



HIGH REPRESENTATIVE
OF THE UNION FOR
FOREIGN AFFAIRS AND
SECURITY POLICY

Brussels, 18.5.2022
JOIN(2022) 24 final

**JOINT COMMUNICATION TO THE EUROPEAN PARLIAMENT, THE
EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND
SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS**

on the Defence Investment Gaps Analysis and Way Forward

1. Introduction

EU Heads of State or Government, meeting in Versailles on 11 March, committed to “bolster European defence capabilities” in light of the Russian military aggression against Ukraine. They agreed to: 1) increase defence expenditures; 2) step up cooperation through joint projects; 3) close shortfalls and meet capability objectives; 4) boost innovation including through civil/military synergies; and 5) strengthen and develop our defence industry, including SMEs. Moreover, they invited “*the Commission, in coordination with the European Defence Agency, to put forward an analysis of the defence investment gaps by mid-May and to propose any further initiative necessary to strengthen the European defence industrial and technological base.*” The tasking was also integrated in the Strategic Compass on Security and Defence¹ adopted by the Council and endorsed by the European Council in March 2022.

This Joint Communication provides the requested analysis to the European Council with the aim to ensure that the increased defence spending by Member States results in a much stronger EU defence technological and industrial base, resulting into increased conventional deterrence for any kind of potential adversary. Building in particular on the “defence package” Communication of 15 February 2022², it offers Member States new ways to step up joint procurements as well as to engage with industry to step up their production capacity to meet the increased needs, based on consolidated and more predictable demand. Citizens’ perception of the need for stronger EU action regarding defence is highlighted in the final report of the Conference on the Future of Europe.³

Such steps are critical in light of the significant implications that Russia’s unprovoked military aggression against Ukraine has for European defence. The return of warfare to Europe has underlined the effects of years of defence underspending, which has led to an accumulation of gaps and shortfalls in the collective military inventories as well as reduced industrial production capacity. In addition to correcting this situation, increased defence expenditure will also have to address urgently the short-term need to replenish and expand defence stocks including to compensate for the military assistance to Ukraine.

Member States have announced increases in their defence budgets in the order of, so far, close to EUR 200 additional billion in coming years.⁴ Whilst these increases are essential, there is a serious risk that this will not be able to make up for the existing shortfalls if spent in a non-coordinated way. EU Member States must therefore not only spend more but also invest better and more together – as acknowledged in the Versailles declaration as well as the Strategic Compass. Only by working together can Member States maximise economies of scale and face the large costs of high-end capabilities, while avoiding to compete for limited supply capacity and preventing unnecessary duplication.

Based on the historical record, there is nonetheless a risk that Member States opt for national solutions, because of industrial and security of supply considerations, or, when not available privilege “off-the shelf”⁵ non-EU solutions given the sense of urgency, at the expense of

¹ Council of the European Union 7371/22.

² In particular: Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: “Commission contribution to European defence” (COM(2022) 60 final) of 15 February 2022.

³ <https://futureu.europa.eu/pages/reporting?format=html&locale=en>

⁴ Aggregated on the basis of open source information.

⁵ Defence industry generally produces only following a firm order, with no stock of final products available. “Off the shelf” refers to existing products, as opposed to the development of new equipment.

possible EU solutions that may have equivalent lead times. Defence industries may be inclined to serve as a matter of priority their national government as opposed to a more European-wide client-base. Without coordination and cooperation, the increased investments would deepen the fragmentation of the European defence sector, limit the potential for cooperation throughout the life cycle of the equipment, intensify external dependencies and likely hamper interoperability. Short term acquisitions will have a longer-term impact in this regard, resulting into a reduction of market strength and foregone opportunities for the next decades.

In short, persistent underspending and lack of cooperation have resulted in critical defence capability shortfalls, particularly at the higher end of the spectrum, across domains, as well as in the fragmentation of the related industry in Europe. It is essential that the EU does not repeat past mistakes that led to inefficiencies, duplications and dependencies and builds instead on the EU defence initiatives and capability development tools set up during the last few years to strengthen Member States' defence cooperation. These initiatives aim to reduce the fragmentation of the European defence market – notably the European Defence Fund (EDF) – and enhance coordination of Member States defence policies, planning and capability development – notably through Permanent Structured Cooperation (PESCO), the Coordinated Annual Review on Defence (CARD) and the Capability Development Plan (CDP). Moreover, the Strategic Compass calls, as of 2022, for annual Defence Ministerial meetings on the EU defence initiatives addressing capability development, organised and chaired by the High Representative/Vice President of the Commission/Head of the European Defence Agency, making full use of existing formats. These are all important steps in the right direction to address the existing shortfalls but they need to be further strengthened in light of the new situation, notably as regards joint investment and procurement of defence capabilities. Such steps are critical to ensure that Europe can field stronger and more interoperable defence capabilities while enhancing the European defence industrial and technological base (EDTIB), which are both essential for Europe's long-term security and strategic autonomy.

The overall aim is therefore to invest:

- **Together**, by exploiting economies of scale through collaborative projects and joint procurements. Developing and buying together reduces prices and will also help to prevent Member States competing for limited industrial resources, thereby further driving up prices or crowding out smaller or more exposed Member States, and thus ensuring solidarity. Similarities with the COVID vaccine situation in 2020-21 present themselves.
- **Better**, by supporting Member States to focus on the identified EU capability priorities. These are coherent with those of NATO and will also be reviewed in light of the political-strategic guidance provided by the Strategic Compass. This analysis highlights some urgent capability gaps in the changed strategic context; and
- **European**, by incentivising defence investments that reinforce industrial ramp-up, longer-term industrial capacity and economic growth within the Union through a more competitive European defence industry. Enhancing the European Defence Technological Industrial Base (EDTIB) has become of strategic importance in the deteriorating geostrategic environment.

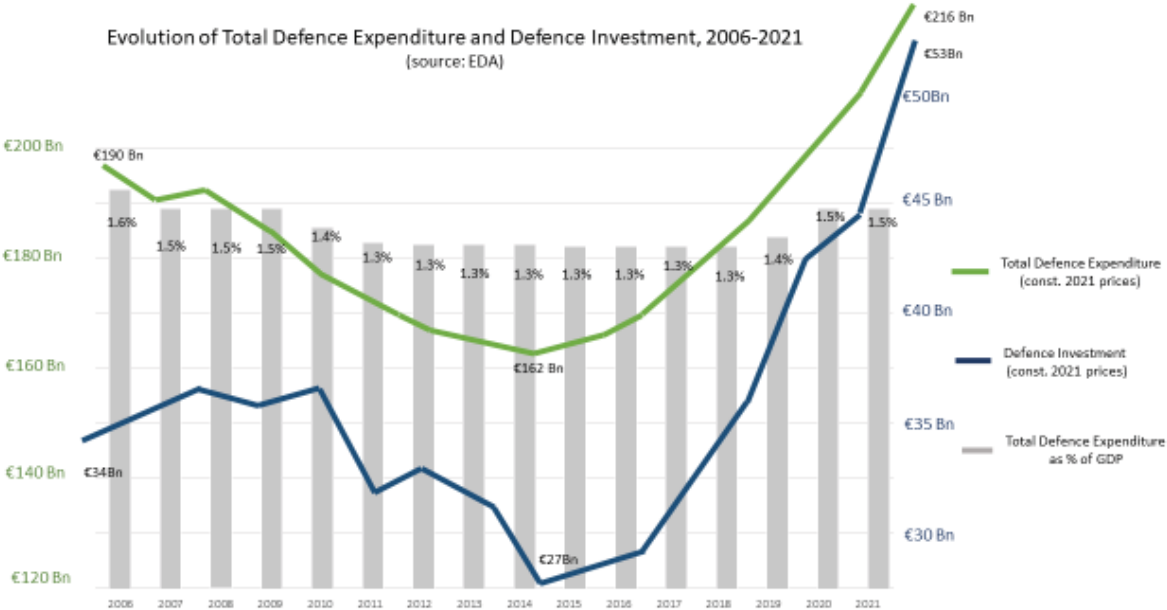
This is also beneficial for NATO which remains the foundation of the collective defence of its members. EU initiatives to foster defence cooperation also help reinforce a fairer Transatlantic burden-sharing and a more effective European contribution within NATO. Member States can use their single set of forces nationally or within the EU, NATO, UN or any other framework. EU's capability development priorities are coherent with those agreed

within NATO, while taking into account the difference in nature and responsibilities between the two organisations and ensuring mutual reinforcement in respective efforts. Defence capability development is a key pillar of the enhanced EU-NATO dialogue and cooperation agreed under the Joint Declarations of 2016 and 2018.

This Joint Communication looks at: a) defence expenditures within the EU, b) capability and industrial gaps that need to be addressed including the most urgent ones, c) ways to address them, and d) options to reinforce defence capability supply.

