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EU defence capability development

Plans, priorities, projects

by Daniel Fiott

Enthusiasts of strategic studies will be familiar with the tripartite, quasi-mathematical equation of *ends*, *ways* and *means*. Over a period of 18 months or so – beginning in June 2016 with the publication of the EU Global Strategy (EUGS) and culminating with Permanent Structured Cooperation (PESCO) in December 2017 – the European Union has made strides on both *ends* and *ways* for greater cooperation in the area of defence. On *ends*, the EUGS has made clear that while Europeans 'live in times of existential crisis' the EU aims to improve security, democracy and prosperity and to invest in the resilience of states and societies in its wider neighbourhood in an integrated manner, while also supporting cooperative regional orders and a rules-based global order.[1] On *ways*, the EUGS indicates that the Union must develop full spectrum capabilities as part of its overall approach to foreign and security policy and it must 'systematically encourage defence cooperation and strive to create a solid European defence industry'.[2]

On *means*, however, there is still some way to go before the EU has the defence capabilities required to meet its strategic objectives. Despite the publication of an Implementation Plan on Security and Defence (IPSD), the development of a Coordinated Annual Review on Defence (CARD), a European Defence Fund (EDF) and PESCO, there are challenges related to defence capability development in a Union of 28 – soon to be 27 – member states. Governments still largely plan for and invest in their defence on a national basis and they still have different capability development priorities. Given the importance of the industrial dimensions of

Summary

> The Capability Development Plan will take on more importance given the Coordinated Annual Review on Defence, the European Defence Fund and Permanent Structured Cooperation, but expectations should be managed in the short term.

> With the introduction of the European Defence Fund, the Capability Development Plan now balances capability shortfalls that need addressing in the short term with longer-term future technology and industrial needs. Balancing military requirements and industrial preferences is a challenge.

> The Capability Development Plan is crucially important for capability prioritisation, but there is also a clear need to ensure coherence and effective governance between all of the recently agreed initiatives on security and defence.

capability development, the fragmented nature of the European defence market persists and member states have different sized defence industrial bases. Additionally, European collaboration on capability development has hitherto been challenging, even when collaborative efforts have resulted in the joint production and acquisition of capabilities.

Of course, the CARD, EDF and PESCO are frameworks and incentives that have been designed to progressively overcome the failures of the past. Yet the question of how to successfully develop defence capabilities on a collective EU basis remains salient. What defence capabilities could the EU collectively prioritise now and in the future in a context of finite financial resources and rapidly evolving strategic and technology trends? This is a major question that sits at the heart of the 2018 revision of the EU's Capability Development Plan (CDP) (herein 'CDP18'). Jointly developed by the European Defence Agency (EDA) and the EU Military Staff (EUMS), the first CDP was published in 2008 (and updated in 2010) and a second revision occurred in 2014. The CDP is both a document and a process that clarifies existing capability shortfalls, plans for future technology trends, explores avenues for European cooperation and details lessons learned from the EU's military missions and operations. Looking to the future, the CDP might be seen as the glue that can enhance coherence between the CARD, EDF and PESCO.

The expectations for the CDP18 are high for at least two reasons: first, the introduction of initiatives such as the EDF and PESCO demand an effective mechanism for capability prioritisation; and second, there is a greater need for policymakers to better understand the shifting strategic and technological landscapes that affect capability development. To this end, how has the CDP evolved in light of the introduction of initiatives such as the CARD, EDF and PESCO? However, the two inter-related factors of defence capability prioritisation of relevance to the CDP must also be analysed. Namely, the balance between military requirements and capability shortfalls on the one hand and future technology needs and industrial perspectives on the other. The CDP is more than just a document because it sits at the intersection of the fundamental challenge of defence capability development. How might shortfalls/requirements and future technology/industrial considerations be balanced in light of the CARD, EDF and PESCO? And what methodology undergirds the CDP process?

