased their US dependence. In light of the recent changes in US foreign policy, many countries are seeking to reduce their dependence on US imports for spare parts and software updates. However, reducing dependence may prove difficult if US defense exports become part of a quid pro quo to avoid US import tariffs. Similarly, the US could limit its defense exports to focus on its own defense build-up against China. Nevertheless, in the short term, governments may have little choice but to increase imports as they lack the capacity to produce more domestically.

Figure 7: Dependencies on arms suppliers, as % of total exports



Sources: SIPRI, Allianz Research. Notes: Other countries include KOR, PHL, JPN, ISR, IND, IDN

The defense sector's supply chains in Europe are notably complex, driven by a combination of stringent regulatory standards, specialized expertise and the need for long-term coordination across multiple parties. These supply chains extend across numerous countries, with suppliers providing highly specialized components, technologies and services that must adhere to rigorous quality standards. Many of these components also involve classified or sensitive information. The complexity of defense procurement – from military aircraft and naval systems to advanced munitions and cybersecurity solutions – requires seamless integration across diverse industries, including aerospace, electronics and manufacturing.

This level of complexity is less pronounced in the US. When comparing the ten largest defense companies in both Europe and the US, it is evident that the European defense supply chain is far more fragmented and intricate. European companies in this sector typically rely on twice as many suppliers as their American counterparts (Table 1). Additionally, US defense supply chains and manufacturing operations are more centralized. While 84% (on average) of suppliers for European companies are based overseas, only 32% of US companies' suppliers are foreign. Similarly, US companies maintain a more concentrated manufacturing base, with just 27% of their production facilities located abroad, compared to 67% for European firms.

Table 1: Supply-chain dependency and complexity by geography, top 10 players by region

Company	Country	Number of Suppliers	% of suppliers domiciled abroad	No. Company facilities	% of Comp. facilities abroad
Airbus	France	2398	80%	107	82%
Safran	France	177	86%	340	64%
Rolls-Royce	UK	146	88%	63	73%
Rheinmetall	Germany	50	82%	109	60%
BAE Systems	UK	232	87%	180	71%
Thales	France	124	81%	93	84%
Leonardo	Italy	110	84%	109	53%
Dassault Aviation	France	57	68%	39	62%
SAAB	Sweden	53	87%	72	54%
MTU Aero Engines	Germany	36	94%	14	65%
Lockheed Martin	US	236	36%	80	11%
Boeing		345	54%	183	44%
Northrop Grumman		276	23%	112	13%
Raytheon Technologies (RTX)		314	41%	198	39%
General Dynamics		152	37%	116	22%
L3Harris Technologies		115	30%	104	33%
Huntington Ingalls Industries		33	25%	30	17%
Textron		119	44%	142	45%
TransDigm		34	32%	131	37%
Kratos Defense		21	0%	33	12%

Sources: Bloomberg, Allianz Research

The current trade war could pose risks for European companies, given their exposure to international suppliers. Indeed, higher tariffs directly translate into higher production costs. Also, as many of these companies rely on a global network of subcontractors, they are indeed more vulnerable to delays and disruptions at various stages of production. In addition, political factors such as trade adjustments, defense budgets and international sanctions add further uncertainty, affecting the flow of critical materials and technologies. The growing emphasis on cybersecurity and supply-chain resilience – especially in response to geopolitical tensions and evolving threats – has led many businesses to reconsider their global sourcing strategies. This shift has encouraged investments in more localized and secure supply chains. As a result, managing these complexities requires not only technological innovation but also effective risk management and strong collaboration with international partners.

Europe can learn from countries that managed to grow their defense industry through strong domestic procurement policies. In the US, large and consistent defense budgets since 1945 have guaranteed a market for domestic contractors. Cost-plus contracts guaranteed contractor profits, while laws like the Defense Production Act and "Buy American" provisions ensured critical production stayed onshore. Multi-year procurement contracts and stable funding streams gave the industry the confidence to invest in capacity. This prevents the boom-bust cycles that can erode capabilities after wartime spikes. For example, continuous demand through programs like the navy's nuclear submarine fleet and NASA's Apollo space program signaled to firms that investments in these areas would be rewarded – contributing to US dominance in space technologies and rocketry. Another example is Israel's procurement strategy, which has been driven by existential threat and import shocks. After France's 1967 arms embargo, Israel launched a "Munitions

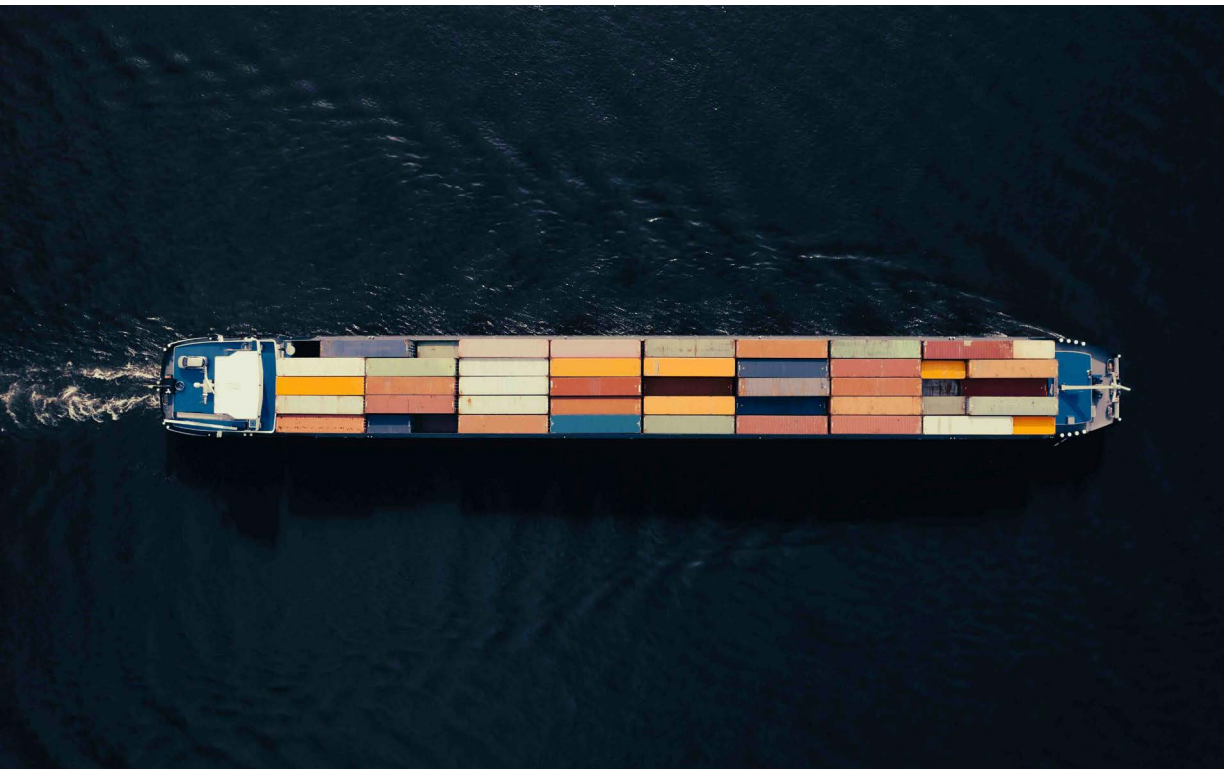
Independence" policy to locally produce major weapons. The government became the primary customer for new domestic systems such as the Gabriel anti-ship missile and the Saar missile boats, which were developed and procured to fill urgent needs when foreign supplies were cut off. This state commitment to buy local designs (e.g. the Merkava tank program initiated after a British embargo) signaled reliable demand for the emerging Israeli defense industry, enabling it to grow. Although US military aid eventually became significant, Israel has often directed portions of that aid to domestic procurement, sustaining local industries while equipping its military. Likewise, South Korea used defense procurement as a tool of industrial development. Facing an aggressive North Korea and uncertain US support, Seoul poured resources into defense in the Cold War decades – spending as much as 6.4% of GDP in the 1960s–80s. This massive budget was largely funneled to domestic production programs, from infantry weapons to warships, under a government-guided strategy. Even in recent years, South Korea's defense ministry (through the Defense Acquisition Program Administration) coordinates most procurements and has authority to favor local industry where feasible. By centrally managing requirements and consolidating orders, DAPA sends clear signals to South Korean firms about future demand, allowing firms to scale up production of tanks, artillery and naval vessels with confidence in sustained government purchases.