2. Defence expenditures within the EU and underinvestment levels

In response to the new security threats, in 2022 most Member States are announcing substantial increases of their defence budgets, in some cases even going beyond 2% of their GDP, building on an upwards trend that started some years ago. In 2020, Member States collectively spent over EUR 200 billion on defence⁶ and in 2021 their combined expenditure is estimated to have grown to EUR 220 billion. These recent developments nonetheless follow a prolonged period of substantial cuts in defence spending after the economic and financial crisis 2007-08; down from EUR 183 billion in 2008 to EUR 159 billion in 2014⁷, only recovering to the pre-crisis levels by 2018-19 (see the graph below). Between 2009 and 2018, Member States cuts amount to an aggregated under-investment of around EUR 160 billion, compared to the 2008 spending level⁸.



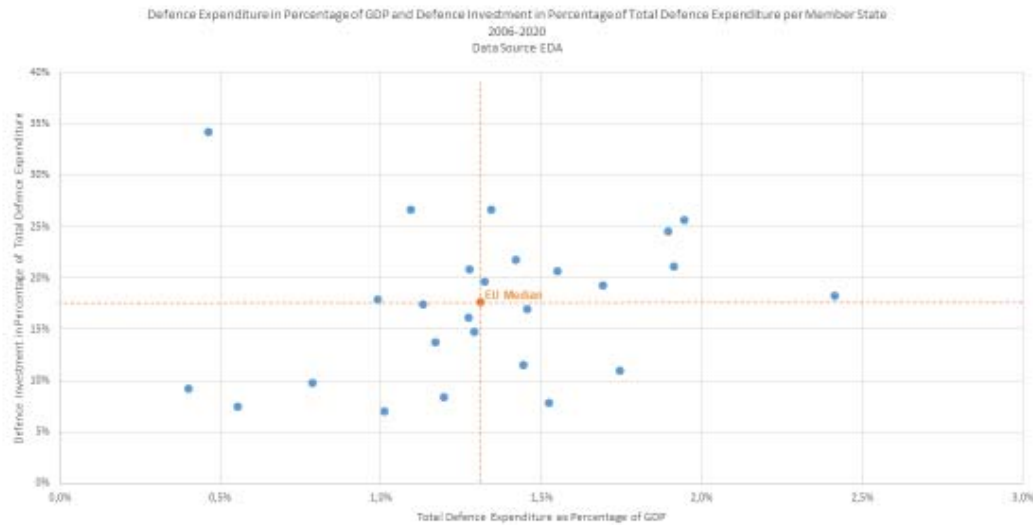
This, alongside the structural trend of cost increase of defence systems and the focus on expeditionary operations in some Member States, has led to severe reductions in overall national force volumes, equipment quantities, and stockpiles – now further depleted by the support provided to Ukraine. As a result, the capacity to operate full-spectrum and at high

⁶ EDA data: [eda-defence-data-report-2019-2020.pdf \(europa.eu\)](https://eda.europa.eu/eda-defence-data-report-2019-2020.pdf). (DK not included)

⁷ EDA Defence Data 2019-2020, constant 2020 EUR.

⁸ EDA data based on the Coordinated Annual Review on Defence (CARD).

intensity was neglected, while existing shortfalls and missing high-end capabilities were, when necessary, covered by non-EU NATO Allies, notably the US.



Moreover, over the past decade, the US – and more worryingly Russia – have increased their defence budgets at a much higher rate than Europe. It is striking that China increased its budget even more over the same period. From 1999 to 2021, EU combined defence spending increased by 19.7% against 65.7% for the US, 292% for Russia and 592% for China.⁹ This does not even account for the significant underestimation of the defence spending by China and Russia as the purchasing power of their budget is higher than the conversion based on exchange rates would make it appear. On a purchasing power parity basis, the 2021 Russian and Chinese defence budgets are estimated to be USD 178 billion and USD 332 billion respectively.¹⁰ On top of that, the share of investment in the defence spending of the United States, China and Russia is significantly higher than that of EU Member States.

While there is no legally binding target for individual national defence spending levels for Member States, the vast majority of them have agreed, in the framework of NATO and/or the Permanent Structured Cooperation (PESCO), to the objective of increasing their defence spending¹¹. As an indication: had all Member States spent 2% of their GDP on defence with 20% dedicated to investment, since 2006 until 2020, this would have resulted in an additional approximately EUR 1,100 billion for defence, of which around EUR 270 billion on investment¹².

Furthermore, European defence expenditure has historically resulted in a lower efficiency and output in comparison with that of our allies and of our competitors. Lack of cooperation

⁹ SIPRI

¹⁰ Source: *Military Balance 2022*.

¹¹ PESCO commitment #1 is to “regularly increase defence budgets in real terms, to reach agreed objectives”. In 2006, NATO Defence Ministers endeavoured to spend 2% of national GDP on defence, 20% of which devoted to investment. In 2014, at the Wales summit, heads of state and government agreed to move towards meeting the guideline of spending 2% of GDP on defence within a decade.

¹² Both estimations are based on EDA data (DK not included).

between Member States on defence is estimated to cost tens of EUR billions per year¹³. Despite the increased European defence expenditure in 2020, there was a new low point of only 11%¹⁴ of investments spent in collaboratively – far below the 35% benchmark agreed by Member States in the EDA framework and set within the PESCO – as opposed to 89% spent on a national basis. Lack of cooperation has led to wasteful duplications and a multiplication of defence systems of the same kind within the EU. In addition, while in 2020 Member States' combined defence Research and Technology (R&T) spending amounted to EUR 2.5 billion, this amounts to only 1.2% of their total defence spending, thus far below the 2% benchmark agreed in the EDA framework and set as more binding commitment within PESCO¹⁵.

3. The defence industrial gaps

The European defence industrial basis is composed of a large set of prime contractors, mid-caps and small and medium enterprises developing and producing most of the advanced technologies and defence capabilities Member States' Armed Forces need and could procure. Overall, the estimated annual turnover of the EU defence sector amounts to almost EUR 84 billion, supporting directly estimated amount of over 196,000 high-skilled jobs, and over 315,000 jobs indirectly¹⁶.

Despite the overall competitiveness of the sector, difficulties and gaps exist. Defence companies are still structured mainly along national borders, benefitting from a close relation with national governments. This structure of the market, combined with a low investment spending, has resulted in a number of national players operating in small markets, producing therefore small volumes¹⁷. A series of consolidation steps at national and European level have fallen way short of the US industrial consolidation.

Therefore, the EDITB remains highly fragmented, especially outside the aeronautics and missile sectors. This greatly reduces its ability to improve its competitiveness through pooling of R&D and economies of scale in production. Moreover, dependencies exist for some key defence equipment for which the EDTIB is not offering indigenous solutions.

The root causes of the difficulties of the EDTIB are the described under-investment gaps by Member States and fragmented spending, coupled with the fact that a very significant part of Member States' spending is not invested in the EDTIB, even when an EU-made product is available. As an indication, between 2007-16¹⁸ it is estimated that over 60% of European

¹³ [The European Defence Fund \(EDF\) \(europa.eu\)](https://eda.europa.eu/docs/default-source/brochures/eda---defence-data-report-2019-2020.pdf)

¹⁴ Data provided by 11 Member States.

¹⁵ <https://eda.europa.eu/docs/default-source/brochures/eda---defence-data-report-2019-2020.pdf>

¹⁶ Source: EDA estimate based on data from the AeroSpace and Defence Industries Association of Europe (ASD).

¹⁷ The biggest company is Airbus (trans-European), followed by a number of the larger companies in FR, IT, DE, SE. Smaller platform manufactures, equipment suppliers and sub-suppliers make the bulk of Member States' DTIBs. The total number of SMEs in the EU, operating in the multi-layered and often trans-border defence supply chains, is estimated at 2 500. They serve the land (39.6%), air (30.5%), maritime (18.7%), cyber (7.8%), and space (3.4%) defence domain customers.

¹⁸ Excluding 2013 (US figures not available that year); import/export figures include both UK and DK (source: US State department (via "The poison pill: EU defence on US terms?", EUISS, D. Fiott)); EU figures includes UK but not DK (source: EDA defence data adjusted with Eurostat conversion rates).

defence procurement budget was spent on non-EU military imports, with the resulting third country controls or restrictions¹⁹.

The return of high intensity conflict and increased territorial threat requires a conversion of the defence industrial ecosystem in the EU to ensure security of supply and an expansion of manufacturing capabilities where necessary or a greater ramp-up readiness. Furthermore, when it comes to disruptive technologies having the potential to radically change the future battlefield (e.g. AI, Quantum) and future equipment, the described root causes risk affecting EDTIB competitiveness in the long term, and its ability to develop advanced capabilities (e.g. hypersonic systems, collaborative combat).

