CHIPS DIPLOMACY
SUPPORT INITIATIVE

Co-funded by the European Union

Autonomy or Indispensability? Identifying the EU's Semiconductor Lodestar

POLICY PAPER • DECEMBER 2025

INSTITUT Montaigne
CEIAS Central European Institute of Asian Studies
VUB BRUSSELS SCHOOL OF GOVERNANCE CENTRE FOR SECURITY, DIPLOMACY AND STRATEGY
euiss European Union Institute for Security Studies

This policy paper is a publication of the Chips Diplomacy Support Initiative (CHIPDIPLO), an eighteen-month project that addresses the EU's urgent need for chip diplomacy. CHIPDIPLO is executed by Institut Montaigne (IM, Paris), the Central European Institute for Asian Studies (CEIAS, Bratislava), the Centre for Diplomacy, Security and Strategy (CSDS, Brussels), and the EU Institute for Security Studies (EUISS, Paris and Brussels).

Co-funded by the European Union. Views and opinions expressed are, however, those of the authors only and do not necessarily reflect those of the European Union or the Directorate-General for Communications Networks, Content and Technology (DG Connect). Neither the European Union nor the granting authority can be held responsible for them.

CHIPS DIPLOMACY

SUPPORT INITIATIVE

Autonomy or Indispensability? Identifying the EU's Semiconductor Lodestar

POLICY PAPER 2 • DECEMBER 2025

INSTITUT Montaigne
CEIAS Central European Institute of Asian Studies
VUB BRUSSELS SCHOOL OF GOVERNANCE CENTRE FOR SECURITY, DIPLOMACY AND STRATEGY
euiss European Union Institute for Security Studies
Co-funded by the European Union

This policy paper is a publication of the Chips Diplomacy Support Initiative (CHIPDIPLO), an 18-month project that addresses the EU's urgent need for a chip diplomacy. CHIPDIPLO is executed by Institut Montaigne (IM, Paris), the Central European Institute for Asian Studies (CEIAS, Bratislava), the Centre for Diplomacy, Security and Strategy (CSDS, Brussels), and the EU Institute for Security Studies (EUISS, Paris and Brussels).

The **Centre for Security, Diplomacy and Strategy (CSDS)** is a research hub at the Brussels School of Governance (BSoG) of the Vrije Universiteit Brussel (VUB). CSDS seeks to contribute to a better understanding of the key contemporary security and diplomatic challenges of the twenty-first century—and their impact on Europe—while reaching out to the policy community that will ultimately need to handle such challenges. It seeks to use its expertise in security studies to establish comprehensive theoretical and policy coverage of strategic competition and its impact on Europe, while paying particular attention to the transatlantic relationship and the wider Indo-Pacific region.

The **European Union Institute for Security Studies (EUISS)** is the EU's foreign and security policy think tank. It provides critical analysis and insights to inform the EU's strategic choices. The EUISS is the only foreign policy research organisation with direct links to European Institutions and are mandated to think specifically in EU terms. As such, EUISS is uniquely positioned to contribute to shaping EU external policies. The EUISS is an autonomous EU agency, intellectually independent and funded by EU Member States.

Institut Montaigne is a leading independent think tank based in Paris. Our research and ideas aim to help governments, industries, and societies adapt to our complex world. Institut Montaigne's publications and events focus on major economic, societal, technological, environmental, and geopolitical changes. We aim to serve the public interest through instructive analysis of French and European public policies and by providing an open and safe space for rigorous policy debates.

Joris Teer

Joris Teer is the Research Analyst leading the portfolio on Economic Security and Technology at the EU Institute for Security Studies (EUISS). On behalf of EUISS, he is a Senior Advisor to the Chips Diplomacy Support Initiative (CHIPDIPLO). Prior to joining EUISS, he was a China and strategic foresight analyst at the Hague Centre for Strategic Studies (HCSS). He co-initiated HCSS Boardroom, an initiative to make the strategies of industry and investors more geopolitically shock resistant. He has lead-authored research reports on these topics for the Dutch Ministries of Defence, Foreign Affairs, and Economic Affairs, and for the House of Representatives of the Netherlands.

Riccardo Bosticco

Riccardo Bosticco is a PhD Researcher at the Centre for Security, Diplomacy and Strategy (CSDS) of the Vrije Universiteit Brussel (VUB). He is also a Junior Academic Fellow at the European Policy Centre and a NextGen Associate Fellow at the NATO Defence College. His research focuses on international political economy, technology policy, and innovation studies. He previously researched energy security and governance at the Istituto Affari Internazionali and Maastricht University, interned at the European Commission, and worked on technology policy at the European Policy Centre.

Antonio Calcara

Antonio Calcara is a Professor at the Vrije Universiteit Brussel (VUB) and the Head of the Geopolitics and Technology programme at the Centre for Security, Diplomacy and Strategy (CSDS). He holds a PhD in Political Science from LUISS University in Rome and has previously held academic positions at the University of Antwerp, LUISS University, and Sciences Po Paris. He has received research funding from the European Research Council, the Research Foundation – Flanders, and the European Commission. His research lies at the intersection of security studies, international political economy, management, and innovation. His work has been published in International Security, Security Studies, Review of International Political Economy, Contemporary Security Policy, West European Politics, International Studies Review, Governance, Journal of European Integration, and European Security. He is the author of *European Defence Decision-Making: Dilemmas of Collaborative Arms Procurement* (Routledge).