Defense "Brexin" is a boost for the region. The Security and Defense Partnership gives the UK access to EU mechanisms for jointly developing and buying military equipment – a significant shift after Brexit had excluded UK firms from these initiatives. UK defense giants like BAE Systems and Rolls-Royce can now take part in the European rearmament program. Under the deal, Brussels and London will "swiftly explore" how the UK can cooperate in the SAFE/"ReArm Europe" plan. In practical terms, British industry can now bid on EU-funded joint contracts and form consortia with European partners for cutting-edge projects. This is a boon to the UK's defense sector, opening access to continental Europe's surge in military investment. It also aligns procurement strategies: rather than competing separately, the UK and EU countries can coordinate acquisitions to get better value and interoperability of equipment. For example, Britain and Germany announced plans to codevelop a new long-range precision strike missile alongside other EU states. Defense funding across Europe is set to increase in tandem with this partnership. The EU's European Defense Fund and related programs (such as the common procurement Act and ammunition production initiative) are now potentially open to UK participation. London's cooperation with EU financial instruments for security – including the European Peace Facility for Ukraine – means resources can be pooled more effectively for shared priorities. Geopolitically, the agreement positions Europe as a more unified actor. By resolving post-Brexit frictions, it allows the UK and EU to present a joint front on global security issues.

Our recommendations

European defense procurement remains highly fragmented along national lines, causing duplication, higher costs and interoperability issues. EU countries operate 178 different weapon systems compared to just 30 for the US (e.g., 17 types of main battle tank in Europe vs. 1 in the US). Historically, about 80% of defense contracts have been national, lacking economies of scale. How can the EU create a genuine single defense market through collaborative procurement and common planning?

- **Coordinate purchases and meet collaboration targets.** Member states should immediately pool orders for urgent needs (ammunition, air defenses etc.) via the European Defence Agency or ad hoc consortiums. A recent EU ammunition initiative highlighted this need after only half of a pledged 1mn shells were delivered in one year due to uncoordinated production. In response, the EU is backing joint tenders for ammunition and missiles to quickly refill stocks. All countries – especially France, Germany, Italy and Spain – must leverage these mechanisms instead of racing separately for off-the-shelf buys. The European Defence Agency has set a benchmark that 35%-40% of equipment spending be in joint procurement; in 2022 this was only 18%. Achieving the above 35% target in the next few years via coordinated fighter, naval and land system purchases is critical. For example, Spain and Germany could consolidate a joint armored vehicle order rather than pursue parallel projects.
- **In the longer-run, Europe needs to integrate markets and standardize programs.** The EU should move toward a unified defense procurement framework by 2030. This includes harmonizing military requirements and timelines so that big projects are co-developed from the start. Flagship programs like the Future Combat Air System (FCAS) fighter (led by France, Germany, Spain) and the Main Ground Combat System (MGCS) tank (Franco-German) set a template – they pool R&D, share costs and will serve multiple nations, reducing redundant systems. The European Commission has floated "Defence Projects of Common European Interest" – akin to industrial IPCEIs – to support such collaborative mega-projects with EU funds. Over time, Europe should streamline around one new fighter jet, one main battle tank, one standard frigate design etc., for the bloc. Joint procurement structures (potentially an expanded EDA or a new central acquisition agency) could coordinate these efforts, from requirements-setting through contracting. A more integrated procurement system will cut unit costs (doubling an order could reduce production cost by about 20%) and ensure forces across Europe can seamlessly operate together.
- **Bigger countries should refrain from playing "solo" and involve smaller members states.** Some big countries such as France, Germany or Italy may insist on national variants for common platforms but in order to maintain cost and operational efficiency, countries should refrain from "flag planting" over interoperability. Domestic bias in contracts should also be avoided, "European content" should be favored over "national content". Lastly, procurement rules have to ensure smaller EU nations participate in projects.

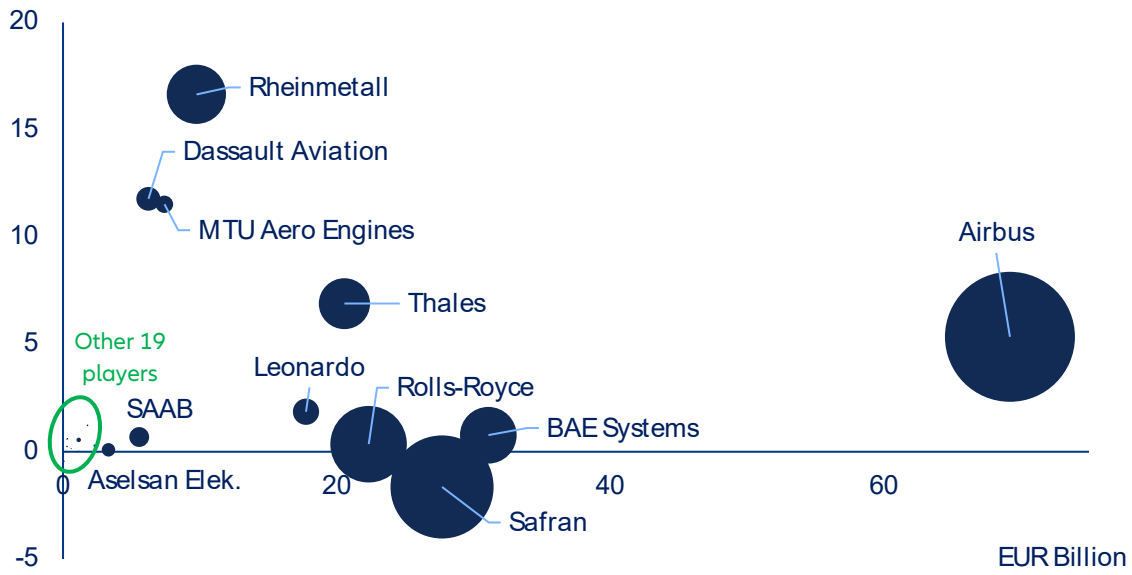


3: Arm Europe to scale and rebuild a complete defense supply chain

Defense is a very concentrated sector with high barriers to entry. Europe's defense sector is a high-quality and technologically advanced industry, underpinned by a complex ecosystem of government contracts, multinational collaborations and cutting-edge technologies. Europe's defense capabilities are large and driven by a combination of state-owned enterprises and private sector defense contractors that specialize in a wide range of domains, including aerospace, submarines, cybersecurity, land systems, weapons, naval platforms, advanced defense technologies and software and maintenance (Table 2). There are an estimated 2,500-3,000 firms in the defense sector in Europe in 2025 but this compares to 60,000 firms in the US[5]. But unlike other industrial sectors, defense is dominated by few large key players. The top five companies in the industry make 68% of the industry's total revenue and represent 71% of market capitalization (Figure 8). This is the result of high barriers to entry, including substantial capital requirements, strict regulatory frameworks and the need for specialized expertise in advanced technologies. Additionally, defense contracts are typically awarded through long-term government relationships, requiring extensive experience and the ability to meet complex, often confidential defense needs. The sector's reliance on large-scale production, security clearances and ongoing R&D further consolidates market share among established companies with the resources to invest in innovation and secure multi-billion-dollar contracts. This creates a natural environment for a limited number of powerful, multinational defense contractors to lead the industry. Instead of competing, each company tends to specialize in supplying specific needs for governments and customers.

[5] As of 2021, including all contractors and subcontractors

Figure 8: European companies operating in the military sector, X-axis = Revenue / Y-axis = EPS / Bubble size = Market Cap. data in EUR



Sources: Bloomberg, Allianz Research

Table 2: Revenue and business segment exposure to the military industry of European companies

		Business segment									
	% Revenue related to defense activities	Planes	Helicopters	Aircraft Engines	Satellites	Land Vehicles	Weapons	Systems	Electronics	Cybersecurity	Maintenance
Aerostar		X					X		X		X
Airbus		X	X	X	X		X	X	X		X
Altinay Savunma			X				X	X	X		
Aselsan Elek.							X	X	X	X	
Avio				X					X		X
Avon Tech.								X	X		
BAE Systems		X	X	X		X	X	X	X	X	X
Chemring							X	X	X		
Cohort							X	X	X		
Dassault Aviation		X		X				X	X		X
Exosens								X	X		
FACC				X					X		
Figeac-Aero		X		X					X		X
Leonardo		X	X	X	X		X	X	X	X	X
Lisi								X	X		
MilDef						X	X	X	X		
Montana Aeros.		X						X	X		
Montana Tech.								X	X		
MTU Aero Engines				X					X		X
OHB					X			X	X		
QuinetiQ							X	X	X	X	
Renk						X	X		X		
Rheinmetall		X		X		X	X	X	X		X
Rolls-Royce				X				X	X		X
SAAB		X	X	X		X	X	X	X	X	X
Safran		X	X	X	X		X	X	X		X
SDT Uzay & Sabunma					X		X	X	X		
Senior								X	X		
Thales		X	X	X	X		X	X	X	X	X
Theon Int.							X	X	X		