4. Capability gaps

The Strategic Compass identified the EU's overall ambition as further developing "full spectrum forces that are agile and mobile, interoperable, technologically advanced, energy efficient and resilient". It has also recalled the already identified critical capability shortfalls indispensable to enable the Union to undertake the full range of Common Security and Defence Policy (CSDP) tasks set out in the Treaty, specifically those in the higher spectrum of intensity. These shortfalls are included in the priorities set by the Member States in the Capability Development Plan of 2018, which will be reviewed in light of the Strategic Compass and remain a key reference for coherence among EU defence initiatives²⁰.

To address these priorities, the EDF is providing financial support contributing to the development of strategic enablers and major capabilities²¹ while Member States are also working together to address them through 60 projects within PESCO.

The Commission and the European Defence Agency (EDA) have analysed the defence investment gaps. In that context, the EDA has presented to Member States an analysis of investment gaps to be filled in the short, medium and longer term, along three lines of actions: 1) to be prepared (increase readiness including replenishment linked to the support to Ukraine); 2) to augment existing forces and capabilities; and 3) to reinforce and modernise capabilities, based on EU agreed capability priorities and informed by CARD (see annex).

¹⁹ For instance through the US European Recapitalization Incentive Program (ERIP), established in 2018 to incentivise replacing Soviet legacy equipment, which has resulted in USD 277 Million grants to some European countries enabling USD 2.5 billion in US weapon sales.

²⁰ The Capability Development Plan (CDP) is the EU prioritisation tool for defence capability development. It takes into account the military shortfalls related to military CSDP (i.e. operations in the scope of Article 43 TEU) identified through the Headline Goal process, as well as lessons identified in missions and operations, while also factoring in medium to longer-term technology trends and national defence needs. The Headline Goal process is the established framework for identifying the military shortfalls (High Impact Capability Goals, HICGs) based on illustrative scenarios derived from the military ambition level for the Common Security and Defence Policy. These HICGs feed into the CDP. The Coordinated Annual Review on Defence (CARD) monitors how Member States are pursuing these priorities in their national defence planning, to identify collaborative opportunities, so far six specific 'focus areas' for cooperation, namely: Main Battle Tanks, Soldier Systems, Patrol Class Surface Ships, Counter Unmanned Aerial Systems, Defence applications in Space and Military Mobility. These efforts are coherent with the requirements stemming out of the respective NATO processes, notably the NATO Defence Planning Process, and will enhance the readiness, robustness and interoperability of the Member States' single set of forces.

²¹ For instance, the European MALE RPAS project (a medium-altitude, long-endurance drone), anti-drone systems, space situational awareness capacity, early warning systems, the next generation of ground-based precision strike capabilities, the development of cyber defence technologies and systems, and support for projects at innovative small and medium-sized enterprises.

In light of the elevated security threat, and building on the coordinated analysis of the Commission and the EDA, the Commission and the High Representative propose to focus on the following most urgent capability gaps that can be addressed by the European defence industry:

1. **Replenish stockpiles:** Secure the combat readiness of armed forces and coordinate competing national demands, avoiding price spiralling and ensuring that most exposed countries have access to required capabilities.
2. **Replace:** Phase out existing Soviet era legacy systems still in use within EU Armed Forces with European solutions (such as: Main Battle Tanks, Armoured Fighting Vehicles, Infantry Fighting Vehicles, Armoured Personnel Carriers, heavy artillery, etc.), as part of a wider effort to augment existing capabilities and supporting interoperability and enhancing security of supply.
3. **Reinforce:** Strengthen the multilayer Air and Missile Defence systems of Member States, starting with mid-range systems in those most exposed. The defence of population areas, military forces and/or critical infrastructure against air and missiles threats is a critical challenge in the new security situation.

Beyond these urgent capability gaps, the Commission and the High Representative propose to work on the following strategic medium- to long-term capabilities to improve Europe's defence capabilities in the face of persistent threats:

- **Air domain:** The development and operationalisation of the medium-altitude “Eurodrone” (MALE RPAS) – which forms part of PESCO and EDF projects – gained importance. In the short to medium term, upgrading and expanding Air-to-Air Refuelling capabilities and existing aircraft fleets, building a multilayer Air Defence capable of integrated management, as well as developing and procuring counter drone-capabilities and weaponised medium-sized drones are priorities. In the medium and longer term, the modernisation of anti-access/area denial systems and the fleet of multi-role fighter aircraft in the EU is another area where Member States intend to make new investments and where a coordinated approach would help optimise resources, also in view of developing the next generation of systems.
- **Land domain:** The upgrade and expansion of the existing inventory of Main Battle Tanks and Armoured Fighting Vehicles, as well as next generation systems has become an urgency for many Member States, in light of the return of large-scale, high intensity warfare in Europe. The reinforcement of land combat capability should include combat support, notably a wide range of anti-tank and artillery systems, with an emphasis on precision strike and counter-artillery.
- **Maritime domain:** further strengthening Member States' naval forces remains critical in light of increasingly contested Black, Baltic and Mediterranean Seas as well the need to reinforce force and power projection but also anti-access denial and coastal defence capabilities. This includes frigates, submarines and patrol corvettes to ensure maritime security. In the medium to long term, ISR capabilities and the protection of sea lines of communication will benefit from high-end inter-connected ships augmented by unmanned platforms for surface and underwater control and electronic warfare.
- **Space (connectivity, surveillance, protection):** The war in Ukraine has further demonstrated the importance of satellite-based secure connectivity, including a highly resilient European ultra-secured connectivity programme including quantum encryption, as well as space-based earth observation as critical enablers. Optimising synergies with

the EU's space-based connectivity programme is one of the advantages of working together in this context. Protection of EU space infrastructure against threats (space situational awareness) is also a growing priority. Space based assets can also be a key enabler for a strong early warning system needed to detect the departure of missiles (e.g. ballistic, hypersonic) and to track them.

- **Cyber defence:** To counter the growing risk of cyber-attacks by state actors in the context of geopolitical competition, the EU and its Member States could launch work towards a full-spectrum cyber defence capability (from research, detection, and protection to response, including active defence capabilities). This includes capabilities for cyber situational awareness and information sharing (also building on potential synergies with a European 'Cyber Shield' infrastructure of Security Operation Centres (SOCs)²²), cyber resilient and interoperable command and control for military operations and missions, cyber exercise and training, and cyber reserve forces at national level. The EU can offer here a platform for cooperation between EU services and Member States including synergies with relevant EU programmes.

In addition, the war in Ukraine has reaffirmed the importance of effective and efficient logistics including the maintenance, sustainment and movement of forces, equipment and supplies to, from and across the theatre of operations. The Commission has accelerated the implementation of the **military mobility** budget under the Connecting Europe Facility (CEF) and stands ready to frontload it within the constraints set by the MFF. Transport infrastructure in particular requires increased investments. The consultations with the Member States on their dual-use transport infrastructure project pipelines and the oversubscription for co-funding in the first call for proposals demonstrate the need for and the capacity to use a larger budget. The EU should build on its work on enhanced military mobility, reinforcing strategic and tactical lift capacity by land, air and sea as well as civil/military synergies in the area of transport, resilience and energy efficiency and more broadly increase synergies of capabilities between civil protection, border management and defence needs.

5. Enhanced defence cooperation framework

To address these gaps, the Commission and the High Representative propose the following way forward to coordinate and incentivise joint procurement of defence equipment, starting with replenishment as the most urgent step. It would complement existing collaborative EU defence initiatives such as in the EDF and PESCO, and on synergies with other EU programmes. European defence industry has strong capabilities and products to offer in all of these areas.

The success of any EU defence initiative depends on Member States' commitment to spend better - to invest, procure and operate together in the common interest. The proposed cooperative approach is critical to streamline and strengthen both European defence demand (programming and procurement) and supply (development and production).

5.1. Immediate measures: Task Force to support coordination

Given the urgent need, the Commission, and the High Representative/Head of Agency will swiftly establish a **Defence Joint Procurement Task Force** to work with Member States to support the coordination of their very short-term procurement needs to face the new security situation. Initially, the Task Force would focus on de-confliction and coordination to avoid a

²² Joint Communication, The EU's cyber security strategy for the Digital Decade, JOIN(2020) 18 final, section 1.2; the Cyber security strategy is part of the Security Union overall approach.

race to secure orders which would result in spiralling prices, over concentration of demands in the same time frame, shortages of supplies and difficulties for the more exposed Member States to secure indispensable items, thereby preventing potential conflicts between parallel national procurement efforts. This could include centralising the collection of information, providing methodological support and coordinating or managing purchases. The Task Force would also establish an aggregate estimate of needs, and map and support the expansion of the EU industrial manufacturing capacities necessary to answer the needs.