Europe's future in the semiconductor ecosystem hinges on a fundamental strategic choice: Should the European Union aim for strategic autonomy or strategic indispensability? The European Chips Act sets out multiple goals—digital sovereignty, resilience, security of supply, innovation, and competitiveness—but these objectives can pull in different directions. Strategic autonomy would mean developing the capacity to act without relying on others by securing guaranteed access to critical chips even amid geopolitical turmoil. Strategic indispensability, in contrast, focuses on making Europe so essential to global semiconductor networks that others depend on its technologies and expertise. Their dependence on Europe will consequently serve as a deterrent, incentivizing them not to act against European interests. Given fiscal limitations and industrial realities, stakeholders increasingly recognize that full autonomy is unrealistic, whereas indispensability—anchored in collaboration with allies and partners—offers a more feasible and geopolitically effective path.

To assess these competing visions, the CHIPDIPLO Consortium, together with Brainport Development, organized a scenario workshop based on the Delphi method on June 26, 2025. Fifty participants representing mostly Europe's semiconductor industry, research technology organizations (RTOs), as well as European and partner-country think tanks and some members of Europe's policymaking community evaluated four distinct scenarios for the year 2035. The first two—"European Semiconductor Fortress" and "Fortified Critical Sectors"—imagined varying degrees of autonomy, while the latter two—"Allied Autonomy, European Indispensability" and "Continent

[1] The authors would like to thank Mathieu Duchâtel and Pierre Sel of Institut Montaigne and Filip Sebok of CEIAS for their careful review of various drafts of this paper. Likewise, CHIPDIPLO would like to express its gratitude to Brainport Development for their contributions to organising the June 26 dialogue and to the workshop's participants for patiently and granularly sharing their insights.

of Choke Points"—explored strategies focused on indispensability. The participants assessed each scenario in terms of its achievability, desirability, and effectiveness in protecting Europe's critical sectors from geopolitical disruptions.

A clear consensus emerged from the workshop. The scenario combining Allied Autonomy with European Indispensability was considered both the most desirable and the most realistic. This scenario envisions Europe concentrating on its core strengths—such as lithography, other semiconductor manufacturing equipment, and industrial (and automotive) chip design, RTOs, and other applied and fundamental research—while supporting key niches in promising disruptive technologies such as photonics and quantum computing. Europe would do this while embedding these assets within a coalition of like-minded and other partners, including the United States, Japan, South Korea, Taiwan, and India. This approach seeks to move supply chain bottlenecks out of China without replicating the entire global semiconductor chain in Europe. It offers fiscal sustainability, commercial dynamism, and credible resilience through shared innovation and diversified supply chains.

In contrast, the scenarios pursuing autonomy were widely rejected. The European Semiconductor Fortress scenario was viewed as economically unviable, as it would require enormous fiscal commitments and market distortions while provoking retaliation from global partners and rivals alike. Similarly, participants saw the Fortified Critical Sectors scenario, which emphasized selective onshoring and stockpiling to achieve a guaranteed supply for Europe's healthcare system, defense sector, energy grid, and critical state functions, as offering only limited resilience at great cost to innovation and efficiency. The participants criticized the Continent of Choke Points scenario for its strategic narrowness: Although fiscally manageable, this scenario would leave Europe overly dependent on external actors and vulnerable to supply shocks, even as it concentrated investment in a few technological niches.

Despite differences among the four visions, participants agreed on one sobering point: No configuration would fully protect Europe from major geopolitical crises such as a military conflict on the Korean Peninsula or in the Taiwan Strait or export embargoes imposed by China or the United States. In addition, achieving strategic indispensability would grant only limited deterrence power. The participants expect that this would not be sufficient to dissuade others from imposing export boycotts or starting military conflicts. Nonetheless, the participants viewed embedding Europe's semiconductor strengths within a resilient allied network as the best way to safeguard both economic security and technological leadership.

To make the European Indispensability, Allied Autonomy scenario a reality, workshop participants emphasized the need for a strategic shift toward demand-side tools that reshape markets rather than relying on costly, distortionary subsidies and state support. By coordinating economic security standards, European- and partner-content requirements, joint tariffs, and aligned procurement rules, partner countries can recreate a competitive international market that counterbalances China's state-supported cost advantages. The participants also stressed the importance of coordinated export controls, investment screening, and research security policies to maintain the coalition's technological edge. Selective domestic support only remains necessary in value-chain segments in which China holds near-monopoly power, such as critical raw materials and perhaps legacy chips and packaging, to reduce dangerous overdependence.