Sources: Company data, Allianz Research

Box 2: Winners and losers from higher defense spending

Increased defense spending will benefit some sectors more than others. Some industries will experience a direct boost in demand, while others might see indirect benefits or even relative disadvantages (Table 3). Broadly, the winners will be industries that supply military goods and services (or their inputs). Defense manufacturing & transport equipment is the most obvious beneficiary of higher defense budgets. Government procurement of military equipment translates directly into new orders for aerospace and defense companies. In Europe, that means increased production of fighter jets, transport planes, helicopters, tanks, armored vehicles, naval ships and related hardware. Heavy transport equipment industries are central to defense procurement – military vehicles, aircraft and other transport systems make up about 60% of the input value of arms production[6]. Thus, higher defense spending directly translates into higher output for these manufacturers. Taking into account only the EUR150bn from SAFE, this would mean about EUR90bn for transport equipment and EUR60bn for the other sectors contributing to the defense push. These rough figures do not take into account the fiscal multiplier and are in lower band of estimates. Beyond final assembly, there are extensive supply chain benefits, too – a fighter jet program involves hundreds of component suppliers (engine makers, avionics etc.). As production volumes rise, these companies see increased sales and possibly economies of scale. A defense buildup will require substantial raw materials and basic manufactured inputs, especially metals. Steel, aluminum, titanium and composites are needed for everything from ship hulls and tank armor to aircraft frames and munitions. Europe's metals and mining sector stands to gain as military production expands. New tanks or warships will lead to orders for steel plates and high-grade alloys from steelmakers. Similarly, increased output of missiles and ammunition boosts demand for chemicals (explosives, propellants) and metals like copper (for casings and electronics). Modern defense systems are packed with advanced electronics – sensors, radar, communications gear, semiconductors and software. Therefore, a rise in defense spending will stimulate Europe's electronics and tech sector. Input-output analysis indicates that about 40% of the value in arms production[7] comes from the electronics and optical equipment sector (computers, avionics, optical sensors etc.), underlining how important this sector is to defense. Governments often fund defense R&D projects with industry, which can especially help electronics and software companies develop cutting-edge technologies. An often-overlooked beneficiary of higher defense spending is the construction sector. Expanding armed forces and new equipment often require investments in infrastructure: bases need expansion or modernization, new training facilities must be built, depots and barracks updated and transportation infrastructure enhanced to move military assets. This is especially relevant as the recent Germany spending plan includes both defense and infrastructure. Additionally, heightened security needs might drive investments in cyber and space infrastructure (data centers, satellite ground stations), again involving construction and tech installation work. Lastly, with more troops and equipment to move, the demand for logistics and transport services can increase. This includes military transportation (by air, land, sea) which often uses civilian contractors or equipment. European defense build-up may involve hiring transport companies for troop deployment exercises, increased shipping of supplies or using rail/road haulage for military purposes.

Sectors unconnected to defense may see little change while those reliant on alternative public spending could lose out. Sectors like retail, consumer goods and hospitality are not directly funded by military budgets. There could be a mild second-round effect if defense manufacturing creates jobs and incomes that workers then spend in shops and restaurants, but this effect is diffuse and modest. Thus, most consumer-oriented sectors remain neutral, with neither a direct boost nor a direct harm from defense budgets. The healthcare sector deserves a mention because it competes for government budget resources. If increased defense spending is financed by higher overall budgets, then health can continue unaffected. However, if defense outlays crowd out other public expenditures, it could face tighter funding. Non-defense capital goods manufacturing could be negatively impacted. A large defense-driven demand increase could lead to resource crowding-out in some areas. For example, skilled engineers and technicians could be drawn away from civilian projects. Sectors like civil engineering, tech startups or advanced manufacturing for civilian products could face tighter labor markets and higher wages as defense contractors recruit aggressively. This could mildly hamper growth in those non-defense industries as they struggle with talent retention or cost inflation. Similarly, segments like real estate development and civilian construction projects could see a marginal negative impact from the side-effects of the defense buildup.

[6] Stamegna et al. (2024), « The Economic Impact of Arms Spending in Germany, Italy, and Spain », Peace Economics, Peace Science and Public Policy, 30(4)
[7] Ibid

Table 3: Summary of sector impacts for higher defense spending

Sector	Demand impact	Transmission channel
Defense & Transport Equipment	**Strongly Positive**	**Direct procurement orders** for military aircraft, tanks, ships etc.
Metals & Chemicals	**Positive**	**Intermediate demand** rises for raw materials and components.
Electronics & ICT	**Positive**	**Technology procurement and R&D** funding increase. Government-funded military R&D (e.g. in AI, encryption, avionics) creates innovation that can transfer to the civilian tech sector.
Construction & Infrastructure	**Positive**	**Infrastructure investment** for defense facilities.
Transport & Logistics Services	**Positive**	**Operational spending** increases for moving troops and equipment. Maintenance services for new equipment also create business for technical service providers.
Consumer Goods & Retail	**Neutral**	**Little direct link** to defense spending.
Healthcare	**Neutral to Slight Negative**	**Potential budget reallocation could decrease revenues**. Fewer resources for hospitals or social security would be a negative impact.
Other Manufacturing (Non-defense capital goods)	**Neutral to Slight Negative**	**Crowding-out of capacity** - tighter labor and input markets, potentially raising costs.
Real Estate & Construction (civilian projects)	**Neutral to Slight Negative**	**Macroeconomic side-effects**. A defense-driven deficit increase could put upward pressure on interest rates, increasing financing costs for real estate development and non-defense construction.

Source: Allianz Research

Increasing EU military production by 25% to 100% cannot be achieved overnight. We estimate that it would take between three to five years for the EU to double its equipment capacities, based on a realistic 35%-50% allocation ratio with a 3% of GDP defense budget. The timeline could be shortened if the EU further increases spending and consistently allocates a high ratio of their budget (40-50%) to capacity investment, including equipment procurement and R&D. Military products usually have long production times (for small arms and ammunition it might be three months and for tanks a minimum of six months; for missiles, aircrafts, helicopters, air defense systems and naval vessels it takes between two to three years on average and is highly labor intensive (Table 4). Moreover, hiring and training new troops (estimates go from 150K to 300K additional) is also time consuming. While it is economically feasible for Europe to increase its military capabilities independently, several obstacles remain, including potential US export restrictions and reliance on US intelligence and satellite services. Additionally, Europe's nuclear capabilities are significantly dwarfed by Russia's, emphasizing the strategic importance of US backing.

Table 4: A deep dive into the production of military products

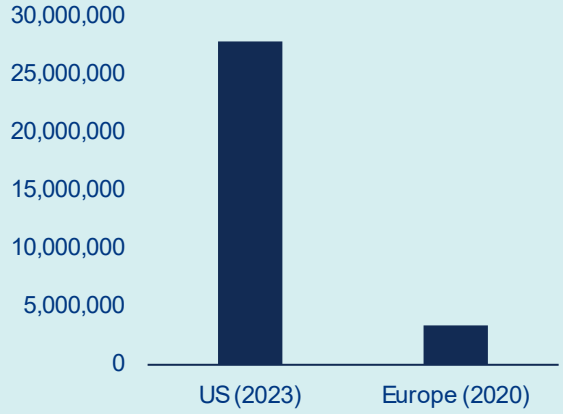
Type of military product	Minimum production cycle	Labor intensity	Notes
Small Arms & Light Weapons	1 month	Medium	Can be mass-produced in established factories.
Ammunition & Artillery Shells	1 month	Medium	High-speed production lines can churn out thousands per day.
Armored Fighting Vehicles	6 months	High	Existing production lines can shorten time, but assembly is labor-intensive.
Tanks	1 year	High	Mass-production is difficult to reach due to a mix of complex mechanical and electronic systems.
Missiles & Guided Munitions	1-2 years	High	Limited by electronic and warhead production constraints.
Naval Vessels (Frigates, Destroyers)	2-3 years	High	Wartime efforts can cut construction time, but shipbuilding remains slow.
Submarines	4-5 years	High	Wartime efforts can cut construction time, but shipbuilding remains slow.
Combat Aircraft (Fighters, Bombers, Drones)	1 year	High	Assembly speed depends on existing parts and trained workforce.
Transport aircraft	2 year	High	Assembly speed depends on existing parts and trained workforce.
Helicopters	1-2 years	High	Can be accelerated if using pre-existing designs and supply chains.
Air Defense Systems (SAMs, Radars)	2 years	High	Some radar and missile systems can be assembled faster with stocked components.
Military satellites	2 years	High	Long testing process due to high precision technology involved is weighting on the delivery time
Nuclear Weapons & Strategic Systems	5 years	Very High	Requires uranium/plutonium processing, which takes years even in wartime.
Cyber & Electronic Warfare Systems	6 months	Medium	Software-based systems can be developed faster, but integration takes time.