Within the Task Force, and in partnership with the Commission, the EDA could already facilitate such very short-term joint procurement building on its expertise and experience in this regard²³. The Task Force would also coordinate with the Clearing House Cell set up within the EEAS/EU Military Staff to facilitate coordination of military assistance to Ukraine, with a view to support Member States to procure the most urgent items needed to replenish stocks.

5.2. Short-term EU instrument to reinforce defence industrial capabilities through joint procurement

As indicated, without coordination and cooperation, the increased Member State investments would deepen the fragmentation of the European defence sector, limit the potential for cooperation throughout the life cycle of the equipment, intensify external dependencies and likely hamper interoperability. Short-term acquisitions will have a longer-term impact in this regard, resulting in a reduction of market strength and foregone opportunities for the next decades.

The Member States need to restore defence combat readiness as a matter of urgency in light of the security situation and of transfers already made to Ukraine. In particular, a replenishment of stocks of material would also enable them to provide further assistance to Ukraine. Today, Member States that provide military assistance to Ukraine can receive financial reimbursement through the European Peace Facility. As they proceed to replenish their stockpiles and equipment, however, they should seize the opportunity to do so in a collaborative way as this would provide greater value for money, by seizing economies of scale, and enhance interoperability. This also requires further enhancing and reinforcing the EDTIB.

To this end, the Commission will propose a dedicated short-term instrument, designed in a spirit of solidarity, to incentivise Member States who are willing to pursue joint procurement to fill the most urgent and critical gaps, especially those created by the response to the current aggression, in a collaborative way. The new instrument would contribute to reinforce joint defence procurement and, through the associated Union financing, thereby to strengthen and reform their defence industrial capabilities. The EU financial support should leverage new defence investments from Member States and benefit the European industrial base while ensuring EU Member States' ability to act and to attain greater interoperability.

The new instrument should remain simple and straightforward in its implementation but conditioned to Member States meeting specific criteria such as a minimum of three Member States participating in the joint procurement. In the implementation of this new instrument, the Commission will rely on the assistance of the Task Force.

²³ According to the TEU article 42(3), EDA is identified as the “The Agency in the field of defence capabilities development, research, acquisition, and armaments...”. The EDA’s tasks are defined in TEU article 45 which states that subject to the authority of the Council, the European Defence Agency shall have as its task to “... b) promote harmonisation of operational needs and adoption of effective, compatible procurement methods...”.

The Commission is ready to invest EUR 500 million over two years (2022-24) into this scheme. To this end, the Commission will propose to the co-legislators to engage in a fast-track adoption of a Regulation enabling the instrument and the related budget increase.

5.3. An EU framework for Defence Joint Procurement

Beyond the short-term urgent needs linked to the new security paradigm, it is necessary to move forward towards an EU framework for Defence Joint Procurement. Through the European Defence Fund, the EU has a strong instrument to incentivize joint and collective R&D in defence up to the prototype level. The EDA is competent to conduct joint procurement and does it already, however it would need to be reinforced for the EU to benefit from a fully fit-for-purpose capacity for joint procurement.

In light of this, the Commission will propose in the third quarter of 2022 a **European Defence Investment Programme (EDIP)** regulation. It will aim at establishing the conditions and criteria for Member States to form consortia that qualify as a **European Defence Capability Consortium (EDCC)** that will jointly procure, for the use of participating Member States, defence capabilities that are developed in a collaborative way within the EU and would benefit from a VAT exemption. This new vehicle would complement existing related options under the umbrella of the EDA, while it could also serve projects in the PESCO framework.

For cooperation based on research and development (R&D) of a new product, the EDCC would also benefit from the flexibility provided by Article 13(c) of the Defence Procurement Directive, including, where applicable, with regard to later phases of all or part of the life-cycle of the product.

An EDCC would create a very strong cooperative element and would bring additional benefits such as interoperability over the life cycle, harmonisation of procedures and training curricula for operation, maintenance, repair and overhaul, as well as economies of scale. The VAT exemption would also apply to operation, maintenance and decommissioning, which are a major cost over the lifecycle of defence equipment. The capabilities procured through an EDCC would be available for use by Member States nationally or in CSDP missions and operations, as well as within the context of UN or NATO. The EDCC could also be a vehicle allowing for synergies and aggregation of demand of capabilities relevant for EU civil protection, border management and defence needs.

The EDIP Regulation could serve as the anchor for future joint development and procurement projects of high common interest to the security of the Member States and the Union, and by extension of the logic of the short-term instrument, for possible associated Union financial intervention for the reinforcement of the European defence industrial base, in particular for projects which no single Member State could develop or procure alone.

5.4 Towards an EU Joint Defence Strategic Programming and Procurement

Beyond the tools and instrument to incentivise cooperation “downstream”, it is paramount that a more ambitious upstream coordination is put forward. Coordinated action at EU level is needed to prevent 27 uncoordinated national approaches. Today’s processes and approach are not all-encompassing and do not allow for enough prioritisation. As Member States will start adapting their planning processes to take into account the new security landscape, it is paramount to set-up a more structured approach – a joint EU strategic defence programming and procurement – to deliver on this new ambition in a coordinated way. It should build on

existing processes and structures, and coherence with NATO planning process should be ensured.

To this end, a joint EU defence programming and procurement function could be envisaged involving Member States, the High Representative/Head of the Agency and the Commission. It would ensure joint comprehensive multiannual programming – building on the EDF multiannual perspective, refinement of needs and specifications – and act as a central purchasing body for EU joint procurement and support Member States in their joint procurements, including downstream from the EDF-funded projects.

In this regard, the work of the Task Force under section 4.1 could be seen as a pilot for such a function in the future.

5.5 Reinforcement of Europe defence industrial capacity

Enhanced European defence cooperation also requires a solid action plan that provides clarity and visibility for the defence industry to invest, modernise and ramp-up EU defence manufacturing capacity, while also enabling it to anticipate and address potential supply chain bottlenecks and ensure EU security of supply on defence capabilities.

The Commission will support defence industry in its effort to modernise its production lines and processes, ramp up manufacturing capacities and reduce critical dependencies and address its critical bottlenecks.

In this perspective, the Commission, in cooperation where applicable with the EDA, proposes to put in place several measures:

- **In-depth mapping of EU current and necessary additional industrial manufacturing capabilities**, including building on efforts ongoing under the Industrial Strategy and in other fora (e.g. EDA Key Strategic Activities²⁴). The objective would be to have a shared picture of the capacity to produce and the needs to ensure European security of supply to Member States, including the most exposed ones.
- Consider enabling defence industry **access to Critical Raw Materials (CRMs)** and other key components in time of crisis, including machine tools needed for production. The Commission will table a Critical Raw Materials initiative, including legislative measures, which will aim to strengthen the EU's resilience and security of supply as regards CRMs, including in the field of defence.
- Measures will be considered as regards **defence specific skills**, including cyber skills, to ensure that defence industry has access to and retains the necessary workforce, in particular in the science, technology, engineering, and mathematics (STEM) area as well as in any other area linked with the current extraordinary effort to ramp up production capacities. Specific attention will be given to attract all talents and skills.
- The Commission will work on further measures (inter alia, coordinated calls among existing EU instruments and EIB loans) to support critical technologies and industrial capacities by developing strategic projects.

²⁴ EDA Key Strategic Activities raise awareness and promote a common understanding of Member States, EU institutions and Defence industrial actors about industrial and technological areas as well as skills and competencies where dependencies from non-EU players could put at risk the EU's freedom of action in the Defence domain.

- The Commission will consider possible amendments to the framework for dual-use research and innovation to improve synergies between civil and defence instruments.

5.6 Sustain the R&D effort

Today, the European Defence Fund is the EU Defence R&D programme. However, considering the new security paradigm, and the unprecedented alignment of increase in defence spending, the **EDF should be able to respond to the new needs**.

It is paramount to define a careful planning to support collaborative R&T and R&D²⁵, preparing the ground for future joint procurements and capabilities, avoiding the emergence of new dependencies on third countries which could weaken the EU armed forces security of supply and security of information, particularly during a military conflict.

In order to safeguard the incentivising power of the EDF in the context of increased national defence expenditures, the Commission will consider strengthening its budget, within the overall review of priorities in the mid-term review of the MFF. Additionally, as announced in the February Defence Package, the Commission is exploring how to revise the bonuses of the EDF in order to support even further joint procurement of the capabilities developed through EDF financial support.

Finally, the Commission will make the Fund attractive for new entrants and support defence innovation, together with the EDA, through the announced EU Defence Innovation Scheme. To that aim, the Commission will speed up the establishment of the **CASSINI for defence**, announced in the Defence Package as part of the EU Defence Innovation Scheme. A **blending facility under InvestEU**, supporting innovation and targeting SMEs and Mid-Caps developing defence technologies, in cooperation with the European Investment Fund, will be part of it.

