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# Main Findings

2023 witnessed a sharp increase in total defence expenditure, with a total amount of €279 billion being spent by European Union Member States (MS), which corresponds to 1.6% of MS Gross Domestic Product (GDP). The development and procurement of new weapons systems was the primary factor driving the increase in defence budgets, as MS have been making efforts to bolster their armed forces' fighting capabilities in response to Russia's war of aggression against Ukraine. As a result, defence investments reached a recordbreaking €72 billion, accounting for 26% of total defence expenditure, the largest share recorded by the European Defence Agency (EDA) since data collection began in 2005.

As in previous years, more than 80% of defence investments, some €61 billion, were allocated to the procurement of equipment. MS frequently resorted to Commercial Off-The-Shelf (COTS) products ordered from non-European manufacturers to quickly fill capability gaps, weakening the European Defence Technological and Industrial Base (EDTIB).

The urge to swiftly address capability shortfalls through COTS products may have caused a temporary slowdown of European collaborative defence procurement, which tends to be perceived as more complex and time-consuming. The exposure of MS significant military capability shortfalls has heightened awareness of the opportunities for European collaborative solutions, creating greater potential for increased European collaborative procurements in the coming years.

Defence Research and Development (R&D) spending, which includes any payments up to the point where expenditure for production of items starts to be incurred, reached €11 billion in 2023, more than doubling the amount spent in 2016, when defence R&D was at a record low. Yet, other international players, such as the US and China, outclass EU MS when it comes to investments in defence R&D, highlighting the increasing importance of this activity given the potential for conflicts with technologically sophisticated adversaries.

Defence Research and Technology (R&T) expenditure, which is a subset of defence R&D expenditure and covers expenditure for basic research, applied research and technology demonstration for defence purposes, is estimated to have reached €4 billion, with MS nearly tripling their outlays since 2016. MS allocated 1.4% of total defence expenditure to defence R&T: they are still failing to reach the 2% benchmark on defence R&T.

From a collaborative standpoint, MS collectively allocated €242 million to European collaborative R&T projects in 2023 (6% of total defence R&T expenditure, falling short of the 20% collective benchmark agreed by MS), with EDA's ad hoc framework being the preferred framework to implement joint R&T projects at European level.

The increasing trend in defence expenditures will continue, and even strengthen in several areas in 2024, providing MS with a unique opportunity to foster European defence if the available funds are invested effectively and a higher level of collaboration among MS is reached.

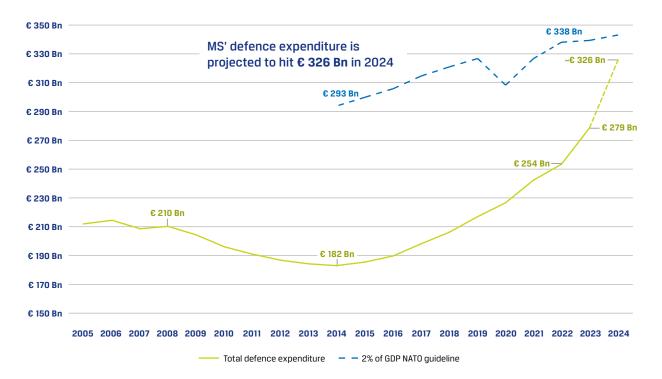
<sup>1.</sup> Figures for 2024 are estimates and subject to final consolidation

# Total Defence Expenditure

Driven by the changes in Europe's security situation and MS efforts to bolster their armed forces' fighting capabilities, total defence expenditure witnessed a sharp increase in 2023. Compared to 2022, defence **expenditure by the 27 MS increased by 10% in real terms** and for the ninth consecutive year, reaching €279 billion. As share of GDP, defence expenditure amounted to 1.6%, up from 1.5% in 2022. The 2024 Coordinated Annual Review on Defence (CARD) report indicates that the rise in spending is likely to continue in the coming years, with data suggesting that **total defence expenditure could reach €326 billion in 2024**. This corresponds to an estimated **1.9% of MS GDP**, moving MS closer to NATO's 2% of GDP guideline.



Figures are in constant 2023 prices





2023 saw a renewed commitment by many MS to individually reach NATO'S 2% guideline, which was driven by the deteriorated security environment and efforts by many MS to modernise their armed forces' military equipment. As a result, **eight MS allocated 2% or more of GDP to defence in 2023**, up from five MS in 2022. Two out of these eight spent more than 3% of GDP on defence (Figure 2).