The participants underscored that Europe's capacity to become indispensable ultimately hinges on talent, energy, and institutional efficiency. A reformed STEM (science, technology, engineering, and mathematics) strategy, aggressive international talent attraction, and incentives for Europeans to enter technical fields are seen as prerequisites for expanding advanced manufacturing. Likewise, Europe must scale up reliable and affordable energy production, including nuclear, to offset structurally high energy prices. The participants view faster permitting, simplified state-aid procedures, and a genuine single capital market as essential institutional reforms to translate plans into industrial capacity and mobilize the long-term capital required for globally competitive production.

Finally, the participants stress that, as a secondary objective, allied autonomy should also contain reciprocal dependencies and redundancy within the coalition. Europe must avoid overreliance on any single partner, including the US, Taiwan, or others, whose ability or willingness to supply critical technologies could be disrupted by political shifts or conflict. Developing redundancy, securing reciprocal market access arrangements (such as sectoral 0-for-0 agreements), and maintaining some European choke points vis-à-vis Washington are all seen as vital.

If pursued coherently with partners, the proposed action plan could position Europe as an indispensable semiconductor hub within a resilient allied network, sustaining prosperity, innovation, and strategic influence through 2035 and beyond.

Table of contents

Introduction

What should the EU's semiconductor lodestar be: strategic autonomy or strategic indispensability?[2] The European Chips Act names "digital sovereignty," "resilience," "security of supply," "innovation," and "competitiveness" as key objectives.[3] The first three point to a long-term goal of strategic autonomy—that is, the EU's ability to act without relying on others.[4] According to this logic, Europe must ensure its access to the semiconductors that are essential to its prosperity and security regardless of export boycotts or wars. Critical sectors—from healthcare and defense to energy and automotive manufacturing—depend on an uninterrupted supply of semiconductors.

The Chips Act initially set the goal for Europe of achieving 20 percent of global market share in semiconductor production by 2030. Critics have, however, questioned this target. In line with an evaluation by the European Court of Auditors, Europe's Semicon Coalition (representing the EU's twenty-seven Member States) called it "unrealistic" and "lacking clear strategic direction".[5] Yet in September 2025,

[2] A "lodestar" is "a star that leads or guides, especially the North Star." https://www.merriam-webster.com/dictionary/lodestar.

[3] European Commission, European Chips Act, 2023, accessed November 10, 2025, pp. 1-3, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2023.229.01.0001.01.ENG.

[4] As noted by the European Parliament's rapporteur of the European Chips Act, "Europe is prepared to face the future challenges in the semiconductor industry, prioritising strategic autonomy, security, and a favourable business environment." See European Parliament, "Semiconductors: MEPs Adopt Legislation to Boost EU Chips Industry," press release, July 11, 2023, https://www.europarl.europa.eu/news/en/press-room/20230707IPR02418/semiconductors-meps-adopt-legislation-to-boost-eu-chips-industry.

[5] European Court of Auditors, "The EU's Strategy for Microchips: Reasonable Progress in Its Implementation but the Chips Act Is Very Unlikely to Be Sufficient to Reach the Overly Ambitious Digital Decade Target," 2025, https://www.eca.europa.eu/ECAPublications/SR-2025-12/SR-2025-12_EN.pdf; Ministry of Economic Affairs of the Netherlands, Semicon Declaration, September 29, 2025, p. 1. https://www.government.nl/ministries/ministry-of-economic-affairs/documents/diplomatic-statements/2025/09/29/semicon-declaration-29-september-2025.

the Semicon Coalition proposed enshrining "resilience" as a strategic objective—resilience here is defined as securing a "stable and reliable supply of trustworthy semiconductors for Europe's most critical sectors" during global disruption.[6] This aligns with the logic of autonomy—even in worst-case scenarios, Europe's critical sectors require guaranteed access to chips.

Strategic indispensability offers an alternative path.[7] By fostering European leadership in cutting-edge semiconductor technologies, the EU can create choke points on which others depend, strengthening its geopolitical leverage. Specifically, this would then strengthen European means to deter the imposition on Europe of export boycotts and perhaps even military adventurism by rival states. This approach emphasizes innovation, competitiveness, and technological leadership. Europe's Semicon Coalition explicitly advocates indispensability, suggesting policies to support the development of European "control points" like ASML's unique production of the most advanced lithography systems. In a March 2025 letter to the European Commission, a group of fifty-four MEPs urged the Commission to adopt an indispensability end goal.[8] Investments in applied research—for example in photonic chips and quantum computing—and in STEM

[6] Ministry of Economic Affairs of the Netherlands, Semicon Declaration.

[7] Mathieu Duchâtel, "From Strategic Autonomy to Economic Security: A Framework for Europe's Next Semiconductor Policy Initiatives" (GLOBSEC Policy Paper, 2025), https://www.globsec.org/what-we-do/publications/strategic-autonomy-economic-security-framework-europes-next-semiconductor.

