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THE EU RESEARCH SECURITY INITIATIVE: IMPLICATIONS FOR THE APPLICATION OF EXPORT CONTROLS IN ACADEMIA AND RESEARCH INSTITUTES

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I. INTRODUCTION

Amid ongoing geopolitical tensions and technological competition, states are trying to protect research and innovation in critical technologies with potential military applications, ranging from artificial intelligence (AI) to quantum computers and hypersonics, where many of the key advances are being made in academia and research institutes. In parallel, concerns are growing around proliferation and undesired knowledge transfer by states and non-state actors through theft and other illicit means.

These concerns have led a growing number of European Union (EU) member states and the EU itself to propose measures to strengthen research security. While there is no commonly agreed definition, research security is often characterized by a set of actions taken by governments or other public or funding bodies, usually in collaboration with academia and research institutes, to safeguard against the risk of undesired transfers, interference in or misuse of research, and threats to research integrity.[1] The rationale for research security policies is also closely linked to increasing national security concerns, including economic security concerns. To date, Australia, Canada, the United States and several European states, among others, have adopted research security measures. The topic has also been addressed as part of Group of Seven (G7) exchanges.[2]

[1] Walker-Munro, B., 'A missed opportunity: Amending the Defence Trade Controls Act 2012 (Cth) and research security', *Journal of Strategic Trade Control*, vol. 2 (Dec. 2024).

[2] Government of Canada, 'G7 best practices for secure and open research: Security and integrity of the Global Research Ecosystem (SIGRE) Working Group', Feb. 2024; and Australian Government, Australian Research Council, 'Research security', [n. d.].

SUMMARY

In response to growing national security and economic security concerns, an increasing number of states, including in the European Union (EU), are in the process of adopting measures to strengthen research security. In parallel, in May 2024 the EU Council adopted a recommendation on enhancing research security. The Council recommendation referred to a range of EU and national policy instruments which could play a role in research security, including export controls. However, there have been challenges in applying export controls in academia and research institutes, and these challenges could be exacerbated by the addition of research security requirements. To address the risks that come with linking research security and export controls, the EU and EU member states should take measures to strengthen awareness among academia and research institutes of both sets of measures, and to make use of the current momentum to strengthen the application of controls on intangible transfers of technology.

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As part of its proposals on economic security, the European Commission published a recommendation on enhancing research security in January 2024, which was adopted with minor changes by the Council of the EU in May 2024.[3] The Council recommendation refers to a range of EU and national policy instruments that could play a role in enabling effective implementation of the EU research security initiative, including export controls.[4] Export controls are the policies that states use to regulate the trade in military and dual-use items. As well as physical items, these controls capture transfers of non-physical items, such as knowledge and technical data, that can be transferred by intangible means, for instance in emails or in-person meetings. Transfers of non-physical items by intangible means are referred to as intangible transfers of technology (ITT). In the EU, export controls are covered by a common legal framework governed by the EU dual-use regulation and the EU Common Position on arms exports.[5]

By bringing export controls within a broader framework that also takes account of other security risks present in research settings, the EU research security initiative could increase awareness of and compliance with export controls within academia and research institutes. This comes with risks, however, not least because the respective rationales, objectives and scopes of research security and export controls differ. This paper seeks to unpack the linkages between research security and export controls in order to explore those risks and make recommendations on the ways in which both instruments could complement each other, rather than create additional challenges.

Section II examines the emergence of research security policies in Europe in recent years, at the EU and state levels. Section III discusses the long-standing challenges facing the application of export controls in academia and research institutes, and how these could be exacerbated by a growing focus on research security. Section IV analyses the risks and opportunities that come with linking research security and export controls. Finally, section V makes recommendations on how the European Commission, EU member states and the research community could take forward some of the proposed measures in the Council recommendation.

II. THE EMERGENCE OF RESEARCH SECURITY POLICIES IN EUROPE

Although not entirely new, the concept of research security and corresponding policies emerged in Europe in recent years in response to growing national security and economic security concerns. This section introduces the framework and the policies that the EU and some states are in the process of adopting in this context.

A new framework: The EU Economic Security Strategy

In response to geopolitical tensions and technological competition, not only but in particular with China, a growing number of EU member states are paying increased attention to certain emerging technologies that are deemed critical.[6] Fields such as hypersonics, AI, additive manufacturing, quantum computing and semiconductors are particularly important because of their significant economic and security implications. This has led states to take additional measures to protect these critical technologies, including from undesired transfers.

In the field of export controls and related instruments, key measures include the adoption by the EU in 2019 of a regulation establishing common standards on the screening of foreign direct investment (FDI).[7] FDI screening enables states to respond to cases where FDI might lead to a foreign entity owning or controlling critical infrastructure, or gaining access to technology that may or may not be subject to export controls but which could benefit the defence and

[3] European Commission, 'Proposal for a Council recommendation on enhancing research security', 2024/0012, 24 Jan. 2024; and Council of the European Union, 'Council recommendation on enhancing research security', 9097/1/24, 14 May 2024.

[4] Council of the European Union, 'Council adopts a recommendation to enhance research security', Press release, 23 May 2024.

[5] Council of the European Union, Council Common Position 2008/944/CFSP of 8 Dec. 2008 defining common rules governing control of exports of military technology and equipment, *Official Journal of the European Union*, L335, 8 Dec. 2008; and Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items (recast), *Official Journal of the European Union*, L206/1, 11 June 2021.

[6] Haeck, P., 'EU moves to shield researchers from Chinese interference', Politico, 23 Jan. 2024.

[7] Regulation (EU) 2019/452 of the European Parliament and of the Council of 19 March 2019 establishing a framework for the screening of foreign direct investments into the Union, *Official Journal of the European Union*, LI 79/1, 21 Mar. 2019.

security capabilities of third countries.[8] A growing number of EU member states have also taken up the option foreseen in the EU dual-use regulation of adopting national export controls on various types of emerging technology, such as additive manufacturing, advanced semiconductors, quantum computers and related equipment and technology.[9] Some of these controls have also been discussed, though not adopted, in the multilateral export control regimes, which reflects the non-proliferation and international stability concerns that these emerging technologies pose.[10] However, in adopting national controls on advanced semiconductor manufacturing equipment, the Netherlands also referred specifically to 'national security' concerns and the need to preserve its 'technological leadership position'.[11]

In June 2023, the EU launched its Economic Security Strategy, aimed at promoting the EU's competitiveness, protecting against economic security risks and partnering with the broadest possible range of countries to advance shared economic security interests.[12] This was followed in October 2023 by a Commission recommendation that listed ten technology areas critical to the EU's economic security, from advanced semiconductor technologies to AI, quantum technologies and biotechnologies.[13] In January 2024, the EU launched a set of five initiatives to support its nascent Economic Security Strategy.[14] These included proposed improvements to the FDI screening regulation and new measures on screening outbound investments in key technologies, as well as further coordination on export controls. There was also a white paper on dual-use research, which outlines potential avenues for removing the exclusive focus on civil applications in the successor programme to Horizon Europe to increase the potential for dual-use research and civil–military synergy. The final initiative was the recommendation on enhancing research security, which the Council adopted with minor changes in May 2024.[15]

The EU research security initiative: Rationale and scope

The Council recommendation on enhancing research security cites the current context of 'growing international tensions and the increasing geopolitical relevance of research and innovation' as background to its proposed measures. Research security is defined as the ability to anticipate and manage three main types of risk: the 'undesirable transfer of critical know-how and technology', 'malign influence on research' and 'ethical or integrity violations, where knowledge and technologies are used to suppress or undermine fundamental values, whether in the EU or elsewhere'.[16]

To address these risks, the initiative puts forward a set of non-binding 'proposed measures'.[17] Some of these are aimed at the EU member states and the European Commission jointly, such as a set of principles on research security and an approach to follow. Among the key principles outlined are the promotion of academic freedom and self-governance in research organizations, together with efforts to avoid any form of discrimination. At the same time, the initiative stresses that international cooperation should be 'as open as possible, as closed as necessary', taking account of economic security and national and EU security risks. The approach suggested is a 'rebalancing of international cooperation in research and innovation' through risk-based and proportional mitigation measures.[18] No state is directly named in the document but a significant part of the EU's recent focus on overseeing and restricting transfers of technology has been viewed as a response to concerns about China's attempts to acquire military-relevant dual-use

[8] Bromley, M. and Maletta, G., 'Developments in the European Union's dual-use and arms trade controls', *SIPRI Yearbook 2024: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2024).