Sources: company details, Allianz Research

Box 3: No energy, no defense

Defense production is energy intensive. From powering factories and steel mills to fueling aircraft, data centers and radar systems, secure and uninterrupted energy access is a critical enabler of military readiness and industrial autonomy. While often framed as a civilian issue, energy resilience is a strategic variable – especially in times of war, supply-chain disruption or rapid production scaling. A single tank or fighter jet requires thousands of kilowatt-hours of electricity and heat during production. Production surges – such as during conflict or rearmament campaigns — place immense pressure on national grids, refineries and logistics systems. The US defense industrial base is distributed across a vast and energy-rich territory, with close access to domestic oil, natural gas and low-cost electricity compared to Europe. Defense contractors benefit from direct pipeline and grid access in states like Texas, Oklahoma and Virginia. Moreover, the US Department of Defense is one of the world's largest institutional energy consumers, with significant internal capabilities for fuel logistics, base energy supply and contingency power. In Europe, the picture is more constrained. Key defense manufacturing hubs in France, Germany and Italy depend on national grids powered by diverse mixes – some nuclear-heavy (France), others reliant on fossil fuels or renewables (Germany), with high exposure to imported natural gas. The 2022 energy crisis revealed how fragile this system is: German industry faced soaring gas prices after the cutoff of Russian pipeline flows, while Italy scrambled to secure LNG supplies. Defense producers, like other heavy industry, had to contend with cost spikes and uncertain supply, while European governments were calling for rapid rearmament and military support for Ukraine.

Figure 9: US and Europe defense electricity consumption, in MWh



Sources: DoD, EDA, Allianz Research

Operational energy, the fuel required to power vehicles, aircraft, ships and generators, is another essential input for force projection. The US military has made energy logistics a core competency, with dedicated fuel supply chains (JP-8 aviation fuel, military-specific diesel), strategic petroleum reserves and refueling infrastructure worldwide. The Defense Logistics Agency (DLA) manages vast stockpiles and contracting frameworks to ensure US forces never lack fuel, even in forward-deployed settings. European armed forces have more limited operational energy depth. While NATO pooling helps coordinate some fuel reserves, individual member states typically manage their own fuel logistics, leading to inefficiencies, incompatible standards and short-duration stockpiles. During high-tempo operations, this becomes a liability. European prolonged armored or air campaigns often rely on US or NATO logistical support. Moreover, many EU militaries rely on commercial fuel supply chains vulnerable to disruptions.

Europe needs to build up energy resilience if it is serious about defense. The US has treated energy independence as a national security priority since the 1973 oil shock. This mindset has shaped its defense posture: energy resilience is designed in from the ground up – from hardened infrastructure and microgrids on bases to backup power systems at defense-critical facilities. In contrast, Europe only began treating energy as a sovereignty issue after Russia's invasion of Ukraine. The EU's REPowerEU plan aims to reduce dependency on Russian fossil fuels, but the pivot to renewables and LNG imports is still underway. Many defense-relevant industrial sites remain connected to grid systems exposed to external price and supply risks. Moreover, the lack of integrated EU-wide energy security planning hampers coordinated response in crisis. If Europe wants to build a sovereign defense industrial base, it must pair rearmament with energy resilience. This includes (i) prioritizing energy access for defense manufacturing in national emergency planning, (ii) developing strategic energy reserves for both industry and operational use, (iii) investing in hardened, secure on-site energy (e.g. small modular nuclear, hydrogen, battery storage) at critical military-industrial nodes and (iv) aligning defense procurement planning with realistic energy availability, particularly during wartime surges. Europe's future defense capacity will hinge not only on budgets and factories – but on the kilowatts and barrels needed to keep them running.

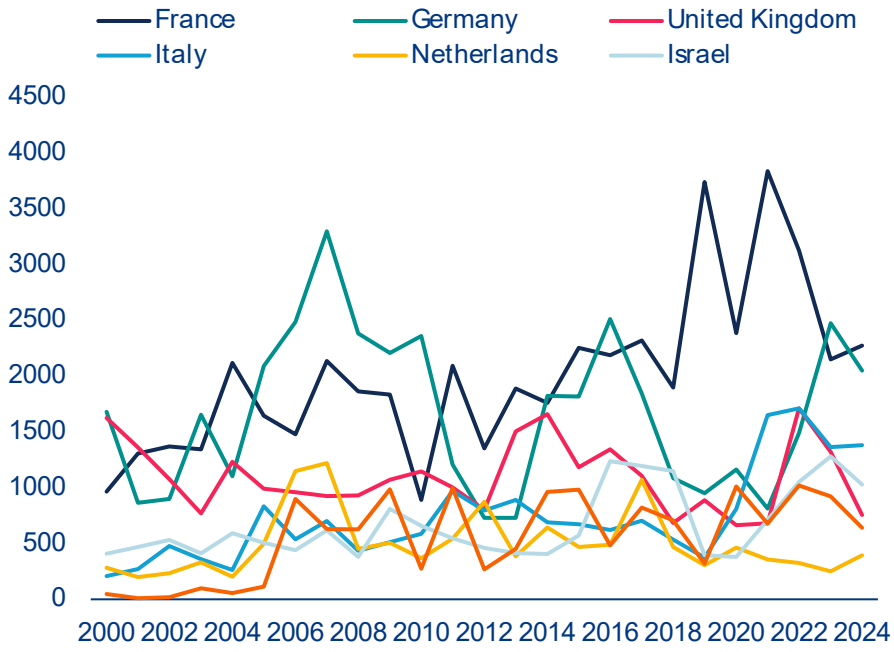
Close collaboration between governments and industry is a hallmark of successful nations, though executed differently. The US military-industrial complex operates largely through private contractors, but with heavy federal guidance and support. During the Cold War, the government pursued an implicit industrial policy for defense by funding capacity (e.g. paying for factory tooling in aircraft programs) and shielding the sector from normal market forces. Over time, this created a network of prime contractors and suppliers that are tightly integrated with the Pentagon. A consequence of this collaboration is the ability to mobilize enormous industrial output when needed (e.g. the rapid ramp-up of missile production for Ukraine in 2022). The US model trusts private innovation but buttresses it with government coordination, as seen in joint programs like the F-35 fighter (a multi-nation, public-private development effort) and the emergence of SpaceX which was catalyzed by NASA and Air Force launch contracts.

Likewise, Israel's defense industry was essentially born within the public sector and later commercialized. In the 1950s, Israel consolidated its ad-hoc pre-independence arms workshops into Israel Military Industries (IMI) under the Defense Ministry, explicitly to create jobs and self-sufficiency. IMI, IAI and Rafael were for long government-run or owned, ensuring strategic alignment with national needs. This tight integration meant the military, the ministry of defense and engineers worked hand-in-hand – e.g. Air Force veterans and scientists collaborated in IAI's projects to build the Kfir jet and Gabriel missile. While these state firms achieved notable successes (the Uzi submachine gun from IMI became a global hit by the 1960s), the model also had limits in efficiency and funding. After the costly Lavi fighter was cancelled in 1987, Israel restructured: IMI was spun off from direct government control and eventually privatized, and more commercial practices were adopted.

South Korea pursued an overt state-led industrial policy to build its defense sector. Not only did it exploit the security exception in trade rules to protect domestic arms production, but Seoul actively planned and nurtured key defense firms. The government designated conglomerates (chaebols) to enter defense manufacturing – for instance, Hyundai Heavy Industries for naval ships, Daewoo for armored vehicles – often providing licenses to produce US or European designs as a learning step. Three dedicated agencies anchor public-private collaboration: ADD for R&D, DAPA for procurement and policy banks for finance. DAPA in particular serves as a single window between military end-users and industry, managing contracts and also negotiating offset agreements so that foreign deals benefit local industry. The six major defense contractors in South Korea today (Hanwha, KAI, Hyundai Rotem, LIG Nex1, Hyundai Heavy Industries, Poongsan) all grew under this guided system and frequent public-private partnerships.

Leveraging exports and global integration is also key to enhance the competitiveness of defense industries. The US has long been the world's top arms exporter by volume, dominating key markets. By embedding arms sales in alliance structures (e.g. standardizing NATO on US equipment), the US ensures its industries achieve economies of scale and interoperability advantages. Even as allies like South Korea become producers, they often remain integrated (buying US engines or avionics), keeping American industry embedded in global value chains. The US strategy allies foreign policy with industry goals, using exports both to strengthen partners and to sustain its own manufacturing base. One outcome is American dominance in high-end sectors like military aircraft and smart munitions, where no competitor has matched the combination of performance and full-spectrum support that US exporters provide. For Israel, export orientation was a necessity from early on. With a small domestic market, Israeli companies turned to overseas customers to achieve scale. By the 1980s, Israel was already among the leading arms exporters, with major firms relying on exports for over half of their sales (e.g. 75% of Israel Aerospace Industries' sales were exports by 1989). The government facilitated this by aggressively marketing Israeli systems abroad and, when needed, by flexibly navigating geopolitical constraints. For example, Israel sold the Kfir fighter and other equipment to second-tier allies in Latin America and Africa when direct superpower sales were restricted. Over time, Israeli industry carved out niches in which it excelled globally: missile and air defense systems, drones and electro-optics. The success of the Iron Dome has led to interest from multiple countries in Israeli air defense know-how. To integrate into the global market, Israeli firms often partner with larger foreign companies (e.g. Rafael teaming with U.S. Raytheon on the David's Sling missile interceptor). This collaboration provides market access and financing while preserving Israeli design leadership. Israel ranks in the top 10 globally in arms exports and outperforms most European countries – an impressive achievement given its size (Figure 10).