[8] However, their letter also reflects an autonomy mindset. The MEPs cite "resilience" and propose that Chips Act 2.0 should focus on overcoming one specific important European capability gap, namely the design and production of AI chips. The MEPs see decreasing dependence on US-designed and Taiwanese-manufactured AI chips as necessary because "geopolitical developments have shown that Europe cannot take continued access to advanced technologies for granted." Again, the logic of autonomy applies: Whatever geopolitical shocks may occur, the EU should maintain access to semiconductors, in this case AI chips. See: Bart Groothuis, "Europa heeft een Chips Act 2.0 nodig!" LinkedIn post, accessed November 10, 2025, https://www.linkedin.com/posts/groothuisbart_europa-heeft-een-chips-act-20-nodig-met-activity-7310250867608223744-9ur3.

education, along with targeted public R&D support, can help Europe strengthen its indispensability in critical segments of the global semiconductor value chain.[9]

The global semiconductor value chain's hyperspecialized division of labor is becoming increasingly vulnerable.[10] The wars in Ukraine and Gaza, as well as the risk of conflict in the Taiwan Strait and on the Korean Peninsula, show how military conflicts can disrupt trade. Loss of access to East Asia—the world's manufacturing hub—would be especially harmful to Europe's economic security, as the majority of logic and memory chip manufacturing takes place there, and it is also the source of many other key semiconductor inputs. China's state-led drive to indigenize the semiconductor value chain places further pressure on European competitiveness. The weaponization of supply chains—such as US export restrictions on semiconductor technologies to China combined with China's subsequent squeezes on critical raw materials and Nexperia's semiconductors—threatens Europe's prosperity and security. Without intervention, China's ongoing onshoring of semiconductor production will expand its coercive supply chain leverage.

Which lodestar—autonomy or indispensability—better protects Europe's interests in this new geopolitical era? Europe faces a choice: Invest heavily to replicate the global semiconductor chain or focus on leading-edge choke points that confer leverage.

[9] Joris Teer and Giuseppe Spatafora, When Stars Align: Leveraging European Defence Budgets to Drive a Dual-Use Tech Boom, European Union Institute for Security Studies, 2025, https://www.iss.europa.eu/publications/briefs/when-stars-align-leveraging-european-defence-budgets-drive-dual-use-tech-boom.

[10] The semiconductor industry is one of the most R&D-intensive sectors in the world. To sustain and/or expand Europe's semiconductor industry and RTOs, they must generate sufficient revenue to continuously innovate. In turn, industry needs this innovation to remain financially solvent in the longer-term. Semiconductor Industry Association (SIA) and Boston Consulting Group (BCG), Strengthening the Global Semiconductor Supply Chain in an Uncertain Era, 2020, http://semiconductors.materiell.net/strengthening-the-global-semiconductor-supply-chain-in-an-uncertain-era/.

Given the resource constraints Europe faces, it would be difficult—probably impossible—to pursue full autonomy, let alone autonomy and indispensability, simultaneously. A lack of clarity regarding the EU's long-term objectives risks incoherent—perhaps even contradictory—policies. As a result, EU institutions and Member States could waste public resources in support of the semiconductor ecosystem. To achieve a high degree of autonomy, policymakers and industry would need to onshore (or at least friendshore) a broad range of production capabilities to reduce dependence on high-risk vendors. Simply expanding front-end manufacturing does not guarantee autonomy: Greater European control over legacy logic production would still leave the continent vulnerable to disruptions in assembly, testing, and packaging (ATP), memory, critical raw materials, and other essential inputs.

To strengthen strategic indispensability, the EU would need policies that enable leading European semiconductor firms—such as equipment manufacturer ASML—to flourish. Likewise, support should ensure that Europe's RTOs, such as CEA-Leti, Fraunhofer, IMEC, and TNO preserve their global competitiveness. Applied research initiatives—for example, in photonic chips and quantum computing—can seed new European scale-ups and potentially global champions that supply niche but essential technologies to the world. Examples include expanding STEM education (for instance, through visa liberalization), increasing public R&D investment, and deploying state instruments to protect European champions against unfair competition.

This paper, and the dialogue that preceded it, is intended to support the European Commission and EU Member States in selecting a semiconductor lodestar grounded in a clear-eyed understanding of Europe's industrial strengths and constraints and today's geopolitical realities. This paper's granular understanding of industry and RTO preferences and insights can help the EU craft targeted, realistic, and impactful policies to achieve these goals.

Workshop Setup

To address the research questions outlined above, the CHIPDIPLO Consortium, in partnership with Brainport Development, organized a scenario workshop based on the Delphi method on June 26, 2025.[11] The event brought together fifty participants, among them thirty-two representatives from the European semiconductor industry, RTOs, and regional tech development organizations. Think tank researchers (mostly from across Europe but also three from partner countries), representatives of EU institutions, and Member State policymakers joined them (see Appendix C for a full breakdown).

The workshop revolved around four backcasting scenarios that depicted radically different futures for the European and global semiconductor value chain in 2035. In the first two scenarios, the EU achieves varying degrees of strategic autonomy, while in the latter two, it strengthens its indispensability within global semiconductor networks (see Table 1 for scenario summaries and Appendix A for the full scenarios). Each scenario represents a distinct trajectory for how Europe might position itself amid the growing geopolitical and technological competition shaping the semiconductor sector.