5.7 Enhancing EIB support to defence

The elevated security threat that the EU is facing and the need to make the most effective use of all the instruments at its disposal call for the European Investment Bank to enhance its support to European defence industry and joint procurement beyond its ongoing support to dual use. The Bank's recent Strategic European Security Initiative (SESI) will make financing available for non-core defence with an initial estimate of around EUR 6 billion by 2027, covering areas with well-identified market failures (e.g. not targeting manufacturing capacity). It will focus on dual-use research, development and innovation, civilian security infrastructure and cutting-edge technology projects ranging from New Space, Artificial Intelligence and quantum technologies to cybersecurity and biosecurity.²⁶ Similarly, the Bank's involvement in the Cooperative Financial Mechanism initiated by the EDA will be limited to the development of dual use technologies in support of CSDP Policy objectives when it starts functioning.

Against this background, the Bank could expand investment towards interested promoters and partners on the support of R&T cooperative projects, i.e. undertaken jointly by two or more Member States, including PESCO projects. The EIB Group would also support strengthening SMEs and small mid-caps along the supply chain through intermediated lending with financial partners. Finally, by working with promoters in the early phases of their project's

²⁵ Taking into account existing initiatives such as the Overarching Strategic Research Agenda and its Technology Building Blocks developed in the European Defence Agency Framework.

²⁶ EDA Annual Conference on 'Innovation in European Defence', 7/12/2021.

development, the EIB Group could strengthen the viability of the business model of emerging technologies crucial for the future of the EU defence industry.

The EIB could also play a role to allow for the short-term ramp-up of the defence industry's production and longer-term modernisation efforts. To this end, the EIB and its shareholders, the Member States, should be invited to assess whether, under present market and geopolitical circumstances, it should extend its support to such defence-related industrial projects, by adapting, if necessary, its lending policy.

Actions to support European Defence cooperation

- The Commission and the High Representative/Head of Agency will establish immediately a **Defence Joint Procurement Task Force** to coordinate an EU response to very short term urgent needs, notably the refilling of stocks.
- The Commission will launch a short-term instrument to reinforce European defence industrial capabilities through joint procurement
- The Commission will propose by the third quarter of 2022 a European Defence Investment Regulation defining the conditions and criteria to form European Defence Capability Consortia, as a basis for VAT exemption for joint procurement and a vehicle (including possible co-funding) for European defence projects of high common interest.
- Envisage a joint EU defence programming and procurement function.
- The Commission will propose a Critical Raw Materials initiative, including legislative measures, to facilitate, inter alia, defence industry's access to Critical Raw Materials (CRMs), thereby strengthening the EU's resilience and security of supply.
- The Commission will, within the overall review of priorities in the mid-term review of the MFF, consider strengthening the budgets of the European Defence Fund, and military mobility through the Connecting Europe Facility.
- The EIB should enhance its support to the European defence industry and joint procurement beyond its ongoing support to dual use.
- The Commission will work on further measures (such as coordinated calls among existing EU instruments and EIB loans) to support critical technologies and industrial capacities by developing strategic projects.
- The Commission will consider possible amendments to the framework for dual-use research and innovation to improve synergies between civil and defence instruments.

6. Recommendations

The Commission and the High Representative/Head of the European Defence Agency, recommend to the European Council to endorse this analysis underlining the need to urgently and collectively address Europe's short term and medium term defence investment gaps, and to invite:

- the Commission and the High Representative/Head of Agency to immediately establish a **task force to coordinate very short-term defence procurement needs** and engage with Member States and EU defence manufacturers to support joint procurement to replenish stocks, notably in light of the support provided to Ukraine;

- the Commission to propose a **short-term instrument to reinforce European defence industrial capabilities through joint procurement**;
- the Commission to submit a proposal by the third quarter of 2022 for a Regulation setting up a joint **European Defence Investment Programme (EDIP)**, including a vehicle for Value Added Tax (VAT) exemption and for European defence projects of high common interest;
- Member States, the High Representative /Head of the Agency and the Commission to envisage a **joint EU defence strategic programming and procurement function**;
- the Commission to propose further measures to **map the current and necessary additional manufacturing capabilities** and reinforce the capacity and resilience of the European defence technology and industrial sector;
- the **EIB to assess whether, under present market and geopolitical circumstances, it should enhance its support to European defence**, including industrial production capacity, by adapting, if necessary, its lending policy, and invite the Member States, its shareholders, to support this process.



HIGH REPRESENTATIVE
OF THE UNION FOR
FOREIGN AFFAIRS AND
SECURITY POLICY

Brussels, 18.5.2022
JOIN(2022) 24 final

ANNEX

ANNEX

to the

**JOINT COMMUNICATION TO THE EUROPEAN PARLIAMENT, THE
EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND
SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS**

on the Defence Investment Gaps Analysis and Way Forward

ATTACHMENT

SCOPING EU DEFENCE INVESTMENT GAPS

Endorsed by the European Council of 24-25 March, and building on the Versailles Summit declaration of 10-11 March and the Commission's defence and space packages, the Strategic Compass marks a quantum leap forward in the shared ambition to make the EU stronger and more capable in the field of security and defence. Such a stronger and more capable EU will contribute positively to global and transatlantic security and is complementary to NATO, which remains the foundation of collective defence for its members.

The Compass clearly recognises the tectonic shift in the European security architecture resulting from the Russian aggression on Ukraine, and the need to invest more and better in defence to meet the many threats and challenges of today and tomorrow. In finalising the Strategic Compass, Member States decided to incorporate the tasking decided by EU leaders in Versailles as a dedicated objective, to reflect the need for the EU to scale up its efforts to respond to the changed security environment¹.

In light of the adoption of the Strategic Compass, EDA offers below a preliminary analysis of defence "gaps", as a contribution to the work that the Commission will be carrying out in response to the Versailles tasking, anticipating also on the upcoming work that will take place to further adapt, under Member States' guidance, the output of EU defence instruments to the strategic environment. While the "demand side" of the equation must be the starting point, the following preliminary analysis will need to be complemented with proposals and recommendations addressing the supply side, through cooperative solutions, to offer a comprehensive view of defence investment gaps and strengthening measures for the European defence industrial and technological base.

DEFENCE INVESTMENT GAPS

Defence investment gaps can be understood in several ways. At the military and operational level, "gaps" are often interpreted as **unachieved levels of ambition** in terms of force or capability shortfalls sometimes expressed as quantitative targets. From a capability development perspective, "defence investment gaps" may be defined as the difference between a stated national priority and the level of investment effectively committed to that priority. At the political and strategic level, however, gaps should be understood in a more comprehensive way, first in reference to the **shortfalls inherited from past cuts in defence investments**, and second to the **present return of war to Europe**, which stands as a true paradigm shift.

Up to now most European militaries have been largely geared up for low- to mid-intensity operations. This is explained by the **sustained post-Cold War defence reductions**, followed by further cuts after the 2008 economic crisis, and also by the **overall reorientation** away from territorial defence toward crisis management missions and "out of area" interventions.

The conjunction of these two trends, deep budgetary cuts and focus on expeditionary operations, led to severe reductions in overall force volumes, equipment quantities, and stockpiles – now further depleted by the support to Ukraine – as well as a neglect of the capacity to operate full-spectrum. It was presumed that opponents would be low-level and asymmetric, while European forces would always enjoy

¹ "We invite the Commission, in coordination with the European Defence Agency, to put forward an analysis of the defence investment gaps by mid-May and to propose any further initiative necessary to strengthen the European defence industrial and technological base."

information and air superiority. In addition, it was also assumed that existing shortfalls and missing high-end capabilities would be mitigated by non-EU NATO Allies, first and foremost the US.

Several of these assumptions could prove inadequate in the future, with the real possibility of a non-article 5 conflict involving high-intensity warfare and large-scale operations around Europe or beyond, and with the support from US forces possibly constrained by contingencies in other theatres.

Accordingly, **defence investment gaps** should be understood both as **deferred investments** at the national level, but also and more broadly as what is needed at the EU-wide level for Member States to be able to address a situation comparable in scale and intensity to the on-going war in Ukraine. Such strengthening of national capabilities will meet the objectives of the Strategic Compass (including the Rapid Deployment Capacity) and will also directly benefit NATO, which remains the foundation of collective defence for its members. This means being able to conduct the full spectrum of military tasks and **to address a large-scale conflict situation, possibly involving a “symmetric” opponent** on the periphery of the Union or beyond. For the EU, the challenge is how to adjust upward the existing collaborative instruments and processes, to help Member States develop capabilities “at scale”.

MAKING BETTER USE OF EXISTING EU TOOLS

The **Strategic Compass** identifies the need to develop full spectrum forces that **are agile, interoperable, technologically advanced and resilient**. It also calls on the Member States to invest more in **strategic enablers** and advance towards **full spectrum high-end capabilities**.