Figure 10: Arms exports of selected countries, in mn of SIPRI trend-indicator values



Sources: SIPRI, Allianz Research

Strategic autonomy is maintained by carefully choosing export markets (often avoiding direct neighbors) and by using export revenue to fund next-generation R&D. South Korea is a new heavyweight in arms exports, emerging rapidly in the 2020s. After decades focused on self-defense, South Korean industry recently pivoted to global markets to sustain growth. The results have been striking: arms sales abroad jumped from USD2.3bn in 2012 to over USD17bn in 2022, making South Korea one of the fastest-growing exporters. This ascent was enabled by government support at every level. South Korea's willingness to accommodate client needs – a flexible approach born from being a late entrant – has given it an edge in markets from Asia to Europe. For instance, the recent mega-deals with Poland (for K2 tanks, K9 howitzers, FA-50 jets and Chunmoo rocket launchers) were won in part because South Korea could deliver hardware quickly and set up local production with Polish industry, something US or European suppliers were less able or willing to do. Seoul also provides financial tools: its export credit agencies and banks help finance arms purchases for foreign clients, reducing risk for both South Korean firms and buyers. By integrating into global supply chains (often using foreign subsystems like German tank engines or US missiles), South Korean companies ensure their products meet international standards. At the same time, the government has pursued defense cooperation agreements – for example, joint development projects with Indonesia for aircraft – to widen market integration. While South Korea still lacks some cutting-edge categories (like its own jet engines or stealth bombers), it has firmly established itself as a globally competitive supplier in many segments, achieving a level of strategic autonomy where it can equip its military largely from domestic sources and also be a net arms seller.

Our recommendations

The defense industrial base must have the capacity and cohesion to equip a continent at war-footing if needed. Recent conflicts exposed glaring shortfalls in Europe's ability to produce and scale key hardware. After decades of downsizing, stockpiles were low and factories struggled to ramp up output of munitions, missiles and spares. Consequently, when demand spiked with the onset of the war in Ukraine, EU governments sourced close to 80% of their military equipment (in value terms) from non-EU suppliers in the last couple of years – a dependency that undermines sovereignty.

- **Ramp up production and build stockpiles.** European industry needs immediate support to produce more, faster and cheaper. Smart financing should be channeled to defense manufacturers to expand production lines and capacities. Priority areas include high-consumption items like artillery shells, air defense interceptors and spare parts. For instance, Europe has launched an "Ammunition Plan 2.0" to create strategic reserves of 155 mm ammunition and other munitions, alongside investments in new facilities. One example is a EUR200mn TNT factory in Finland to fix a critical explosives bottleneck, deemed of "major importance" for Europe's ammunition supply. Similar crash programs across the EU (e.g. expanding missile assembly lines in Italy or shipyard capacity in France) will shorten delivery times. Member states should also coordinate stockpiling – pre-allocating industrial output to a common European stock – so that initial surges go toward collective needs and no country is left undersupplied. In the near term, this concerted ramp-up (with streamlined regulatory approvals and fast-track procurement) will start rebuilding Europe's arsenal and reduce the need to rely on US and other non-EU imports.

- **Consolidate industries and secure supply chains over the next five years.** Structurally, Europe must overcome its over-fragmented defense industry – currently thousands of firms across countries with overlapping product lines. Greater industrial consolidation and specialization are needed to achieve scale. This could mean encouraging cross-border mergers and joint ventures: for example, the Franco-German tank makers have merged into KNDS, and a similar approach could unite naval shipbuilders in France and Italy. The aim is to have fewer, stronger European primes in each segment (aerospace, land, naval, cyber) that can compete globally. EU competition and procurement rules should be updated to favor European consortiums and avoid pitting national champions against one

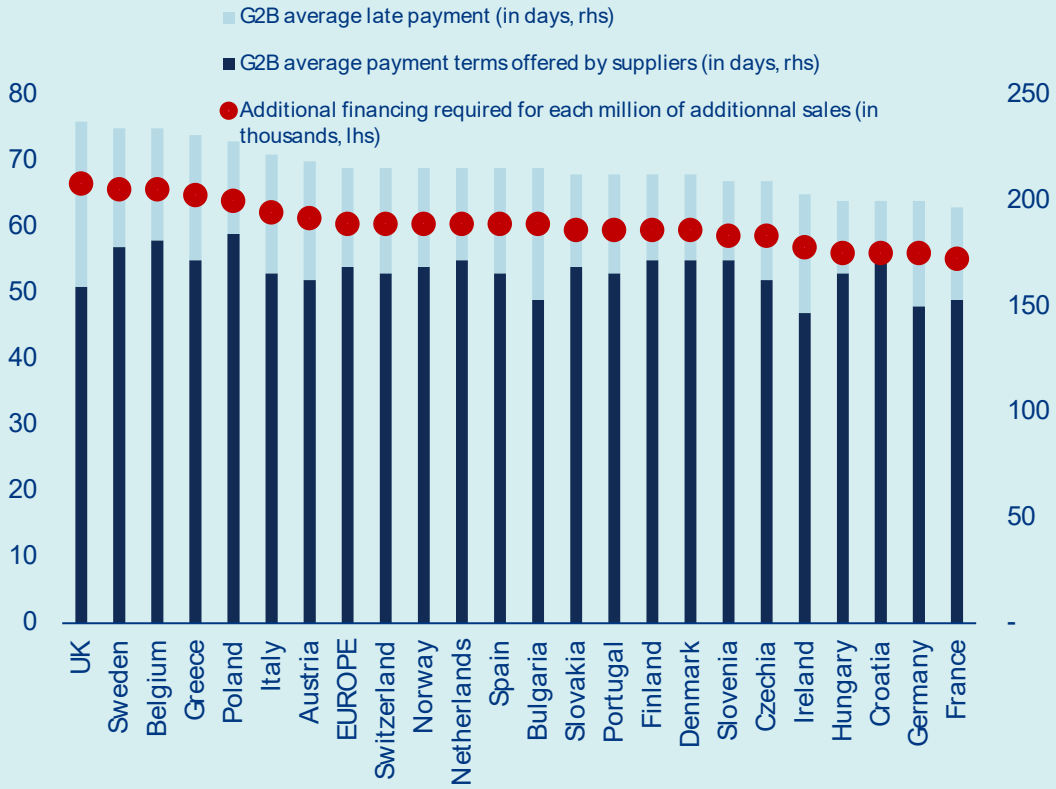
another in tiny markets. At the same time, SMEs and mid-tier suppliers should be integrated via Europe-wide supply chains – a Spanish electronics SME or a Polish materials producer should be able to serve programs in France or Italy, aided by an EU-wide defense supply portal. This is the way to achieve the target of 65% of defense equipment from European suppliers set by the European Defence Industry Strategy. Achieving this will also require robust supply chains for critical inputs: from microchips and software (linking with the EU Chips Act and digital agenda) to energetics and rare earths. National governments, led by the big four, should align export control policies and intellectual property rules to facilitate cooperation – e.g. France and Germany must resolve export licensing conflicts so jointly-produced systems can be sold widely, boosting their viability. With the EIB loosening its defense lending and many banks re-evaluating their ESG exclusions, more capital will flow into factory expansion and new technologies. By 2030, Europe should have doubled its capacity to produce key armaments (e.g. 2mn shells per year dedicated to European needs) and established secure European sources for components, making the defense industrial base far more self-reliant and resilient.

- **Let's not put all the missiles in the same basket.** Europe should be mindful of distributing the effort across the continent to avoid bottlenecks and over-reliance on a few countries for strategic production. Countries should also refrain from channeling the majority of their investments towards their local champions; funding must be distributed smartly to smaller players as well.