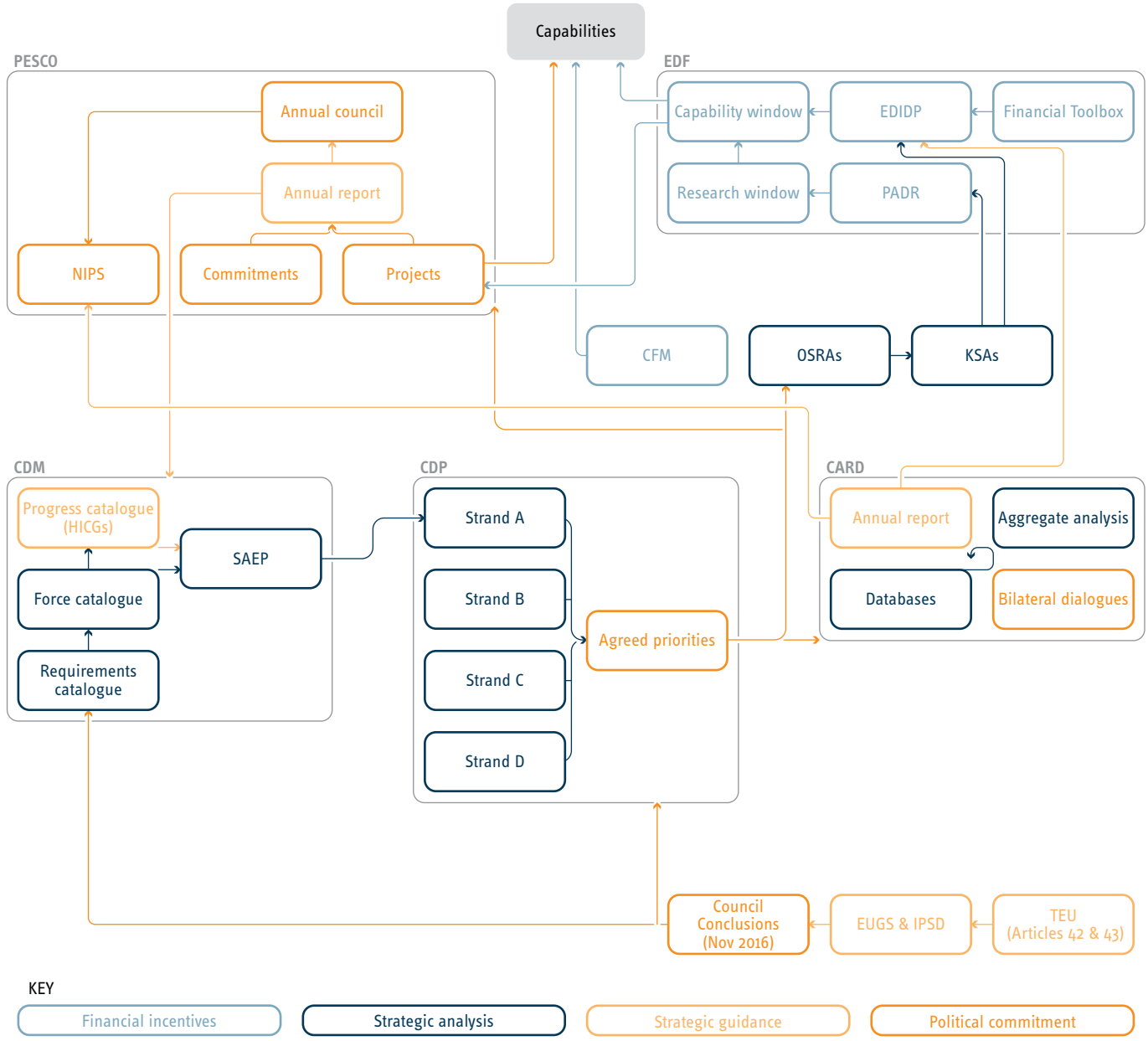
Understanding the CDP process

The CDP is a document that details the EU's defence capability priorities, but the Plan is not simply a wish list of defence capabilities. Rather, it is a process based on a specific methodology (see Figure 1). In fact, the guidance that the CDP provides to the Council are based on four different working 'Strands': 'Strand A' identifies existing capability shortfalls; 'Strand B' concentrates on capability trends out to 2035; 'Strand C' looks at the potential for European cooperative activities; and 'Strand D' assesses the lessons learned from Common Security and Defence Policy (CSDP) military missions and operations. Once this four-pronged process is complete, the CDP process results in the articulation of 11 priority areas so that EU member states will have a better common understanding of short-term capability requirements, what avenues for enhanced European defence capability cooperation exist over the medium-term and which longer-term defence capability needs should be planned for (up to 2035). Yet the CDP's four individual strands are based on their own respective working methodologies.