The goals and overall ambition set out in the Compass have been informed by the **Capability Development Plan (CDP) and the Coordinated Annual Review on Defence (CARD)**, which highlight gaps at both national and EU level, spanning the full capability spectrum. The output of these instruments is coherent with the requirements stemming out of the respective NATO processes, notably the NATO Defence Planning Process, and will enhance the readiness, robustness and interoperability of the Member States’ single set of forces.

CDP and CARD are therefore a sound foundation upon which to build **an analysis of defence investment gaps**. The most comprehensive EU-level source of information on defence investment is **CARD**. Its raw data contains significant information on Member States’ defence investments, including on national priorities and short-term procurement of equipment. **CARD was designed to measure performance against EU capability development priorities agreed by Member States** in the Capability Development Plan. On that basis, CARD identifies collaborative opportunities to close capability gaps across all planning horizons. The political orientations and guidance provided by Member States in the Strategic Compass will be reflected in the upcoming CDP revision, as well as in the next CARD report to be presented to Defence Ministers in November 2022².

However, the **new security environment forces us to speed up** all envisaged efforts in the short term, and to shorten the timelines envisaged to overcome these gaps. While making full use of our instruments (CDP, CARD), as well as our implementation frameworks and programmes (PESCO, EDF), we must

² The decision regarding the next revision of CDP is to be made at the EDA Steering Board in June 2022. The second CARD cycle, reviewing the implementation by Member States of EU Capability Development Priorities resulting from the 2018 CDP and launched before the Strategic Compass was adopted, is currently on-going with a 2022 CARD Report to be delivered in November 2022. The third CARD cycle is expected to start in the Autumn 2023, synchronised with the NDPP Review.

deliver **sharper** (higher end) capabilities and **forward** their delivery as much as possible, preferably in a cooperative way.

Accordingly, the analysis displays findings across three **overlapping time horizons**:

- **First**, an immediate step should be to work on the combat **readiness** of forces and capabilities;
- **Second**, starting in 2022-23 with an impact within the next 5 years, the focus should be placed on **augmenting the mass and volume of existing capabilities**;
- **Third**, in the mid-to-long term, starting as soon as possible but with an impact in 10 years and beyond, the focus should be on **reinforcement and modernisation**: adapting R&T activities and capability development to cope with the possibility of large-scale, high-intensity operations.

Anticipating the expected revision of the CDP, the measures proposed below along three lines of action do not define new priorities but are directly drawn from the results of the EU defence initiatives and complement them. Considering the new security environment, these lines of action focus on **areas** to be investigated and “**scaled up**”.

Care must be taken across all three-time horizons that the material development, i.e. technical and technological aspects of capabilities, is combined with high attention to the recruitment, education, and training of qualified personnel.

ANALYSIS OF DEFENCE INVESTMENT GAPS ALONG LINES OF ACTION

1. BE PREPARED: READINESS INCLUDING REPLENISHMENT

This **first line of action**'s objective is to improve as soon as possible the **combat readiness** of **existing forces and capabilities**. This would also contribute to the **EU Rapid Deployment Capacity**, allowing the swift deployment of a modular force in a non-permissive environment as set up in the Act chapter of the Strategic Compass. Thus, gaps are here areas where efforts are urgently required based on activities conducted with Member States. The focus is on ensuring the availability of **sufficient initial provisions and stockpiles of ammunition** (including specific missiles), initial supplies and logistics support, force protection and mine counter measure equipment, while **training forces**, testing and hardening chains of command, and improving data collection means and information sharing.

This first line of action thus encompasses mainly investing in **training and rapid joint procurement of initial provisions**. Such joint procurement, possibly incentivised at EU level, requires discussing with manufacturers how to increase their existing production lines/capacities. Coordination with NATO will be also important to avoid unnecessary duplications in carrying forward these activities.

2. AUGMENT EXISTING FORCES AND CAPABILITIES

In a **second line of action** starting in parallel, proposed measures – expected to deliver within the next 5 years – are aimed at **reinforcing existing force structures quantitatively and qualitatively** by incorporating cutting edge military capability available on the market or upgrading existing ones. Main efforts should be focused on **areas and enablers** which were **neglected in the past** but would certainly be required in large-scale, high intensity scenarios while also useful for most kinds of operations. These include, inter alia, **augmented capabilities** in air-to-air refueling or counter-UAS, modernisation of fighters, air defences, and artillery, as well as cyber capabilities, communication and information

systems or earth observation and satellite communication. Although Member States have declared in the CARD framework most of these areas as a short-term (next five years) priority, planned investment in many cases does not begin before 2023-2025. In some other cases, these priorities are currently unfunded and are thus unlikely to be delivered in the short-term.

3. REINFORCE AND MODERNISE CAPABILITIES

Beyond the recommendations for short and medium-term activities for Member States and the EU, the analysis should also not lose sight of long-term perspectives: **repairing the past does not mean winning the future.**

Building on the 2020 CARD Report recommendations to reduce the fragmentation of the European capability landscape, the ‘Invest’ chapter of the Strategic Compass stresses the need to plan jointly the next generation of full-spectrum military capabilities and acknowledges the initiatives already undertaken by some Member States, such as next generation Main Battle Tanks or fighter aircraft.

In a **third line of action** focusing on the mid- to long term horizon, filling the investment gaps should remain driven by the risk of a high-intensity, large-scale conflict on the periphery of the Union or beyond. Accordingly, R&T activities and capability development efforts should be adjusted upward as soon as possible, both in terms of overall volume and technological edge.

Ensuring that the reinforcement of defence capabilities is resilient in the long term requires a **cooperative approach** towards **innovation** and **Emerging and Disruptive Technologies (EDTs)**, due to their potentially revolutionary impact on future military capabilities and operations. EDTs commonly include Artificial Intelligence (AI), big data, quantum technology, robotics, autonomous systems, new advanced materials, blockchain, hypersonic weapons systems and biotechnologies applied to human enhancement. For instance, hypersonic weapon systems have recently made their appearance on the battlefield; understanding the underlying technologies across the entire engagement chain (i.e. from early warning to interception to battle damage assessment) will be key to ensuring a timely and effective reaction.

The Focus Areas Main Battle Tanks, Anti-Access/Area Denial (A2/AD), Defence in Space, Enhanced Military Mobility, and European Patrol Class Surface Ships (EPC2S) identified and agreed upon in the CARD 2020 Report remain fully relevant in the current and foreseeable security context. Based on an analysis of inherent collaborative opportunities, they were designed to encourage Member States to address closely together these particular areas (among agreed EU capability development priorities), thus reducing excessive fragmentation. Addressing these gaps would not only structure the EU defence landscape on key future capabilities, but also create, at European level, operational added value through increased interoperability, economies of scale, rationalised sustainability, and simplified deployability.

Complementing these Focus Areas to fully address a more demanding security environment, several additional critical gaps should also be considered and addressed cooperatively. In particular, **Suppression/Destruction of Enemy Air Defence (SEAD/DEAD)** capabilities, that are a serious gap today, will prove key in countering the proliferation of air defences and guarantee EU Member States’ freedom of action. Likewise, **Space Situational Awareness (SSA)** underpins space-based services that are indispensable for the conduct of military operations in all domains. The **digitalisation of ground combat**, including manned/unmanned teaming, and the **multidimensional protection of naval forces** will prove equally critical.

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Bringing the EU capabilities landscape “at scale” with the new strategic environment will require time and dedicated efforts, including sustained budgetary resources. It will be essential in that respect not to lose sight of the twin imperative of **preparing the future** and **working collaboratively** towards an efficient, coherent, and defragmented EU capability landscape. The current momentum to increase defence capabilities should not side-track Member States from pursuing the path of wide cooperation, **nor should repairing the past come at the expense of winning the future**. To maximise efficiencies while strengthening the European Defence Technological and Industrial Base (EDTIB), **filling capability gaps will require not only increased national resources but also EU incentives, mechanisms and frameworks** based notably on PESCO and EDF. In addition, the potential of VAT exemption measures, additional funding programmes, or actionable joint procurement and reinforced security of supply within the EU, should be explored, building on existing roles and available expertise. EDA stands ready to contribute in that respect.

DETAILED LINES OF ACTION

1. BE PREPARED: READINESS INCLUDING REPLENISHMENT

GAPS TO BE FILLED:

- Availability of sufficient initial provisions and stockpiles of ammunition (including specific missiles);
- Initial logistic supplies and logistic support (transport enablers, military engineering, petrol, oil and lubricants supply) to improve our ability to sustain high-intensity combat operations;
- Provisions of force protection equipment adapted to operational context;
- Training and certifying forces, and testing and hardening chains of command;
- Improving data collection means and info sharing.

