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WHITE PAPER

On options for enhancing support for research and development involving technologies with dual-use potential

WHITE PAPER ON OPTIONS FOR ENHANCING SUPPORT FOR RESEARCH AND DEVELOPMENT INVOLVING TECHNOLOGIES WITH DUAL-USE POTENTIAL

This White Paper aims to launch a public consultation on EU-level research and development (R&D) support involving technologies with dual-use potential. In this regard, it reviews the current relevant EU funding programmes and assesses whether this support is still adequate and strategic in the face of existing and emerging geopolitical challenges outlined in the European Economic Security Strategy. It then suggests options for the future in an open way as a basis for debate in the context of the public consultation.

For the purpose of this White Paper, "dual-use" is used in the context of R&D support in relation to software and technology that has the potential to be used for both civil and military purposes[1]. The scope of R&D support involving technologies with dual-use potential is aimed at addressing the gap between exclusively civil and exclusively defence R&D activities, in particular on critical and emerging technologies.

1. INTRODUCTION

The importance and potential of exploring ways to enhance support for R&D involving technologies with dual-use potential has been discussed in previous years. In its proposal for the Horizon Europe Regulation in June 2018[2], the Commission proposed that research and innovation activities carried out under Horizon Europe should focus (but not exclusively) on civil application, while research carried out under the European Defence Fund (EDF) should focus exclusively on defence applications. During negotiations, the European Parliament and the Council amended the legal provisions, stating that research and innovation activities under the Horizon Europe Specific Programme[3] and the European Institute of Innovation and Technology (EIT)[4] should focus exclusively on civil applications. At the same time, the co-legislators maintained provisions on defence R&D activities carried out under the EDF that

[1] This definition is consistent with the definition on dual-use items in Regulation (EU) 2021/821 of 20 May 2021 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items: 'Dual-use items' means items, including software and technology, which can be used for both civil and military purposes.

[2] Proposal for a Regulation of the European Parliament and of the Council establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, COM (2018) 435 final, 7.6.2018.

[3] Decision (EU) 2021/764 establishing the specific programme implementing Horizon Europe – the framework programme for research and innovation.

[4] Regulation (EU) 2021/819 of the European Parliament and of the Council of 20 May 2021 on the European Institute of Innovation and Technology (recast)

focus exclusively on defence applications[5] while indicating the potential for civil-defence synergies. They also clarified that unnecessary duplication should be avoided. This implies that there has been an explicit political choice from the co-legislators to treat civil and defence research and development activities as entirely separate fields, targeting substantially different stakeholder communities, with different rules, different purposes and different market applications.

Acknowledging the lack of suitable instruments to facilitate cross-fertilisation between civil and defence R&D activities, the Commission has launched several actions since 2021 to improve synergies between EU programmes and promote an EU-wide approach for critical technologies by making best use of EU R&D programmes.

EU initiatives supporting cross-fertilisation between civil, defence and space R&D activities

In **February 2021**, the action plan on synergies between civil, defence and space industries[6] identified among its objectives the need to improve complementarity between relevant EU programmes and instruments in order to increase investment efficiency and the effectiveness of results. Its first progress report adopted in **November 2022** acknowledged the need to '*carry out a gap analysis of support from EU instruments on the pathway from R&D to deployment, right through to market uptake or public procurement, with the aim to see how one instrument could help where the other cannot. The result of this analysis could feed into planning the next [multiannual financial framework].*'[7]

In **February 2022** the Communication 'Roadmap on critical technologies for security and defence'[8] acknowledged that there is no framework for direct support for dual-use activities under existing programmes and instruments and announced that '*in 2023 the Commission will review existing EU instruments and promote further ways to encourage dual-use RTD&I at EU level'*. The Commission also analysed opportunities and constraints for strengthening support to technologies with dual-use potential through the EU Defence Innovation Scheme (EUDIS), announced in this Communication and launched in May 2022 as part of the European Defence Fund (EDF).

In **May 2022**, the Joint Communication 'Defence investment gaps analysis and way forward'[9], announced '*possible amendments to the framework for dual-use research and innovation to improve synergies between civil and defence instruments'*. In the same Joint Communication, '*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'* was outlined as necessary.

[5] Regulation (EU) 2021/695 of the European Parliament and of the Council of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013.
[6] COM(2021) 70 of 22.2.2021.
[7] SWD(2022) 362 of 10.11.2022.
[8] COM(2022) 61 of 15.2.2022.
[9] JOIN(2022) 24 of 18.5.2022.