Take, for example, the work on 'Strand A' on identifying capability requirements. Here, through the EU's Capability Development Mechanism (CDM), the EUMS seeks to answer three basic questions. First, what is the political guidance directing the EU's capability development plans? The EUMS derives the EU's military level of ambition (LoA) and strategic priorities from the Treaty on European Union (TEU) (see Articles 42 and 43)[3], the EUGS and the Council Conclusions of 14 November 2016 as agreed by the Council and its expert bodies the EU Military Committee (EUMC) and the Political and Security Committee (PSC). Second, based on this guidance what should be the EU's military requirements? This question is answered through the 'requirements catalogue' (RC) which relies on a set of strategic planning assumptions and five 'illustrative scenarios' that are based on the EU's current LoA (to be phased in over the short to medium term) including: i) peace enforcement; ii) conflict prevention; iii) stabilisation and support for capacity building; iv) support for humanitarian operations; and v) rescue and evacuation. Third, once requirements have been set how does the EU meet its capability needs? Here a 'force catalogue' (FC) becomes critical because it lists what capabilities EU member states can contribute to CSDP military operations and missions based on a military questionnaire that is circulated among member states.

Yet simply listing capabilities is not enough. Here, an exercise known as 'Scrutiny, Assessment, Evaluation and Prioritisation' (SAEP) is conducted under the CDM that compares the FC and the RC. The SAEP serves as the main reference and scrutiny mechanism for Strand A because it sets capability shortfalls against potential operational risks and vulnerabilities that may emerge during

Figure 1: the EU's defence capability development policy process



Data: EUISS

CSDP missions and operations. The SAEP is also therefore relevant to Strand D, which takes stock of the capability-relevant lessons learned from EU military operations and missions. The SAEP feeds into the 'progress catalogue' (PC) which highlights the critical capability areas that are needed to meet the EU's LoA, plus it highlights EU-specific capabilities against broader European capability development planning needs. A revised version of the PC was approved by the Council on 25 June 2018. Interestingly, for the first time the PC will result in the definition of High Impact Capability Goals (HICGs) that define capability domains in key strategic areas (in full dialogue with NATO's identified shortfalls). It is hoped that the HICGs will provide further guidance for Strand A. Finally, it should be noted that the EUMS rely on a particular taxonomy during the CDM process called the 'Capability Code and Statement' (CCS). The CCS not only lists specific military capabilities but it also assigns each capability a unique alphanumeric code and description. Importantly, the EU and NATO share CCS codes so that EU shortfalls and requirements can be compared to NATO's own priorities.

Moving from the CDM into the CDP is a critical moment for the credibility of EU defence capability prioritisation. A key step in the process – where the CDM and CDP meet – is the generation of the so-called Generic Military Task List (GMTL) by the EDA. For the purposes of Strand A, the GMTL is a

taxonomy that converts more than 300 CCS codes into 130 tasks so that it is easier to find political agreement at the level of the Council of the EU once the CDP's results emerge. Yet, the GMTL serves as the basis of analysis for Strands B, C and D, too. Under Strand B, the EDA analyses future capability needs out to 2035. Here, the Agency draws on external expertise through specialist studies and input. For example, on 21 June 2017 the EDA convened experts from the EU member states, the EUMC, the EUMS, the European Commission and NATO Allied Command Transformation (ACT) for a three-day tabletop exercise to identify capability trends, military requirements and military-strategic future perspectives. Strand C also benefits from the GMTL because it allows the EDA to identify cooperative areas and to factor in industrial considerations. Once the individual work strands are complete, the overall CDP analysis is then forwarded to the Council of the EU for their consideration.

