Original Paper • DOI: 10.2478/ecdip-2026-0002 • 4(S1) • 2026 • 11-23 • CC-BY-NC-ND 4.0

Economic **Diplomacy**

Strategic Export Controls and the G7 Coordination Challenge

Original Paper

Robert A. Rogowsky[1,2]*

1 Professor of Trade & Diplomacy, Middlebury Institute of International Studies,
2 Adj. Professor, Georgetown University; formerly Chief Economist and Director of Operations, US International Trade Commission.

Received 21 November, 2025, accepted 22 November, 2025

Abstract

The "technology war" between the U.S. and China has prompted a proliferation of export control regimes across advanced economies. In particular, the Group of 7 (G7) nations have strengthened controls on sensitive tech exports to prevent adversaries from acquiring capabilities that could threaten security. However, coordinating these controls across the G7 remains a major hurdle. Each country faces unique economic interests and legal constraints that complicate efforts to form a cohesive front. This paper examines how U.S., European, and Japanese export control policies have tightened from 2022 through late 2025, and why aligning these measures within the G7 is so challenging. The central thesis is that while national security imperatives have led to stronger unilateral controls, multilateral coordination is lagging, undermining the effectiveness of these measures. An effectively coordinated "Tech Control Alliance" could establish common lists, shared license data, and joint diplomatic stances to persuade other nations to join controls. The task is to move from reactive, ad-hoc coordination to a standing unified framework that anticipates technological advances and updates controls in real-time.

Keywords

economic diplomacy • national security • strategic export controls

1 Introduction: National Security and the Rise of Export Controls

National security is increasingly driving countries to impose strategic export controls on critical technologies. The quiet "technology war" between the U.S. and China – exemplified by export restrictions on semiconductors and semiconductor production equipment– has prompted a proliferation of export control regimes across advanced economies.[1] In particular, the Group of 7 (G7) nations have broadened controls on sensitive tech exports, aiming to prevent adversaries from acquiring capabilities that could threaten security. However, coordinating these controls across the G7 remains a major hurdle. Each country faces unique economic interests and legal constraints that complicate efforts to form a cohesive front. This paper examines how U.S., European, and Japanese export control policies have tightened from 2022 through late 2025, and why aligning these measures within the G7 is so challenging. It also looks at China's countermeasures – from subsidies to export bans on critical minerals – which further test G7 unity. The central thesis is that while national security imperatives have led to stronger unilateral controls, multilateral coordination is lagging, undermining the effectiveness of these measures. The final section offers steps to build cohesion

1.1 U.S. Export Controls (2022–2025).

On October 7, 2022, the U.S. Commerce Department's Bureau of Industry and Security (BIS) unveiled sweeping restrictions on advanced computing semiconductors and semiconductor manufacturing equipment (SME) destined for China.[2] These rules

1 The term "export control regimes" often refers to the four major Multilateral Export Control Regime (MECRs) – the Nuclear Supply Group (NSG), Australia Group (AG), Missile Technology Control Regime (MTCR), and the Wassenaar Arrangement. For this article, the term "export control regimes" extends beyond the four established MECRs, encompassing also emergent bilateral and multilateral initiatives that may coordinate policy but not possess the institutionalized structure of the MECRs.

2 "Commerce Implements New Export Controls on Advanced Computing and Semiconductor Manufacturing Items to the People's Republic of China (PRC), BiS Press Release, October 7 2022; at; https://www.bis.doc.gov/index.php/documents/about-bis/newsroom/press-releases/3158-2022-10-07-bis-press-release-advanced-computing-and-semiconductor-manufacturing-controls-final/file [and links therein to rules]

* *E-mail: robert.rogowsky@gmail.com*

aimed to "maintain as large a lead as possible" in force-multiplying technologies like AI and high-performance chips.[3] Initially, the U.S. approach was framed as "delaying" China's progress, but by 2022 it had shifted to "degrading" China's military-tech capabilities. The October 2022 measures, engineered to slow China's AI and supercomputing development, marked a turning point in U.S.–China trade relations. It disrupted US relations with its allies as well since they were imposed unilaterally without prior allied agreement.

In January 2023, the Biden administration moved aggressively to control critical chokepoints "blocking China's access to the future of AI and semiconductor technology" by securing a trilateral deal with the Netherlands and Japan to harmonize the October 2022 export control regime across the three countries.[4] Dutch SMEs are used to produce a vast majority of the world's integrated circuits; Japan produces much of the rest. Instead of a formal commitment, the U.S. efforts focused on a "mutual understanding" of countries' priorities. Ultimately, Washington brought the leading international semiconductor technology players to its 2022 framework, albeit in an informal capacity.[5] The parties kept a low profile and declined to publicize the specific terms of the deal.

In March 2023, the Netherlands announced new restrictions aligning with the U.S. October 2022 policy. Citing an evolving threat and loopholes in earlier rules, BIS rolled out a new package of tighter controls in October 2023.[6] These updates expanded the scope of chips and equipment requiring licenses, closed loopholes that allowed certain high-performance chips (like specialized AI GPUs) to evade 2022 thresholds, and explicitly targeted third-country transshipment to China.[7] Additional rules in December 2023 added two Foreign Direct Product (FDP) rules to assert U.S. jurisdiction over foreign-made chip equipment if destined for China's advanced fabs, and placed 140 new Chinese entities on the Entity List (trade blacklist); specifically "to further impair" China's capabilities,[8] and demonstrated a willingness to continually update controls as technology evolves and as China finds workarounds.

To complement export controls, the U.S. in 2023 turned to outbound investment restrictions. In August 2023, President Biden issued an executive order laying the groundwork to screen or restrict U.S. investments in certain Chinese tech sectors, namely semiconductors, artificial intelligence, and quantum computing.[9] This move reflects a growing U.S. view that money and know-how flowing into China's high-tech industries can also undermine national security. Though still being refined via regulations (led by the Treasury Department), these measures, combined with the export bans, form a broad toolkit to prevent U.S. technology and capital from fueling China's cutting-edge advancements.

---

3 Barath Harithas and Andreas Schumacher, "Where the Chips Fall: U.S. Export Controls Under the Biden Administration from 2022 to 2024," CSIS, December 12, 2024; at: https://www.csis.org/analysis/where-chips-fall-us-export-controls-under-biden-administration-2022-2024.

4 Swanson, Ana. 2023. "Netherlands and Japan Said to Join U.S. In Curbing Chip Technology Sent to China." *NYT*, January 30, 2023. https://www.nytimes.com/2023/01/28/business/economy/netherlands-japan-china-chips.html.

5 Allen, Gregory C., and Emily Benson. "Clues to the U.S.-Dutch-Japanese Semiconductor Export Controls Deal Are Hiding in Plain Sight," *www.csis.org*, March 2023. https://www.csis.org/analysis/clues-us-dutch-japanese-semiconductor-export-controls-deal-are-hiding-plain-sight#:~:text=Combined%2C%20these%20facts%20suggest%20two. [Even so, Beijing perceived it as a U.S.-driven move and threatened retaliation. The Dutch were willing to bear short-term economic pain (ASML derived about 15% of its revenue from China in recent years) for long-term security gain. Still, Dutch officials grew anxious about being the sole EU country openly targeting China, and thus have pressed for an EU-wide approach to avoid standing alone as a retaliation target.]

6 BIS, "Commerce Strengthens Restrictions on Advanced Computing Semiconductors, Semiconductor Manufacturing Equipment, and Supercomputing Items to Countries of Concern," October 17, 2023; at: https://www.bis.gov/media/documents/2023.10.17-bis-press-release-acs-sme-rules-final-js.pdf. [These controls were strategically crafted to address, among other concerns, the PRC's efforts to obtain semiconductor manufacturing equipment essential to producing advanced integrated circuits needed for the next generation of advanced weapon systems, as well as high-end advanced computing semiconductors necessary to enable the development and production of technologies such as artificial intelligence (AI) used in military applications.]