[9] Compilation of national control lists under Article 9(4) of Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items, *Official Journal of the European Union*, C/2024/5880, 27 Sep. 2024.

[10] Bromley and Maletta (note 8).

[11] Government of the Netherlands, 'Letter to Parliament on additional export control measures concerning advanced semiconductor manufacturing equipment', Letter from Minister Schreinemacher for Foreign Trade and Development Cooperation to the House of Representatives, 10 Mar. 2023.

[12] European Commission, Joint communication to the European Parliament, the European Council and the Council on 'European Economic Security Strategy', JOIN/2023/20, 20 June 2023.

[13] European Commission, 'Commission recommends carrying out risk assessments on four critical technology areas: Advanced semiconductors, artificial intelligence, quantum, biotechnologies', Press release, 3 Oct. 2023.

[14] European Commission, 'Commission proposes new initiatives to strengthen economic security', Press release, 24 Jan. 2024.

[15] European Commission (note 14); and Council of the European Union (note 3).

[16] Council of the European Union (note 3).

[17] Council of the European Union (note 4).

[18] Council of the European Union (note 3).

technologies by licit and illicit means, and more broadly about the need to de-risk and reduce dependency on China.[19] China has been criticized by some EU member states for its policy of civil–military fusion, which aims to help the Chinese military benefit from developments in China's civilian sectors.[20] The Council recommendation stresses the need to pay attention to cases where a partner institute is 'subject to . . . an aggressive civil–military fusion strategy or limited academic freedom'.[21]

Other key proposed measures include the adoption by EU member states of 'national measures . . . on intangible technology transfer' and the provision by the European Commission of guidance to facilitate the interpretation of 'export control rules, notably [on] the intangible transfer of technology'.[22] A European Centre of Expertise on Research Security could also be established to support the provision of guidance and additional tools on how to assess the risks associated with partnering with foreign institutions.

The Council recommendation welcomes the efforts of several EU member states to develop national policies aimed at enhancing research security. It also recommends the development of further national approaches, such as guidelines and support services for academia and research institutes, as well as cross-government cooperation. However, it hints at the need for harmonization, noting that 'Union level coordination and Commission support for capacity building and exchange of practices' are needed.[23] The Commission draft published in January 2024 went further in stating that 'an uncoordinated multiplication of national measures would result in a patchwork of national policies, disparities among Member States, and thereby fragmentation of the European Research Area'.[24]

[19] Haeck (note 6); and Duchâtel, M., 'Demystifying economic security: A framework for the EU', Issue Paper, Institut Montaigne, Apr. 2024, pp. 19–25.

[20] Permanent Mission of the Czech Republic to the United Nations, 79th Session of the General Assembly First Committee, General Debate, Statement by Ms Tatjana Jakšičová, Director of Control Policies Department, Ministry of Foreign Affairs, New York, 8 Oct. 2024.

[21] Council of the European Union (note 3).

[22] Council of the European Union (note 3).

[23] Council of the European Union (note 3).

[24] European Commission (note 3).

The development of national research security approaches in Europe

Some EU member states and other European states had already taken the decision to adopt national research security policies prior to the EU research security initiative, in response to the changing geopolitical context and to address perceived shortcomings in the ability of universities to manage the possible security implications of their activities.[25] This paper found at least eight states in Europe that had either already established such frameworks (Denmark, France, the Netherlands, Norway and the United Kingdom) or were in the process of setting up their frameworks (Germany, Italy and Sweden) (see table 1).[26] Although different terms are used for these states' approaches, such as 'research security', 'knowledge security', 'trusted research' and 'responsible internationalization', there appears to be a common underlying rationale (see table 1). Concerns around the national security implications of research undertaken in academia and research centres are central to all the approaches. The scope usually revolves around three main priorities: addressing the risk of undesired transfers, misuse and interference, and ethical issues, which is also broadly the approach adopted by the EU.

Although close in scope, there are variations in the ways in which individual states approach research security in Europe. Not all the states give

[25] Regeringskansliet, 'Ökad kompetens i säkerhetsfrågor vid universitet och högskolor' [Increased competence in security matters at universities and colleges], Regeringskansliet, 25 Jan. 2024; and D'Hooghe, I. and Lammertink, J., 'How national governments and research institutions safeguard knowledge development in science and technology', Leiden Asia Centre, Nov. 2022.

[26] Government of the Netherlands, 'National knowledge security guidelines', 7 Apr. 2022; Danish Ministry of Higher Education and Science on behalf of the Committee on guidelines for international research and innovation cooperation, 'Guidelines for international research and innovation cooperation Committee on guidelines for international research and innovation cooperation', May 2022; Norwegian Directorate for Higher Education and Skills and Research Council of Norway, *Guidelines and Tools for Responsible International Knowledge Cooperation*, 14 Aug. 2023; National Protective Security Authority and National Cyber Security Centre, UK, 'Trusted research: Guidance for academics', 2 July 2024; General Secretariat for Defence and National Security (SGDSN), 'Protéger le potentiel scientifique et technique de la nation' [Protecting the nation's scientific and technical potential], 22 Nov. 2022; German Federal Ministry of Education and Research, 'Position paper on research security in light of the Zeitenwende', Oct. 2024; Reuters, 'Italy announces plan to shield research from foreign influence', 7 Nov. 2024; and UHR, Vetenskapsrådet och Vinnova, 'Nationell stödfunktion för ansvarsfull internationalisering' [National support function for responsible internationalization], 16 Dec. 2024.

the same priority to all risks. Some focus much more on undesired transfers (see Denmark and the Netherlands). Others explicitly mention states of concern, such as Russia, China and Iran (see Germany and Norway) while some refer only to undemocratic or non-liked-minded states. The entities in charge of implementing aspects of research security policies also vary, from ministries of research, education and innovation (in Denmark, Germany and Norway) to the intelligence services (in Denmark), to dedicated contact points set up as a result of a collaboration between several ministries and agencies (in the Netherlands). Another variable is whether states choose to adopt soft law or legally binding measures. Thus far, most of the states in Europe that have adopted research security approaches have published or are in the process of publishing guidelines for academia and research institutes. In some cases, such as the Netherlands, states are also preparing to introduce mandatory screening of the foreign researchers and students who will engage in particularly sensitive research areas as part of a wider set of tools for enhancing research security.[27]

III. APPLYING EXPORT CONTROLS IN ACADEMIA AND RESEARCH INSTITUTES IN THE EU

Recent EU and member state policy developments aim to strengthen the ability of academia and research institutes to address security-related risks. Export controls is one of the main security-related obligations academia and research institutes have had to implement, but they have faced long-standing challenges in applying such controls, which this section explores.