TO ADDRESS THESE GAPS FOCUS SHOULD BE ON:

- **Training.** Although most of individual and unit training is done on a national or bilateral basis, additional multinational efforts to improve interoperability and efficiency have produced good effects in many specific areas (such as Multi-Domain operations, Airlift transport, Cyber operations, Air-medevac operations, rotary wing operations, RPAS, Space, C4ISR). However, there is a need to further develop quickly unit training at all levels, in complementarity with NATO whenever possible. This requires dedicated platforms for Cyber Exercises, as well as live, joint exercises in all domains (conducting for instance Mine Countermeasure exercises/missions involving EU navies with capabilities in mine sweeping). Combat training would also benefit from investment in simulators and synthetic environment, in order to train as we fight in complex environments. In addition, facilitating the **integration of military air capabilities** in the increasingly congested **European airspace** will be key in ensuring that military aviation continues to train realistically, and is able to operate in peace and conflict times within and from the EU.
- **Rapid joint procurement.** The first concrete measure could be to facilitate rapid joint procurement supporting the key capabilities and items listed above, such as ISR, SatCom, ammunition, transport enablers, logistic supplies, individual protection systems, and mine counter measure equipment. Such joint procurement, possibly incentivised at EU level, requires discussing with manufacturers how to increase their existing related production lines/capacities.

2. AUGMENTATION OF EXISTING FORCES AND CAPABILITIES

RECOMMENDED AUGMENTATIONS BY DOMAINS:

Air Domain

- **Modernisation of fighter aircraft**, flagged as an investment priority by a large number of Member States (MS), would help retain a sufficient overall volume of fighters in Europe – the development of next-generation air fighters should also be accelerated to keep this volume at a sufficient level. Modernising existing fleets should involve upgrading electronic warfare suites.
- **Air Defence-specific effectors** (with associated C2), in particular short range air defence (SHORAD) and ground-based air defence (GBAD), are identified as a priority but currently underfunded. Existing stockpiles of mid- and long-range air ammunitions should be augmented (Precision Guided Munitions and cruise missiles).
- **C-UAS (countering drones)**, is a capability where investments from MS are not at the level making it possible to cope with a growing challenge (declared in CARD as a short-term priority). This capability is constantly evolving, and the current industrial offer remains fragmented and of limited operational use. Although possible, rapid acquisitions would not be able to face current challenges without further development.
- **Weaponised medium-sized drones** have proven their efficiency in manned-unmanned operations. The rapid acquisition of capacities should go along with accelerating the development of future ones.
- Increasing **Air-to-Air Refuelling capability** (more tanker-aircraft) remains a priority even though recent investments have been significant in the EU. As the overall capability is dimensioned for peacetime, further investment should be pursued as called for in the Strategic Compass, building on the experience of the Multinational MRTT Fleet (MMF).

Land Domain

- **Combat Support (notably Artillery and counter Artillery)** is declared as a priority by a large number of MS in the CARD context, but associated budgets remain limited as they are mostly focused on peacetime, training activities.
- **Armoured ground combat, including Main Battle Tank (MBT), anti-tanks weapons, wheeled and tracked vehicles.** The land domain sector in the EU is historically the most fragmented and heavily driven by national considerations. The EU and its Member States should work on upgrading existing capabilities while in parallel developing and refining generic open communication architecture standards in collaboration with industrial players.

Maritime Domain

- **Naval Mine Warfare** is declared as a priority by many MS in the CARD framework, but with a limited level of investment which does not cope with the strategic context. Assuring maritime force protection is a prerequisite to any deployment of naval forces, lessons learned from recent conflicts demonstrate how important it is to be able to do active mine laying and as well to do mine-clearing. Thus, current mine warfare capabilities need to be further increased, keeping in mind that further

development based on unmanned systems is expected to deliver an enhanced capability and require an acceleration of projects, including the related PESCO projects.

Cyberspace Domain

- **Cyber capabilities** (notably Cyber Situational Awareness and information sharing, Cyber Deployable capabilities, improving cyber Exercise & Training, build cyber reserve forces and refreshing reservists through training), will certainly become a more prominent domain, requiring an increased operational engagement. The acceleration of existing related PESCO projects would allow to deliver earlier at EU level. The European Market for cyber security/defence products and services, despite of its existing capacities and ongoing programmes, is still fragmented, dependent on third markets, and does not provide a sound and trusted supply chain. The main challenges are related to estimated labour-force shortage, simulation and training, as well as to the integration of cyber-specific and disruptive technologies.
- **Resilient and interoperable Multi-Domain Command & Control (C2)** capabilities from the strategic down to the tactical level and across all domain boundaries are critical enablers for any military operation and mission. Two key areas have been identified to enhance the related capabilities, (1) contributing to the improvement of EU's cross-domain C2 capacities, and (2) providing a deployable joint interoperable C2 capability readily available for integration to be able to operate more efficiently with international and regional partners.
- **Interoperable communications and information systems (CIS)** Infrastructure including agile Line-of-Sight (LOS) and Beyond-Line-of-Sight (BLOS) Communications – compliant with the Federated Mission Network (FMN) Concept to enable “day one connectivity” – are needed to improve and strengthen autonomous, resilient, interoperable, quick and safe data/communication exchange, transfer and recording CIS and data link capabilities at tactical level.

Space domain

- **Earth observation** reinforces and extends the ability to constantly monitor large areas, typically through constellations of small/mini satellites. This is a priority identified by a limited number of MS with an envisaged investment of €3 to €4 billion before the mid-2020s. The PESCO project Common Hub for Governmental Imagery (CoHGI) could be further strengthened and accelerated, including by an increased level of participation. The fast growth of the number of European enterprises exploiting the open Earth observation satellites' immense amount of data made available through ESA and Copernicus will soon face a bottleneck in terms of skilled graduates. MS should also invest collaboratively to benefit from big data management and analysis through Artificial Intelligence (AI).
- **Satellite communication** remains a critical enabler for Member States' forces and EU CSDP actors to rapidly deploy tactical, operational and strategic communications tools/systems. Complementary to the EU Space Programme with EU GOVSATCOM and the EU Secure Connectivity Programme, and to overcome the heterogeneous distribution of SatCom capabilities across the EU, to reduce dependency on non-EU SatCom service providers and to have quick, secure, resilient and guaranteed access to an enhanced SatCom service portfolio, investment into new constellations, launchers, European Waveforms and SatCom training is key to ensuring and improving resilient Command and Control and information superiority.

3. REINFORCE AND MODERNISE CAPABILITIES

While the second line of action was mainly inferred from CARD data, this third line of action complements the exploitation of CARD, in particular the Focus Areas, with elements derived from the Strategic Context Cases (SCCs) – SCCs guide MS' efforts to implement in a collaborative manner the EU agreed Capability development priorities throughout different time horizons, and incorporate R&T opportunities³.

Reinforcing defence capabilities in an enduring, long-term way will require a coordinated and cooperative approach towards **Innovation** and **Emerging and Disruptive Technologies (EDTs)**, given their potentially revolutionary impact on future military capabilities and operations. While ambitious and resource-intensive research programmes are currently implemented by major world powers, Europe risks lagging behind, potentially facing disruptive surprises in the future. For instance, AI solutions could provide significant advantages in the field of cyber security, by enabling the development of self-configuring networks capable of detecting vulnerabilities and self-patching. AI will also make it possible to organise, combine and analyse large datasets based on imagery or the Internet of Things. Militarily, this will mean improved logistics and operational efficiency, real-time monitoring of assets, predictive assessments of campaign plans, and quicker decision making.

FOCUS AREAS:

- **Main Battle Tanks** (MBTs – *Land Domain*) combine mobility, firepower and protection and are the backbone of land operations. Beyond updating existing fleets in the mid-term, it will be necessary to introduce more modern and capable MBT, benefiting from R&T on hybrid power trains, 360 degrees enhanced shared situational awareness and active protection systems. Developing modular and open platforms that can be easily upgraded and reconfigured in light of technological evolutions will improve interoperability and logistical standardisation as well as security of supply.
- **A2/AD** (*Air Domain*) is a critical capacity to protect citizens, forces and infrastructures, and is also required to ensure freedom of action in a contested air space. The fast increase in air threats, from high end capacities including air precision strikes, cruise and ballistic missiles, to low-speed, low signature threats like swarms of UAS, requires to be able to integrate and combine radars and effectors (rapid-fire, various kinetic and non-kinetic capacities) as active defence systems. Investments are needed in developing capacities to detect (long range radars / early warning) and neutralise adversary systems (notably SHORAD and deployable tactical anti-missiles, hypersonic missiles, directed energy weapons), through integrated C2 systems. An acceleration of the related PESCO project TWISTER would positively impact the capability landscape in that domain. European industry has strong competencies in all dimensions of A2/AD (sensors, effectors, C2). Further investment could scale up production facilities, in particular regarding effectors.
- **Defence in Space** (*Space Domain*) aims at providing and ensuring unconstrained access to space-based services to support all operations in more contested environments. The related PESCO project Defence of Space Assets could be further strengthened to reach these important capabilities, including by an increased level of participation. The EDTIB's dependency on components and materials, as well as the exploitation of AI and on-board processing, are gaps to be tackled by MS.