7 For example, the performance criteria for controlled chips were broadened to capture more AI-capable processors by introducing a "performance density" metric, ensuring even chips designed to just skirt old thresholds would now be caught. See Stefan Reising and Claire Huitt, "US expands export restrictions on advanced semiconductors," Norton Rose Fulbright, October 2023; at: https://www.nortonrosefulbright.com/de-de/wissen/publications/5a936192/us-expands-export-restrictions-on-advanced-semiconductors#:~:text=On%20Tuesday%2C%20October%2017%2C%202023%2C,a%20number%20of%20other%20countries.

8 BIS, "Commerce Strengthens Export Controls to Restrict China's Capability to Produce Advanced Semiconductors for Military Applications, December 2, 2023; at: https://www.bis.gov/press-release/commerce-strengthens-export-controls-restrict-chinas-capability-produce-advanced-semiconductors-military. ["a package of rules designed to further impair the People's Republic of China's (PRC) capability to produce advanced-node semiconductors that can be used in the next generation of advanced weapon systems and in artificial intelligence (AI) and advanced computing, which have significant military applications. This action is a proactive measure enhancing the Department of Commerce's work to impede the PRC's ability to procure and produce the technologies necessary for its military modernization."]

9 Executive Order 14105 of August 9, 2023, "Addressing United States Investments in Certain National Security Technologies and Products in Countries of Concern" (the Outbound Order), and Department of Treasury final rules to implement; at: https://home.treasury.gov/news/press-releases/jy2687. [(1) prohibit U.S. persons from engaging in certain transactions with persons of a country of concern involving a defined set of technologies and products that pose a particularly acute national security threat to the United States, and (2) require U.S. persons to notify Treasury of certain other transactions with persons of a country of concern involving a defined set of technologies and products that may contribute to the threat to the national security of the United States. In the Outbound Order, the President identified the People's Republic of China, along with the Special Administrative Region of Hong Kong and the Special Administrative Region of Macau, as a country of concern.]

U.S. officials have framed these controls as necessary to protect national security and human rights. They argue that China's Military-Civil Fusion strategy blurs the line between civilian tech and military use, meaning even commercial AI chips or lithography tools sent to China could ultimately empower the People's Liberation Army.[10] By choking off China's access to the most advanced chips and equipment, the U.S. intends to hamper Beijing's ability to indigenize those technologies for military purposes.

The Biden administration repeatedly underscored a "small yard, high fence" principle – limiting a narrow set of the most advanced tech, but doing so aggressively.[11] Indeed, U.S. National Security Advisor Jake Sullivan declared in late 2022 that attaining a large lead in foundational technologies like chips and AI is a national security imperative.[12] The export curbs are thus seen as a long-term strategy: if they cannot cripple Chinese capabilities overnight, they will seek to slow China's progress and ensure that the U.S. and its allies retain a technological edge.

In 2025, US attention to export controls intensified and highlighted both the complexity of effective control and the fluidity of US policy. In January, BIS under the departing Biden Administration issued a global *AI Diffusion Rule* both to restrict PRC access to advanced chips and AI computing power through third countries and to create a secure global ecosystem for AI data centers.[13] The rule divided the world into three groups. Tier I identified 18 US intelligence and security partners excluded from licensing. Tier II, most of the rest of the world, would licensing approvals. Tier III-- China, Russia and North Korea-- would labor under presumed denials. The rule also aimed to close gaps in controls by considering multichip modes and total computing power, and by restricting PRC access to third parties, including via cloud computing services. It also ended license exceptions for front-end chip fabricators and outsourced assembly and testing, as well as restricting PRC access to advanced U.S. AI model weights.[14]

The Trump Administration immediately began to both tightened and loosened export controls on chips. Initial actions to tighten controls included adding 42 PRC entities to the Entity List and requiring Nvidia to apply for a license to sell its H20 GPU in China, which had been modified in response to U.S. export controls.[15] In May 2025, BIS determined that Huawei had developed its Ascend chips in violation of U.S. controls and warned that using such chips would violate U.S. export controls.[16] BIS also required licensing of electronic design automation (EDA) hardware and software tools for PRC sales.[17]

The new Administration also loosened controls. In July they replaced the Biden Administration's *AI Diffusion Rule*, ending proposed controls on PRC access to third-party computing centers, with its own *AI Action Plan* promoting export of the full AI technology stack—hardware, models, software, applications, and standards—to countries that join America's AI alliance.[18] Also in July, BIS rescinded license requirements for EDA firms in response to PRC agreement to resume licensing rare earth magnets for U.S. firms.[19]

In August, BIS approved Nvidia's H20 and Advanced Micro Devices's (AMD) MI308 GPUs for sale in China under terms that the U.S. government would receive 15% of proceeds.[20]

Targeting controls on certain PRC entities, technology levels, and industry segments has left gaps in controls and enabled corporate workarounds. The Entity List's actor-based approach is limited to specific entities, of which only parts of the firm and named subsidiaries are listed. Some PRC firms have restructured around these controls. For example, in November 2020, Huawei sold its 5G business, Honor, to a PRC government consortium, with R&D teams and advanced technology and design capabilities. Since, BIS did not list Honor on the Entities List, Honor did not come under U.S. export controls and technology

10 BIS, "Commerce Strengthens Export Controls to Restrict China's Capability to Produce Advanced Semiconductors for Military Applications, December 2, 2023; at: https://www.bis.gov/press-release/commerce-strengthens-export-controls-restrict-chinas-capability-produce-advanced-semiconductors-military. ["The PRC's Military-Civil Fusion strategy presents a significant risk that advanced node semiconductors will be used in military applications that threaten the security of the United States, as well as the security of our allies and partners,"]

11 Ibid.

12 Office of the White House, "Remarks by National Security Advisor Jake Sullivan at the Special Competitive Studies Project, Global Emerging Technologies Summit," September 16, 2022.

13 BIS, "Framework for Artificial Intelligence Diffusion," 90 *Federal Register* 4544, January 15, 2025.

14 BIS, "Framework for Artificial Intelligence Diffusion," 90 *Federal Register* 4544, January 15, 2025.

15 BIS, "Additions and Modifications to the Entity List," 90 *Federal Register* 14032, March 28, 2025; and Nvidia Corporation, Form 8-K, U.S. Securities and Exchange Commission, April 9, 2025.

16 BIS, "Guidance on Application of General Prohibition 10 (GP10) to People's Republic of China (PRC) Advanced- Computing Integrated Circuits (ICs)," May 13, 2025.

17 Karen Freifeld, "U.S. Curbs Chip Design Software, Chemicals, Other Shipments," *Reuters*, May 29, 2025.

18 Office of the White House, *Winning the AI Race: American AI Action Plan*, July 2025; at: https://www.whitehouse.gov/wp-content/uploads/2025/07/Americas-AI-Action-Plan.pdf [Establish and operationalize a program within DOC aimed at gathering proposals from industry consortia for full-stack AI export packages. Once consortia are selected by DOC, the Economic Diplomacy Action Group, the U.S. Trade and Development Agency, the Export-Import Bank, the U.S. International Development Finance Corporation, and the Department of State (DOS) should coordinate with DOC to facilitate deals that meet U.S.-approved security requirements and standards.]

19 Sherry Qin, "U.S. Eases Some Chip Software Curbs on China," *Wall Street Journal*, July 3, 2025.

20 Demetri Sevastopulo and Michael Acton, "Nvidia and AMD to Pay 15% of China Chip Sale Revenues to US Government," *Financial Times*, August 10, 2025

licensing.[21] Similarly, U.S. firms AMD and Nvidia have responded to controls by calibrating GPUs for China that fall just below control thresholds but still support AI development and advanced computing functions.[22]

Additional concerns highlight the difficulty of effective policy within a single state: (i) BIS slowness to list PRC firms, strengthen controls, and respond to workarounds; (ii) BIS's policy signaling allows stockpiling; and (iii) advanced packaging techniques, aimed at enhancing competitiveness with leading-edge nodes, allows firms to circumvent controls by grouping multiple mature-node chips.