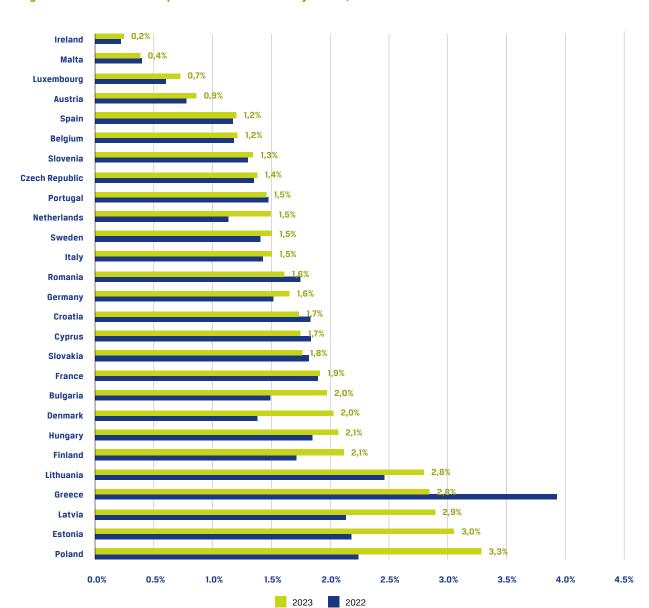


Figure 2. Total Defence Expenditure as % of GDP by EU MS, 2022-2023



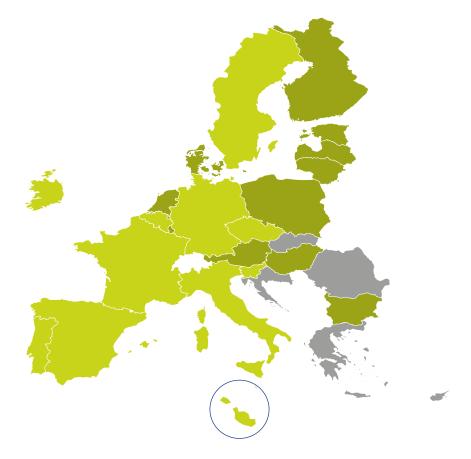
2023 saw a renewed commitment by many MS to individually reach NATO's 2% guideline

In 2023, a total of 22 MS increased their defence expenditure compared to 2022, while five MS decreased defence spending. Eleven MS raised their defence expenditure by more than 10%. The highest increase in defence expenditure amounted to 50% in real terms (see Figure 3).

Figure 3. Change in Total Defence Expenditure by EU MS, 2022-2023

Figures are in constant 2023 prices





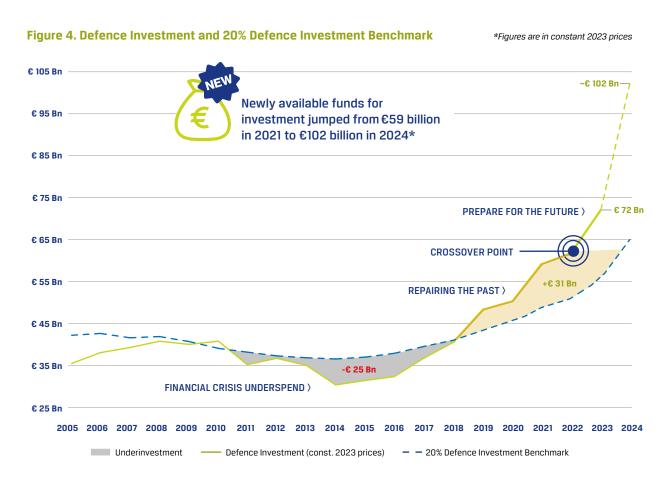


The increases in defence expenditure reveal that MS are delivering on their spending promises made in 2022 as a response to the war at the EU's borders. Following a decade of under expenditure, it is crucial to allocate these additional resources effectively. If available funds are invested strategically in line with the 2023 EU Capability Development Priorities, **the current spending increases could lay the foundation for a stronger European defence**, not only addressing the gaps created by years of under expenditure but also preparing to meet future threats and challenges.