[11] "A Delphi study relies on the idea that collective group responses are superior to individual responses. […] The Delphi method is a process used to arrive at a group opinion or decision by surveying a panel of experts. […] During a Delphi study, selected experts respond to several rounds of questionnaires, and the responses are aggregated and shared with the group after each round." – Tenley Sablatzky, "The Delphi Method," Hypothesis: Research Journal for Health Information Professionals 33, no. 1 (2021), p. 1 https://journals.indianapolis.iu.edu/index.php/hypothesis/article/view/26224/24366.

The participants were invited to evaluate these scenarios along three main dimensions. The first, *Achievability*, measured how likely it was that a given future could realistically materialize by 2035. The second, *Desirability*, reflected the political, economic, and diplomatic costs associated with pursuing the policies required to reach that outcome. The third, *Effectiveness*, assessed how successfully each scenario would protect Europe's critical sectors and broader economy from potential supply disruptions caused by geopolitical shocks, including export restrictions or armed conflict (see Appendix B for a full description). In addition to assessing these dimensions, the participants were encouraged to suggest alternative or hybrid scenarios that might capture dynamics not fully represented in the original four and to outline the policy measures that the EU and its Member States would need to implement to make each scenario possible.

The process was structured around two anonymous surveys conducted before and after the event. The pre-event survey received twenty-six responses between 12:35 p.m. on June 12 and 12:44 a.m. on June 25, 2025 (see Appendix B for the full scenario questions, Appendix C for an overview of the respondents, and Appendix D for the results). Most respondents came from the European semiconductor industry, followed by members of industry associations, RTOs, think tanks, EU or national policymakers, and two from partner-country think tanks. Before filling out the survey, the participants received a CHIPDIPLO discussion paper outlining the early-2020s configuration of the global semiconductor value chain and describing the four scenarios in detail (see Appendix A). At the beginning of the workshop, the CHIPDIPLO Consortium presented a synthesis of the pre-event survey results, which served as a starting point for the day's discussions.

Over the course of the workshop, the participants engaged in a full day of keynotes, panel debates, and breakout sessions, all held under the Chatham House Rule to ensure open and candid exchange. At the conclusion of the event, the participants were asked to complete a post-event survey, conducted between 5:15 and 5:45 p.m. on 26 June. This final round of responses, thirty-two in total, broadly mirrored the professional composition of the pre-event group (see Appendix C). The findings from this survey capture the participants' final assessments of the four scenarios and the policy packages needed to support them, with a focus on the post-event survey outcomes. A summary of these results is provided in Table 2, while the following section discusses the main insights and implications that emerged from the dialogue.

Table 1 • Scenario summaries

Scenario 1. A European Semiconductor Fortress—Full Autonomy but No Indispensability

By 2035, Europe establishes full semiconductor autonomy by replicating the entire global value chain within its borders. It reaches its goal of producing 20 percent of the world's semiconductors, including memory, logic, and advanced AI chips. This ecosystem encompasses domestic assembly, testing, and packaging (ATP), with Europe holding 20 percent of global ATP capacity, and includes companies capable of designing high-performance chips using a mix of European and open-source software. Europe also becomes self-reliant in semiconductor manufacturing equipment (SME), critical raw materials (CRMs), and production inputs such as specialty gases, chemicals, and wafers through aggressive onshoring and friendshoring strategies. This "fortress" model drastically reduces foreign dependence and is supported by robust industrial and research capabilities, including leading RTOs such as IMEC and CEA-Leti. However, Europe fails to maintain ASML's monopoly in EUV lithography, as competing Chinese Shanghai Micro Electronics Equipment (SMEE) systems come to market by 2034. While Europe becomes more resilient and capable across the semiconductor value chain, it does not create new global choke points in emerging technologies such as photonics or quantum chips. Europe lacks strategic indispensability; its geopolitical influence in the semiconductor landscape remains limited compared to the US and China.

Scenario 2. Fortified European critical sectors—Guaranteed five-year semiconductor supply for medical, defense, telecommunication, and other vital industries

By 2035, Europe has long abandoned its target of 20 percent global semiconductor production and has not achieved full semiconductor autonomy. Instead, the EU secures supply for vital sectors such as defense, healthcare, telecommunications, and energy. It achieves a modest 10 percent share in memory, logic, and DAO chips but fails to develop domestic AI-chip design or manufacturing capabilities. Semiconductor design remains dependent on American and open-source software. Instead of full autonomy, Europe ensures resilience through strategic policies such as onshoring selective production and mandating stockpiles for semiconductors in essential sectors, enabling a five-year period to protect against crises. Europe gains a limited 7 percent share in ATP, but most ATP capacity remains in Asia. However, Europe's policies stimulate ATP in Southeast Asian countries such as Malaysia, Singapore, Vietnam, and India, carving out market share previously held by China. ASML loses its competitive edge in EUV lithography, particularly in the Chinese market, to SMEE, which emerges as a rival by 2034. This loss weakens Europe's technological leverage. Despite maintaining globally competitive research institutions such as CEA-Leti, Fraunhofer, IMEC and TNO, Europe fails to develop new choke points in emerging technologies such as photonics and quantum chips. Europe ensures operational continuity for key sectors but does not strive for global dominance in value-chain niches.