In September, the rules were further tightened to address these concerns and more. BIS published an Interim Final Rule (IFR) [23] that makes foreign entities that are owned 50 percent or more, directly or indirectly, by one or more companies listed on 1) the Entity List, 2) the Military End-User List (MEU List) and/or 3) certain entities on the Specially Designated Nationals and Blocked Persons List (SDN List) (collectively, the Listed Entities) subject to the same U.S. export control restrictions as those parent entities. This interim final rule essentially replaces the "legally distinct" standard with OFAC's long-standing "50% ownership" threshold.[24]

This "Affiliates Rule," significantly increases the scope of BIS' list-based controls with a "rule of most restrictiveness," that is, subject to the most restrictive EAR license requirements, license exception eligibility, and license review policy applicable to any of its listed parents.

In addition to greater due diligence obligations, it expands the Foreign Direct Product Rules by increasing the number of parties that are subject to Entity List and MEU List restrictions. In particular, it subjects foreign produced items to U.S. export control restrictions when (1) the items are the direct product of or produced using equipment that is a direct product of certain specified technology and software subject to the EAR, and (2) the end use of the items satisfies certain criteria such as being incorporated into or used in the production or development of items produced, purchased or ordered by parties subject to certain Entity List restrictions, or such a party is otherwise a party to a transaction involving the foreign-produced items, including as a purchaser, intermediate consignee, ultimate consignee or end-user.[25] The reach is both expanded in ways that are hard to define and harder to uncover.

However, unilateral U.S. actions have costs. American companies fear losing access to China's huge market. If allies do not impose similar controls, Chinese firms can simply turn to European or Asian suppliers to fill the gap. The G7 and other European partners have responded, but often more slowly and cautiously. U.S. policymakers, in response to the gaps and loopholes that undermine effectiveness, made a strong diplomatic push in 2023–2024 to get allies on board.

2 Europe's Conundrum: Fragmented Responses and New Initiatives

Europe's approach to tech export controls has been cautious and divided, characteristic of the European Union's complex internal dynamics. The EU acknowledges the strategic challenge posed by China's technology ambitions, but struggles to balance national economic interests, legal constraints, and a reluctance to be seen as simply "following Washington's lead."[26] The result has been a patchwork of national policies and EU-level initiatives, rather than the steady, unified strategy that the U.S. has sought from its allies. This section examines the EU's evolving export control framework from 2022 to late 2025, highlighting key developments: (i) the lack of an initial EU-wide response to the U.S. October 2022 controls, (ii) the subsequent efforts by certain member states (notably the Netherlands) to align with the U.S., (iii) the EU's steps toward an Economic Security strategy (including potential outbound investment screening), and (iv) the enduring tension between economic and security priorities among EU members.

---

21 Karen Sutter, U.S. Export Controls and China: Advanced Semiconductors, Cong'l Res. Service, August 22, 2025.

22 Stephen Nelis and Jane Lee, "Nvidia Tweaks Flagship H100 Chip for Export to China as H800," *Reuters*, March 21, 2023; Tobias Mann, "AMD Says It'll Jump Through Uncle Sam's Hoops to Sell AI Ships to China," *The Register*, August 3, 3023. Licensing guidance in some cases only restricts certain technologies and allows BIS discretion to approve dual-use exports on a case-by-case basis, such as BIS's approval of Nvidia's H20 and AMD's MI308 for export to China.

23 Expansion of End-User Controls To Cover Affiliates of Certain Listed Entities; at: https://www.federalregister.gov/documents/2025/09/30/2025-19001/expansion-of-end-user-controls-to-cover-affiliates-of-certain-listed-entities

24 In October, 2025, the US signed Reciprocal Trade Agreements with Cambodia and Malaysia in which strategic export controls were explicitly included. Both nations agreed to cooperate with the United States to regulate the trade in national security-sensitive technologies and goods through existing multilateral export control regimes, align with all unilateral export controls in force by the United States, and ensure that its companies do not backfill or undermine these controls. At: https://www.whitehouse.gov/briefings-statements/2025/10/agreement-between-the-united-states-of-america-and-malaysia-on-reciprocal-trade/

25 R. Friedman, et. al., "BIS Expands Impact of U.S. Export Controls with 50 Percent Rule," October 6, 2025; at: https://www.hklaw.com/en/insights/publications/2025/10/bis-expands-impact-of-us-export-controls-with-50-percent-rule. The IFR also expands the situations in which transfers of foreign-produced items between foreign countries may be subject to U.S. export control requirements under the Entity List Foreign Direct Product Rules (EL FDP) and the Russia/Belarus-Military End User and Procurement Foreign Direct Product Rule (RU MEU FDP).

26 Ringhof, Julian. 2022. "Setting the Tone: The Value of the EU-US Trade and Technology Council." ECFR. December 9, 2022. https://ecfr.eu/article/setting-the-tone-the-value-of-the-eu-us-trade-and-technology-council/?amp.

The European Union as a whole failed to immediately mirror the sweeping U.S. semiconductor controls of 2022. Unlike the coordinated Western export controls quickly enacted against Russia after its invasion of Ukraine, there was no consensus in Brussels on similar measures toward China. Instead, Europe's response was fractured along national lines. Some countries, such as the Netherlands, have direct stakes in semiconductor equipment and thus felt pressure to respond, while others remained ambivalent.[27] Washington pressed hard, warning that any European holdout created cracks in the wall to be exploited by Beijing to circumvent U.S. controls, straining transatlantic relations.

Europe's challenge is the diversity of its member economies in the high-tech arena. A few countries are critical players in semiconductor supply chains, while many others have minimal exposure. For example, the Netherlands is home to ASML, a near-monopoly producer of advanced lithography equipment (notably *EUV* machines essential for cutting-edge chips).

Meanwhile, Germany – Europe's largest economy – exemplified a more hesitant stance. Germany has significant trade ties with China and a historical reluctance to weaponize economic tools. Its semiconductor sector is strong in certain areas (e.g. *automotive-grade chips* and materials) but not at the leading-edge of AI chips that the U.S. controls. The initial U.S. controls barely affected German firms, which primarily produce mid-tier chips and crucial chemicals outside the U.S. jurisdiction.[28] Nonetheless, the U.S. pressure and China's assertiveness triggered a rethinking in Berlin. In 2023, Germany published its first ever China Strategy, which openly identified China as a systemic rival and highlighted the need to protect critical technologies.[29] German officials acknowledge that China's civil-military fusion and economic coercion (such as trade retaliation against Lithuania in 2021) have invalidated the old *Wandel durch Handel* ("change through trade") approach. Still, Germany remains wary of unilateral Western actions and wants any tech control regime to include broader participation (e.g. involving countries like India) so it's not just a Western bloc imposing rules. German multilateralism underscores a broader European concern about legitimacy – many EU governments feel more comfortable when measures are cast as global or multilateral, rather than as a U.S.-led coalition explicitly against China.

Other G7 members in Europe mirror this cautious approach**.** France and Italy**,** for instance, support "de-risking" but not "decoupling" from China. France's STMicroelectronics and Italy's semiconductor initiatives (often in partnership with France or U.S. firms) mean they prefer a say in shaping any controls rather than having them imposed externally. The United Kingdom, no longer in the EU but a G7 member, has aligned closely with U.S. policy on China – banning Huawei from 5G networks and implementing its own strict export licensing. Such a position is easier for the UK as a small player in semiconductor manufacturing. The UK's main contribution is in areas like chip design IP.

2.1 EU-Level Framework and Legal Constraints

Legally, the European Commission's powers in export control are constrained by what member states allow. Under the EU's Dual-Use Regulation (revised in 2021, Regulation (EU) 2021/821), the Commission can update the controlled items list, but largely to reflect agreements in multilateral regimes like the Wassenaar Arrangement. This means the EU's common control list is tethered to the lowest-common-denominator of global consensus – a serious problem given that Wassenaar operates by unanimity and includes countries (like Russia) that stall decisions.

The 2021 update to the regulation did introduce a novel "emerging technology" provision that allows member states to propose new controls even if not yet on Wassenaar's list. In theory, this bottom-up mechanism (via Articles 9 and 10) lets the EU react faster: if one country enacts a national control on a sensitive new tech, it can be elevated to the EU level – unless a qualified majority of member states objects.