Enhanced European cooperation will be crucial for maximising the impact of the current defence spending and investment increases and addressing concerns about value for money and operational output. Stronger European cooperation opens opportunities for cost savings and could help MS spend available funds more efficiently. European defence initiatives provide a strong platform for deeper collaboration with additional funding incentives, which can significantly improve the efficiency of overall defence investment and provide MS with more interoperable and less fragmented capabilities on the long term.

#### Defence Investment

The development and procurement of new weapons, systems and equipment was the primary factor driving the rise in total defence expenditure, as MS are seeking to replenish stocks depleted through military aid to Ukraine, address critical capability gaps, and enhance defence readiness and preparedness for high-intensity conflict. In 2023, investments in researching, developing and procuring defence equipment grew at an exceptional rate. Compared to 2022, defence investments surged by 17% in 2023, hitting a record high of €72 billion (Figure 4), or 26% of total defence expenditure, marking the highest level measured by EDA since data collection started in 2005 (Figure 5). The trend of increasing defence investments is estimated to continue in 2024, with data indicating that investments may reach beyond €100 billion and more than 30% of total defence expenditure.





In 2023, **20 EU MS achieved the 20% benchmark on defence investment**, the same as in 2022. Eight of these MS allocated 30% or more of total defence expenditure to researching, developing and procuring defence capabilities.

The current heavy investments into MS armed forces highlight critical vulnerabilities caused by past underinvestment, which accumulated following the 2008 financial crisis. During the 2011-2018 period, MS invested continuously less than 20% of their total defence expenditure on equipping their armed forces with modern defence capabilities, resulting in an investment gap of at least €25 billion, not accounting for previous underinvestment. The substantial defence investments made since 2019 have helped compensate for the underinvestment period and repair the shortfalls originating from the past. In this regard, a sustained investment path beyond recovery will prove essential: elevating these efforts from only repairing the past and addressing the present to securing Europe's future will depend heavily on MS commitment to sustain these levels of defence investment in a structured, enduring way, ensuring the readiness and resilience of European forces today and tomorrow. In this respect, the 2024 CARD Report proposes to EU MS a series of collaborative opportunities for different time horizons, such as integrated air missile defence systems including short-range air defence/C-UAS, loitering ammunition, electronic warfare systems, next generation surface combat vessel, soldier armament/ equipment/support, next generation ground combat capabilities, and medium-size tactical air transport.

Enhanced cooperation on capability development does not only bring improved interoperability, operational efficiency and reduced fragmentation but can also involve significant cost-savings in procurement and training. For instance, EDA studies show that sharing existing training facilities and systems capabilities could provide substantial financial savings while also optimising their utilisation.

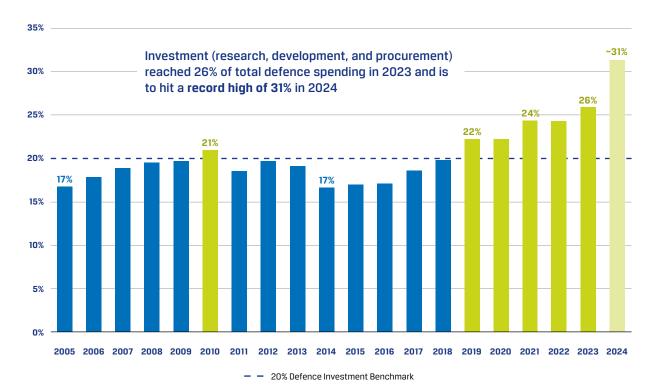


Figure 5. Share of Total Defence Expenditure Allocated to Defence Investment

Member States now well above the agreed 20% benchmark

## Defence Equipment Procurement

As in previous years, more than 80% of defence investments, some €61 billion, were allocated to the procurement of new defence products (Figure 6). Compared to 2022, spending for the purchase of new defence products increased by 19%, which marks one of the steepest increases in equipment procurement expenditure measured by EDA these past years. Since 2014, when defence equipment procurement reached a record low following the cuts to defence expenditure in the aftermath of the financial crisis, procurement spending has more than doubled. The increasing trend is expected to continue and even strengthen in 2024, when defence equipment procurement spending could reach beyond €90 billion. This would correspond to a potential year-on-year increase of more than 50%.