Military requirements & capability shortfalls

One of the chief reasons why the CDP was established in 2008 was to help address the EU's critical capability shortfalls. In the past, these shortfalls were based mainly on CSDP military operations and missions. One of the ways in which CDP18 differs from its two predecessors relates to the different strategic and technological climate in which the document has been drafted. Under the HLG 2003 adopted in 1999, the planning assumption was that the EU should be able to deploy up to 60,000 troops within 60 days for up to one year for crisis management operations. After the adoption of the European Security Strategy in 2003, and the HLG 2010 adopted in 2004, this planning assumption was validated but further requirements were identified. This would not only result in the development of the EU Battlegroups in 2007, but also a commitment to acquire critical strategic enablers such as strategic air, sea and land lift capabilities (air transport and an aircraft carrier) and command and control (C2) capabilities.[4]

However, in 2016 the introduction of the EUGS and the subsequent Council Conclusions on security and defence in 14 November 2016[5] broadened the EU's LoA on security and defence. The EU still wishes to conduct crisis management tasks and to build the capacity of partners and to this end the Council Conclusions confirm the TEU's (Articles 42 and 43) and EUGS' focus on joint crisis management operations, joint stabilisation operations, military rapid response operations, air security operations, maritime security and surveillance and security sector reform. However, the Conclusions also promote a third (new) set of possible types of scenarios for the EU's military planners to grapple with: the need to protect the Union and its citizens. The introduction of this third set of possible scenarios broadens the planning assumptions under both the CDM and CDP because it presupposes that the CSDP could support scenarios including the protection of networks, critical infrastructure and borders; keeping the global commons open; conducting civil protection and disaster relief; countering hybrid and cyber threats; and combatting terrorism, people and arms trafficking and organised crime.[6] These new possible scenarios also assume that concomitant civilian and military capabilities will be made available.

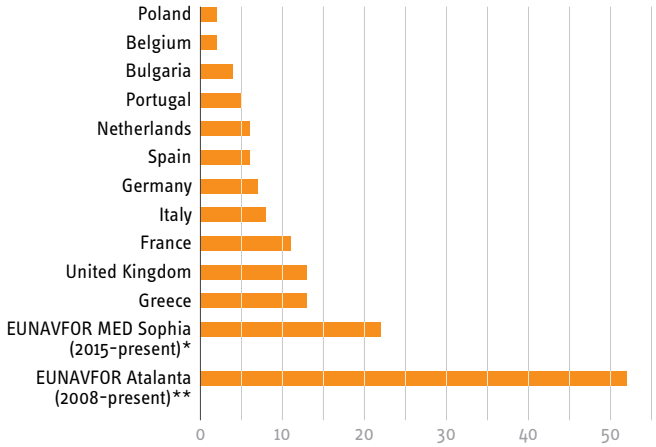
In this regard, a challenge for the CDP is to also quantitively and qualitatively identify capabilities for this wider set of possible scenarios, especially as the Council Conclusions of 14 November 2016 do not unsurprisingly specify in any numerical granularity the types of defence capabilities required for the EU's new LoA. Instead, the identification of requirements emerges through the CDM when it specifically details what type of air, naval, land and other capability inventories are required to support each of the possible scenarios the EU could deploy for or support. In reality, even without the new LoA there remain a number of capability shortfalls including: air-to-air refuelling interoperability, intelligence, surveillance and reconnaissance (ISR) and airlift capabilities. Despite the fact that many EU member states are now purchasing airlift capabilities (e.g. the A400M) and developing ISR capacities (e.g. EuroMALE), capability development is a notoriously slow and expensive process. In this respect, there can be a mismatch between the expectations of operational planners and the realities of defence procurement processes. The timescales involved in the operational planning process and the capability development process are naturally different. Operational planners rightly think in terms of immediate needs, but capability developers require decades to develop a particular weapons system.