In **July 2022**, the Commission adopted a New European Innovation Agenda[10]. Among the framework conditions for deep tech innovation, the agenda highlights that '*leveraging the role of the public sector as a lead customer*' can accelerate the modernisation of public services and strengthen the EU's industrial competitiveness globally. As a result, the Commission has opened calls to support Member States in developing national strategies that boost innovation procurement, and it is also improving data collection on innovation procurement across the civil and defence sectors. As many critical technologies with dual-use potential are in the digital sector, it is also important to note that the Commission's 2023 Report on the State of the Digital Decade[11] recommends that Member States create '*action plans in support of innovation procurement and step up efforts to increase public procurement investments in developing, testing and deploying innovative digital solutions*'.

In **March 2023**, the Commission and the High Representative adopted the EU Space Strategy for Security and Defence[12]. It stresses that '*space systems and services play an increasing role in support of defence and security. Dual-use services provided by EU space programmes and by commercial entities, including New Space, will be further developed to increase the strategic autonomy of the EU and its Member States*' and that '*when preparing the future development of the EU space programmes, the Commission will consider the long-term defence and security user requirements (time horizon 2035), in close cooperation with Member States. It will consider system interoperability and piggy backing payload options for defence as well as security on existing or future space systems*. To this end, '*synergies will be encouraged through EDF, so that defence research and development can accelerate the deployment of payloads enabling services for defence. In addition, the different governmental services enabled by EU space programmes will be consistently operated and exploited*'.

In **June 2023**, the Commission adopted a proposal for a Regulation establishing the Strategic Technologies for Europe Platform (STEP) to maintain a European edge over critical and emerging technologies relevant to the green and digital transitions: from computing-related technologies, including microelectronics, quantum computing and artificial intelligence, to biotechnology and biomanufacturing, and net-zero technologies. Further to increase of the EDF, STEP will enhance co-financing by EU instruments under the Cohesion policy in support of development or manufacturing of critical technologies, many of which have dual-use potential.

The Joint Communication on the European Economic Security Strategy[13] adopted on 20 June 2023 proposed a common European approach to economic security, including by de-risking and promoting a technological edge in critical sectors. The strategy sets out three priorities: promoting the EU's own competitiveness; protecting it from economic security risks; and partnering with the broadest possible range of countries who share the EU's concerns or interests in economic security. It aims to build the EU's economic security and make its economy more resilient, including by maintaining and growing our technological edge over

[10] COM(2022) 332 of 5.7.2022.
[11] https://digital-strategy.ec.europa.eu/en/library/2023-report-state-digital-decade
[12] Joint Communication to the European Parliament and of the Council 'European Union Space Strategy for Security and Defence', JOIN(2023) 9 final.
[13] Joint Communication to the European Parliament, the European Council and the Council on 'European Economic Security Strategy', JOIN(2023)20 final.

technologies that are critical for EU economic security. These technologies often have a dual-use potential: they underpin technologies relevant for many fields in both civil and defence domains. In **October 2023**, the Commission presented its Recommendation[14] on critical technology areas and launched a joint risk assessment with Member States.

In the Joint Communication, the Commission committed to reporting on options to ensure support for R&D involving technologies with dual-use potential, after reviewing the scope of existing instruments. The design of parameters in EU funding conditions for R&D involving technologies with dual-use potential should enable their quicker market uptake in the EU, whether for commercial purposes, Member States' government needs (civil or defence), or for EU-level infrastructures.

The EU may therefore have an important role to play in providing targeted support to dual use, on the pathway from R&D to deployment, right through to market uptake or public procurement. Support measures can further build on the potential of synergies under STEP and an enhanced coordination with dual-use programmes of other EU organisations such as the Strategic European Security Initiative (SESI) of the European Investment Bank (EIB)[15], seeing how best one European instrument could help where the other cannot and aiming to support critical technologies and industrial capacities by developing strategic projects.

In **November 2023** President von der Leyen asked to maximise the EU dual use potential: '*While we strengthen our defence-specific research and development, we should also better integrate civilian technologies in our defence industrial base… There is so much vital innovation with defence applications that emerges from civilian activities. It is now important that we connect the dots. And for this, the Commission will set out options in a White Paper on dual-use research.*'[16]

[14] Commission Recommendation C(2023) 6689 of 3.10.2023 on critical technology areas for the EU's economic security for further risk assessment with Member States.
15 See also the European Council Conclusions of 14-15 December 2023 that call 'for an enhanced role of the European Investment Bank Group in support of European security and defence, building on the bank's Strategic European Security Initiative'.