Inherent tensions between academic freedom, institutional autonomy and security objectives

Academic freedom and autonomy are key values for researchers throughout the EU. Freedom of research is a civil right that has been constitutionally enshrined in some EU member states, including Germany.[28] It is also a right protected by article 13 of the EU Charter of Fundamental Rights, which states that: 'The arts and scientific research shall be free of constraint. Academic freedom shall be respected'.[29] In practice, academic freedom means that researchers should be free to choose the subject of their research and to enter into international research collaborations. International research cooperation is recognized as having a range of benefits. It is often required to achieve the highest quality research, by drawing on a broader range of resources, ideas and backgrounds.[30] International research cooperation is also very widespread. In 2021, for example, 70 per cent of scientific publications in Sweden were co-authored by at least one partner based abroad.[31]

This poses inherent challenges for research and academia to uphold the principles of academic freedom and institutional autonomy while also addressing security concerns and related obligations. States have put in place international and national export controls and other legal obligations to oversee and regulate transfers of weapon of mass destruction- (WMD) and military-relevant technologies. These involve licensing requirements before an export can take place. This is not a new challenge and there is a growing understanding among many in research institutes and academia that with academic freedom comes academic responsibility.[32] In some states, national authorities have clarified that academic freedom does not provide exemption from compliance with export control regulations, and that export controls do not aim 'to restrict research or censor its results, but solely to prevent its misuse'.[33] There have also been a range of efforts and initiatives to strengthen academic responsibility within academia and research institutes, some of which have explored the role of ethics and self-regulation.[34]

Nonetheless, a perception remains that security considerations, including the application of export controls, might clash with academic freedom, which

[27] Government of the Netherlands (note 26). This screening proposal is still in development and its exact scope (e.g. which disciplines are covered) is not known.

[28] Jakob, U. et al., 'Applying ethics in the handling of dual use research: The case of Germany', *Research Ethics*, 10 June 2024.

[29] Charter of Fundamental Rights of the European Union, *Official Journal of the European Union*, C326/391, 26 Oct. 2012.

[30] Shih, T., 'Responsible internationalization: Why, what, and how?', OSF, 18 Dec. 2023.

[31] Shih (note 30).

[32] Charatsis, C., 'Dual-use research and trade controls: Opportunities and controversies', *Strategic Trade Review*, vol. 3, no. 4 (Spring 2017), p. 57.

[33] German Federal Office for Economic Affairs and Export Control (BAFA), *Export Control and Academia Manual* (2nd edn), Nov. 2023.

[34] Joint Committee on the Handling of Security-Relevant Research, 'Security-relevant research', accessed 28 Nov. 2024; and Jakob et al. (note 28).

Table 1. Selected national measures on research security adopted or currently being considered by European states, as of January 2025

Policy name	Main risks identified and countries of focus	Stage of development	Source(s)
Denmark			
Knowledge security	Risks: Transfers of knowledge related to critical technologies, affairs of state and critical infrastructure; foreign interference. Focus: non-like-minded states, especially those with a civil–military fusion policy	May 2022: Guidelines published by the Ministry of Higher Education and Science on international research and innovation cooperation; Aug.2023: Guidance published by the Danish intelligence service	Danish Security and Intelligence Service, 'Knowledge Security', accessed 7 Mar. 2025; Danish Ministry of Higher Education and Science on behalf of the Committee on Guidelines for International Research and Innovation Cooperation, 'Guidelines for international research and innovation cooperation Committee on guidelines for international research and innovation cooperation', May 2022.
France			
Protection of scientific and technical potential	Risks: Undue collection of knowledge, misappropriation of knowledge and foreign interference affecting the economic interests of the nation; strengthening foreign military arsenals or weakening the defence capabilities of the nation; contributing to weapons of mass destruction proliferation; or use for terrorist purposes. Focus: country agnostic	2012: policy published, including 'Restrictive Regime Zones' for sensitive research to be performed securely; 2018: Guidance published by General Secretariat for Defence and National Security (SGDSN) and French Cybersecurity Agency	SGDSN, 'Protéger le potentiel scientifique et technique de la nation' [Protecting the nation's scientific and technical potential], 22 Nov. 2022.
Germany			
Research security	Risks: Undue influence, interference, or misappropriation of research; theft of ideas, research outcomes and intellectual property. Focus: States (including mention of China and Iran), militaries and their proxies, as well as non-state actors and organized criminal activity	Oct. 2024: Position paper published by the Federal Ministry of Education, outlining priorities: to review existing instruments, strengthen awareness and reconsider the strict separation between civil and military research	German Federal Ministry of Education and Research, 'Position paper on research security in light of the Zeitenwende', Oct. 2024.
Italy			
n/a	n/a	2025: Ministry of Universities and Research is preparing National Action Plan and guidelines	Decode 39, 'How Italy plans to tackle foreign interference in research', 7 Nov. 2024; ANSA, 'In arrivo le linee guida sulla sicurezza nella ricerca' [Research security guidelines coming soon], 13 Jan. 2025.

Policy name	Main risks identified and countries of focus	Stage of development	Source(s)
Netherlands			
Knowledge security	Risks: Undesirable transfer of sensitive knowledge and technology with negative implications for national security and ability to innovate; covert activities aimed at influence and interference activities; ethical issues in countries in which fundamental rights are not respected. Focus: country-agnostic	2022: National Contact Point for Knowledge Security established and Knowledge Security Guidelines published; Knowledge institutions to conduct a risk assessment and take part in external audit to review their knowledge security policy. 2024: Ministry of Education, Culture and Science preparing Knowledge Security Screening Act	Government of the Netherlands, 'National knowledge security guidelines', 7 Apr. 2022.
Norway			
Responsible international knowledge cooperation / Knowledge security	Risks: Unwanted transfer of sensitive knowledge and technology with negative consequences for national security and innovation capacity; influencing and disrupting activities on behalf of foreign state actors; ethical issues. Focus: countries where fundamental rights are not respected, including China, Iran and Russia	Since Oct. 2020: Ministry of Education and Research organized roundtable meetings on 'academic cooperation with China'; Jan. 2023: Guidelines published; Establishment of independent networks focused on security-related topics among higher education and research institutions	Norwegian Directorate for Higher Education and Skills and Research Council of Norway, Guidelines and Tools for Responsible International Knowledge Cooperation, 14 Aug. 2023; European Commission, 'Feedback from: Norwegian Ministry of Education and Research', 3 Jan. 2024.
Sweden			
Responsible inter-national-ization	Risks: New challenges for international collaborations in higher education, research and innovation. Focus: China, Iran and Russia identified as the highest-risk countries	2024: interim and final reports and guidelines on 'Responsible Internationalization' published by the Swedish Research Council, Vinnova and the University and Higher Education Council (UHR), tasked by the Swedish government. Plans for a national support function to be established to provide support and build capacity on responsible internationalization	UHR, Vetenskapsrådet och Vinnova, 'Nationell stödfunktion för ansvarsfull internationalisering' [National support function for responsible internationalization], 16 Dec. 2024.
United Kingdom			
Trusted research	Risks: theft, misuse or exploitation. Focus: states where 'democratic and ethical values are different' from the UK	Sep. 2019: launch of Trusted Research Guidance by National Cyber Security Centre (part of Government Communications Headquarters) in partnership with Universities UK; July 2024: publication of updated guidance	National Protective Security Authority and National Cyber Security Centre, UK, 'Trusted research: Guidance for academics', 2 July 2024; Universities UK, 'Managing risks in internationalisation: Security related issues', Oct. 2020.

has sometimes affected willingness to engage with outreach efforts. More pragmatically, the time taken to process security-related requirements, including export licence applications, can hinder international cooperation. A licensing decision on an application or a response to an inquiry can take from several days to several months.[35] An important additional concern in the academic community is that an extensive focus on security could lead to discrimination and suspicion being cast on to foreign employees by virtue of their nationality.[36] A balance between the principles of academic freedom, autonomy and self-governance, on the one hand, and security concerns, on the other, can be even more difficult to achieve where the research security requirements placed on academia and research institutes focus on national and economic security.