2.2 Developments in the EU 2023–2025

Facing pressure to act, the EU has taken steps since 2023 to strengthen its economic security toolkit:

- In May 2023 Spain expanded from the EU Dual-Use List by adding quantum computing technologies to its national export control list, along with additive manufacturing and other emerging technologies.
- In June 2023, the European Commission and the EU High Representative issued a Communication outlining a *European Economic Security Strategy*, which explicitly calls for more coordinated and rapid EU action on export controls.[30] It emphasizes

27 Chorzempa, Martin. 2023. "New US Export Controls: Key Policy Choices for Europe." Edited by Laura von Daniels. Stiftung Wissenschaft Und Politik. Stiftung Wissenschaft und Politik. March 24, 2023. https://www.swp-berlin.org/10.18449/2023C20/.

28 Allen, Gregory, Julian Ringhof, Jan-Peter Kleinhans, Kazuto Suzuki, Rem Korteweg, Chau-Chyun Chang, Francesca Ghiretti, Antonia Hmaidi, Emily Benson, and Catharine Mouradian. 2023. "A Report of the CSIS Wadhwani Center for AI and Advanced Technologies EDITOR Wonho Yeon the Post-October 7 World International Perspectives on Semiconductors and Geopolitics." https://csis-website-prod.s3.amazonaws.com/s3fs-public/2023-09/230928_Allen_Post_October7.pdf?VersionId=.kQdrhUIqlZA1l.F5xXrOV4YpF55FJYm.

29 Bernhard Bartsch and Claudia Wessling, "Germany's new China strategy: Ambitious language, ambiguous course," Mercatus Institute for Chinese Studies, July 7, 2023; at: https://merics.org/en/report/germanys-new-china-strategy-ambitious-language-ambiguous-course

30 Commission Proposes New Initiatives to Strengthen Economic Security, Directorate-General for Communication | European Commission, 1/24/2024; At: https://www.wita.org/atp-research/eu-comm-econ-security/

making full use of the existing Dual-Use Regulation's flexibilities to address emerging tech risks. The EU's strategy is to articulate a unified approach to challenges posed by countries like China (without naming China directly). It embraces the concept of "de-risking" – reducing dependency on adversarial powers for critical inputs – as championed by Commission President Ursula von der Leyen.

- In October 2023, the European Commission published Spain's national control list for the first time in the Official Journal of the European Union, which allowed other EU member states to impose authorization requirements for exports of these same items.[31] The European Commission unveiled a preliminary list of four critical technology areas deemed most at risk of misuse by autocratic regimes or for human rights violations.[32] These areas are *cutting-edge semiconductors, artificial intelligence (AI), quantum computing, and biotechnology/genetic engineering*. The Netherlands and France added quantum computing controls in 2024.[33]
- The EU continues to update its dual-use export control list annually to reflect multilateral changes. For instance, in September 2025 the Commission incorporated the latest agreed controls on emerging technologies.[34] While largely procedural, this ensures EU controls cover new items discussed in regimes like Wassenaar (e.g. items related to semiconductor fabrication that were added by international consensus).
- Perhaps the most significant new initiative is Europe's exploration of controlling outbound investments. Following the U.S., the EU has moved toward its own mechanism to prevent European capital or expertise from bolstering technologies in rival states. In January 2024, an EU Expert Group on Outbound Investment was established. By January 2025, the Commission issued a Recommendation urging member states to review outbound investments in critical technologies like semiconductors, AI, and quantum computing, to assess if they pose security risks.[35] This Recommendation does not create binding rules but encourages capitals to use their screening tools (currently used mainly for inbound foreign investment) to monitor outgoing deals or joint ventures that might transfer valuable tech abroad. The Commission explicitly aligned this effort with the U.S. approach, noting it covers the same sectors as the U.S. outbound investment program announced in 2023.

Overall, the EU is tightening its stance on technology transfers to China, but in a characteristically European way: carefully, slowly, and with an eye to preserving its economic interests.[36] Brussels stresses that it is not *"decoupling"* from China but *"de-risking."* European leaders like President Macron have reiterated that Europe's goal is not to sever all tech ties with China, but to ensure trade in sensitive areas "does not come at the expense of our security." Significantly, the EU emphasizes its 2019 policy framework calling China simultaneously a partner, competitor, and systemic rival. That ambivalence, combined with the EU's consensus-driven policymaking, means that transatlantic gaps persist. By late 2025, the U.S. continues pressing Europe to do more, faster – while some in Europe urge the U.S. to consider the continent's economic exposure. This transatlantic dynamic is at the heart of the G7 coordination problem discussed later.

---

31 In accordance with Article 10 of the Regulation, following the publication of the national control lists by the European Commission, the other Member States may now impose an authorization requirement for the export of items on the basis of the national control lists adopted by Spain and the Netherlands. Unless otherwise specified, the destinations concerned are all exports out of the European Union within the meaning of Article 2(2)[5] of the Regulation. See https://www.esu.ulg.ac.be/first-eu-autonomous-controls-on-the-export-of-dual-use-items/

32 Jorge Liboriero, "These are the four technologies the EU wants to protect, especially from China," *Euronews,* March 10, 2023; at:https://www.euronews.com/my-europe/2023/10/03/these-are-the-four-technologies-the-eu-wants-to-protect-especially-from-china

33 Jasper Helder, et. al.," EU Updates Dual-Use Export Control List: Key Changes for Emerging Technologies," Akin, September 16, 2025; at: EU Updates Dual-Use Export Control List: Key Changes for Emerging Technologies | Akin. These "national controls" are permitted under Article 9 of the EU Dual-Use Regulation, which allows member states to impose additional controls beyond the common EU list for national security or human rights reasons.

34 "2025 Update of the EU Control List of Dual-Use Items," European Commission, September 8, 2025; at: https://policy.trade.ec.europa.eu/news/2025-update-eu-control-list-dual-use-items-2025-09-08_en [Specifically, this update of the EU control list provides for the addition of new dual-use items, including: Controls related to quantum technology (e.g. quantum computers, electronic components designed to work at cryogenic temperatures, parametric signal amplifiers, cryogenic cooling systems, cryogenic wafer probers); Semiconductor manufacturing and testing equipment and materials (e.g. Atomic Layer Deposition equipment, equipment and materials for epitaxial deposition, lithography equipment, Extreme Ultra-Violet pellicles, masks and reticles, Scanning Electron Microscope equipment, etching equipment); Advanced computing integrated circuits and electronic assemblies such as Field Programmable Logic Devices and Systems; Coatings for high temperature applications; Additive manufacturing machines and related materials (e.g. inoculants for powders); Peptide synthesizers, and; modification of certain control parameters and update of certain technical definitions and descriptions.]

35 "Commission calls on Member States to review outbound investments and assess risks to economic security," European Commission, January 14, 2025; at: https://ec.europa.eu/commission/presscorner/detail/en/ip_25_261. See also, Steven Farmer, et. al., "EU Calls On Member States to Review Outbound Investments in Critical Technologies," January 20, 2025, Pillsbury; at: https://www.globaltradeandsanctionslaw.com/eu-call-to-review-outbound-investments/#:~:text=Julia%20Kotam%C3%A4ki.

36 Øystein Tunsjø, "The EU's China Strategies: A Hedging Framework for Analysis," *Journal of Common Market Studies*, May 2025; at: https://onlinelibrary.wiley.com/doi/10.1111/jcms.13749 [Soviet Union posed an overwhelming threat to Western Europe during the previous bipolar system, which compelled the European Economic Community towards containment and balancing. China represents much more of a risk than a threat to the EU in the new bipolar system, which allows the EU to sustain a hedging strategy and prioritize de-risking.]