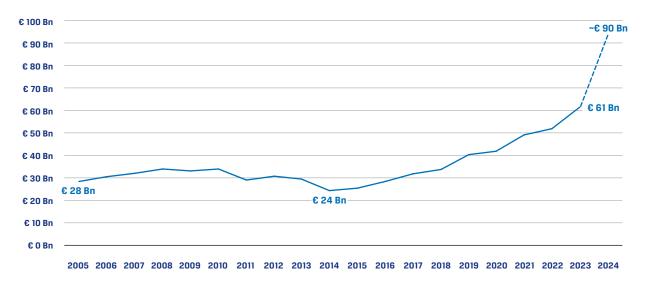
The surge in procurement spending went hand in hand with MS resorting to COTS acquisitions to promptly address current capability gaps. COTS procurements can offer an effective way to respond to short-term delivery constraints and enhance overall combat readiness rapidly, but they can also have a negative impact on the overall coherence of EU armed forces, replicating problems of interoperability and long-term development into the future. Significant acquisitions made by MS in 2023 include air defence systems to protect European airspace, investments into combat aircraft to enhance air-to-air and air-to-ground capabilities and main battle tanks to upgrade MS ground combat capabilities.

Yet, many of MS procurementswere ordered from non-European manufacturers in 2022-2023, rather than from the EDTIB, the latter suffering from a perceived lack of manufacturing capacity and longer lead times.

The growing trend of non-European COTS procurement risks weakening the EDTIB further with the associated challenges to the EU's strategic autonomy, interoperability of defence equipment, and long-term consequences for European cooperation in related capability areas. The current increase in procurement budgets offers an opportunity to move European defence in the right direction and make it fit for the long term. A collaborative and coordinated approach that provides for larger orders and a longer planning horizon is critical to supporting long-term industrial strategies and investments and strengthening the EDTIB.









The urge to swiftly address capability shortfalls through readily available military equipment may have also caused a temporary slowdown of collaborative procurements, which tend to be perceived as more complex and time-consuming due to the need to coordinate among multiple countries. This indicative assessment of European collaboration on defence equipment procurement stemming from the CARD analysis could be made more precise if a larger number of MS provided data related to the financial expenditure on European collaborative procurement. In 2023, 14 MS provided figures.

Yet, the exposure of MS' significant shortfalls in military capabilities following Russia's war against Ukraine combined with the need for a unified response, has heightened awareness of the benefits of European collaborative solutions despite their complexities. As a result, there is now greater potential to increase European collaborative procurement in the coming years, providing MS with the best option to achieve cost reduction from economies of scale and reduce expected delivery times. On the contrary, the lack of collaborative procurement could lead to increased prices and the risk of re-creating critical gaps in some MS stocks due to insufficient coordination and prioritisation of orders. In this respect, EDA has been actively working to support MS in their capability needs, launching projects for the joint procurement of ammunition, soldier equipment and chemical, biological, radiological and nuclear (CBRN) equipment. Regarding the project on ammunition, EDA put in place framework contracts providing options to jointly procure 155 artillery ammunition from the EDTIB, which MS used to place over €350 millions of orders so far. EDA's projects form key examples of MS coordinating their short-term procurement needs and collectively acquiring military equipment from European industry for replenishment of national stocks and/or in support of Ukraine.

The availability of financial support through new EU instruments adds to the momentum and provides additional incentives for future joint procurement. The European Defence Industry Reinforcement through common Procurement Act (EDIRPA) supports the joint procurement of ammunition, air and missile defence as well as platforms and replacement of legacy systems with a total budget of €310 million.² The Act in Support of Ammunition Production (ASAP) is endowed with €500 million and aims at helping European defence industry in increasing its ammunition production capacity.³ As a successor programme to EDIRPA and ASAP, the European Defence Industry Programme (EDIP) could provide €1.5 billion from the EU budget over the period 2025-2027 to increase the EU's defence industrial readiness in the future. It includes potential VAT exemptions and could support Permanent Structured Cooperation (PESCO) projects.⁴



<sup>2.</sup> European Commission (2024) EDIRPA Work Programme. Procuring Together Defence Capabilities, available at: <a href="https://libibs700f\_en/europa.eu">https://libibs700f\_en/europa.eu</a>)

<sup>3.</sup> European Commission, ASAP | Boosting defence production, available at: Act in Support of Ammunition Production (ASAP) (europa.eu)