Scenario 3. Allied Autonomy, European Indispensability—Moving Semiconductor Bottlenecks Out of China

By 2035, Europe forgoes broad semiconductor autonomy in favor of strategic indispensability within a trusted alliance with the US, Japan, and South Korea. Europe manufactures only 6 percent of global semiconductors, but it remains indispensable in advanced value-chain niches such as EUV lithography and becomes indispensable in photonics. Through coordinated policy actions starting in 2026, the coalition reduces its reliance on China by relocating legacy chip production, ATP capacity, and raw material supply chains. Traditional packaging is offshored to Southeast Asia and India, while advanced ATP is built up within Europe. Mining and refining of critical materials such as gallium, rare earths, and cobalt are also shifted away from China. High energy costs push some production—particularly of specialty chemicals—out of Europe but do not lead to more strategic dependence on China. Europe remains indispensable through its continued monopoly on EUV lithography via ASML and leadership in R&D fields such as photonics and quantum chips, potentially establishing new choke points by the late 2030s. The RTOs thrive under this cooperative model, though Washington's demand to exclude Chinese researchers signals trade-offs in research excellence.

Scenario 4. Continent of Choke Points—Indispensable Europe in a Coalition of the Indispensable

By 2035, Europe's role in semiconductor manufacturing diminishes, producing just 4 percent of global output. It fails to attract major investments in memory, logic, or DAO chip production and remains entirely reliant on AI chips designed by US firms and manufactured in Taiwan (and increasingly in the United States). China, meanwhile, expands its dominance, reaching 40 percent of global production and maintaining control over CRMs such as gallium, germanium, and rare earths. Europe does not establish a foothold in ATP, but more capacity moves from China to Southeast Asia. Despite this diminished manufacturing base, Europe retains strategic relevance by holding onto vital choke points in the global value chain. ASML preserves its monopoly on EUV lithography systems, with China unable to even produce immersion DUV machines. Europe's RTOs—such as IMEC, CEA-Leti, and Fraunhofer—remain world leaders, while the EU works within a coalition of indispensable partners including Taiwan, South Korea, Japan, and the United States. In this scenario, Europe's geopolitical influence stems not from scale but from its control over choke points—essential technologies and capabilities. While China dominates critical nodes, Europe's participation in a coalition of choke-point holders ensures its continued strategic leverage in an increasingly fragmented and competitive global semiconductor ecosystem.

European Semiconductor Ecosystem Views on Value-Chain Scenarios

This section outlines the seven main outcomes drawn from the Delphi workshop. The first three outcomes stem from the participants' cross-scenario assessments. They capture the perceived achievability, desirability, and effectiveness of all scenarios, offering an overview of how industry experts view the current and foreseeable trajectory of the European semiconductor sector and its strategic implications. The latter four outcomes derive from the participants' evaluations of individual scenarios. For each scenario, the participants identified the necessary policy measures and discussed their associated trade-offs—what this paper refers to as their respective "downsides" and "upsides." Every scenario-specific outcome is followed by a summary table indicating what the participants deemed required policy interventions, downsides, and upsides. Table 3 provides a general summary of the scenario-specific outcomes.

Cross-Scenario Outcomes

The participants generally favor scenarios that emphasize European indispensability over full autonomy, yet they remain skeptical that any scenario can fully protect Europe from major geopolitical crises or provide strong deterrence. They considered Allied Autonomy, European Indispensability desirable and likely by 2035, while rejecting the autonomy-focused Fortress Europe and Fortified Sectors scenarios as unrealistic and counterproductive. The Continent of Choke Points scenario was deemed likely to become a reality by 2035 but still undesirable. None of the four scenarios offers convincing protection against major geopolitical crises such as export embargoes or conflicts in East Asia. The participants remain skeptical of the EU's ability to deter such events, believing that even strategic indispensability would grant Europe only limited geopolitical leverage or crisis resilience.

European semiconductor ecosystem representatives are cautiously optimistic about the 2035 configuration of the global semiconductor ecosystem

By and large, they deem those scenarios that are most desirable also the most likely to have become a reality by 2035. They find that Scenario 3: Allied Autonomy, European Indispensability is both desirable and very likely to become a reality (7.3). Conversely, participants reject the first two scenarios—in which the EU achieves a high degree of semiconductor autonomy—as they are both unachievable and undesirable. This is especially true not only for Scenario 1: European Semiconductor Fortress (1.8 and 3.1, respectively) but also for Scenario 2: Fortified European Critical Sectors (4.3 and 3.6, respectively). Crucially, Scenario 4: Continent of Choke Points, is the odd one out: It is relatively likely to become a reality by 2035 (6.6) but is overall undesirable (4.6).