[16] Keynote speech by President von der Leyen at the EDA Annual Conference 2023: Powering up European Defence, 30.11.2023. https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_23_6207

2. OPPORTUNITIES AND CHALLENGES

The debate on opportunities and challenges for enhancing direct support for R&D involving technologies with dual-use potential in EU programmes has gathered momentum in recent years. This could represent an opportunity to further strengthen and improve the competitiveness and resilience of the European scientific and technological bases. It should also boost startups and small and medium-sized enterprises (SMEs) engaged in technological innovation. Civil-defence synergies have the potential to create new market opportunities for companies working in various industrial ecosystems and bolster the economy at large.

The action plan on synergies between civil, defence and space industries[17] recognised that it is in many instances difficult to draw a clear line between civil and defence R&D. While in fundamental research (low Technology Readiness Levels (TRLs)) the future fields of application of research results are not always known at the beginning of the project ('application agnostic'), medium and high TRL R&D could develop technologies with dual-use potential immediately, with non-substantial or more substantial adaptations, even if these technologies are originally intended for purely civil or defence applications. Conversely, defence R&D may have civil applications, also with adaptations where needed. There is therefore a clear potential for cross-fertilisation between civil and defence R&D.

2.1. Problem definition

Technologies used in the context of security and defence capabilities increasingly originate in the civilian domain, where private sector investments are higher, indirect costs are lower and R&D cycles faster. In the EU, synergies between EU programmes and instruments should be further pursued to elaborate on unexploited potential for spin-out from civil R&D to deliver defence applications and from defence R&D to generate civil applications.

An important challenge is the lack of a common conceptualised definition of 'dual use' in the context of R&D support, either internationally or at EU level. This lack of definition creates problems. For example, the European Investment Bank (EIB) uses a definition[18] it has developed for banking purposes, whereby the majority of the promoter's expected revenue will come from civilian applications. For its part, the EU has not defined the concept of "technologies with dual-use potential" in its funding programmes. As a result, it has proven

[17] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, Action Plan on synergies between civil, defence and space industries, COM(2021) 70 of 22.2.2021.
[18] Available here: Strategic European Security Initiative (eib.org)

difficult to have a common reference scope with the EIB to prepare joint investments focused on technologies with dual-use potential.

The Regulation on dual-use export control[19] provides a definition of dual-use items and includes a list of several hundred dual-use items (and technical specifications) that covers not only tangible items but also intangible items such as software or technology in the form of technical data or technical assistance. This list reflects agreement within the multilateral export control regimes and is updated each year. In addition, this framework can be complemented by national measures for non-listed dual-use items for public security or human rights concerns. This definition is designed in the context of export control and its specific goal is to avoid civil technology being misused or diverted for military purposes by countries, governments or non-governmental bodies to undermine peace or security or in connection with internal repression or serious violations of human rights and international humanitarian law. Therefore, this definition may be adapted to define the scope of activities to be funded by the EU. Further work could be engaged by the Commission, in close coordination with the EIB group and other financial institutions to elaborate a common definition of "dual-use".

In light of the consultative nature of this Paper, the Commission invites respondents to share their views on what elements can constitute the building blocks of a definition of technologies with dual-use potential, which could be useful in order to promote inter alia transferability from civil to defence and vice-versa as well as joint investments with other partners, such as the EIB Group.

In addition, the EU continues to struggle to ensure the swift exploitation and market uptake of the results of R&D investments in the EU, including in technologies with dual-use potential. Innovations with great potential are often exploited in other parts of the world where the quest for game-changing innovation has become a pressing priority, leading to the development of organisations and doctrines set up to expressly exploit dual-use potential for the benefit of defence. In Europe on the contrary, the results of dual-use innovation, i.e. the transformation of ideas and knowledge into new or improved products, processes and services for military and commercial use, often do not reach successful commercialisation for different reasons, including lack of first customers, especially in the public sector, and need for more targeted R&D. Among other factors, underinvestment in innovation procurement hampers not only the modernisation of European infrastructures with new capabilities provided by innovative

[19] Regulation (EU) 2021/821 of 20 May 2021 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items.

technologies, but also stifles the competitiveness of European industry[20]. Innovation procurement is very pertinent for technologies with a dual-use potential, which need a vibrant home market to enable their uptake into systems and products in the civil and defence sectors.

2.2. Objectives

The overall objective of this White Paper is to explore options to improve the integration and cross-fertilisation of civil and defence technologies in the European industry. It will do this by pursuing the better use and exploitation of project results and identifying actions to allow, where applicable, dual-use results from civil R&D activities for defence applications and from defence R&D activities for civil applications.