<sup>4.</sup> European Commission (2024), European Defence Industry Programme, available at: https://defence-industry-space.ec.europa.eu/document/download/638c4482-0715-4aef-ac86-6529ce2dfd4b\_en?filename=DEFIS\_EDIP\_factsheet.pdf

#### Defence R&D

Defence R&D spending has also benefitted from the overall increase in total defence spending but grew at a slower pace than the procurement of defence equipment (+6% in real terms compared to 2022). Compared to the lowest point in R&D spending recorded by EDA in 2016, the amount of R&D spending has more than doubled, reaching €11 billion in 2023. In 2024, data indicates that defence R&D may continue to increase and could reach €13 billion (Figure 7). Despite the overall accuracy of the data reported, certain challenges persist concerning defence R&D and R&T data. The most significant challenge is that some MS include defence R&D and R&T data within their spending for defence equipment procurement, which may result in an underestimation of defence R&D spending.5

Other international actors outclass MS when it comes to investments for defence R&D. In 2023, the United States of America allocated around €129 billion to Research, Development, Test, and Evaluation (RDT&E).6 This category saw the most significant increase in U.S. military spending in 2023, emphasizing the importance that the United States placed on defence RDT&E as it focuses on strategic competitors.<sup>7</sup>

Despite the uncertainties surrounding China's defence R&D data, it is evident that the country invests heavily in this sector, too. According to available data, China's defence R&D spending could amount to €21 billion in 2023.8 This goes hand in hand with the rapid modernisation of China's armed forces and the country's investment into missiles and advanced technologies, including cyber, space and counterspace capabilities.9

A continuing increase in defence R&D spending is essential for MS to remain at the cutting-edge of technological advances. Continued investments into long-term R&D projects of next generation capabilities are also vital for the competitiveness and long-term viability of the European defence industry. In this respect, cooperation among MS is essential. The collaborative pooling of resources facilitates technologically advanced R&D projects which typically involve large costs that are difficult to cover by one state alone, while EU cooperation also allows reducing external dependencies on critical defence equipment. The growing awareness about the necessity of European collaboration in R&D, fostered by European defence initiatives, such as the European Defence Fund (EDF) and its financial incentives, may pave the way for an increase in R&D programs in the coming years.



<sup>5.</sup> An additional challenge is that some MS do not distinguish R&T from R&D data.

<sup>6.</sup> Around \$140 billion in 2023, source: Office of the Under Secretary of Defense (Comptroller) (2023): National Defense Budget Estimates for FY 2024, available at: National Defense Budget Estimates for FY 2024. The US definition of RDT&E and EDA's definition of R&D are broadly comparable.

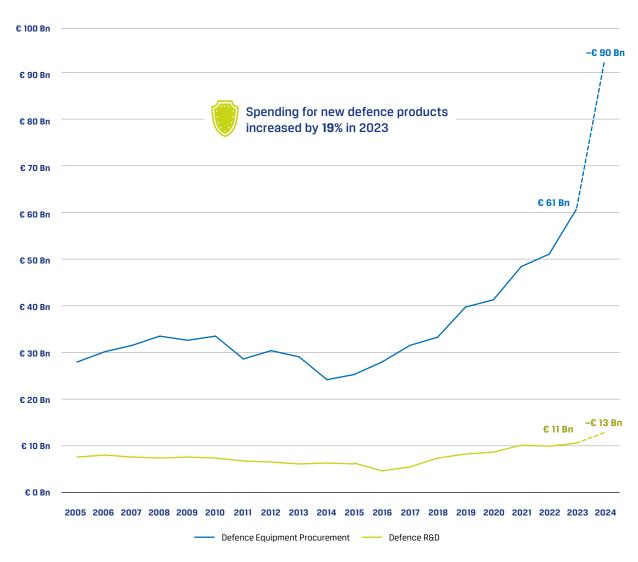
<sup>7.</sup> SIPRI, 2024: SIPRI Factsheet: Trends in World Military Expenditure, 2023, available at: Trends in World Military Expenditure, 2023 (sipri.org).

<sup>8.</sup> SIPRI 2023 yearbook database.

<sup>9.</sup> US Department of Defense (2023) Fact sheet | 2023 China Military Power Report, available at: 2023-CMPR-FACT-SHEET,PDF (defense.gov); DoD's 2021. China Military Power Report: How Advances in Al and Emerging Technologies Will Shape China's Military | Council on Foreign Relations (cfr.org).