The difficulties inherent in EU capability development could be amplified given that the EU now has to plan for a wider range of possible scenarios, all while one of the Union's most important military actors is leaving. The dilemma for Europe is paradoxical in that a higher LoA on defence implies the need to make ready and procure more capabilities, and this may actually result in more shortfalls when the CDP is conducted in the future. Here, the availability of existing capabilities should not be underestimated, especially given that each EU member state only has a single set of forces. The availability of capabilities for CSDP military missions and operations is contingent upon factors such as whether forces and capabilities are deployed on non-EU operations, maintenance and repair, the availability of support capabilities and strategic enablers and the demands of national

defence. Figure 2 shows a comparison between the current EU member state inventory stocks of frigates and the number of frigates that have been deployed as part of EUNAVFOR Atalanta and EUNAVFOR Sophia rotations since 2008 and 2015, respectively. Notwithstanding the fact that EUNAVFOR frigate rotations may see the same vessel deploy more than once, capability commitments for such operations are not negligible.

Despite this challenge, however, a number of initiatives have been developed to ensure that both the CDM and CDP can take better stock of the capability landscape in Europe. The first major policy shift has occurred under the CDM because planners working on the FC, RC and PC are now working to factor in Europe's complete capability picture – including EU member state assets listed under the NATO Defence Planning Process (NDPP). Under the CDM, the aim is to avoid simply listing CSDP-specific capabilities because there is growing recognition that, because EU member states and NATO allies only have a single set of forces, the individual planning processes of the EU and NATO cannot afford to diverge. In the spirit of the EU-NATO Joint Declaration of 2016, both the EU and NATO are working to harmonise their data collection methods for capability development as part of the 42 action points agreed to in December 2016. Fortunately, the EU and NATO share a CCS which means that the RC already accurately highlights areas where the capability shortfalls of each organisation overlap.

Figure 2: EU frigate inventories and CSDP operational assets



* EUNAVFOR Med Sophia has been deployed in the central Mediterranean since 2015. Currently, seven naval vessels are deployed under the operation and two of them are frigates. See EEAS.

** EUNAVFOR Atalanta has been deployed off the Horn of Africa since 2008. On average, four to six surface combat vessels are deployed in any given year. Presently, only one frigate (ITS Carlo Margottini) is on operation. See EEAS.

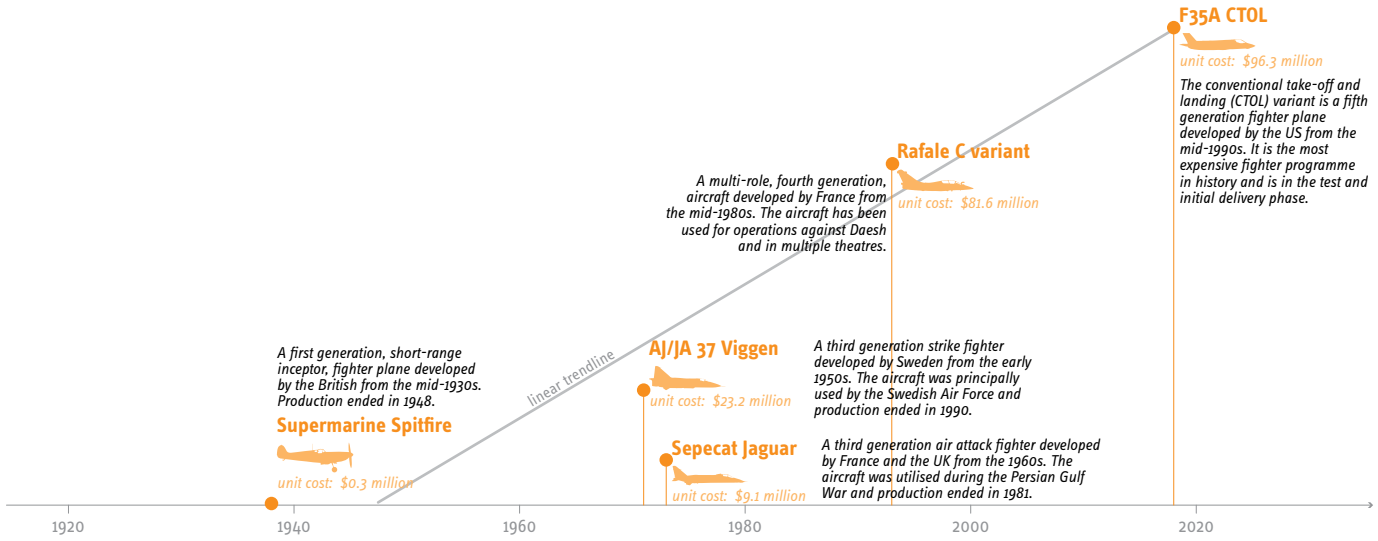
Data: EEAS[7], IISS[8]