Box 4: The cost of late G2B payments

Delays in Government to Business (G2B) payments increase the financial resources required for each additional million in sales by 28% to EUR189,000 from EUR148,000 in average. The boost in demand for defense-related products and services is not without risks and challenges. Investment in production capacities often requires substantial capital investment, which can pose risks if not carefully planned, executed and financed. Expanding production and inventory levels can necessitate adjusting the existing supply chain to secure production schedules, avoid delays or shortages and to enhance quality control to maintain product standards. In addition, it often leads to significant working capital requirements (WCR), which can result in liquidity issues if not managed effectively. One critical factor is the effective management of the cash conversion cycle as public entities are notorious for payment delays, often longer than those observed between private companies (B2B). This can ultimately increase financial stress for the most fragile firms – especially SMEs as they have fewer financing options to address the impact of delayed payments – and even raise the likelihood of insolvencies[8]. According to suppliers' surveys, companies in Poland, Belgium and Sweden are most exposed to this challenge, with G2B average payment terms exceeding 55 days, compared to 54 and 45 days for the European average for G2B and B2B, respectively (Figure 11). The issue is less prevalent in France and Germany (49 and 48 days, respectively). For companies, however, the risk is not that of defaulting on payments from public entities, but that of having to arrange additional financing due to late payments, which will be more expensive if rates remain high. Late payments are significantly higher in the UK (25 days compared to 15 for the European average) ahead of Austria, Ireland, Italy, Greece and Sweden. At the European level, delays in G2B payment force companies to find an extra EUR41,000 in financial resources for every million in additional sales on top of the needs generated by the normal conditions offered (EUR148k). This European average conceals a much greater constraint in the UK (EUR68,000), Greece (EUR52,000) and Italy (EUR49,000), compared to France (EUR38,000) and Germany (EUR44,000). All in all, between negotiated conditions and late payments, G2B delays are the biggest consumer of financial resources in the UK, Sweden and Belgium (EUR208,000, EUR206,000 and EUR205,000 for each additional million in sales, respectively).

Figure 11: G2B payment according to suppliers in days, European countries, 2023



Sources: EU Payment Observatory, Intrum, Allianz Research

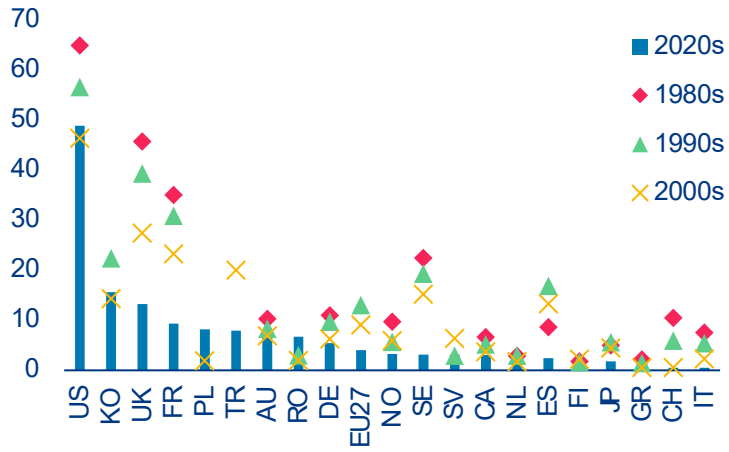
[8] Checherita-Westphal, C., Klemm, A. and Viefers, P. (2016), 'Governments' payment discipline: The macroeconomic impact of public payment delays and arrears'

4: Innovate to dominate and build a cutting-edge dual-use tech ecosystem

Heavy public investment in R&D has underpinned technological leadership in defense for several successful countries. Europe's investment in defense research and innovation lags far behind and has trended lower and lower (Figure 12). In 2022, EU nations spent only EUR9.5bn on defense R&D combined, versus the US allocating about USD140bn in 2023. Closing this gap is essential for strategic autonomy. The US pioneered a model of massive public investment in R&D: agencies like DARPA (founded 1958) and NASA channeled federal funds into breakthrough defense and space technologies. These investments yielded transformational innovations – the Internet (ARPANET), stealth aircraft, satellite GPS – that gave the US military a decisive edge and spun off into the civilian economy. During the Cold War, US defense R&D spending was extraordinarily high (defense-related R&D alone was nearly 70% of global R&D over 1960-1970) and it translated into decades of productivity gains and high-tech dominance. Crucially, government labs and contracts provided an ecosystem where private firms' labs could collaborate on advanced projects, sharing risks and knowledge. The space sector is a prime example: massive R&D in the 1960s Apollo program spurred advances in rocketry and aeronautics, enabling the US to achieve space dominance and later support a commercial space industry. Today, the US continues to allocate tens of billions annually to defense R&D, nurturing innovation in areas from AI to hypersonics. Israel, despite its smaller size, has one of the world's most R&D-intensive economies, owing in part to defense. Its defense budget in the early decades devoted significant portions to in-house development of tailored systems for unique threats. From the 1960s onward, state-owned labs and companies built an innovation ecosystem: Israel Aerospace Industries (IAI) and Rafael (the armaments authority) developed original missiles and rockets, reducing dependence on foreign suppliers. Government R&D programs produced world-class capabilities in missile defense and unmanned systems. A notable

success is Israel's multi-layer missile shield. Through the Israel Missile Defense Organization, the government partnered with industry (e.g. Rafael) to invent systems such as Iron Dome, which demonstrated great interception success rate against short-range rockets. Similarly, the Arrow ballistic missile interceptor was co-developed with US support, marrying local engineering talent with sustained R&D funding. These achievements show how Israel's concentrated investment in defense innovation – often leveraging US technological aid – yielded globally competitive niches (e.g. anti-missile systems, UAVs) that are exported worldwide.

Figure 12: Defense R&D spending in % of government allocations for R&D by decade up to 2024



Sources: SIPRI, Allianz Research

South Korea is another example of a successful late comer that shifted from technology importer to innovator. The country's success was propelled by deliberate R&D institution-building. In 1970 the government founded the Agency for Defense Development (ADD) as a national R&D hub to drive weapons technology progress. ADD took on the costly, long-term research that private South Korean firms could not initially afford, essentially incubating new technologies. Nearly every major South Korean-made weapon began as an ADD project – from early rifles to today's KF-21 fighter prototype – providing a knowledge base that was later transferred to industry. This model of a government research engine gave South Korea a fast-follower advantage: it could absorb foreign technologies (often via license-production with US firms) and then "absorb" and improve them through local R&D. By sparing private companies from enormous R&D expenses in the early stages, South Korea built up firms' manufacturing expertise first; in recent years, companies have started investing more in their own advanced R&D as they acquire confidence and capability. The result is an innovation ecosystem jointly steered by state and industry – from defense science parks and university programs to corporate research centers – that has produced competitive South Korean systems like the K9 self-propelled howitzer and K2 tank. South Korea's case shows the value of "embedded autonomy" in R&D: government and firms closely coordinate, ensuring that innovation is mission-focused and quickly translated into deployable products.

Investing in human capital has also been a long-term lever for military-industrial competitiveness and innovation. The US recognized early that scientific and engineering talent would be as crucial as

funding. In 1958, after Sputnik, it passed the National Defense Education Act to bolster education in science, engineering and foreign languages. This enabled a new generation of engineers and researchers to meet national security needs. Throughout the Cold War, US defense contractors benefited from the output of top universities and national labs. Many aerospace and electronics firms formed partnerships or funded research at MIT, Stanford and others, effectively creating a pipeline of skilled graduates. Workforce development programs within the defense establishment – from the military academies producing technical officers to in-house training at companies like Boeing – sustained a deep pool of expertise. Over time, this talent base underpinned not just defense projects but also America's broader innovation economy (as veterans and defense scientists later moved into private tech sectors). Even today, the US emphasizes STEM education and has proposed new versions of the Defense Education Act to train people in critical fields like AI and cybersecurity.

Israel's edge in military tech also owes much to its human resources strategy. Universal conscription means a large share of its population gains technical experience through service. The Israel Defense Forces identify and cultivate talent via elite units and programs: for example, the Talpiot program (started 1979) selects top math and science graduates for an intensive military-academic course, producing many of Israel's defense innovators and tech entrepreneurs. By integrating young talent into defense R&D units early, Israel creates a feedback loop between cutting-edge military needs and a skilled workforce. It now boasts one of the world's highest ratios of scientists and engineers: about 140 per 10,000 employees (versus about 85 per 10,000 in the US). This reflects both strong education (Israeli universities like Technion excel in STEM) and the absorption of immigrant talent (e.g. an influx of Russian-trained scientists in the 1990s). The defense sector has leveraged this pool for projects like cybersecurity and avionics, where Israel punches above its weight globally. Moreover, many ex-IDF tech specialists spin off into the private sector, ensuring the wider economy benefits from defense-acquired skills – a dynamic behind Israel's "Start-Up Nation" success.

Similarly, South Korea's rapid development was supported by a highly educated workforce shaped by government policy. South Korea heavily expanded higher education from the 1960s onward, recognizing that domestic industry (including defense) needed skilled engineers and technicians. By 2018 South Korea led OECD rankings in education, with about 70% of young adults attaining tertiary degrees – many in science and engineering fields. This focus on STEM is evident in the higher-than-average share of South Korean graduates in engineering and manufacturing specialties. The government also established specialized institutions like KAIST (Korea Advanced Institute of Science and Technology) in 1971 to train scientists for strategic industries (often with defense applications in mind). In the defense realm, agencies like ADD hire top talent and often sponsor advanced degrees for their researchers, ensuring cutting-edge knowledge. South Korea's success in building modern naval ships (from destroyers to submarines) is partly due to the cross-pollination of talent between its world-class commercial shipbuilders and naval design bureaus – a transfer of know-how from civilian to military domain. Concerted education policy and on-the-job skill building allowed South Korea to achieve self-reliance in defense production by steadily upgrading the capabilities of its people alongside its products.