3 Japan and Other G7 Partners: Quietly Aligning with U.S. Strategy

Japan, a G7 and Quad member, has emerged as a pivotal player in semiconductor export controls. Geographically close to China and acutely aware of regional security threats, Japan shares U.S. concerns about China's military buildup. Indeed, Tokyo has its own restrictions on tech exports to countries of concern. In early 2023, as part of the U.S.-Netherlands-Japan understanding, Japan agreed to impose new limits on semiconductor manufacturing equipment exports, complementing U.S. controls. By July 2023, Japan formally announced it would tighten export controls on 23 types of chip fabrication tools, effective that year, essentially aligning with the spirit of the U.S. October 2022 rules (covering items like advanced lithography and etching machines).[37] Japanese officials, like their Dutch counterparts, did not trumpet this as an anti-China measure; they framed it as a technology-agnostic safeguard to prevent misuse of high-end equipment. The driving motivation, however, was clear – to constrain China's ability to make cutting-edge chips that could enhance its military.

Japan's strategy has been to coordinate closely but quietly. It prefers a multilateral veneer for its actions, to avoid provoking Beijing more than necessary. By having the U.S. take point publicly, and implementing its controls in tandem with others, Tokyo minimizes political blowback. Caution stems from Japan's significant business interests in China; Japanese semiconductor firms and electronics companies still count China as a major market. Thus, while Japan is fully on board with the security logic of export restrictions, it has a stake in ensuring that any regime is broad-based (so Japanese firms aren't disadvantaged alone) and that lines of communication with Beijing remain open.

Among its G7 partners, Canada has a relatively small advanced-tech export sector but has staunchly supported the U.S. approach on principle. Canada tightened its controls on sensitive exports to China and enhanced screening of research partnerships, especially after high-profile incidents of IP theft. Italy and France align via EU mechanisms, though France also individually has pushed for EU "technological sovereignty" and heavy investment in European chips (the EU Chips Act, etc.) to reduce reliance on U.S. or Asian suppliers. The United Kingdom, after Brexit, instituted its own National Security and Investment Act and updated export control criteria, which have been used to block Chinese acquisitions (like the attempted takeover of a British semiconductor plant) and to bar exports of certain dual-use items to China. The UK also joined U.S.-led coalitions such as the "Export Enforcement Five" (E5, comprising the U.S., UK, Australia, Canada, and New Zealand) created in 2023 to coordinate enforcement against illicit tech transfers.[38]

The U.S. and G7 are also trying to bring other key tech players into the fold. India, for instance, is not in the G7 but is a critical partner in the Indo-Pacific. The U.S. has launched a Strategic Tech Partnership with India (iCET – Initiative on Critical and Emerging Technologies) and would like India on board with controlling exports of sensitive tech to adversaries. India, however, as a developing country, resists anything that looks like a Western "club" restricting its tech growth or its non-aligned foreign policy. Recent aggressive U.S. tariff policy toward India has pushed it toward China.[39]

Similarly, countries like South Korea (a major semiconductor producer) have been engaged through trilateral summits (e.g. the Camp David Summit of the U.S., Japan, ROK in 2023). South Korea has expressed concern about the uncertainty caused by sudden U.S. export rule changes. The U.S. granted but then reversed some exceptions.[40] The overarching aim is to prevent third country backfill – where, say, a Korean or Taiwanese firm might replace U.S. firms in the China market, thus undermining the effect of controls. Achieving this broader coalition is an ongoing diplomatic endeavor and extends beyond the G7 proper.

In summary, Japan and other close U.S. partners have largely aligned with the tightening export control regime, but each does so in a way that manages strong domestic interests and relations with China. Their cooperation is crucial for the controls to truly hold. A broad alignment also gives the policies greater legitimacy – it's harder for China to claim it is being targeted by one country when a half-dozen major democracies echo the restrictions. However, assembling this coalition required U.S. leadership and often quiet behind-the-scenes deals (like January 2023 trilateral pact). It underscores that even among advanced economies with shared strategic concerns, policy coordination takes skillful statecraft.

---

37 Jim Garomone, "Japan, South Korea, U.S. Strengthen Trilateral Cooperation," U.S. Department of Defense, August 18, 2023, https://www.defense.gov/News/News-Stories/Article/Article/3498451/japan-south-korea-us-strengthen-trilateral-cooperation/#:~:text=The%20trilateral%20ties%20among%20Japan.

38 UNITED STATES-AUSTRALIA-CANADA-NEW ZEALAND-UNITED KINGDOM RELEASE JOINT GUIDANCE ON COUNTERING RUSSIA EVASION, Bureau of Industry and Security, Dept of Commerce, September 26, 2023; at: https://media.bis.gov/sites/default/files/documents/2023.09.22_BIS%20Press%20Release_Quint%20Seal_EE.OCPA_CLEAN%2BAJB-osb.pdf

39 Leonardo Dinic, "A Thaw in Chinese-Indian Relations Amid Mounting U.S. Pressure and Trump's Tariffs," *China-US Focus,* Sep 25, 2025; at: https://www.chinausfocus.com/foreign-policy/a-thaw-in-chinese-indian-relations-amid-mounting-us-pressure-and-trumps-tariffs ["China and India are cautiously rebuilding ties after years of mistrust, with renewed border talks, restored flights, and revived trade, a shift accelerated by Trump's steep tariffs on Indian goods."]

40 South Korea has a larger role than often is appreciated in policy circles, which may be increasingly at odds with US policy that imposes substantial costs on Korean firms. BIS' revocation of validated end-user waivers, for instance, significantly hurt Samsung and SK hynix operations in China. See: https://www.eetimes.com/u-s-export-waiver-revocations-put-samsung-and-sk-hynix-in-limbo/

4 China's Countermeasures: Adaptation, Subsidies, and Tech Nationalism

As states increasingly rely on economic sanctions to advance their foreign policy objectives, they ineluctably trigger a series of counterbalancing moves by the target state, resulting in a cycle of escalating tensions. China has employed a mix of countermeasures – both offensive and defensive – to mitigate the impact of Western restrictions and to impose costs on countries cooperating with the U.S. strategy. These include large state investments in domestic tech industries,[41] regulatory hurdles for foreign firms, and export bans on critical raw materials needed by global high-tech manufacturers. Collectively, these actions form China's strategy to achieve technological self-reliance and to push back against what it perceives as tech containment.[42]

A core pillar of China's response is indigenization-- doubling down on its long-term industrial policies, like *Made in China 2025* and *China Standards 2035*.[43] These policies seek to replace foreign technology with Chinese alternatives and to dominate advanced manufacturing. Since 2018, and especially after 2020, Beijing has poured unprecedented resources into the semiconductor sector. In late 2022, it was reported that China's government was preparing a support package exceeding ¥1 trillion (US$140 billion) for the semiconductor industry.[44] This includes subsidies, tax incentives, and R&D funds to boost domestic chip production and jump-start areas where it lags (e.g. lithography equipment, semiconductor materials). In 2023, the government made it easier for top Chinese chip firms like SMIC, Hua Hong, and equipment makers like Naura to access subsidies more quickly, relaxing performance criteria so that funds could be disbursed as upfront support.[45]

Beijing also mobilized its state-owned policy banks and insurance to support chip imports and stockpiling of foreign components while they are still obtainable. The clear intent is to outlast the U.S. controls by creating an entire value chain within China that cannot be crippled by foreign rules. This effort has seen some progress – for instance, China's top contract chipmaker SMIC reportedly succeeded by mid-2023 in producing a 7-nanometer node chip (though likely with foreign equipment acquired before the ban).[46] China is trying novel techniques like using slightly older tech (e.g. deep ultraviolet lithography) in innovative ways to advance nodes without EUV machines.

On the demand side, Chinese authorities have instructed government agencies and state-owned enterprises to replace foreign hardware and software with domestic products, a campaign that has been ongoing for several years. By 2025, Beijing wants a significant percentage of government computers, servers, and industrial control systems running on Chinese-made chips, operating systems, and networking gear. This not only shields these entities from Western sanctions but also helps Chinese tech firms achieve economies of scale at home. For example, after the U.S. blacklisted Huawei and cut off its access to advanced chips, the Chinese government helped channel resources to Huawei's chip design arm (HiSilicon) and sanctioned research to develop a domestic supply chain for 5G telecom equipment. By 2023, Huawei released a new smartphone (Mate 60 Pro) featuring a 7nm chipset made in China – a sign that Chinese firms are finding creative ways to advance despite sanctions (possibly through stockpiled parts and less advanced lithography used cleverly).[47] Such developments underscore China's determination to work around the restrictions, even if it means initial technological or economic sacrifices.