3. BASELINE: THE CURRENT LEGISLATIVE FRAMEWORK

According to Article 182 of the Treaty on the Functioning of the European Union, all research and technology development activities of the EU are set out in a multiannual framework programme. While the Horizon Europe Specific Programme[21] focuses exclusively on civil applications[22], defence research activities are carried out under another specific programme of Horizon Europe with an exclusive focus on defence R&D with its own rules of participation, budget, eligibility conditions and governance fixed in the EDF Regulation[23].

The Horizon Europe Regulation refers to potential synergies with the EDF that could benefit civil and defence research, while avoiding unnecessary duplications. At the same time, the EDF Regulation explicitly states that 'positive spill-over effects to the civilian sector can also be expected, where applicable'[24] and that 'the Commission will take into account other activities financed under Horizon Europe […] in order to avoid unnecessary duplication and ensure cross-fertilisation and synergies between civil and defence research'[25].

[20] See the results of the Commission benchmarking of innovation procurement investments and policy frameworks across Europe, March 2023 (https://digital-strategy.ec.europa.eu/en/library/benchmarking-innovation-procurement-investments-and-policy-frameworks-across-europe)
[21] Council Decision (EU) 2021/764 of 10 May 2021 establishing the Specific Programme implementing Horizon Europe – the Framework Programme for Research and Innovation, and repealing Decision 2013/743/EU.
[22] Article 7(1) of Regulation (EU) 2021/695 of the European Parliament and of the Council of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013.
[23] Regulation (EU) 2021/697 of the European Parliament and of the Council of 29 April 2021 establishing the European Defence Fund and repealing Regulation (EU) 2018/1092.
[24] Recital 35 of Regulation (EU) 2021/697 of the European Parliament and of the Council of 29 April 2021 establishing the European Defence Fund and repealing Regulation (EU) 2018/1092.
[25] Recital 33 of Regulation (EU) 2021/697 of the European Parliament and of the Council of 29 April 2021 establishing the European Defence Fund and repealing Regulation (EU) 2018/1092.

3.1. Civil R&D with dual-use potential

While the Horizon Europe Specific Programme can support R&D activities with an exclusive focus on civil applications, the results can have a dual-use potential, for example in areas such as digital, cybersecurity, energy, mobility, health, materials, and space, and therefore for potential applications in the field of defence. However, the selection of projects is restricted to those projects that, while developing technologies with dual-use potential, target only civil applications. As soon as a proposal includes a defence application, it should not be funded under the requirements of the Horizon Europe Specific Programme.[26]

As a consequence, defence industry stakeholders cannot access capital and services provided through Horizon Europe for any activity having a defence application (notably through the European Innovation Council Accelerator funding programme) and defence ministries or agencies are unable to apply for innovation procurement funding provided by Horizon Europe for such activities. Although stakeholders from the defence sector are not automatically excluded from funding from the Horizon Europe Specific Programme, their participation can be justified only if their R&D activities in a project focus exclusively on civil applications.

3.2. Defence R&D with dual-use potential

The EDF provides financing for collaborative defence R&D projects for defence applications. The development of technologies with an exclusive focus on future military applications differs from technologies with a civil focus as they target operational military needs, and the ultimate customers are ministries of defence. Project results are often subject to export control and to the classification of information during project implementation where appropriate. Nonetheless, there are already several examples of funded actions that have clear potential for an application in the civil sector and can help strengthen the scientific and technological bases of the civil sector. While being exclusively focused on defence, projects supported by the European Defence Fund can also have relevant civilian applications (therefore a dual-use dimension).

EDF-funded projects as well as projects in civil security or space research under the Horizon Europe Specific Programme include partially classified information and have specific security-based eligibility conditions at the level of entities and rules to avoid technology leakage. The strategic and sensitive nature of technologies with a dual-use potential and their application

[26] Proposals focusing on defence applications can be considered under the EDF, according to the rules of this programme.

calls for closer attention to security requirements, including the selection of projects and participants, the demand for security scrutiny procedures and the possible classification of research results. For reasons of consistency across different EU-funded projects and programmes and international cooperation initiatives, the same security-related requirements should arguably apply when supporting technologies with a dual-use potential.

3.3. Review of the scope of existing instruments

The action plan on synergies between civil, defence and space industries[27] proposed the launch of a '*dual use innovation incubator'* to focus on encouraging synergies, screening proposals and results, and sharing information as early as possible to identify possible applications, including in areas other than those originally intended.