Our recommendations

Technological superiority is at the core of military strength. This lever promotes bold investment in emerging technologies and better exploitation of Europe's advanced civilian tech sector (civil-military "dual-use" synergy) to drive defense innovation.

- **Increase R&D funding and exploit EU programs.** Member states and EU institutions should immediately boost funding for defense research and technology. The EDF – with EUR1.2bn per year for collaborative R&D – must be fully utilized and national R&D budgets should prioritize cooperative projects in cutting-edge fields. Key focus areas include cybersecurity, artificial intelligence, space, robotics, quantum encryption and hypersonic systems. For example, the EU's upcoming Armaments Technological Roadmap in 2025 will identify advanced dual-use technologies to invest in collectively. France and Germany are already partnering on next-generation cloud-encrypted combat systems (as part of FCAS), and Italy and Spain on new space-based communications – these efforts need fast-tracked funding and political support. Leveraging existing EU civilian programs is also a low-hanging fruit: Horizon Europe research projects and digital innovation hubs can be directed to spin-off defense applications in areas like AI, cyber and microelectronics.
- **Aim for a world-class dual-use innovation ecosystem.** By 2030 and beyond, Europe should aim to be a global leader in defense tech innovation, integrating civilian and military advances. This means institutionalizing civil-military R&D cooperation: e.g. permanent funding for dual-use projects that benefit both security and commercial markets (drones, satellites, 5G/6G communications, autonomous vehicles). The EU Space program provides a model – Galileo satellite navigation and the upcoming IRIS secure communications constellation serve both civil and governmental users, bolstering autonomy in space. Similar dual-use development should extend to areas like secure semiconductors and advanced aviation (e.g. hydrogen propulsion technology that could power both civil airliners and military UAVs). Member states need to dedicate a larger share of defense budgets to R&D (the EDA recommends 2% of total defense spending on R&D; only a few like France are close to this). Collaborative R&D should also be increased – currently only a fraction of R&D is done jointly. France, Germany, Italy and Spain can lead by pooling research on future combat air engines, AI-enabled command systems and cyber defense algorithms, avoiding duplicate national labs. Lastly, investing in human capital is critical: the EU should fund defense-related education program, exchanges among engineers and retraining programs to ensure a skilled workforce for its high-tech industries. By cultivating this innovation ecosystem, Europe can catch up on the current technology gap but could also secure domestic expertise in the next wave of critical technologies, reinforcing long-term sovereignty.

5: Unify command through a cohesive governance

Governance remains fragmented among multiple institutions, leading to overlapping mandates and gaps in defense leadership. At the EU level, responsibility is split primarily between intergovernmental bodies (where member states dominate decision-making) and supranational organs (like the European Commission). The European Council and Council of the EU (through the Common Security and Defence Policy framework) retain control over military operations and capability planning – areas still guarded as national prerogatives. The European Defence Agency (EDA) was created in 2004 to coordinate defense capability development and armaments cooperation, but it operates on member state consensus and with limited resources. The European Commission has increasingly entered the defense arena via industrial and research initiatives (like the European Defence Fund), but its formal powers in defense remain constrained by treaties that reserve military matters to states This patchwork of EU actors often lacks a clear hierarchy, with the Commission steering industrial programs, the EDA defining capability needs and the Council/EEAS handling strategic policy – coordination is voluntary and sometimes inconsistent. Crucially, the division between national and EU-level authority hampers unified action. Defense remains an intergovernmental domain; decisions on force structure, procurement and deployment are taken in national capitals, with EU bodies playing a supporting role. Fragmentation of authority is evident in duplicated initiatives and slow decision-making. For example, the EU aims to set common priorities, but implementation still depends on each member state. The European Defence Agency's own assessment in late 2022 warned that "no improved coherence of the EU defence landscape has yet been observed" and questioned whether member states will truly coordinate efforts to "avoid further fragmentation". This fragmented governance structure makes it challenging to align military requirements or pool resources across Europe, undermining efforts to build a "European Defense" or even a coherent European pillar within NATO.

Europe's defense industrial base is highly fragmented along national lines, leading to duplication of effort, inefficient competition among national champions and interoperability issues. Unlike the US, Europe has a multitude of smaller markets, each with its own favored suppliers backed by their governments. This atomization of the defense industry is one of the major hurdles to Europe's strategic autonomy. EU militaries operate 178 different weapon systems – 148 more than the US. In practical terms, this means European states maintain many parallel programs. At least six European countries currently manufacture their own main battle tanks (Leopard 2 in Germany, Leclerc in France, Ariete in Italy, Challenger in the UK etc.), whereas the US has a single standard tank (the M1 Abrams) for its forces. Some 10–11 European producers build Infantry Fighting Vehicles (IFVs) or armored fighting vehicles, reflecting national programs in Germany, France, Britain, Italy, Sweden, Poland, Spain and others. Europe has nearly 20 types of fighter jets and combat aircraft in service or development, from the Eurofighter Typhoon and Dassault Rafale (developed separately due to past national divergences) to older F-16s, Tornados, Gripen, and upcoming projects. Warship production is similarly fragmented, with about 10 different European shipyards or groups building major surface combatants (frigates, destroyers, corvettes) across the continent. While some consolidation has occurred (for instance, Airbus in aerospace, MBDA in missiles are multi-nation consortia), many defense segments remain nationally siloed with different standards and approaches. Strong political direction and governance is essential for a truly unified European defense industry.

Europe can draw lessons from more unified defense governance models, especially that of the US, as well as other integrated defense structures. The US defense establishment, while not directly replicable, illustrates the benefits of centralized planning and procurement. Its governance includes (i) unified strategic guidance and capability planning, (ii) centralized acquisition authority and (iii) consolidated industrial base. Another area of best practice is export control and arms sales coordination. The US operates under the International Traffic in Arms Regulations (ITAR) and related laws, a centralized regime where the State Department (in consultation with Defense) approves or denies arms exports according to one national policy. While ITAR can be cumbersome, it provides clarity – US firms know the rules and can plan accordingly, and allies know where the red lines are. Europe's export system is fragmented. France is relatively permissive in exporting arms, whereas Germany applies much stricter humanitarian standards and often freezes exports to conflict zones. Although the best approach could be debated, a more unified approach is key – for example with an EU-level export control agency – could emulate the US in providing consistency. Lastly, in terms of political and operational governance, NATO offers a model of integrated military command that Europe could build upon for its own endeavors. NATO's success in standardizing procedures and doctrine among 30 nations underscores how vital a central coordinating authority is. It is notable that NATO has long urged Europeans to pool efforts. The EU now acknowledges this, with leaders talking of a "Defense Union" and appointing a dedicated Defense Commissioner to push integration.

Our recommendations

Structural changes in governance are needed to underpin all the above four levers. Europe's defense push will succeed only if national and EU-level efforts are synchronized through effective policy coordination. Currently, national sovereignty concerns and varying regulations impede a unified approach. This lever focuses on breaking down institutional barriers: aligning regulations, streamlining decision-making and fostering a "European Defense Union" mindset while respecting national roles.

- **Streamline EU frameworks and incentivize cooperation.** The EU should remove red tape that hinders joint projects. A planned "Defence Omnibus" regulatory simplification in 2025 aims to simplify procurement and funding rules across the Union. This needs swift adoption to harmonize standards (e.g. unified certification for military equipment to be accepted across all EU armed forces). New governance forums should also be considered: EU leaders have discussed a possible European Defence Council or appointing a dedicated European Defence

Commissioner to focus on industrial coordination and capability monitoring. In the interim, existing bodies like the National Armaments Directors' forum and the PESCO framework should be empowered to enforce collaboration commitments. Moreover, the EU should use financial incentives and penalties in the short term: reward joint projects via co-funding (as with the EDF) and discourage purely national buys by requiring justification when EU options exist. Aligning policies also means addressing protectionist tendencies – for example, France and Germany can agree to open certain contracts to each other's industries under EU auspices, building trust that keeps production local at the European (not just national) level.

- **Establishing a unified European defense planning and policy approach.** The end goal is a cohesive governance structure where EU-wide defense strategy and national plans reinforce each other. By the 2030s, the EU should routinely conduct joint defense planning exercises (in complement to NATO) that map out capability needs, industrial base health and R&D priorities for the continent. This could formalize into a Europe-wide plan that guides national budgets – an evolution of the current EDA Coordinated Annual Review on Defence. In addition, harmonizing export control regimes is crucial for long-term industrial coherence: France, Germany, Italy and Spain (as top arms exporters) need a common EU framework so that a system developed together can be sold to partners abroad under one agreed policy. A truly single European defense market also requires narrowing the provisions under which states can exempt contracts from EU competition on national security grounds. Over time, as trust deepens, the EU might move toward joint defense budgeting for certain capabilities (much as some NATO allies pool resources for AWACS aircraft). While full integration will take time, ultimately, Europe's strategic autonomy will be solidified when decisions on defense investment, production and deployment are made in a coordinated manner at the European level, with major powers (France, Germany, Italy, Spain) aligning their national sovereignty imperatives with the collective interest. This alignment ensures that Europe can act decisively and coherently, with a sovereign defense sector resilient to external pressures and unified from policy down to production.