In 2023 and 2024, China began weaponizing its dominant position in certain critical materials as a responsive form of retaliation and leverage. In July 2023, Beijing announced export restrictions on gallium and germanium, two obscure but essential metals

---

41 Responsive "industry boosting" involves a proactive, multifaceted approach to bolster the resilience of the sanctioned industries. This strategy goes beyond mere compensation, as the state actively supports a broader range of firms that can further state's policy agenda. Recent empirical analysis shows that China subsidizes not only US-sanctioned firms but also other domestic firms that extensively bid for the same government contracts with sanctioned firms. Jialu Li, "Sanction Busting via Industry Boosting: How China Strategically Counteracts US Sanctions on Chinese Firms," Working Paper, November 4, 2024; at: https://www.dropbox.com/scl/fi/k6edz5yo1jmfj0b475vs8/USsanctionChina.pdf?rlkey=no5eu3okuuzd5b8q7s3zu2tk8&e=2&st=h4rncmlc&dl=0]

42 China's protective measures provide assurance to other domestic market actors and incentivizes them to continue "business as usual" with firms in sanctioned industries. These findings highlight the dynamic interactions between states and market actors in the new normal of economic warfare.

43 Yi Wu, "China Standards 2035 Strategy: Recent Developments and Implications for Foreign Companies," *China Briefing,* June 26, 2022; at: https://www.china-briefing.com/news/china-standards-2035-strategy-recent-developments-and-their-implications-foreign-companies/ [China views standardization as a way to strengthen its research and development (R&D) ecosystem by elevating whole-sector capacities, particularly in critical and emerging industries like AI, quantum computing, and biotechnology. The Action Plan offers concrete measures that links the process of developing standards and technological innovation to promote industry optimization and upgrades.]

44 "China gives chipmakers easier subsidy access to help guide industry recovery," Reuters, March 20, 2023; at: https://www.reuters.com/world/china/china-gives-chipmakers-easier-subsidy-access-help-guide-industry-recovery-ft-2023-03-21/#:~:text=Sign%20up%20here

45 Ibid.

46 Dylan Martin, "China seems to have figured out how to make 7nm chips despite US sanctions," July 22, 2022, *The Register,* at: https://www.theregister.com/2022/07/22/china_smic_7nm_chips/. See also, Dick James, "China's SMIC Plays the 7nm Card," *TechInsights,* September 4, 2025; at: https://www.techinsights.com/blog/chinas-smic-plays-7-nm-card [Huawei launched the Mate 60 Pro phone with a 7 nm processor fabricated in China, seemingly in contravention of Western sanctions. They did it by employing multiple-patterning lithography. Lithographic multi-patterning can take SMIC below 7 nm to 5 nm and potentially 3 nm.]

47 Matthew Schleich and Wm. Reinsch, Contextualizing the National Security Concerns over China's Domestically Produced High-End Chip," CSIS, 2023; at: https://www.csis.org/analysis/contextualizing-national-security-concerns-over-chinas-domestically-produced-high-end-chip

used in semiconductor substrates, high-speed chips, and fiber-optic systems.[48] China produces the majority of the world's gallium and germanium, so this move sent Western companies scrambling to find alternative sources. Exporters now need special licenses to ship these minerals out of China, ostensibly for "national security" reasons.

In October 2023, China imposed curbs on graphite exports, another area where it is a top global supplier.[49] Graphite is crucial for EV battery anodes and thermal management in electronics. The new rules require Chinese firms to get approval before exporting certain "high-purity" graphite products, tightening a tap on which the world's battery industry relies. In December 2023, China escalated by banning the export of some rare-earth magnet technology – specifically the know-how to make high-performance magnets used in everything from electric vehicles to military hardware. (These restrictions complemented an existing ban on exporting unprocessed rare earth elements extraction technology.)

These measures signal that China is willing to inflict pain on global supply chains, even at cost to its own exporters, in respond to tech pressure from the West. Indeed, a Reuters analysis noted that as of late 2024, China had enforced limits on antimony (a metal used in batteries and ammunition) and was banning exports to the U.S. of certain goods containing gallium, germanium, and antimony in retaliation for new U.S. chip curbs. Beijing is effectively saying: "If you restrict our access to technology, we will restrict your access to the materials that your technology industries need."[50]

China has also leveraged its domestic regulatory powers to strike back at foreign firms. In May 2023, after a cybersecurity review, China banned operators of critical infrastructure from buying products from U.S. memory chip maker Micron, citing security risks.[51] This move – seen as retaliation for U.S. actions against Huawei and others – hurt Micron's sales and served as a warning to other companies. Around the same time, China's cybersecurity authorities raised issues with products from companies like Intel and Qualcomm, hinting at potential reviews. Furthermore, China dusted off its "Unreliable Entities List" (created in 2019 during the Trump trade war) and started using it in 2023–2024. In one high-profile instance (Sept 2024), Beijing announced an investigation of U.S. firm PVH Corp (owner of Calvin Klein and Tommy Hilfiger) for allegedly boycotting Xinjiang cotton, under the Unreliable Entity framework.[52] While not directly export-control related, it was a shot across the bow: China can punish companies that comply with U.S. human-rights-related bans (like the U.S. Uyghur Forced Labor Prevention Act). A few U.S. defense companies (Lockheed Martin, Raytheon) have even been added to this blacklist in response to arms sales to Taiwan.[53]

Being on the list can mean prohibitions on trade and investment in China. Additionally, China's Anti-Foreign Sanctions Law (2021) empowers it to sanction individuals or entities involved in enforcing foreign sanctions against China. For example, when the U.S. sanctioned a Chinese drone maker (DJI) , and later (Skydio), China hit back by sanctioning Skydio, a smaller drone company by causing Chinese suppliers to cut off Skydio's component access.[54]

China's message is clear: it will not passively absorb economic blows. It is leveraging multiple points of interdependence – whether foreign companies' access to Chinese markets, or the West's reliance on Chinese materials – to create counter-pressure. It is this tit-for-tat dynamic that has led some to dub it a "tech cold war," with parallels to the oil embargoes and resource leverage seen in past geopolitical struggles.

China's countermeasures have tested the unity of the G7 and like-minded partners. For example, when China imposed the Micron ban, South Korea's government pointedly did not stop its memory firms (Samsung, SK Hynix) from filling the market gap in China.[55] This raised an uncomfortable free-rider scenario: one ally's firms benefit from another ally's punishment. Solidarity suffers. Similarly, European countries that rely on Chinese demand for luxury goods, autos, or other exports fear that getting too tough on Beijing could invite economic retaliation outside the tech realm (consumer boycotts or lost contracts). China's dominance in critical mineral processing also means any Chinese export curbs shake G7 supply chains, which pressures G7 governments to dial back or find workarounds. In sum, Beijing has shown it can and will retaliate in selective and impactful ways, which underscores why a coordinated G7 approach is hard: each member must calculate the risk of being singled out by China in a way that others might not compensate.

Despite these Chinese efforts, Western nations have by and large remained committed to their export control goals. If anything, China's aggressive response – such as the gallium/germanium curbs – reinforced perceptions in Washington, Tokyo, and some European capitals that dependence on China is a strategic liability. This has accelerated initiatives to find alternative sources

48 Eduardo Baptista, "Explainer: After China's mineral export ban, how else could it respond to U.S. chip curbs?" *Reuters,* December 3, 2024; initially at: https://www.reuters.com/technology/how-china-could-retaliate-against-new-us-chip-curbs-2024-12-03/; removed but still available at: https://www.aol.com/news/explainer-china-could-retaliate-against-073146821.html

49 Ibid.

50 Ibid.

51 Matthew Reynolds, "Micron Aggression: The Right Response to Beijing's Ban on the U.S. Chipmaker." CSIS, June 22, 2023; at: https://www.csis.org/analysis/micron-aggression-right-response-beijings-ban-us-chipmaker

52 Eduardo Baptista, "Explainer: After China's mineral export ban, how else could it respond to U.S. chip curbs?" *Reuters,* December 3, 2024; at: https://www.reuters.com/technology/how-china-could-retaliate-against-new-us-chip-curbs-2024-12-03/

53 Ibid.

54 Ibid.

55 Michael Ingram, "G7 Summit 2023 Summary," *TradeSecure,* March 2023; at: https://tradesecure.net/2023/05/23/g7-summit-2023-summary/

(e.g. new gallium plants outside China) and to stockpile critical materials. It has also prompted discussions within the G7 about collective resilience – for instance, coordinating strategic reserves of rare minerals or sharing information on supply chain vulnerabilities.