Technologies that are developed by consortia under the European Innovation Council (EIC) Pathfinder have low TRLs and are often 'application agnostic'. The EIC Accelerator supports and invests in individual SMEs at higher TRLs to fill the financing gap at the innovation stage and help them successfully scale up. The support comprises a grant component and an equity component. The equity component is decided by the EIC Fund following an award decision from the Commission. The EIC Accelerator has supported SMEs and start-ups with promising technologies and innovation with dual-use potential, such as drones, unmanned vehicles, cybersecurity and AI, with an exclusive focus on civil applications. As of 2023, access to the EIC Transition Scheme (which provides follow-up support to develop commercial applications from research results) has been opened to proposals following up on results achieved through defence R&D activities (i.e. under the EDF), on the condition that these proposals target exclusively civil applications. The size of the portfolio of dual-use projects and the potential of spin-off projects from EU-funded defence research into civil applications remains rather unexplored for the time being, as EU-funded defence research only started recently.

The Commission also analysed opportunities for and constraints on strengthening support to technologies with a dual-use potential through the EU Defence Innovation Scheme, announced in the Communication 'Roadmap on critical technologies for security and defence' of February 2022[28] and launched in May 2022 as part of the EDF. The EUDIS offers SMEs, start-ups, and other non-traditional defence industry actors more opportunities to access and benefit from the European Defence Fund.

[27] COM(2021) 70 of 22.2.2021.
[28] COM(2022) 61 of 15.2.2022.

EUDIS is now fully operational and delivers on the Commission's endeavour to better connect civil and defence actors/technologies and capitalises on the Commission's proven track record in stimulating innovation. For 2023, the calls in support of defence innovation under EUDIS totalled EUR 224 million. Spin-in calls proved highly successful and Commission services and the European Defence Agency are cooperating to continue systematically scanning results from civil programmes to assess defence potential for future uptake. Especially high interest has been registered in non-thematic calls targeting SMEs and disruptive technologies where the applications have more than doubled in comparison with 2022. This high interest in calls exclusively open to SME consortia and those focusing on disruptive technologies confirm that the EDF continues to be highly attractive to smaller companies and newcomers to the defence sector.

The Commission will expand EUDIS further in the current multiannual financial framework in close cooperation with the European Defence Agency in the dedicated Defence Innovation Task Force, focusing on uptake of civil innovation to defence. In this regard, the Commission aims to fund EUDIS business accelerator, develop matchmaking services and increase business coaching for all SMEs participating in the EDF as of 2024; notably to facilitate their introduction in the defence market. In return, it should be explored how to facilitate access to results achieved through defence R&D activities in order to boost potential follow-up civil R&D investments.

In addition, the Commission has funded successful innovation procurement projects under Horizon Europe and its former programmes Horizon 2020 and FP7. Pre-commercial procurements are exempt from international public procurement agreements and can contain conditions that anchor the development and production of solutions in Europe. For example, they can be limited where needed to companies established in and controlled from Europe, or they can specify that the deployment of the first batch of innovative solutions in the defence or civil security sector is limited to contractors that participated in the preceding pre-commercial procurement.

The legal provisions of the EDF include the possibility to support pre-commercial procurements through a grant for contract authorities to jointly procure defence R&D services. However, so far this option has not been used. It is not possible under the EDF to go beyond the R&D phase, therefore the focus is on joint procurement for R&D services. Nevertheless, the possibilities for pre-commercial procurements for R&D services could be further explored under both programmes. More generally, the Commission could explore how to facilitate a

smooth transition for innovations developed in either programme to be taken up by procurers that are deploying innovations in the civil or defence markets in order to better exploit the dual-use potential.

3.4. Synergies with other EU programmes and policies

Even if they are not directly financing R&D activities, other EU programmes also have a role to play in terms of civil or defence applications, in particular when funding the deployment of technologies. Synergies between programmes that directly finance R&D projects (Horizon Europe and EDF) and other EU programmes aim to support the uptake and dissemination of knowledge and solutions stemming from Horizon Europe and EDF projects to deliver on the objectives of other EU programmes (for example, the European Regional Development Fund[29], Connecting Europe Facility, Digital Europe Programme, InvestEU, Internal Security Fund, Border Management and Visa Instrument, Space Programme). STEP is expected to also enhance co-financing by EU instruments under the Cohesion policy in support of development or manufacturing of critical technologies, many of which have dual-use potential. Analysis of the legal bases of other EU funding programmes and instruments shows that they are not designed to directly support the deployment of technologies with a dual-use potential.