- **To unify properly command, Europe needs to fend off turf wars, incoherences in policies and rigid frameworks.** EU institutions risk overlapping mandates and slow coordination. Clear roles and mandates must be defined, particularly for new initiatives (e.g. SAFE fund). Disjointed national rules is another pitfall to avoid and the block also needs to make sure the legal framework allows for quick action.

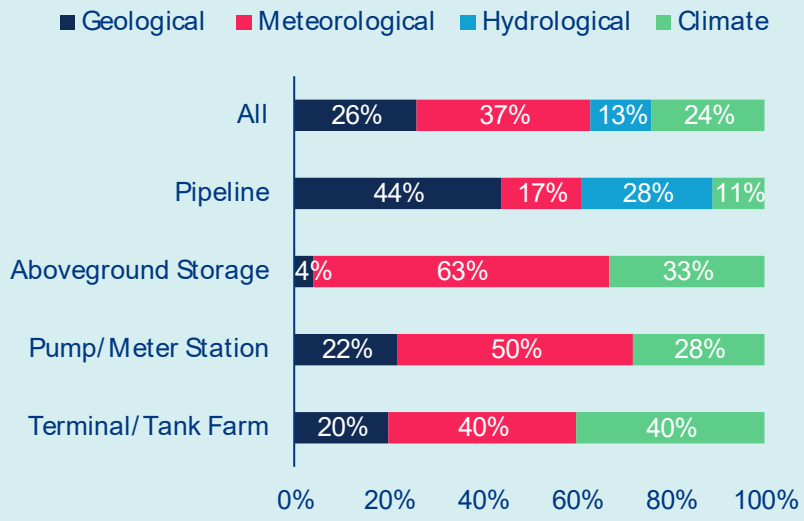
Box 5: How is climate change reshaping defense strategies?

Climate change is no longer just an environmental or economic challenge, it is increasingly shaping military readiness and operations. Rising temperatures, extreme weather, and shifting environmental conditions damage military infrastructure, degrade equipment performance and disrupt operations in harsh environments. The increasing frequency of climate-related disasters also poses safety risks for personnel and inflates costs for infrastructure maintenance and repairs.

Beyond direct damage, climate hazards can trigger secondary risks due to the storage, transport, and handling of hazardous materials by the military. Natural disasters can set off Natech (Natural Hazard Triggered Technological) accidents, where extreme weather events cause the release of dangerous substances, leading to fires, explosions, toxic air pollution, or oil and chemical spills. These cascading risks amplify the overall damage from natural disasters, affecting both military sites and surrounding communities.

Insights from the US Pipeline and Hazardous Material Safety Administration (PHMSA) database provide a glimpse into the scale of such risks (Figure 13). From 1986 to 2012, natural hazards were responsible for 5.5% of all reported hazardous liquid pipeline incidents in the US, yet they accounted for a disproportionate 18% of total economic losses. In this period, Natech incidents resulted in over 50,500 cubic meters of hazardous liquid spills, primarily from pipelines and aboveground storage tanks, leading to nearly USD600mn in damages. Different climate hazards affect infrastructure in distinct ways. Pipelines are most vulnerable to geological risks (such as subsidence and frost heave) and hydrological events (such as floods and erosion). Above-ground storage tanks, on the other hand, are mainly damaged by meteorological and climatic hazards, lightning, storms, freezing temperatures and extreme cold. Pump and meter stations suffer most from storms and heavy rainfall, while tank farms and fuel terminals face increased risks from severe weather and climate extremes. These lessons from past disasters underscore the critical need for military and defense infrastructure to be more resilient in the face of climate hazards.

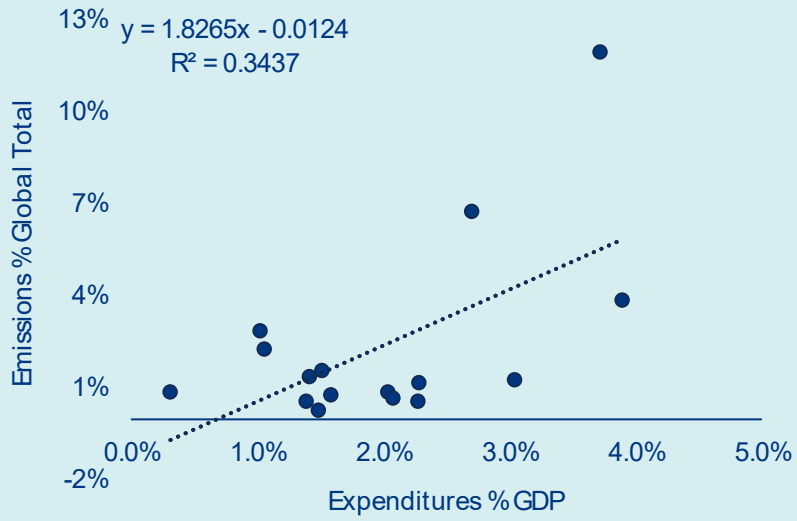
Figure 13: Share of natural hazard categories of Natech accidents per hazardous liquid pipeline system element for the period from 1986 to 2012



Sources: JRC, Allianz Research

Military and defense infrastructure are not just vulnerable to climate change, they are also a significant contributor to it. The defense sector ranks among the largest global carbon emitters, with military operations, equipment manufacturing and supply chains generating an estimated 2,750 megatons ($MtCO_2e$) of emissions annually, 5.5% of total global emissions. If the military sector were a country, it would be the fourth-largest emitter in the world, surpassing Russia's total carbon footprint and even the entire African continent (1,900 $MtCO_2e$). European nations and the UK contribute 5.3% of global military emissions, reporting 146 $MtCO_2e$ in 2019. Expanding domestic weapons production would further increase the carbon footprint of hard-to-abate industries such as steel and aluminum, which are essential for military hardware manufacturing. A strong positive correlation exists between a country's military spending and its share of global military CO_2 emissions, as shown in Figure 14. If Europe and the UK were to raise defense spending to 3.5% of GDP, military emissions would increase by an estimated 462 $MtCO_2e$ – equivalent to 12% of Europe's total emissions. This underscores the need for sustainable defense policies that balance security demands with climate commitments.

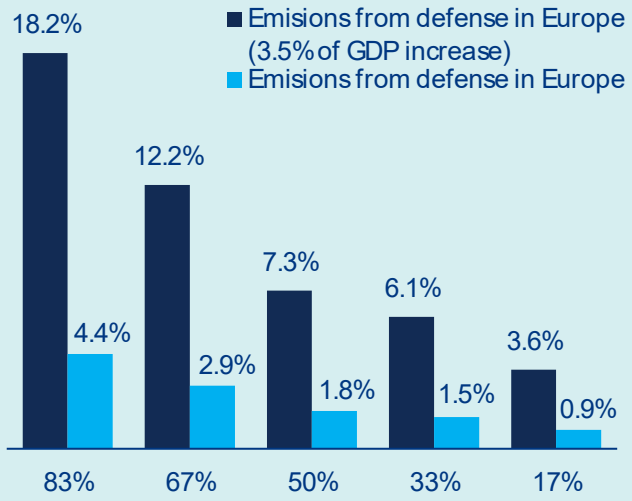
Figure 14: Military spending and associated emissions



Sources: CEOBS, Allianz Research

Europe's new defense targets risk further depleting the already limited global carbon budget, directly undermining efforts to meet the Paris Agreement. To have a 50% chance of keeping global warming below 1.5°C, the world can emit no more than 250 gigatons (Gt) of CO_2 between 2020 and 2050, or 8.3 Gt per year. However, to increase certainty to 83%, emissions would need to be drastically reduced to just 3.3 Gt per year, a target that seems almost unattainable given that current global emissions stand at 41 Gt CO_2 annually. The defense sector already accounts for a significant share of this carbon budget. Military emissions from Europe and the UK alone have consumed 4.4% of the stricter carbon budget (Figure 15). Under a less conservative scenario, where the chance of staying below 1.5°C drops to just 17%, defense-related emissions would still account for 0.9% of the remaining budget. However, if military spending rises to 3.5% of GDP, the situation becomes far more critical. The additional emissions from this expansion would consume 18% of the remaining carbon budget under the risk-averse scenario, significantly hindering global climate action. Without integrating carbon-conscious policies into defense strategies, the race to strengthen security could come at the expense of climate stability.

Figure 15: Share of natural hazard categories of Natech accidents per hazardous liquid pipeline system element for the period from 1986 to 2012



Sources: UNFCCC, Allianz Research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