Disparities in export control awareness and available resources

The primary focus of export controls has traditionally been industry. This has led to a lack of accounting for the specificities of applying export controls in a research context and contributed to a lack of awareness among research institutes and especially academia.[37] In the EU, however, the situation appears to have evolved in the past decade. In 2021, the EU published guidance on internal compliance programmes (ICPs) for 'controls of research involving dual-use items'.[38] The guidance defines ICPs as 'ongoing effective, appropriate and proportionate policies and procedures adopted by exporters to facilitate compliance' with export controls, but also in many cases with other legal obligations and internal policies such as codes of conduct. This guidance led a growing number of universities and research institutes to initiate or speed up the process of adopting and implementing their own ICPs.[39]

Despite this progress, the level of awareness about export control regulations among universities and research institutes is still highly uneven and differences remain among the EU member states. Academics and research institutes in countries such as Belgium, Germany, the Netherlands and Sweden appear to have been most active in setting up national or European forums for dialogue, outreach to authorities, exchange and training on export controls.[40] This could in part be because these states provided export control-related guidance to academia and research institutes early on or conducted outreach following cases of export control violations or risk of such violations.[41]

There are also differences between the various academic disciplines that might be affected by export control obligations. For example, some research organizations in the life sciences sector have issued specific guidance on the identification of dual-use research and biosecurity, as well as export control-related risks.[42] However, emerging fields of research may be more likely to have lower awareness about such controls. In the AI field, for example, overall awareness of security risks among practitioners and researchers remains low.[43] Specific knowledge about applicable export control regulations is probably even lower. To address this, some universities and research institutes have centralized export control processes and appointed export control officers to take the lead in preparing and administering licence applications.[44] While this provides a level of standardization and the ability to centralize information, it is essential that

[35] Van der Molen, I. et al., *Keeping Science Open? Current Challenges in the Day-to-Day Reality of Universities*, White Paper, CESAER, 18 Oct. 2023.

[36] Norwegian Directorate for Higher Education and Skills and Research Council of Norway (note 26).

[37] Bauer, S. et al., *Challenges and Good Practices in the Implementation of the EU's Arms and Dual-use Export Controls: A Cross-sector Analysis* (SIPRI: Stockholm, July 2017), pp. 27–28; and Michel, Q., 'Trade control and dual-use research: A difficult compromise', University of Liège, Europan Studies Unit, Feb. 2022, p. 18.

[38] European Commission, 'Commission Recommendation (EU) 2021/1700 of 15 September 2021 on internal compliance programmes for controls of research involving dual-use items under Regulation (EU) 2021/821 of the European Parliament and of the Council setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items', *Official Journal of the European Union*, L. 338/1, 23 Sep. 2021.

[39] Van der Molen et al. (note 35); and KTH Royal Institute of Technology, 'KTH Royal Institute of Technology's Export Control Programme', English translation, 29 Nov. 2021.

[40] See e.g. the five founding members of the European Export Control Association for Research Organizations (EECARO): Liège Université, KU Leuven, imec, Fraunhofer and TNO, which are based in Germany, Belgium and the Netherlands. See also Järvenhag, C., 'För få forskare klassar sina data som känsliga' [Too few researchers classify their data as sensitive], Tidningen Curie, 3 Sep. 2024.

[41] Bauer, S. et al., 'Internal compliance and export control guidance documents for actors from academia and research', SIPRI Good Practice Guide, July 2017; and SVT, 'Ny kritik efter UG:s avslöjande av Kina-affären' [New criticism after UG's revelation of the China affair], 11 Oct. 2014.

[42] Bauer et al. (note 37), p. 20.

[43] Boulanin, V. et al., 'AI missteps could unravel global peace and security', IEEE Spectrum, 21 July 2024.

[44] See e.g. KTH Royal Institute of Technology, 'Export control in collaborations involving sensitive technology', accessed 21 Oct. 2024.

researchers who know the technology best have a central role in classifying their own technologies.

The lack of human and financial resources for export control functions also presents challenges.[45] Some universities and research institutes have taken steps to increase the exchange of information and level of training by setting up export control associations at the European level or organizing at the national level.[46] This is crucial because recent efforts to increase funding for research on military or dual-use applications, notably in the EU through the European Defence Fund (EDF), have brought academia and research institutes closer to dual-use and military research.[47] Academia and research institutes are also increasingly developing partnerships with the private sector and becoming more engaged in applied research with concrete or potential commercial applications, including through the establishment of spin-offs or start-ups. This makes academia and research institutes highly relevant actors with regard to export controls.[48]

The research security policies currently being adopted are likely to require further efforts to raise awareness about new guidance and requirements, as well as additional resources from academia and research institutes to implement them. A lack of additional resources could strain the already limited capacity of these entities to implement security-related requirements, even as the EU envisages options for increasing support for dual-use research.[49]

The prevalence of intangible transfers of technology

Even for universities and research institutes that have an ICP in place, complying with the controls on ITT presents major challenges. Activities that might be covered by ITT controls are common in research settings because much of the research produced can be transferred through intangible—or non-physical—means, such as through informal exchanges between researchers, in publications, during training or by inviting foreign researchers to work on dual-use research.[50] Technology is defined in the EU dual-use regulation as specific information '"required" for the "development", "production" or "use" of goods controlled'.[51] The EU dual-use regulation also covers the provision of 'technical assistance', defined as 'instruction, advice, training, transmission of working knowledge or skills or consulting services', when it concerns dual-use items and there is a potential WMD-related application or a military end-use in an embargoed destination.[52] The controls extend to cases where technical assistance is provided to residents of a third country temporarily present in EU territory. It has been left to individual EU member states to determine how these controls should be applied.[53]

To comply with the controls, academia and research institutes need to understand whether they are exporting any controlled dual-use items or any controlled technology that relates to those items, or providing any controlled technical assistance. However, understanding the military or dual-use applications of research activities, and especially classifying research according to the technical specifications of the EU control lists, is not always straightforward. Furthermore, the EU dual-use regulation provides several exemptions from technology controls for basic scientific research, defined as 'experimental or theoretical work undertaken principally to acquire new knowledge of the fundamental principles of phenomena or observable facts, not primarily directed towards a

[45] Bauer et al. (note 37); and Van der Molen et al. (note 35).

[46] European Export Control Association for Research Organizations (EECARO) website, accessed 1 Dec. 2024; and Järvenhag (note 40).

[47] Naujokaitytė, G., 'Security concerns and funding draw academics and SMEs into defence research', *Science Business*, 25 June 2024..

[48] Michel, Q. et al., 'Do academic activities contribute to WMD proliferation?', European Studies Unit, Liège University, 2018, pp. 16–17. See also University of Liège, 'Spin-offs', accessed 7 Jan. 2025; and Rzhevkina, A., 'Czechia targets knowledge transfer reforms to tackle "stagnant situation" in innovation', *Science Business*, 6 Mar. 2024.