5 G7 Coordination Efforts: Platforms, Progress, and Pitfalls

The statecraft of technology controls is long and storied. It reaches back at least as early as the mid 1980's with the Australia Group (AG 1985 to counter the spread of chemical and biological weapons), the Missile Technology Control Regime (MTCR, 1987 to control the proliferation of missile technology), Nuclear Suppliers Group (NSG, 1992 to prevent nuclear proliferation) and the Wassenaar Arrangement (WA, 1996 to control conventional arms and dual-use goods).

The Multilateral Action on Sensitive Technologies (MAST) was launched in September 2019 when the State Department hosted a three-day MAST conference where 15 advanced industrial nations, many of them European, compared notes on technology transfer threats. The U.S. State Department described MAST as part of "technology security diplomacy" aimed at building a "coalition of caution"—a coordinated approach among democracies to manage strategic technology risks.[56] MAST was created as an informal forum for like-minded countries to compare experiences and improve coordination on common technology-transfer challenges, particularly in response to technology transfer threats in authoritarian regimes seeking to acquire sophisticated technology abroad.

Another coordination platform was the U.S.-EU Trade and Technology Council (TTC) launched in 2021. One of the TTC's working groups was specifically on Export Controls.[57] This working group has served as a venue for technical consultations on new regulations, sharing licensing practices, and aligning approaches to emerging tech controls. For instance, export control cooperation within TTC made more progress on aligning responses to Russia than to China, since EU unity on the latter was lacking. Nonetheless, the TTC's existence set a high-level spotlight on tech issues and creates a regular cadence (meetings every six months or so) to push for incremental progress.

Achieving a unified G7 front on export control to coordinate both policy and enforcement is a daunting endeavor. These efforts have been limited to high-level statements committing to aligned action, the formation of working groups to share information, and the use of international forums to legitimize controls. This section examines the key coordination mechanisms that emerged by 2023–2025 and evaluates their effectiveness and limitations.

At the leaders' level, export controls have been elevated as a priority in G7 summits. In May 2023, the G7 Hiroshima Summit issued a Leaders' Communiqué that explicitly reaffirmed export controls as a "fundamental policy tool" for protecting global security.[58] This language – unprecedented in a G7 statement – reflected a shared post-Ukraine understanding that controlling strategic goods can blunt aggression. The same summit produced a standalone G7 Statement on Economic Resilience and Security, which, in a thinly veiled reference to China, decried "attempts to weaponize economic dependencies" and pledged to "strengthen multilateral efforts to cooperate in the field of export controls to ensure gaps in our dual-use technology protection ecosystem cannot be exploited."[59] In other words, G7 nations agreed in principle to close ranks and prevent malign actors from shopping among them for the weakest link. The communiqués also acknowledged the "central role of multilateral export control regimes" like Wassenaar, while in the same breath noting those regimes need updating for today's challenges. These high-level declarations set the tone and gave political impetus to concrete coordination work.

One tangible outcome of G7 collaboration is the Enforcement Coordination Mechanism (ECM), launched in February 2023, primarily to counter Russia's sanctions evasion, but also highly relevant to export controls. Through the ECM, G7 members share intelligence on illicit procurement networks and coordinate actions to shut them down. In September 2023, under the ECM, the G7 established a Sub-Working Group on Export Control Enforcement. This sub-group – which includes representatives from all G7 countries plus the European Commission – provides a forum for exchanging information on export control violations, discussing enforcement trends, and sharing best practices.

---

56 Christopher Ford, "Technology Transfer Diplomacy and the Challenge of Our Times," Remarks, Bureau of International Security and Nonproliferation, Department of State, September 15, 2023; at: https://2017-2021.state.gov/technology-transfer-diplomacy-and-the-challenge-of-our-times/

57 Futurium, European Commission, Working Group 7 - Export Controls; at: https://futurium.ec.europa.eu/it/EU-US-TTC/wg7?language=da. The State Department website shows no activity since January 2025.

58 *G7 Hiroshima Leaders' Communiqué,* May 20, 2023; at: https://www.international.gc.ca/world-monde/international_relations-relations_internationales/g7/documents/2023-05-20-hiroshima-leaders-communique-dirigeants.aspx?lang=eng [To coordinate our approach to economic resilience and economic security that is based on diversifying and deepening partnerships and *de-risking*, not *de-coupling*; among other commitments.]

59 Michael Ingram, "G7 Summit 2023 Summary," *TradeSecure,* March 2023; at: https://tradesecure.net/2023/05/23/g7-summit-2023-summary/

In a significant first, this G7 sub-working group in September 2024 published joint industry guidance on preventing the evasion of export controls and sanctions (focused initially on Russia).[60] The guidance alerted companies to red flags (e.g. unusual transshipment routes or shell buyers) and listed high-priority items that illicit actors tend to seek.[61] It essentially put the private sector across G7 countries on notice to tighten compliance and cooperate with authorities to plug diversion loopholes. The fact that all G7 members signed onto a single advisory suggests a combined intent to enforce the rules that have been collectively imposed.

The ECM framework also contemplates taking collective action against third-country actors that help in evasion, which could include, say, jointly sanctioning a UAE or Chinese company that is caught funneling restricted goods to Russia.[62] This level of coordination on enforcement is an encouraging sign that, at least regarding Russia-related controls, the G7 is acting in concert. Translating this to the China tech-control context is naturally more complex (given the higher economic stakes), but the mechanisms and relationships built in the Russia context could be repurposed.

Beyond the G7, Western countries have endeavored to create a broader coalition on export controls targeting security threats. A noteworthy example is the so-called "Global Export Control Coalition" (GECC) of 39 countries (which includes all G7 members, the EU, plus countries like Australia, South Korea, Taiwan, and more) that have aligned their export controls and sanctions on Russia. This coalition was not an existing institution but rather an ad-hoc alignment formed after Russia's invasion of Ukraine, which demonstrates the West's ability to muster a critical mass in defense of a principle (in this case, stopping military aggression).[63] The coalition's existence has been cited in G7 contexts as a model: if 39 countries can harmonize controls against Russia, perhaps a similar grouping can cooperate on China-sensitive technologies. For instance, President Biden floated ideas of a multilateral tech control regime – sometimes dubbed "*Chip 4*" (involving the U.S., Japan, South Korea, Taiwan) for chips, or even an alliance of "techno-democracies" for broader tech issues.[64]

5.1 Common Challenges in Coordination:

Despite these efforts, serious challenges persist for G7 coordination on export controls:

- Divergent Threat Perceptions**:** Not all G7 members view China's tech rise with the same urgency. The U.S. sees it as a grave threat to national security and even to the liberal international order. European nations, while increasingly concerned, often see China also as an economic competitor/partner and fear crossing certain lines. Japan and the UK align closer to the U.S. view. These differences make it hard to agree on *how far to go* with controls (e.g., should mid-level chips be restricted, or just cutting-edge?).
- Economic Exposure**:** The economic stakes are uneven. Germany's high-end machine tool exports to China, Italy's luxury goods, France's aerospace components – each country has sectors that could lose big if China retaliates or if decoupling accelerates. The U.S. economy is more insulated (with a smaller share of GDP from exports overall, and less dependent on China for advanced manufacturing inputs), which arguably makes Washington more willing to absorb the costs of restrictions. Reaching consensus means accounting for the most cautious voice (often in Europe) that can water down measures.
- Legal and Structural Hurdles: As described, the EU's legal framework means any EU-wide controls require collective agreement. Meanwhile, Japan and others must fit new rules into their legal system (Japan's export control law, for instance, had to be amended to accommodate the 2023 changes). These procedural steps take time, during which technology doesn't stand still.
- Scope Creep and Definition Issues**:** Coordinating what exactly to control is itself complicated. Dual-use technologies are everywhere – how does a nation target military-applicable tech without unduly hurting commercial innovation? The G7