4. POSSIBLE OPTIONS FOR THE FUTURE

Following up and expanding on the defence-related initiatives of the Commission and High Representative from the last few years, especially after the Russian war of aggression against Ukraine, this White Paper confirms the continued need for more adequate support for enhancing R&D involving technologies with dual-use potential that can help develop state-of-the-art defence capabilities in the EU. At the same time, the integration of new technologies developed through defence funding into the civil sector is still limited, and its potential remains largely unexploited. The EU institutions continuously need to explore possible options to strengthen this cross-fertilisation in the context of R&D support involving technologies with a dual-use potential, while taking into account the fundamental differences between civil and military spheres.

The geopolitical context has equally shown that defence capabilities must be accompanied by strong measures on civil security to protect the EU's resilience, in particular to protect civilian

[29] If the project pursues entirely or in a prevailing part the purpose of contributing to reducing disparities and contributing to the social cohesion of the EU, it is covered by the Article 174 of the TEU, also if it includes investments benefiting security or defence activities.

critical infrastructures, deter border related security threats, restore essential services in times of crisis, and address the risks of social unrest following disinformation campaigns or cyber-attacks. As a result, increasing the EU's resilience is a priority for both defence and internal security needs.

To meet these challenges, the Commission has identified three possible options for the future that are presented below. Option 1 presents what more can be done based on the current set-up – since possible measures can be implemented without changing the existing legal bases. Options 2 and 3 will require different legal bases in the future.

For Options 2 and 3, further analysis in line with Better Regulation provisions (e.g. impact assessment, stakeholder consultation, etc.) will be needed to explore their effects and value added, including on: complementarities with national priorities; attracting potentially new beneficiaries; evaluation and eligibility criteria and processes; rules of participation; openness of the programmes to third countries, including specifically regarding those associated to Horizon Europe; and the decisions on the delegation (or not) of powers to the executive agencies and the corresponding staff allocations and profiles.

Specific eligibility conditions would apply only for the purpose of supporting dual-use R&D activities. These would be subject to a more restrictive approach towards the use of research security safeguards, while the rest of the programme would remain largely open. More delineated sets of security-based considerations may therefore be defined only for specific dual-use R&D activities. All options should be designed to be complementary to the specific programmes dedicated to R&D for civil and defence applications under the next framework programme for research and innovation, while concurring with the European Economic Security Strategy's emphasis on the need for more R&D investment in strategic emerging technologies to ensure EU leadership and competitiveness. Every option must ensure compliance with the conditions and procedures set out by the restrictive measures adopted pursuant to Article 215 of the Treaty on the Functioning of the EU[30], as well as with other regulatory requirements for emerging technologies and international obligations.

[30] In particular, the Commission must ensure the compliance of any option with European Union restrictive measures in the context of providing financing to third parties. Against this backdrop, the Commission must always seek solutions that do not breach European Union restrictive measures.

4.1. Option 1: Going further based on the current set-up

This option would build on the current approach established up to now under the current multiannual financial framework, while introducing incremental improvements and leveraging on measures already implemented that are yet to produce their intended effects. It is the only one that can already be tested in the current EU funding programmes, within the limits of the available resources.

Measures would build on some relevant approaches and actions that have already started, like the EIC Transition Scheme, the different strands of the EU Defence Innovation Scheme (EUDIS) under the EDF such as spin-in calls, the possibility to support dual-use companies with InvestEU and the introduction of an additional exploitation obligation in Europe for the results of actions on critical technologies as in the case of COVID-19 calls under Horizon Europe. Similarly, this scenario would build on the exploitation of the results achieved through defence research to the benefit of civil applications, through, for instance, spin-out calls.

Agreement on a common definition of 'technologies with dual-use potential' between the Commission and the European Investment Bank Group, including the EIB and the European Investment Fund, could possibly promote joint investments in technologies with a dual-use potential for military mobility, green transition, critical infrastructure resilience including critical communication, emerging or disruptive technologies and defence innovation, as well as space. Such an agreement should be sought as part of an overall revision of the defence exclusion policy of the EIB, which hinders the potential for the Group's joint investments. The Commission and the EIB Group should continue to hold regular exchanges to discuss opportunities offered by new EU initiatives for possible joint action in a commonly agreed scope.