[49] European Commission, 'White Paper on Options for Enhancing Support for Research and Development Involving Technologies with Dual-use Potential', 24 Jan. 2024. These options are still being discussed and the proposal led to criticism from some universities. See e.g. Matthews, D., 'Universities not in favour of dual-use research', *Science Business*, 19 Sep. 2024.

[50] Héau, L. and Brockmann, K., *Intangible Transfers of Technology and Software: Challenges for the Missile Technology Control Regime* (SIPRI: Stockholm, Apr. 2024), p. 16.

[51] Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items (recast), *Official Journal of the European Union*, L206/1, 11 June 2021. In the EU dual-use regulation, single quotation marks are used to define a term that is specific to one control list category and double quotation marks are used to define a term throughout the control list.

[52] Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 (note 51). Article 8(4) states that each EU member state may decide to extend controls on the provision of technical assistance to non-listed dual-use items (a catch-all control) for the same end-use concerns.

[53] Bromley, M. and Brockmann, K., *Implementing the 2021 Recast of the EU Dual-use Regulation: Challenges and Opportunities* (EUNPDC: Stockholm, Sep. 2021), p. 5.

specific practical aim or objective', and for research already in the public domain, which 'has been made available without restrictions upon its further dissemination', as well as for the minimum information necessary to file patent applications.[54]

Interpreting these exemptions, as well as other aspects of the controls on technology transfers, is challenging for academia and research institutes in part due to the variations in the practices of individual EU member states. For example, states differ with regard to whether or how export controls apply when controlled technology is stored on or shared through cloud computing services.[55] The use of cloud computing services is increasing globally, including among academia, and this topic has emerged as a concern among research institutions in the context of export controls.[56] In the area of technical assistance, while some states appear to control the provision of instruction, competences, skills and training through export controls, others focus on expanding the use of tools such as screening mechanisms for students and researchers in specific disciplines.[57]

Some EU member states have published or updated guidance materials to clarify national interpretations and applicable definitions.[58] At the EU level, the EU guidance on internal compliance programmes for academia and research institutes provides clarifications and concrete examples.[59] The European Council Working Party on Dual-Use Goods has confirmed the need to adopt guidelines on ITT controls and begun work on preparing these.[60] However, both national and EU guidance have struggled to provide decisive answers to some outstanding challenges related to the application of export controls, including ITT controls, in a research setting. Unless dedicated efforts are made to harmonize and improve effective implementation of such controls, many of the objectives of the EU research security initiative are unlikely to be achieved.

IV. THE OPPORTUNITIES AND RISKS OF LINKING RESEARCH SECURITY WITH EXPORT CONTROLS

Applying export controls in academia and research institutes has presented a number of challenges. Unless improvements are made in this area, at least some of the research security objectives are unlikely to be met, and the challenges faced in the field of export controls might even be exacerbated. Moreover, using export control tools and related measures to achieve aspects of research security objectives comes with its own risks and opportunities.

Risks

Increasing tensions between academic freedom and security objectives

When, in December 2023, the European Commission invited interested entities to submit feedback on an initial proposal for a research security initiative, 35 responses were submitted by academia and research institutes and the organizations that represent them.[61] The feedback was not based on the final Council recommendation, but on a much earlier and shorter document. However, the responses provide insights into how the initiative was received by a number of universities and research institutes. While a majority of the responses seemed to align with the main principles outlined, several appeared critical of the initiative. Some highlighted that existing guidelines

[54] Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 (note 51).

[55] Digital Europe, 'Export controls tech transfers', 8 July 2021.

[56] European Export Control Association for Research Organizations (EECARO), 'Comments to EU-US Trade and Technology Council's Export Controls Working Group (WG 7)', Feedback submitted during the public consultation on Working Group 7, Feb. 2022.

[57] Bromley, M. and Maletta, G., *The Challenge of Software and Technology Transfers to Non-Proliferation Efforts: Implementing and Complying with Export Controls* (SIPRI: Stockholm, Apr. 2018), p. 26.

[58] German Federal Office for Economic Affairs and Export Control (BAFA), 'Export control and academia manual (2nd Edition)', Nov. 2023; Financial Analytical Office of the Czech Republic, 'Handbook: Technical assistance and intangible transfer of technology', 2021; and Helder, J. and Klaui, C., 'EU trade update', Akin, 16 Mar. 2018.

[59] European Commission, Commission Recommendation (EU) 2021/1700 of 15 September 2021 on internal compliance programmes for controls of research involving dual-use items under Regulation (EU) 2021/821 of the European Parliament and of the Council setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items, *Official Journal of the European Union*, L 338, 23 Sep. 2021.

[60] European Commission, 'Report from the Commission to the European Parliament and the Council on the implementation of Regulation (EU) 2021/821 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items', COM(2025)19, 30 Jan. 2025.

[61] European Commission, 'Boosting research security in the EU (guidance)', Call for evidence, Feedback period 6 Dec. 2023 to 3 Jan. 2024. In total, 56 pieces of 'unique feedback' were submitted, but some included feedback from government entities, industry and individuals.

'fail to consider the risks of non-cooperation', or that scientific progress might be hindered when security considerations override international cooperation.[62] Others stressed that EU actions should aim to 'facilitate international collaboration, and not hinder internationalization'.[63] Research organizations seemed concerned about the risk that the principles of academic freedom, autonomy and self-governance in academia and research institutes might be subordinated to economic and national security concerns.

At the same time, academia and research institutes are not insensitive to geopolitical developments. There are signs of an increased awareness of the need for export control measures, as well as guidance on research security, such as on how to manage research cooperation with institutes based in China.[64] This comes at a time when the EDF is being expanded, and universities are being encouraged to take part in more dual-use research. That said, a number of responses highlighted the need for concrete guidance, tools and direction from the EU and national authorities, and the problem of existing resource constraints if further requirements are put on academia and research institutes.[65] Some of the responses also discussed the risks that come with pushing the entire responsibility on to researchers or individual research organizations to decide whether to pursue international cooperation. Academia and research institutes are now having to take decisions on national security and economic security matters, such as whether or how to conduct security screenings, that they did not have to make before.[66] In particular, a lack of political direction and firm guidance could lead to academia and research institutes refusing to participate in academic partnerships or joint projects because of a lack of clarity around the rules that apply, or the risks are perceived as too high. Overcompliance would have a negative impact on cooperation, innovation and research as a whole. If the guidance proves too complex, unclear or demanding, there is also a risk that academia and research institutes might pursue international cooperation without taking research security measures into account.

Blurring the lines between export controls and research security

(a) *Differences in rationale:* Mitigating the risks of undesirable transfers of critical knowledge and technology, which is one of the three risk categories in the EU research security initiative, is also at the core of the objectives of export controls. The Council recommendation makes an explicit link between research security and export controls: 'in the domain of Union export control rules for dual-use goods and technology, the Regulation (EU) 2021/821 of the European Parliament and of the Council is of significant importance to research security'.[67]

Export controls and research security are policy instruments that each come with their own objectives. Although this is not new, export controls are increasingly being used as a tool for advancing states' national security objectives in the current strategic competition.[68] Export controls have also been instrumental in implementing international norms and the obligations found in arms control treaties with a non-proliferation focus, as well as some of the provisions of international humanitarian and human rights law, United Nations Security Council resolutions and the multilateral export control regimes.[69]

Research security has been more closely and directly associated with economic security objectives or the promotion of economic security interests. The balance between protection and cooperation also feeds into the proposal on enhancing research security.[70] This reflects the evolving concerns of states, whereby economic security is becoming a more prominent part

[62] European Commission, 'Feedback from: Deutsches Elektronen-Synchrotron DESY', 3 Jan. 2024.