Second, the introduction of the CARD could in time provide a more complete picture of the European capability landscape with a view to enhancing defence planning synchronisation and identifying possible avenues for cooperation on defence technology. To be clear, as a stand-alone initiative CARD does not lead to the prioritisation of defence capabilities per se, but rather serves as a mapping exercise that could greatly enhance Strands A, B and C of the CDP. One of the complaints of the past was that EU military and policy planners had limited understanding of Europe's capability landscape beyond CSDP. Past versions of the CDP did not benefit from having a comprehensive capability snapshot even though (since 2007) the EDA has made available a collaborative secured online database (CODABA) for member states to share defence planning information with one another. However, CODABA will now serve as the basis for the CARD. In any case, PESCO demands member states share information through the database under binding commitments six and seven.

Of course, expectations for how far the CARD can inform the CDP18 process need to be managed because the first full cycle of the CARD will occur in 2019 – thus, after CDP18 has been released. While CDP18 will still benefit from the bilateral dialogues that are currently taking place between the EDA, the EUMS and each member state under the CARD, the Review is still in its preparatory phase and the first trial CARD report will only be ready for presentation to EU defence ministers in autumn 2018. Future cycles of the CARD will initially be presented to EU defence ministers on a biennial basis at Council gatherings. This highlights the importance that should be (and is being) given to ensuring coherence between all of the EU's latest defence initiatives.[9] The CARD should be important in future years because it allows the EU for the first time to be able to feed into the CDP (particularly Strands A, B and C), as well as PESCO and the EDF, a more complete picture of the European capability and defence planning landscapes based on the member states' respective national plans.

The initiation of PESCO could also aid the CDP by leading to greater commitment to the Plan on the part of the 25 PESCO participating member states. In particular, binding commitments 10, 12, 13, 15 and 16 all stress the need for PESCO members to enhance the readiness and interoperability of force packages for CSDP.[10] Whereas past versions of the CDP rested on the goodwill of member states to provide information and follow through on capability pledges under the FC, future versions of the CDP could benefit from increased political will because of the annual review process embedded in PESCO. Most importantly, when the CDP and CARD are combined they will inform the National Implementation Plans (NIPs). The NIPs provide the analytical basis for the PESCO annual review by detailing how member states are living up to the binding commitments and the progress being

Figure 3: fighter aircraft cost inflation



Data: Multiple[11]

made on the PESCO projects. While CDP18 will be published after the first batch of 17 PESCO projects have already been identified, it can play a role for the second wave of projects due by the end of 2018 and for future phases of projects.

Technologies & industrial considerations

The CDP should not just be seen as merely a tool for identifying capability priorities, even though the combination of new initiatives such as the CARD, EDF and PESCO and the EU's new LoA on security and defence make this task even more indispensable. Indeed, the CDP is also used for the purposes of horizon scanning for future capabilities (Strand B) and there are important industrial considerations at stake here in terms of new technological domains and the increasing costs of weapons systems.

As Figure 3 shows, despite numerous factors that dictate the unit cost of aircraft (e.g. production runs and orders), fighter aircraft costs have increased over time as systems have become more technologically advanced. The escalation of capability costs is just one reason for closer European cooperation on defence capability development. Another reason is that by nurturing the industrial ability to produce and maintain high-tech systems, Europe's defence industry can climb the value-added ladder which can only improve the EU's strategic autonomy. As the 15th PESCO commitment states, the CDP's identified 'capability projects shall increase Europe's strategic autonomy and strengthen the European Defence Technological and Industrial Base (EDTIB)'.[12] To this end, the CDP is used to chart out technology areas that will not only enhance the effectiveness of CSDP but also support the EDTIB by identifying key technology areas.