None of the four scenarios offers convincing protection against the four geopolitical crisis events surveyed

The events surveyed included a Chinese export embargo, including on CRMs; a US export embargo, including on AI chips and design software; a war in the Taiwan Strait; and a war on the Korean Peninsula. In other words, the participants only partially subscribe to the view that a strategically autonomous Europe in the field of semiconductors or moving supply bottlenecks out of China can protect critical European state functions and commercial industries from disruptions. Whereas Scenario 1: European Semiconductor Fortress offers the EU's critical state functions and commercial industries some protection (5.4), Scenario 4: Continent of Choke Points offers almost no protection at all (3.2). Scenario 2: Fortified European Critical Sectors and Scenario 3: Allied Autonomy, European Indispensability offer limited protection (4.5 and 4.6, respectively). Notably, there are no major differences between the levels of protection that individual scenarios offer against different geopolitical crises. For example, whereas the European Semiconductor Fortress scenario provides some protection against a Chinese export embargo (5.6), a US export embargo (5.5), a war in the Taiwan Strait (5.3), and a war on the Korean Peninsula (5.3), the Continent of Choke Points scenario shields Europe against none of these events (3.5, 3.2, 2.9, and 3.1, respectively).

The participants are skeptical that the EU can dissuade rivals, competitors, and rogue states from either imposing export embargoes against the EU or starting wars in East Asia

This is also true for Scenario 3: Allied Autonomy, European Indispensability and Scenario 4: Continent of Choke Points. The participants assess the EU's ability to deter the four geopolitical crisis events as being, on average, very limited (between 2.7 and 3.9) in all scenarios. Notably, throughout the four scenarios, the EU is more likely to successfully deter Chinese and American export embargoes on important semiconductor inputs and technologies (between 2.9 and 4.5 and between 3.4 and 4.8, respectively) than wars in the Taiwan Strait or on the Korean Peninsula (between 2.2 and 3.1 and between 2.2 and 3.1, respectively). Differences in the EU's capability to deter through economic means are minimal between scenarios. The indispensability scenarios—Scenario 3: Allied Autonomy, European Indispensability and Scenario 4: Continent of Choke Points—provide the "best" (meaning "least bad") cards to deter China from starting a Taiwan War (3.2 and 3.1, respectively) and deter North Korea or China from starting a war on the Korean Peninsula (3.1 and 3.2, respectively). In short, the participants expect that even if Europe is strategically indispensable in the semiconductor value chain, this will provide the EU with little influence to determine the course of events in East Asia.

Table 2 • EU semiconductor ecosystem views on the EU's 2035 semiconductor future: Post-dialogue survey outcomes

Survey Question	Scale	Scenario 1: European Semi-conductor Fortress	Scenario 2: Fortified European Critical Sectors	Scenario 3: Allied Au-tonomy; EU Indispensa-bility	Scenario 4: Continent of Choke Points
Q1. Achievability, meaning likelihood that Scenario X is a reality by 2035	1 = Totally unachievable 10 = Entirely achievable	**1.8**	**4.3**	**7.3**	**6.6 ***
Q2.4 Desirability, meaning whether Scenario X is in the EU's interest	1 = Entirely opposed to the EU's interests; 10 = Entirely in line with the EU's interests	**3.1**	**3.6**	**7.3**	**4.6**
Q3a. Effectiveness(i), meaning whether the EU's critical state functions and commercial industries are protected against semiconductor supply interruptions, if Europe faces…					
Q3a. major geopo-litical crisis events (average)	1 = Not at all protected 10 = Entirely protected	**5.4**	**4.5**	**4.6**	**3.2**
Q3.1 a Chinese export embargo (in-cluding CRM / legacy chips)	1 = Not at all protected 10 = Entirely protected	5.6 *	4.6	5.3	3.5
Q3.3 a US export embargo (including of SME and SME parts / chip designs)	1 = Not at all protected 10 = Entirely protected	5.5 *	4.6	4.5	3.2
Q3.5 a war in the Taiwan Strait	1 = Not at all protected 10 = Entirely protected	5.3 *	4.3	4.4	2.9
Q3.7 a war on the Korean Peninsula	1 = Not at all protected 10 = Entirely protected	5.3	4.6	4.1	3.1

Survey Question	Scale	Scenario 1: European Semi-conductor Fortress	Scenario 2: Fortified European Critical Sectors	Scenario 3: Allied Au-tonomy; EU Indispensa-bility	Scenario 4: Continent of Choke Points
Q3b. Effectiveness(ii), meaning EU ability in Scenario X to...					
Q3b. deter major geo-political crisis events (average)	1 = Extremely unlikely 10 = Extremely likely	**3.1**	**2.7**	**3.9**	**3.5**
Q3.2 deter a Chinese export embargo (including of CRM / legacy chips)	1 = Extremely unlikely 10 = Extremely likely	3.7	2.9	4.5	3.9
Q3.4 deter a US export embargo (in-cluding on SME and SME parts / chip	1 = Extremely unlikely 10 = Extremely likely	4.2	3.4	4.8	4.0
Q3.6 deter China from starting a war in the Taiwan Strait	1 = Extremely unlikely 10 = Extremely likely	2.2	2.2	3.2	3.1
Q3.8 deter North Korea / China from starting a war on the Korean Peninsula	1 = Extremely unlikely 10 = Extremely likely	2.2	2.2	3.0	3.1 *