[63] European Commission, 'Feedback from: Stockholms universitet', 3 Jan. 2024.

[64] Järvenhag (note 40); European Export Control Association for Research Organizations (EECARO), 'EECARO's Feedback on the "Enhancing Research Security in Europe" Call for Evidence', 22 Dec. 2023; and Matthews, D., 'Germany moves to create new restrictions on research cooperation with China', *Science Business*, 18 July 2023.

[65] European Commission, 'Feedback from: League of European Research Universities', 22 Dec. 2023; European Commission, 'Feedback from: Helmholtz-Gemeinschaft Deutscher Forschungszentren e.V.', 3 Jan. 2024; European Commission, 'Feedback from: Centre National de la Recherche Scientifique', 3 Jan. 2024; and European Export Control Association for Research Organizations (note 64).

[66] ETH Zürich, 'Dual use and sanctions: These applications require security screening', 24 Oct. 2024.

[67] Council of the European Union, 'Council recommendation on enhancing research security', 9097/1/24, 14 May 2024.

[68] Kim, H. and Shaw, R., 'Strategic trade controls as a foreign policy tool in strategic competition: Implications of a shift beyond global nonproliferation goals', *Strategic Trade Review*, vol. 10, no. 11 (winter/spring 2024).

[69] Boulanin, V., Brockmann, K. and Richards, L., *Responsible Artificial Intelligence Research and Innovation for International Peace and Security* (SIPRI: Stockholm, Nov. 2020), p. 25.

[70] Council of the European Union (note 67).

of the broader set of national security concerns. By proposing that export controls are used as one of the tools for implementing aspects of research security, the EU is linking the implementation of research security with export controls. In doing so, the research security initiative risks blurring the common international security objectives of non-proliferation and stability that come with export controls with the national and EU economic objectives that arise from the research security initiative.

(b) *Differences in scope and legal status:* The scope of undesirable transfers of critical knowledge and technology that the EU research security initiative is seeking to prevent is much broader than the scope of the export control lists. Critical knowledge and technology is defined in the Council recommendation as 'knowledge and technology, including know-how, in emerging and disruptive areas and in domains that are key to economic competitiveness, social welfare and the security of the Union and its Member States and in which, consequently, overdependency on third countries is undesirable'.[71] The Council recommendation refers to the ten critical technology areas identified by the EU in Commission Recommendation (EU) 2023/2113, but does not restrict the definition of critical knowledge and technology to these areas.[72] Another essential characteristic is that the EU research security initiative is non-binding, and the majority of national research security measures adopted by individual states are also guidelines that do not amount to legally binding obligations.

Conversely, export controls are largely list-based instruments that cover certain dual-use and military technologies that fall within defined thresholds and have specific performance capabilities. These are complemented by catch-all controls, which enable states to impose controls on items that do not appear on their control lists but which are likely to be used for a proscribed end-use. These are particularly useful in the case of emerging technologies to allow export controls to be applied to non-listed items destined for specific end-uses, such as a WMD programme.[73] In a research setting, export-controlled research can therefore be defined as 'those research and development activities involving items, technologies, and software restricted under relevant trade control law'.[74] Export-controlled research is focused primarily on 'civil research activities that are considered as integral to the design, construction, use, and delivery of Weapons of Mass Destruction and in some instances of conventional weapons'.[75]

In the EU, export controls are covered by a common legal framework. The EU dual-use regulation is directly applicable in EU member states and enforced through each state's national control system. The EU Common Position on arms exports lists a common set of criteria for authorizing arms exports but leaves its application to each member state.[76]

Increasing complexity in coordinating the multiplication of approaches and instruments

The EU research security initiative aims to harmonize national approaches to research security but it is unclear how this will be achieved in practice, especially as several states had already adopted their own national approaches before the Council recommendation was published. For instance, the Netherlands is adopting a screening mechanism for foreign students applying for high-risk courses. France has also sought to control foreign access to sensitive research but has chosen to limit online and physical access to buildings and laboratory facilities rather than restrict access for researchers from third countries to sensitive research domains.[77] Without a degree of harmonization or at least coordination on the measures adopted by EU member states, variations in national approaches are likely to lead to compliance challenges for academia and research institutes when implementing research security measures, added to those that already exist in the export controls area.[78] Another concern raised by some universities in the UK and the Netherlands is the 'waterbed effect', which refers to the risk that unless measures are adopted by all EU member states,

[71] Council of the European Union (note 67).

[72] European Commission, 'Commission recommends carrying out risk assessments on four critical technology areas: Advanced semiconductors, artificial intelligence, quantum, biotechnologies', Press release, 3 Oct. 2023.

[73] Brockmann, K., 'Drafting, implementing, and complying with export controls: The challenge presented by emerging technologies', *Strategic Trade Review*, vol. 4, no. 6 (Spring/Summer 2018), pp. 22–23.

[74] Charatsis (note 32), p. 53.

[75] Charatsis (note 32), p. 53.

[76] Council of the European Union, Council Common Position 2008/944/CFSP of 8 Dec. 2008 defining common rules governing control of exports of military technology and equipment, *Official Journal of the European Union*, L335, 8 Dec. 2008; and Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 (note 51).

[77] Van der Molen et al. (note 35); and D'Hooghe and Lammertink (note 25).

[78] European Export Control Association for Research Organizations (note 64).

researchers from third countries could move to countries where screening is not required.[79]

When looking at the broader range of export control and research security instruments, the lack of coordination at the EU, national and research organization levels could pose increasing challenges. However, coordinating instruments with different legal statuses and responsibilities becomes increasingly complex. For example, the Council recommendation refers to the role of dual-use export controls and the new measures on FDI screening, which are the subject of EU legislation; controls on outbound investments, which are the subject of proposed EU legislation; and visa screening mechanisms, which are outside the potential scope of EU legislation but some EU member states are considering.[80] On FDI, 24 EU member states had adopted a national screening mechanism as of the end of 2023 and the remaining three were in the process of adopting one.[81] The EU is currently seeking to further harmonize national FDI approaches with a new proposal launched as part of the EU Economic Security Strategy. However, there are reports that some EU member states are pushing back against aspects of this initiative.[82] Another type of instrument some European states—such as the Netherlands and the UK, with its Academic Technology Approval Scheme—have adopted or are taking steps to adopt a screening mechanisms for foreign students. The EU research security initiative recommends their use but since this remains an area of exclusive national competence, there is limited scope to develop a common EU approach that goes beyond the provision of guidelines.[83]

[79] Van der Molen et al. (note 35); and D'Hooghe and Lammertink (note 25).

[80] Council of the European Union, 'Council adopts a recommendation to enhance research security', Press release, 23 May 2024.

[81] EU Directorate-General for Trade, 'Report from the Commission to the European Parliament and the Council: Fourth report on the screening of foreign direct investments into the Union', COM(2024)464, 17 Oct. 2024.

[82] European Commission, Factsheet, 'Economic Security: Proposal for a new regulation on the screening of foreign investments', 24 Jan. 2024; and Gijs, C., 'EU capitals try to gut investment screening rules aimed at keeping China out', Politico, 26 Nov. 2024.

[83] UK Government, 'Guidance: Academic Technology Approval Scheme (ATAS)', 25 Mar. 2013, Updated 8 Jan. 2025; and Government of the Netherlands (note 26).