Measures could be implemented through modified implementation parameters where needed within the legal provisions of existing programmes, without putting undue burden on the Commission/executive agencies and applicants/beneficiaries. Such parameters, which can already be implemented under the current legal provisions and could be further used also in view of further options could include:

- Exploit R&D projects and results to upscale them in dual-use applications (in both civil and defence R&D) by using the existing information available in EU databases to search for such results and by monitoring ongoing R&D projects;

- Further develop synergies, such as the upstream exchange of information and better coordination of (parts of) the work programmes between civil and defence R&D, including possibilities to support pre-commercial procurement of R&D services across programmes, improved access to project results and project reporting, and dedicated topic-specific exchanges involving both civil and defence communities;
- Consider the introduction of an additional obligation to exploit results in the EU (based on Article 39 of the Horizon Europe Regulation 2021/695) in relevant work programme parts and calls that address critical technology areas identified in the Commission Recommendation of 3 October 2023, based on the result of collective risk assessment launched under the Recommendation;
- Introduce a dual-use flagging mechanism (e.g. a tag at call level or a project-level label) to signal the additional dual-use potential as well as spin-in/spin-out calls based on the practice already followed for the work programme topics under the Horizon Europe specific programmes;
- Provide, as appropriate, further guidance and support to beneficiaries dealing with technologies that have dual-use potential. In this regard, reference is made to the EU guidelines for research involving dual-use items, to ensure that risks are effectively taken into consideration by authorities and research organisations[31], as well as to the proposal for a Council Recommendation on enhancing research security.

Option 1 is feasible under the current multiannual financial framework. A streamlined approach with agreed mechanisms would however need to be further developed to systematically seek for synergies and cross-fertilisation between civil and defence. A better coordination between the related programming, for instance by sharing the respective technology roadmaps, would also be needed with a view to foster initiatives aiming at improving the development of civil and military technologies while sharing paths to a certain and appropriate extent.

4.2. Option 2: Remove the exclusive focus on civil applications in selected parts of the successor programme to Horizon Europe

This option would provide a new direction in the content and implementation of selected parts of the future multiannual framework programme for research and innovation.

It could be implemented by replacing ‘exclusive focus’ with ‘focus’ only for selected parts of the successor programme to Horizon Europe, for example where technologies with dual use

[31] EUR-Lex - 32021H1700 - EN - EUR-Lex (europa.eu)

potential are most prominent. All remaining parts of the programme would maintain an exclusive focus on civil applications. As a result, this option would provide the opportunity under the successor programme to Horizon Europe to maintain key policy characteristics of Horizon Europe, such as the long-standing openness of Framework Programmes to third countries in areas of mutual interest while allowing possible restrictions in the selected parts involving technologies with dual-use potential.

This option would allow strategic emerging technologies to be supported independent of the field of application in selected parts of the programme, which would avoid discarding excellent proposals that do not target exclusively civil applications.

In terms of delineation with future defence innovation actions under a successor programme to the EDF, this option would allow programming spin-in calls involving defence-related projects results directly in the successor programme to Horizon Europe, whilst in turn the successor programme to the EDF would provide follow-up funding for defence capability development of the most promising civil-related project results. This approach would most likely attract more industry stakeholders as potential participants in R&D projects, contributing to the cross-fertilisation of civil and defence industries.

On the other hand, the stakeholder community active in the civil domain might have concerns in relation to their participation in calls under the selected part of the Programme, where there would not be an exclusive focus on civil applications.

Under this new approach, the possible impact on other programmes would need to be assessed, depending on the chosen areas. Furthermore, there are basic parameters that might already have to be considered, in particular those relating to security-based conditions, during the preparation of Commission proposals and based on experience gained from other EU programmes. Such parameters would include:

- planning and programming of the programmes' priorities during implementation based on sound mechanisms inspired by e.g. the Horizon Europe and EDF governance modes;
- identification of areas with dual use potential;
- budget distribution conditions for prioritisation among calls and topics;
- types of interlocutors at national government level, including national ministries and other authorities;
- complementarities with national priorities that can be scaled-up to take the results of EU actions further;

- population of potential (new) beneficiaries based on their capacities to carry out various types of research;
- handling of sensitive and classified information submitted by applicants and generated by beneficiaries;
- grant evaluation and eligibility criteria and processes, ethics and security reviews;
- foreign control of eligible entities and control over intellectual property rights;
- eligibility and categories of costs and their reimbursement;
- consortia structures, with choices made on the nationality of participants and coordinators, the types of participants and the agreements that govern their relations;
- rights of participants, including on the protection of intellectual property, open science and academic freedom;
- procurement rules with specific eligibility and selection criteria;
- governance modes;
- safeguards to avoid leakage of sensitive technologies to destinations of concern;
- implementation mode and decisions on the delegation (or not) of powers to the executive agencies for tasks linked to the programmes and corresponding decisions on staff allocations and profiles.