Working towards the objective of an enhanced EDTIB, the conclusions of CDP18 will be supported by two initiatives that have been developed by the EDA. The first initiative is called the Overarching Strategic Research Agendas (OSRAs), which are designed to assist the defence research activities of the EU by identifying key research and technology (R&T) building blocks out to 2025, 2035 and 2045. Based on the EDA's in-house analysis and the work conducted under Strand B of the CDP, OSRAs are designed to assist with the identification of R&T priority areas with a view to supporting the EDF's research window and Preparatory Action on Defence Research (PADR). The second initiative is the so-called Key Strategic Activities (KSAs), which is designed to assist member states invest in industrial and technological areas that will help the EU maintain non-dependence in key defence industrial sectors. In this respect, Strands B and C of the CDP will inform the KSA process with a view to assisting member states to specialise in vital industrial areas.

Another key reason why capability development in the EU takes on industrial considerations is due to the introduction of the EDF and the European Defence Industrial Development Programme (EDIDP). The EDF has been established by the European Commission with a clear intent to invest in European capability programmes. This immediately raises the question of how the EU will prioritise programmes funded under the EDIDP over 2019-2020 (worth €500 million), and, eventually, under the capability window in the post-2020 period (worth approximately €1 billion per year). Consider also that 5% (or €650 million) of the planned €13 billion allocated to the EDF over

the next Multi-annual Financial Framework from 2021-2027 will be dedicated to disruptive technologies for defence.[13] CDP18 will be published in time to inform discussions about capability prioritisation under the EDIDP. In this regard, the Commission's Communication on the launching of the EDF makes clear that '[t]he coordination of investment decisions requires a common definition of needs and priorities. These will remain in the hands of the Member States'.[14] Yet to avoid a lack of coordination between competing national preferences for capabilities, the Commission also recognises that the CDP 'will be the key reference at the EU level of the systematic identification and prioritisation of capabilities.[15]

Yet the introduction of the EDF raises another feature of capability development: commercialisation. In particular, Article 173 of the Treaty on the Functioning of the European Union (TFEU) serves as the legal basis for the EDIDP and this treaty provision is predicated on improving the competitiveness of the European economy. As the TFEU states, competitiveness should imply 'speeding up the adjustment of industry to structural changes; encouraging an environment favourable to initiative and to the development of undertakings throughout the Union, particularly small and medium-sized undertakings; encouraging an environment favourable to cooperation between undertakings; and fostering better exploitation of the industrial potential of policies of innovation, research and technological development'.[16] While military planners focus on capability shortfalls, investments in capabilities also require some thought about how they might eventually be sold to EU and non-EU member states. Here a question arises over the compatibility of shorter-term capability requirements and the longer-term health of Europe's defence industry (e.g. think about how this tension might play out during the development of a potential future aircraft system in Europe).

This question should not raise an automatic dichotomy between operational requirements and industrial competitiveness – it is not a binary decision. In reality the CDP must be a process that balances both considerations while acknowledging two inter-related factors. On the one hand, capability development priorities should in theory answer to military requirements so as to avoid potentially frivolous investments that only benefit industry without enhancing overall operational effectiveness. On the other hand, a strict focus on capability shortfalls may risk undermining the competitiveness of the European defence industry for at least two reasons. First, capability shortfalls can be filled by simply purchasing off-the-shelf systems from non-EU sources, which might not be conducive to supporting skills and defence industrial capacity in the EU; and second, while military planners take the lead on operational questions, they are not necessarily well-placed to identify technologies that may enhance defence capability development in the future.

'...there is even more of a need to strike the right balance between capability requirements and industrial needs.'

While a number of capabilities can be classed as having basic technological levels of sophistication, the need to identify future technologies for complex weapons systems is a key challenge for EU policymakers under Strand B of the CDP.[17] Military technology is increasingly characterised by disruptive domains such as: artificial intelligence, augmented reality, biotechnology, cyber, directed energy, hypersonic velocity, nanotechnology, robotics, social weapons, swarms, etc. This is why Strand B of the CDP is an essential component of the EU's capability development process because the relationship between capability requirements and future technologies is not merely of conceptual relevance. In fact, many of the costs associated with capability development are borne out of how governments and firms delicately balance military requirements and technological possibilities. At the core of capability development planning is essentially an asymmetry of information: the military will understand what the operational requirements are, but firms usually know what technologies can be used to develop defence capabilities.[18] In this respect, with the introduction of the EDF, the CDP will take on a further responsibility of balancing operational needs and industrial considerations.