Opportunities

Increasing mutual awareness-raising

Given the existing challenges concerning the application of export controls in academia and research institutes, embedding export control-related and research security requirements into respective guidance and larger ICPs might help to increase overall awareness of both sets of requirements. It would be useful to underline areas where the requirements related to complying with export controls might overlap with or diverge from the steps that need to be taken to avoid the misuse of research and to provide researchers with a better understanding of how these two goals complement and reinforce each other.[84] Ethical issues have also been emphasized as an important part of export control-related due diligence efforts, as a complement to strict compliance with legal obligations.[85] However, they are not always linked to such due diligence processes.

The Council recommendation proposes that ministries of research, education or innovation take the lead on issues of research security, but that a whole-of-government approach also be adopted in this area. Thus far, this has been the approach taken by most of the EU member states that have devised a research security policy (table 1). This could help to increase interagency cooperation in national governments and support the development of a culture of export control compliance among academia and research institutes. These ministries are direct interlocutors with academia and research institutes. Increased awareness of export controls among these ministries through the adoption of research security measures could support better integration of such controls. At the same time, these ministries are likely to have a more granular understanding of how research works and of research funding dynamics, and therefore be able to relate to the concerns of academia and research institutes in relation to export controls. This might help bridge the gap between export control authorities and academia and research institutes and address the recurring concern on the part of the latter that export control licensing authorities are not always familiar with the way research organizations work.[86]

[84] Bromley and Maletta (note 57), p. 37.

[85] 2024 Erlangen Conference, Nuremberg, 20–21 Nov. 2024.

[86] Järvenhag (note 40).

Using experience gained from implementing export controls to implement aspects of research security

The EU recommends using a risk appraisal approach to implement research security measures. Research organizations have pointed out that there are similarities between this risk appraisal and the transactional screenings they carry out as part of due diligence measures to comply with export controls.[87] The research security risk appraisal should be conducted by research organizations on: (*a*) the risk profile of the EU organization seeking to enter into an international cooperation with a third country organization; (*b*) the domain in which the international cooperation is to take place, and whether it involves critical knowledge and technology; (*c*) the risk profile of the third country where the international partner is based or from where it is owned or controlled, including whether it has 'aggressive civil military fusion strategies'; and (*d*) the risk profile of the international partner organization, through a due diligence screening of the organization, including to determine whether it has links with the military and the affiliations of the researchers or other staff involved.[88]

Use of the expertise gained in transaction-based screening by some actors in academia and research institutes could therefore in principle support the application of at least that part of the EU research security initiative that focuses on mitigating the risks of undesirable transfers. However, risk appraisal under the EU research security initiative has a much broader scope than that carried out to classify technology under export controls. Moreover, not all entities in academia and research institutes have put such an approach in place. Nor does a transaction-based screening approach to export controls appear sufficient to implement all aspects of research security. Equally, the risk appraisal approach is not likely to be sufficient for the implementation of export controls in academia and research institutes. That said, the use of risk appraisals in the EU research security initiative might in the medium term lead to an increase in the use of transaction-based screening by actors in academia and research institutes.

[87] European Export Control Association for Research Organizations (EECARO), 'Feedback on the factsheet research security: Building blocks for risk appraisal', 25 Oct. 2024.

[88] European Commission, Factsheet, 'Research security: Building blocks for risk appraisal', Jan. 2024.

V. RECOMMENDATIONS

Applying export controls in academia and research institutes presents many challenges. Unless improvements are made in this area, the objectives of research security are unlikely to be fully met and the challenges faced might even be exacerbated. The respective rationales for, and the objectives and scopes of, research security and export controls differ. While economic security concerns are central to research security, states have used export controls in large part to address proliferation concerns linked to WMD and other common international security concerns.[89] That said, there are opportunities for the two policy tools to reinforce each other, not least by strengthening awareness among academia and research institutes of their security-related requirements, and by making use of the current momentum to strengthen the application of ITT controls in academia and research institutes.

The recommendations set out below constitute steps that could be taken to support the goals of the research security initiative and export controls, and the ability of academia and research institutes to implement their respective requirements.

For the European Union

Encourage dialogue and internal alignment

Research cultures vary at the national level, as do the institutional set-ups in academia and research institutes, and the resources available. This necessarily leads to differences in the way in which individual EU member states develop research security policies. Nonetheless, ensuring a degree of alignment within the EU will be important to avoid increased complexity and disparities in the way that academia and research institutes apply research security provisions. To encourage alignment of such provisions, the EU could facilitate dialogue and information exchange on research security between its institutions, the EU member states, and academia and research institutes, including on how research security and export controls might complement each other. Resuming the annual EU export control forum, which the Commission organized on an annual basis until 2022, would provide an opportunity to discuss issues related to the implementation of export controls in academia and

[89] See e.g. the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty) and the 2013 Arms Trade Treaty.

research institutes.[90] Alternatively, or in addition, an equivalent forum on research security could be created.

Provide tools and guidance

Additional tools or guidance from the EU would effectively support EU member states, academia and research institutes to implement research security provisions in many areas. One such tool would be the establishment of a European Centre of Expertise on Research Security, which is proposed in the Council recommendation. This centre could be instrumental to gathering evidence and good practices on how states view and implement research security provisions, and how these intersect with export controls in practice, as well as developing a community of practice. It could also develop guidance on enhancing research security in specific technology fields, such as the critical technology areas already identified by the EU.

Prioritize improvement of ITT controls

A more harmonized approach to ITT controls in the EU would be highly beneficial to both export controls and research security and would enable compliance teams in academia and research institutes to prioritize their resources. It would also avoid delays in the implementation of international research projects.[91] The momentum created by the EU research security initiative provides an opportunity to achieve progress on how EU member states approach ITT controls and how the EU can support their harmonization. This could in part be done through the provision of guidance by the European Commission, which is discussed in the Council recommendation. Such guidance should be as concrete and practical as possible, and address the issues around how export controls might apply when controlled items are shared or made available via cloud computing, how to apply the exemptions for basic scientific research and research in the public domain, and the application of controls on technical assistance. Where applicable, it would also be useful for the guidance to pay close attention to the application of other EU instruments that create or might create controls on ITT, such as sanctions, the FDI screening directive and research security, in order to identify opportunities for complementarity and coordination.

[90] European Commission, '2022 Export Control Forum', 6 Dec. 2022.

[91] European Export Control Association for Research Organizations (EECARO), 'Feedback: R&D on dual-use technologies, options for support', 29 Apr. 2024.

For European Union member states

Adopt national research security measures and provide political direction

In the absence of a common EU legal framework, it is the EU member states that are responsible for defining and implementing research security provisions. They therefore have a key role in defining responsibilities and roles, and developing a national approach that takes account of the guidance provided by the Commission. While the design of national approaches varies based on institutional, cultural and financial factors, setting up a dialogue with and opportunities for meaningful involvement of research organizations is crucial.

It is also key that states provide clear political direction and protection for academia and research institutes when it comes to interpreting matters of national security. For example, leaving the decision on whether to perform a screening of foreign researchers to individual research organizations could increase the administrative burden, in terms of both financial constraints and unfamiliarity with dealing with national security and economic security issues. National authorities could consider undertaking the screening of foreign researchers. This would allocate the resources needed and lead to the development and application of risk assessment criteria grounded in arms control and non-proliferation norms and standards. Alternatively, they could ensure that if research organizations perform the screening, there is an opportunity to reach out to national authorities in cases of doubt.[92] In all cases, proper safeguards should be applied to avoid any form of discrimination. Insights from the Netherlands, where there has been a lengthy ongoing debate on the proposed establishment of a security screening mechanism, include to take a country-agnostic approach and to base screening on higher risk disciplines.[93]

Increase collaborative outreach

The Council recommendation highlights the value of bringing together policymakers responsible for higher education, research and innovation, trade,

[92] ETH Zürich, 'Dual use and sanctions: These applications require security screening', Press release, 24 Oct. 2024.