³ SCCs include R&T opportunities by encompassing Technology Building Blocks (TBBs) stemming from the Overarching Strategic Research Agenda (OSRA).

- **Enhanced Military Mobility** (EMM – *Cross Domain*) enables effective, timely and safe movement and transport of personnel and assets within and beyond Europe. EMM is already a high priority of strategic relevance amongst all MS. High-intensity operations require to consider Military Mobility in a holistic manner, in terms of improved resilience, Air and Sea Lift capabilities (including unmanned systems), logistical support and enhanced Command and Control. In this respect, an acceleration of the related PESCO projects Military Mobility, Future Medium-size Tactical Cargo, and Strategic Air Transport for Outsized Cargo would positively impact the capability landscape.
- The Focus Area **European Patrol Class Surface Ships** (EPC2S - *Maritime Domain*) aims at improving coherence of MS dedicated ships in the future to ensure that military presence and power projection at sea will meet the future challenges of an ever-evolving operational environment. ISR capabilities and the protection of sea lines of communications will benefit from high end and interconnected ships augmented by unmanned platforms for surface and underwater control and electronic warfare. This new class of ship characterised by innovative energy generation technologies and AI-based combat systems will have an impact on both Maritime Situational Awareness and Surface Superiority, adapted to sea basins with possible configurations based on Member States' needs. An acceleration of the related PESCO project EPC would positively impact the capability landscape in the maritime domain. Although characterised by a high degree of fragmentation, the European military shipbuilding sector is highly competitive across the whole range of naval ships and almost the totality of its core systems and components.

ADDITIONAL CRITICAL GAPS TO BE POTENTIALLY ADDRESSED:

The following gaps do not proceed from a comprehensive analysis of these domains but represent key points of concern complementary to Focus Areas, to be further investigated.

Air Domain

- Denying adversaries' freedom of action in areas of operations requires the ability to destroy A2/AD "bubbles" that are more and more effective, based on the proliferation of GBAD systems and their digitalisation. **Suppression/Destruction of Enemy Air Defence (SEAD/DEAD)** capabilities are already today a critical gap, as MS have very few specialised sensors and weapons to locate and target GBAD systems. Suppression will typically require loitering ammunition or UAS swarms, which are costly and complex to develop.

Land Domain

- **Digitalisation of ground combat**, manned/unmanned teaming in combined air support to ground is influencing capability development across all domains. A structured joint and multinational approach will improve interoperability and standardisation amongst land forces as well as with civilian authorities.

Maritime Domain

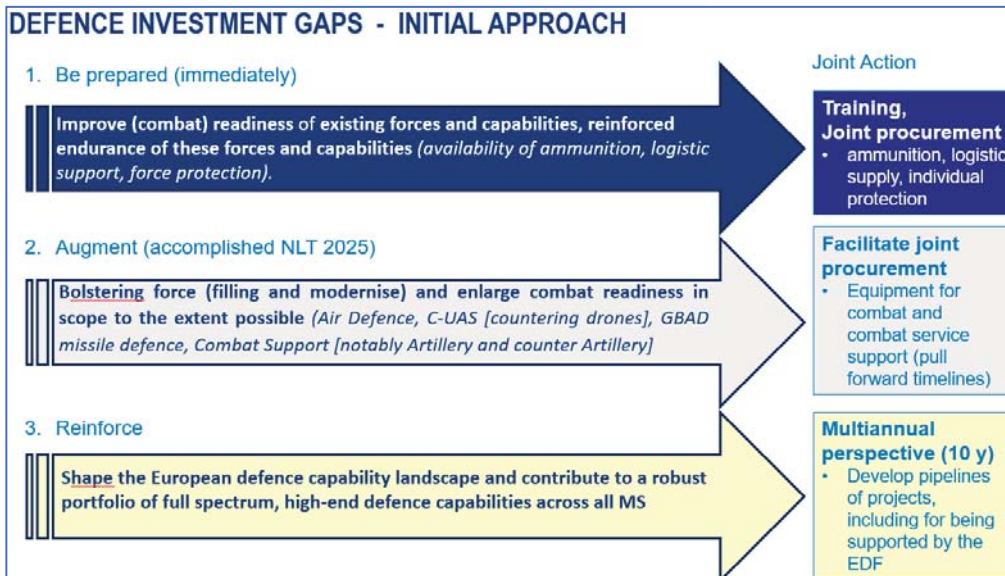
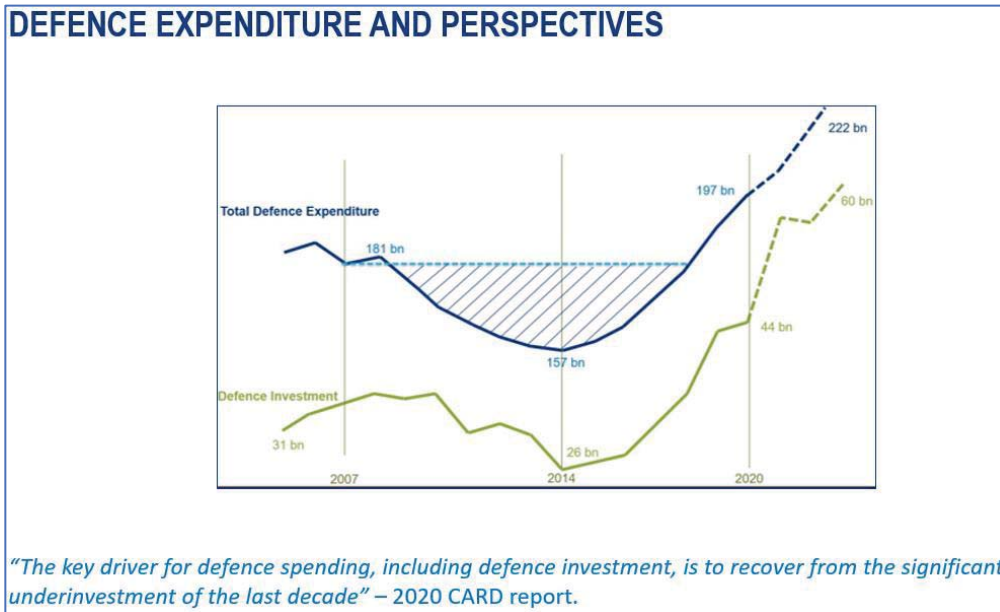
- **Multidimensional protection of naval forces** (*Anti-Aircraft Warfare (AAW), Anti-Surface Warfare (ASuW), Anti Subsurface Warfare (ASW), Maritime Mine Counter Measures (MMCM), Mine Warfare*) will require investments to adapt the related threat detection and mitigation. EU Member States Maritime Patrol Aircraft (MPA) fleets are ageing, and there is a need to accelerate their replacement, notably to ensure ASW role. The EDTIB hosts essential assets in many of these

capabilities, notably leading Anti-Submarine Warfare capabilities at sensors, platforms, underwater communication, and processing software levels.

Space Domain

- **Space situational awareness (SSA)** is an underpinning capability, fundamental to enable all space operations, to protect satellites and to reinforce EU autonomy for detection, tracking, identification and characterisation of space objects. Accordingly, SSA is key to ensuring space-based communication and information services that are indispensable to conduct military operations in all domains.

SUPPORTING GRAPHS



1. BE PREPARED

Combat Readiness, including replenishment

Training

- Training & certifying forces, in all domains (notably Cyber), in realistic & complex environments
- Testing & hardening chains of command

Joint Procurement

- Ammunition (including specific missiles)
- Logistic supplies
- Logistic support (transport enablers, military engineering, petrol, oil and lubricants supply)
- Force protection equipment (individual systems, mine counter measure equipment...)
- Data collection means and info sharing (ISR, SatCom, ..)

2. AUGMENT EXISTING FORCES AND CAPABILITIES

Augment mass & volumes

Land domain

- Combat Support (notably Artillery and counter Artillery)
- Armoured ground combat, including MBT, anti-tanks weapons, wheeled and tracked vehicles

Cyberspace domain

- Cyber capabilities
- Resilient and interoperable Multi-Domain Command & Control (C2)
- Interoperable communications and information systems (CIS)

Air domain

- Modernisation of fighter aircraft
- Air Defence-specific effectors
- Counter UAS
- Weaponised medium sized drones
- Air-to-Air Refuelling

Maritime domain

- Naval Mine Warfare

Space domain

- Earth observation
- Satellite communication

3. REINFORCE AND MODERNISE CAPABILITIES

Address the future