From priorities to projects

The EU's CDP has evolved in light of strategic, technological and policy developments. The latest edition of the CDP will be more than just a simple academic exercise that can be largely ignored by the EU member states. Instead, in 2018 the stakes are much higher for EU defence capability development because for the first time the CDP links in more tangible ways to capability output. First, PESCO has set binding commitments and put in place capability projects to ensure more structured cooperation over the long term. Second, investments under the EDF will give member states a greater incentive to collaborate with each other on defence research and capability programmes. Third, CARD will in time lead to a more complete picture of Europe's capability landscape. As far as PESCO and the EDF are concerned, the CDP can now play a vital role in helping the

member states to prioritise capabilities together at the EU level and the CARD will inform this process on an annual basis.

Yet some degree of expectation management is required when analysing CDP18. First, the sequencing of all of the EU's new defence initiatives means that while the CDP18 will be published in time for the second wave of PESCO projects and the introduction of the EDIDP, it will be published before a full formal cycle of the CARD is complete. In other words, once the CARD, EDF and PESCO have taken root and work coherently together there is a strong case for conducting another CDP revision in the near future. Given that the last CDP revision was conducted four years ago, this length of time between Plans might be ideal despite the fact that the strategic and technological landscapes may greatly alter in the intervening years.

The CDP should be seen as a vital element of the EU's broader defence policies because of the important role it plays in arbitrating between short-term capability requirements and longer-term capability and technology needs. As was stated, the choice between prioritising current capability gaps or future capability needs is not a binary one. In reality a balance must be struck. Yet, with the introduction of the EDF and the EDIDP questions about the commercial aspects of capability development are on the agenda in a way that did not exist in the past. This means that there is even more of a need to strike the right balance between capability requirements and industrial needs. This balance is an even more delicate issue given that the capability shortfalls that were consistently identified in the past have not been addressed by member states.

The challenge facing the EU today is one that involves having to fill a multitude of capability shortfalls in the short term, while also thinking about what future capabilities and technologies the EU member states should invest in. Opting only to fill capability shortfalls may result in industrial costs later on, but only investing in future capabilities will affect the EU's ability to meet its LoA by sapping (albeit steadily increasing) financial resources for defence. Getting this balance right is vital to the EU's ability to field full spectrum capabilities and enhance its military and industrial strategic autonomy. As PESCO's binding commitments make clear, there is a need for member states to engage with the CDP, CARD and the EDF because only by doing so can the EU make the tough decisions required when it comes to defence capability prioritisation.

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Endnotes

1) *Shared Vision, Common Action: A Stronger Europe – A Global Strategy for the European Union's Foreign and Security Policy*, Brussels, June 2016, 9-10.

2) *Ibid.*, 11.

3) In the consolidated version of TEU, Article 42.1 speaks of peace-keeping and conflict prevention missions outside of the Union and Article 42.7 introduces the mutual assistance clause in case of armed aggression on a member states' territory. Article 43.1 lists joint disarmament operations, humanitarian and rescue tasks, military advice and assistance tasks, conflict prevention and peace-keeping tasks, tasks of combat forces in crisis management, including peace-making and post-conflict stabilisation.

4) European Parliament, "Headline Goal 2010, approved by the General Affairs and External Relations Council on 17 May 2004 and endorsed by the European Council of 17 and 18 June 2004," http://www.europarl.europa.eu/meetdocs/2004_2009/documents/dv/sede110705headlinegoal2010_/sede110705headlinegoal2010_en.pdf.

5) See the 'Annex to the Annex'. Council of the EU, "Conclusions on implementing the EU Global Strategy in the area of Security and Defence," 14149/16, Brussels, November 14, 2016, 15.

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15) *Ibid.*

16) European Commission, "Proposal for a Regulation establishing the European Defence Industrial Development Programme aiming at supporting the competitiveness and innovative capacity of the EU defence industry," *COM(2017) 294 final*, Brussels, June 6, 2017, 3.

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