Figure 7. Defence Equipment Procurement and Defence R&D

Figures are in constant 2023 prices



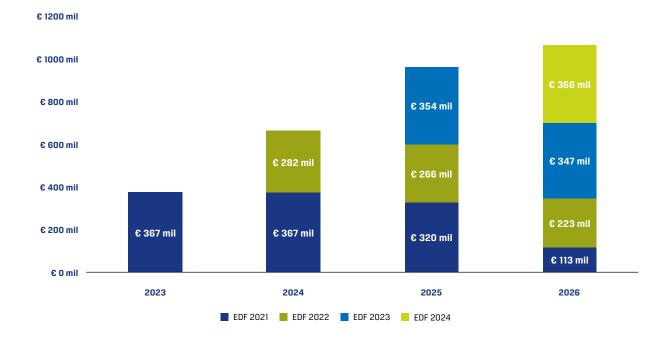


Sixty-one defence R&D projects were launched under the EDF 2023, with a total support of €1.15 billion (€850 million for capability development and €304 million for research projects) from the European Defence Fund. The funding from the EDF should take effect over the coming years and support MS projects throughout their research and development phases. In this respect, EDF funding for European collaborative defence R&D projects is estimated to have increased from €367 million in 2023 to more than €1 billion (current prices) in 2026 (Figure 8).



Figure 8. European Collaborative Defence R&D under the EDF11

Figures are in current prices





 $<sup>10. \</sup> European \ Commission \ (2024) \ EDF \ 2023 \ Call \ Results, available \ at: \\ \underline{41aef331-03f0-4209-8193-5e9c7188b348\_en} \ Label{eq:2023}$ 

<sup>11.</sup> The graph shows an estimate of the annualised impact of the EDF financial support. Data are based only on the EU financial contribution (i.e. they do not include potential co-funding that may be required for Development Actions): data for EDF2021, EDF2022 and EDF2023 are extrapolated from the descriptive factsheets publicly available on the European Commission's website for each project while, for EDF2024, data are based on the Work Programme. For simplification reasons, the annual distribution of the EDF financial support has been calculated by dividing each project's EU financial contribution by the project duration, expressed in years. This distribution does not consider the usual pre-financing of 55% taking place at the signature of the EDF grant agreements.

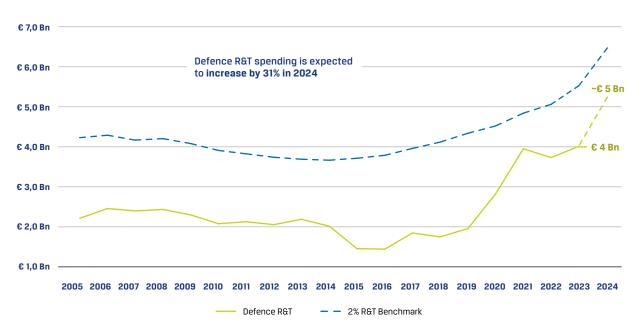
## Defence R&T

Recent data on defence R&T spending indicates a positive trend over the past few years. Following a period of underspending evident between 2008 and 2016, there has been a notable increase in R&T expenditures, reflecting a growing focus on this category. In 2023, total defence R&T expenditure reached €4 billion (Figure 9). This corresponds to an increase by 8% in real terms compared to 2022. Compared to 2016, MS almost tripled their defence R&T outlays, with the steepest increases being recorded in 2020 (+46%) and 2021 (+41%). As a share of total defence expenditure, MS allocated 1.4% to defence R&T, which is slightly less than last year's number. Despite MS efforts to increase R&T spending, they are still failing to reach the 2% benchmark on defence R&T benchmark agreed in 2007. In addition, there is a very uneven distribution of declared R&T spending at EU level, as two MS account for more than 80% of it. In 2024, data indicates that defence R&T expenditure may pick up speed and could reach €5 billion. Yet, the expected 31% increase in defence R&T spending will likely not be sufficient for MS to achieve the benchmark, with expenditure expected to amount to 1.6% of total defence expenditure according to data (Figure 10).