[93] Rijksoverheid [Government of the Netherlands], 'Kamerbrief over afbakening doelgroep wetsvoorstel screening kennisveiligheid' [Letter to Parliament on the demarcation of the target group for the bill on screening knowledge security], Chamber Document, 17 Jan. 2025.

foreign affairs, intelligence and security in the implementation of research security. However, a forum that also includes representatives of academia and research institutes would be most useful to ensure that research security policies are developed with the collaboration of the actors that will have to implement them. One example of such a forum is the Higher Education Security Forum in the UK, which gathers relevant government entities, universities and funding agencies, as well as export control associations to share information and increase engagement.[94] This should lead to increased awareness among these actors of both research security and export controls, which could lead to a better understanding among government entities of the specificities of academia and research institutes, and enable those entities to conduct effective and targeted outreach. In particular, this could create the conditions for the Council recommendation's proposal on facilitating 'information exchange between research performing organisations and research funding organisations on the one hand and intelligence agencies on the other hand'.

For the research community

Strengthen and coordinate due diligence processes

Academia and research institutes have been active in recent years in adopting ICPs to implement export control obligations and distribute relevant responsibilities within their organizations. Research security requirements have not been adopted by all EU member states, and in most states where they have been adopted they mostly comprise non-binding guidance. It is likely that as more EU member states adopt research security measures, academia and research institutes will need to adapt their due diligence processes to implement them.

It would therefore be worth exploring how export controls and research security can be integrated into broader ICPs, which would ensure that researchers have a clearer sense of the applicable obligations and guidance in these two areas. This would also provide an understanding of how their respective goals can complement and reinforce each other, and avoid creating an undue burden on academia and research institutes. Similarly, appointing staff members to implement both export controls and research security might be a strategic use of limited available resources.

Develop education, awareness-raising and research

If academia and research institutes—and the individual researchers within them—are to be able to identify threats to national security, or establish that partnering with a given entity outside the EU constitutes a risk that must be properly addressed, through a series of mechanisms including but not limited to export controls, further awareness-raising efforts will be needed. A number of initiatives aimed at supporting the implementation of export controls currently involve academia and research institutes, in many cases with EU or member state support and funding. At the international level, Germany in partnership with the UN Office for Disarmament Affairs set up the Erlangen initiative, a forum dedicated to strengthening dialogue between academia and export control authorities within the framework of UN Security Council Resolution 1540.[95] At the European level, the European Export Control Association for Research Organizations was set up as a network for EU research institutes and universities to address export control issues from the perspective of research.[96] At the national level, the Swedish Export Control Society was set up to support compliance officers with the application of export controls. Some of these initiatives have already started to hold discussions on the linkages between export controls and research security. Further discussions should be encouraged, to deepen understanding of how these two security-related commitments can complement each other.[97]

EU-funded instruments could be used to encourage further work on export controls in academia and research institutes and on linkages with research security. The EU Non-Proliferation and Disarmament Consortium is one potential avenue. It brings together a wide network of organizations, including universities, organizes annual proliferation awareness courses for students in science, technology, engineering and mathematics (STEM) disciplines and already addresses issues related to export controls and ITT

[94] Presentation made at the 2024 Erlangen Conference, Nuremberg, 20–21 Nov. 2024; and 'Update from the Chairs of the Higher Education Security Forum (HESF)', Higher Education Export Control Association (HEECA), Feb. 2025.

[95] UN Office for Disarmament Affairs, 'Erlangen Initiative: Fostering Collaboration Between Academia and Government Regulators for UNSCR 1540 Implementation', 22 Dec. 2023.

[96] European Export Control Association for Research Organizations (EECARO), 'About', accessed 7 Jan. 2025.

[97] Swedish Export Control Society, 'In English', 20 Feb. 2017.

challenges.[98] Further research on the development and implementation of research security policies and approaches could be pursued as part of the EU's funding programme for research and innovation, Horizon Europe. In particular, while it does not mention research security specifically, the latest Horizon Europe strategic plan refers to the 'profound transformations in European societies and economies' resulting from 'rapid technological advancements', 'geopolitical tensions' and other factors, and to the need for strengthening resilience in response.[99]

[98] EU Non-proliferation and Disarmament Consortium, 'About us', accessed 7 Jan. 2025.

[99] European Commission Directorate-General for Research and Innovation, 'Horizon Europe strategic plan 2025–2027', First Edition, Mar. 2024, pp. 63–68.

ABBREVIATIONS

AI	Artificial intelligence
EDF	European Defence Fund
FDI	Foreign direct investment
ICP	Internal compliance programme
ITT	Intangible transfers of technology
WMD	Weapons of mass destruction

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A EUROPEAN NETWORK

In July 2010 the Council of the European Union decided to support the creation of a network bringing together foreign policy institutions and research centers from across the EU to encourage political and security-related dialogue and the long-term discussion of measures to combat the proliferation of weapons of mass destruction (WMD) and their delivery systems. The Council of the European Union entrusted the technical implementation of this Decision to the EU Non-Proliferation Consortium. In 2018, in line with the recommendations formulated by the European Parliament the names and the mandate of the network and the Consortium have been adjusted to include the word 'disarmament'.

STRUCTURE

The EU Non-Proliferation and Disarmament Consortium is managed jointly by six institutes: La Fondation pour la recherche stratégique (FRS), the Peace Research Institute Frankfurt (HSFK/ PRIF), the International Affairs Institute in Rome (IAI), the International Institute for Strategic Studies (IISS–Europe), the Stockholm International Peace Research Institute (SIPRI) and the Vienna Center for Disarmament and Non-Proliferation (VCDNP). The Consortium, originally comprised of four institutes, began its work in January 2011 and forms the core of a wider network of European non-proliferation and disarmament think tanks and research centers which are closely associated with the activities of the Consortium.

MISSION

The main aim of the network of independent non-proliferation and disarmament think tanks is to encourage discussion of measures to combat the proliferation of weapons of mass destruction and their delivery systems within civil society, particularly among experts, researchers and academics in the EU and third countries. The scope of activities shall also cover issues related to conventional weapons, including small arms and light weapons (SALW).

www.nonproliferation.eu

EU Non-Proliferation and Disarmament Consortium

Promoting the European network of independent non-proliferation and disarmament think tanks

FONDATION pour la RECHERCHE STRATÉGIQUE

FOUNDATION FOR STRATEGIC RESEARCH

www.frstrategie.org

PRIF Peace Research Institute Frankfurt — HSFK Hessische Stiftung Friedens- und Konfliktforschung

PEACE RESEARCH INSTITUTE FRANKFURT

www.hsfk.de

iai Istituto Affari Internazionali

INTERNATIONAL AFFAIRS INSTITUTE

www.iai.it/en

IISS

INTERNATIONAL INSTITUTE FOR STRATEGIC STUDIES

www.iiss.org/en/iiss-europe

sipri

STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE

www.sipri.org

VCDNP Vienna Center for Disarmament and Non-Proliferation

VIENNA CENTER FOR DISARMAMENT AND NON-PROLIFERATION

www.vcdnp.org

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