60 "G7 Announces Industry Guidance on Preventing Evasion of Export Controls and Sanctions Imposed on Russia," BIS, September 24, 2014; at: https://www.bis.gov/node/20511 [G7 published, for the first time ever, joint guidance for industry on preventing evasion of the export controls and sanctions imposed on Russia.]. For background on US efforts and enforcement, see Assistant Secretary for Export Enforcement Matthew S. Axelrod, "Remarks at the Practicing Law Institute's Coping with U.S. Export Controls and Sanctions Conference, Washington, D.C., March 28, 2024; at: https://www.bis.doc.gov/index.php/documents/about-bis/newsroom/3488-bis-update-2024-axelrod-final/file

61 Michael Amberg, et. at., "G7 Issues Joint Guidance on Preventing Russian Export Control and Sanctions Evasion," Global Sanctions and Export Controls Blog, BakerMcKenzie, October 14, 2024; at: https://sanctionsnews.bakermckenzie.com/g7-issues-joint-guidance-on-preventing-russian-export-control-and-sanctions-evasion/#:~:text=On%2024%20September%202024%2C%20the,multilateral%20export%20controls%20and%20sanctions.

62 Michael Ingram, "G7 Summit 2023 Summary," *TradeSecure,* March 2023; at: https://tradesecure.net/2023/05/23/g7-summit-2023-summary/

63 Michael Amberg, et. at., "G7 Issues Joint Guidance on Preventing Russian Export Control and Sanctions Evasion," Global Sanctions and Export Controls Blog, BakerMcKenzie, October 14, 2024; at: https://sanctionsnews.bakermckenzie.com/g7-issues-joint-guidance-on-preventing-russian-export-control-and-sanctions-evasion/#:~:text=On%2024%20September%202024%2C%20the,multilateral%20export%20controls%20and%20sanctions.

64 Christian Davies, et. al., "US struggles to mobilise its East Asian 'Chip 4' alliance," *Financial Times,* September 12, 2022; at: https://www.ft.com/content/98f22615-ee7e-4431-ab98-fb6e3f9de032

must agree on technical parameters for controls (which involves classified intelligence on what performance levels matter militarily). Differing assessments slow things down.

– Enforcement and Compliance: Even when controls are synchronized on paper, enforcing them uniformly is tough. The G7 is working to share information (through the ECM and other channels) about illicit networks, but differences in enforcement capacity exist. The U.S. has ramped up its export enforcement staffing and penalties; some European countries historically enforced export controls less vigorously. Bridging this gap is an ongoing effort – the joint G7 enforcement guidance is a positive step, but effective implementation is uncertain.

On the positive side, there are signs that the G7 coordination is yielding results. The trifecta of the U.S., Netherlands, and Japan aligning on chip gear controls in 2023 removed what could have been a major hole in the U.S. strategy – without Dutch/Japanese participation, Chinese fabs might have eventually sourced alternatives. The G7's united front on Russia (and the fact that those same export control tools are being considered for China contingencies) has built trust and habits of cooperation among agencies. Additionally, the political consensus that emerged by 2023 – that high-tech export controls are a valid and necessary tool for national security – was an important step. A few years prior, many in Europe and even some in the U.S. were reluctant to mix tech trade and security so explicitly vis-à-vis China. Now, there is broad G7 acknowledgement that certain technologies (semiconductors, AI, etc.) are key to the military and economic balance of power, and thus controlling their spread is fair game.

6 Conclusion: Toward a Cohesive Strategy?

Export controls have re-emerged as a centerpiece of strategic policy, employed by the U.S. and its allies to maintain a technological edge over rivals and safeguard national security. National security concerns have undoubtedly spurred the proliferation of these regimes – from Washington's sweeping semiconductor bans to Europe's tentative steps at de-risking critical sectors. However, this case study of semiconductor and technology controls demonstrates that coordination across the G7 remains the Achilles' heel of the effort.

The past three years have shown both the potential and the limits of multilateral coordination. On one hand, there has been substantial alignment: the G7 and partners moved in lockstep on Russia-focused controls, and key U.S. allies joined in restricting China's access to advanced chip capabilities. There is growing recognition among democracies that only a united front can succeed. Multilateral forums and working groups – whether the G7 sub-working group on enforcement, the U.S.-EU TTC, or ad-hoc coalitions – have laid the groundwork for more cohesive action. G7 leaders have explicitly endorsed using export controls cooperatively to address security threats.[65] These are encouraging developments for G7 diplomacy.

On the other hand, significant hurdles remain. The G7 countries are not monolithic; each must—in complex domestic political settings-- balance security with economic welfare in its own way. Divergent risk assessments (especially regarding China) mean that forging consensus is slow and often results in the lowest common denominator approach. China's adept use of carrots (market access) and sticks (retaliation) exploits these cracks, seeking to peel away more reluctant allies or create incentives for defection (such as tempting companies from one country to replace those from another under sanctions). While the U.S. pushes for high fences around broad "small yards" of technology, others prefer a narrower fence – or worry the fence might eventually surround much more than intended, harming innovation.

To truly overcome the coordination challenge, the G7 must institutionalize export control cooperation more formally. Some experts propose a new plurilateral regime focused on emerging technologies (a "Tech Control Alliance") that would complement the aging Wassenaar Arrangement. Such a regime could establish common lists, shared license data, and perhaps even joint diplomatic stances to persuade other nations to join controls. The idea would be to move from reactive, ad-hoc coordination to a standing framework that anticipates technological advances and updates controls in near-real-time – something very difficult under current structures. Whether this is feasible is an open question; it would require a high degree of trust and willingness to cede a bit of sovereignty for the greater goal of collective security.

In the meantime, pragmatic steps can enhance G7 coordination: (i) enhanced coordination at a technician-expert level of technology necessary to be restricted, (ii) improving information-sharing on license denials (so if one country denies an export for security reasons, others are alerted); (iii) coordinating outreach to industry to ensure compliance expectations are similar; (iv) jointly engaging third countries that are potential transshipment hubs (like Malaysia, UAE) to tighten their controls; and (v) continuing to align policy through forums like the G7 and TTC on new areas (outbound investment, quantum technology, etc.).

Enforcement cooperation is vital. Policy is only as strong as its enforcement, and if one country becomes known as a weak

65 Michael Ingram, "G7 Summit 2023 Summary," *TradeSecure,* March 2023; at: https://tradesecure.net/2023/05/23/g7-summit-2023-summary/

link, the whole regime is undermined. The creation of the G7 Enforcement Coordination Mechanism and its early outputs are promising signs that the leading democracies can act in concert when motivated.[66]

Ultimately, the proliferation of export control regimes in recent years underscores a fundamental shift: economic interdependence is no longer viewed as an unalloyed good, and high-tech trade is now seen as a domain of rivalry as much as profit. The G7 countries, bound by common values and facing common adversaries, are naturally turning to collective action. Yet achieving a fully cohesive and agile multilateral export control system remains a work in progress, hampered by internal differences—exacerbated by increasingly random use of trade weapons by the United States—which adversaries like China are keen to exploit. The coming years will test whether the G7 can close ranks and move from a reactive posture to a proactive, strategic coordination of export controls. The efficacy of the West's broader strategy – to deter military aggression, uphold international norms, and secure the technologies of the future – may well depend on the G7's ability to get this right.

66 Michael Amberg, et. al., "G7 Issues Joint Guidance on Preventing Russian Export Control and Sanctions Evasion," Global Sanctions and Export Controls Blog, Baker McKenzie October 24, 2024; at**:** https://sanctionsnews.bakermckenzie.com/g7-issues-joint-guidance-on-preventing-russian-export-control-and-sanctions-evasion/