Option 2 is mutually exclusive with option 3.

4.3. Option 3: Create a dedicated instrument with a specific focus on R&D with dual-use potential

This option could materialise through various forms, such as:

- a specific instrument devoted to research with dual-use potential with its own budget, its own rules on the participation and dissemination of results, comitology/governance provisions, evaluation and eligibility criteria, consortia structure, etc.;
- stepping up support for EU market uptake of technologies with a dual-use potential through a dedicated mechanism or structure (such as in the executive agencies or a dedicated Joint Undertaking), or through public procurement by EU-based end-users linked with EU procurement needs (e.g. IRIS^2) or procurement support instruments (e.g. for customs equipment or border surveillance equipment). Several sub-options could be envisaged depending on whether the owner/end user ('first mover') is an EU body, a national governmental body, or commercial body. The EU-added value would

need to be considered for measures where the end user is at national level (e.g. facilitating joint procurement).

- planning of 'dual-use by design' flagship projects[32] that support development of critical technologies, build on synergies with other EU policies and instruments and are, where possible implemented in coordination with the EIB dual-use programme. Such projects would build on results of preparatory work inside the Commission or jointly with Member States and put the EU as the lead customer for services of public interest in the defence and civil domain. Examples may include technologies for the future generations of EU space systems (in support of defence, security and environmental policies), EU autonomous vehicles (in support of defence and border control, maritime or critical infrastructure policies) or other projects of common European interest. Given that end-user needs can be quite different depending on the operational requirements, it is of paramount importance to involve relevant stakeholders from the start.

This option would significantly increase the visibility of dual-use R&D per se, but would risk adding complexity to an already crowded R&D support environment. Compared to option 2, the budget distribution between dual-use R&D activities and exclusively civil R&D activities would be more clear, as it could be set out in the basic act establishing the successor programme to Horizon Europe. However, this would come at a cost of rigidity in resource allocation over the programming period. Moreover, there would be a risk of duplication that would impact the planning and programming of priorities between dual-use R&D activities and exclusively civil R&D activities, as well as with those activities carried out exclusively for defence applications under the successor to the EDF. There would also probably be very few cases where dual-use by design could be applicable without impacting the market uptake of the final product by the civil or defence sector, which typically specify quite different requirements (see section 2). Overall, it is likely that this option would bring an additional level of complexity, both for applicants - having to apply to yet another mechanism/programme with different requirements - and the Commission - coordinating between dual-use R&D activities and other calls, with different comitology and governance provisions.

Option 3 is mutually exclusive with option 2.

5. CONCLUSIONS

[32] These projects could also build on critical technologies and be planned in coordination with the EIB, implementing the announcement by the Commission in the 'Defence Investment Gaps analysis' Communication: 'The Commission will work on further measures (such as coordinated calls among existing EU instruments and EU loans) to support critical technologies and industrial capacities by developing strategic projects'.

Enhancing R&D support involving technologies with a dual-use potential at EU level offers both opportunities and challenges. Optimising civil-defence synergies could benefit the European industry and could accelerate the uptake of research and innovation results in the economy. At the same time, it is difficult to predict the dual-use potential of R&D, even when it is intended exclusively for civil or defence applications. The EU efforts to promote cross-fertilisation between the civil and defence sectors should be undertaken while keeping their distinctive characteristics in mind.

In the context of the 'promote' dimension of the European Economic Security Strategy, the EU seeks to maintain a competitive edge in critical and emerging technologies relevant to the green and digital transitions, including by making better use of and exploiting the results of EU-funded R&D projects, whether in the civil or defence domains, while reinforcing the 'protect' and 'partner' dimensions.

With this White Paper, **the Commission is launching a broad consultation of public authorities, civil society, industry and academia** on options for strategic support to technologies with a dual-use potential. It takes into account the current legislative framework which is characterised by mutually exclusive focuses on either civil or defence applications as well as the lack of a commonly agreed conceptualised definition, and identifies possibilities under current or future EU funding programmes as well as key parameters that require further analysis. This consultation will allow comprehensive dialogue with all parties concerned, which will inform the Commission's next steps.

The Commission invites comments on the options set out in this paper through an open public consultation available at https://ec.europa.eu/info/law/better-regulation/have-your-say_en. The consultation is open for comments until 30 April 2024. It is standard practice for the Commission to publish submissions received in response to a public consultation. However, it is possible to request that submissions, or parts of them, remain confidential. If this is the case, please indicate clearly on the front page of your submission that it should not be made public and also send a non-confidential version of your submission to the Commission for publication.