Figure 9. Defence R&T and 2% Defence R&T Benchmark

Figures are in constant 2023 prices





Russia's war of aggression against Ukraine might have caused a temporary slowdown in the rise of allocations dedicated to defence R&T expenditure since many MS focused their attention to swiftly address capability shortfalls through readily available military equipment. This may have led to less room for maneuver for defence R&T projects the benefits of which generally become apparent only in the long term. However, there is the potential that the current geopolitical context may strengthen the focus on defence R&T projects in the coming years. The war in Ukraine has demonstrated that the combination of major platforms with unorthodox solutions can increase lethality, firepower and maneuverability. As a result, Europe has already taken some necessary steps to pursue the rapid integration of R&T elements into capability development initiatives to capitalise on fast technological advancements.

The combination of European defence initiatives provides important tools stimulating cooperative MS activities in this field. Therefore, there is the possibility of additional increases in R&T investments in the years to come, improving the armed forces' warfighting abilities with the adoption of dual use technologies and other R&T elements.



Figure 10. Defence R&T as Percentage of Total Defence Expenditure





From a collaborative standpoint, relying primarily on national contributions, MS have collectively allocated €242 million to European collaborative R&T projects in 2023. As share of total defence R&T, 6% were allocated by EU MS on European collaborative projects, falling far behind the achievement of the 20% collective benchmark. However, the dataset remains incomplete, with only 16 EU MS providing figures on European collaborative defence R&T spending.

The EDA's ad hoc framework has been a preferred framework to implement collaborative EU R&T projects with national funds. This framework has witnessed a continuous upward trajectory in the number of R&T activities currently under development. Presently there are 61 ongoing R&T projects with a combined gross value of €321 million.<sup>12</sup>

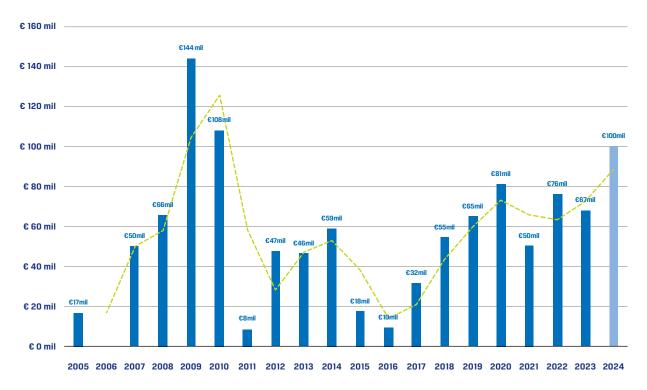
The recently approved EDA 2024 Long-Term Review has further confirmed EDA's commitment to promoting European collaborative R&T projects, highlighting that R&T and innovation will remain vital elements for future cooperation within the framework of EDA. In 2023, the EDA ad hoc R&T portfolio witnessed the expansion and evolution of potential new strategic domains, as exemplified by the strong lift-off of CapTech Space with several new ad hoc projects, and by the cross-domain development of the Action Plan for Autonomous Systems.

The experience observed since 2005 shows that EDA's R&T ad hoc portfolio evolves in cycles, with some years of strong growth followed by years of fewer new ad hoc projects. However, the trend indicates that, following the last cycle, the overall value of new ad hoc projects continues to increase (Figure 11).



Figure 11. Budget of New Defence R&T Projects per Year in EDA's Ad Hoc Framework

Figures are in current prices



12. Updated as per 31/12/2023

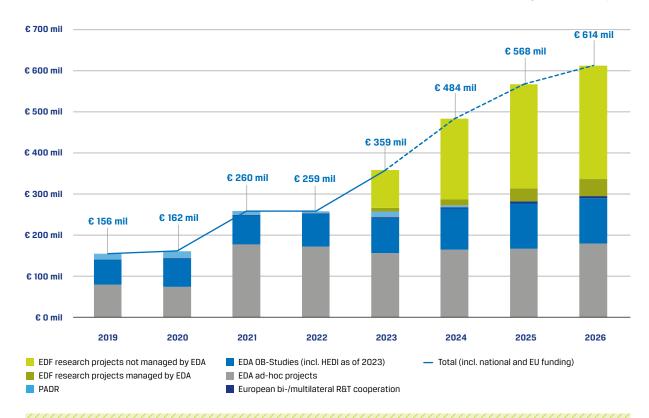
2023 marked the first year that the EDF had such an effective and visible financial impact on the European defence landscape. In 2023, total funding for collaborative R&T projects launched under the EDF calls 2021 and 2022 amounted to around €100 million for projects. EU-funded research actions are projected to grow to almost €320 million in 2026. Combined with other financial instruments and national funding by MS, the total European collaborative R&T spending is estimated to increase from €359 million in 2023 to more than €600 million in 2026 (current prices) (Figure 12). In addition to European collaboration under EDA and the EDF, MS are cooperating on R&T outside these frameworks, for which currently no figures are available.

While this forms a significant contribution to European collaborative defence R&T projects, the allocated funds dwindle in comparison with national defence R&T resources. **The EU's five biggest R&T spenders** alone allocated around €3.7 billion on defence R&T in 2023. To set adequate incentives for enhanced European cooperation on defence R&T in the coming years, EDF funding should be increased in line with national R&T investments.



Figure 12. European Collaborative Defence R&T by Funding Source<sup>13</sup>

Figures are in current prices





<sup>13.</sup> Data regarding EDF consider only Research Actions and follow the same methodology as in figure 8. For PADR, the actual expense per year is used. EDA Ad Hoc projects include only R&T projects and expenses are annualised.

### Conclusion

Over the past two years, the drastic deterioration of Europe's security situation has led to significant changes in defence priorities across the continent. This critical moment led MS to update national defence plans and adjust defence investments. It offers an opportunity to redefine the scope of cooperation and signal MS commitment to future EU initiatives fostering defence cooperation.

Recent budget increases by MS to scale-up their defence capabilities should be invested strategically in line with the 2023 EU Capability Development Priorities to maximise outputs at EU level. To ensure the readiness and resilience of European forces today and tomorrow, these efforts need to be elevated from merely repairing shortfalls originating from the past and addressing current needs to securing the future. This will depend strongly on MS commitment to sustaining defence expenditure in a structured, long-term manner.

Even though the 2023-24 edition of the Defence Data Publication draws a positive trend on European defence spending, MS current tendency to resort to COTS products from non-EU suppliers to quickly replenish depleted stocks and fill critical capability gaps threatens to weaken the EDTIB and raises concerns about EU armed forces' interoperability. It is therefore **crucial for MS to move past the immediate urgency and coordinate national planning toward common goals for the mid to long term**. Developing defence capabilities requires a clear strategy that also allows the EDTIB to build up a coordinated production process.

In the coming years, enhanced European defence cooperation will be crucial to provide MS with more interoperable armed forces, while also strengthening the EDTIB by placing larger orders and with a longer planning horizon, providing increased visibility to secure production lines and avoid over-reliance on non-EU suppliers. In this respect, MS should make expanded use of the collaborative opportunities proposed by the 2024 CARD Report and funding incentives offered by European defence initiatives to channel the increased funds into actionable collaborative projects that make European defence fit for the long run. A stronger collaborative approach in addressing capability requirements is essential to reaching a higher degree of interoperability, efficiency, and effectiveness of EU armed forces.

In line with the Agency's revised and agreed 2024 Long-Term Review, EDA stands ready to support MS in this endeavor along all the steps of the capability development cycle and beyond.

# Methodological Remarks

EDA has been collecting defence data on an annual basis since 2006, in line with the Agency's Ministerial Steering Board Decision of November 2005. The Ministries of Defence of the Agency's 27 MS provide the data. EDA acts as its custodian and publishes the aggregated figures in its "Defence data" booklets and on its website.

EDA compiled the 2023 defence data figures through the 2024 PESCO National Implementation Plans, the 2024 CARD Consolidated Information, and individual updates by MS. On 23 March 2023, Denmark joined the Agency, allowing for the first time EDA's Defence Data Publication to account for all EU MS. Notably, Denmark's defence data has been included in EDA's Defence Data Publications as of 2021.

All data is collated ("total incorporates 27 Member States"), and it has been rounded. Defence expenditure figures are provided in constant 2023 prices – unless stated otherwise – to take inflation into account and allow for a comparison across years.<sup>14</sup>

This year's defence data publication provides support for the findings and conclusions drawn in the 2024 CARD Report. Considering the shifting geopolitical situation, MS have adopted a more cautious approach to sharing data in a disaggregated format, while still ensuring the overall analysis remains transparent and clear.



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