The color of each cell—gold, silver, bronze, or white—indicates the rank of the scenario on each of the three indicators. For example, Scenario 3 is ranked first place (gold-colored) in terms of overall 1. Achievability and 2. Desirability but only in second place (silver) in 3a. Effectiveness(i) and in third place (bronze) in 3.3 protection against a US export embargo. Scenario 1 is ranked fourth place (white) in 1. Achievability. The scores in response to Q3a. and Q3b. are averages of participants' responses to the four questions below those questions. CHIPDIPLO welcomed fifty participants to the dialogue, of whom thirty-two came from industry and RTOs. In total, thirty-two experts filled out the post-event survey. Sixteen respondents came from the semiconductor industry and three from research organizations. The remainder included European and non-European think tanks, governments, and an EU agency. Some respondents did not specify in which sector they work, so the total number of industry and RTO respondents is likely higher. For a more detailed breakdown, please see the full methodology in Appendix C.

Scenario-Specific Outcomes

From the scenario-specific conclusions, a hierarchy of feasibility and desirability emerges. The participants overwhelmingly reject the autonomy-focused scenarios, namely Fortress Europe and Fortified Critical Sectors, as unrealistic, prohibitively costly, and ineffective in crisis resilience, warning they would erode competitiveness, fragment innovation, and provoke retaliation. The Allied Autonomy, European Indispensability scenario stands out as the most desirable and achievable path—leveraging Europe's strengths in lithography, other semiconductor manufacturing equipment, and research to embed the EU within an allied, innovation-driven network that diversifies away from China without full decoupling. This scenario offers a fiscally sustainable route to resilience, although it still depends on stable US alignment and energy reforms at home. In contrast, the Continent of Choke Points scenario appears fiscally plausible but strategically hollow: It preserves influence only in narrow technological bottlenecks while deepening dependence on external actors. Overall, participants see Europe's best chance in selective interdependence—fortifying its technological niches through alliances rather than isolation.

Scenario 1: A European Semiconductor Fortress

Participants considered this scenario impossible—or nearly impossible—to achieve, deeply undesirable because of the enormous financial, societal, and diplomatic costs of even trying, and only somewhat effective in protecting the EU against global supply chain shocks. In this scenario, the EU seeks near-total semiconductor self-sufficiency, replicating the full value chain at home—from raw materials and chemicals to design, fabrication, and advanced packaging. The participants stress that achieving this would require a centralized EU authority and massive, sustained public support. In practice, this strategy would demand exceptional fiscal firepower, deep regulatory (e.g., state aid) derogations, and sustained mobilization of capital, land, energy, and talent. The participants expect a semiconductor fortress strategy to court retaliation from rivals and partners alike, who would also close their own markets to EU semiconductors. Participants expect the result to be European "hollow champions" throughout low-return value-chain segments.

What the participants expect it would take. Production-centered industrial policy to onshore the entire value chain, ranging from front-end, back-end, chemicals, and SME to CRMs; the creation of an EU design and AI-chip "champion"; major public–private finance vehicles; long-term power contracts and massive new energy production (including nuclear) to make energy-intensive manufacturing at scale viable in Europe; accelerated permitting; and a visa and education regime that reorients STEM talent into semiconductors at scale. The EU would need to relax fiscal rules and state-aid constraints while accepting trade-offs against other priorities such as in the healthcare, housing, and defense sectors. Demand-side protection—strict "buy European" requirements—would be used to guarantee offtake. Overall, the participants stressed that this scenario would demand that the EU "act like China."

Downsides. The participants expect that spending in low-ROI areas (i.e., "zombie industries") would crowd out financial support for higher-value public and commercial goods. Talent diversion from other sectors would slow innovation elsewhere (including cleantech).

Insulating Europe's internal market would raise prices for downstream industries and reduce their competitiveness, as they would be stuck with noncompetitive semiconductors (compared to the global leading edge). The participants also think that taking away resources from Europe's strengths—such as lithography or industrial semiconductors—would risk generalized industrial mediocrity. Black markets would likely emerge in which intermediaries sell foreign semiconductors to European end industries. Local-content requirements would trigger retaliation from rivals and partners alike, shrinking export markets just when European industries most need sales to achieve scale. This strategy would also heighten the environmental pressures from mineral mining and refining, as they would be pursued within the EU.

Upsides. The upsides—in the very unlikely scenario that a Fortress Europe can be achieved—are few, according to the participants. If sustained for a decade or longer, Fortress Europe might produce a modest form of geopolitical autonomy as a kind of geopolitical crisis insurance. It may also produce strong STEM spillovers (if the policy succeeds in getting a larger part of the population to work in STEM): expanded R&D, deeper university–industry links, and high-skill employment in new clusters. The broader enabling base—equipment, materials, and packaging—would benefit adjacent industries by making essential inputs available.

Summary: Scenario 1

Pillar	Policies required	Downsides	Upsides
Production-centered policy	Provide mass support across the full chain; create EU design/AI-chip champion; long-term subsidies; regulated energy.	High fiscal cost; misallocation; retaliation; higher downstream prices.	Crisis insurance; R&D spillovers; cluster jobs.
Workforce	Reorient STEM pipeline; fast-track visas; mass reskilling.	Opportunity costs; recruitment shortfalls in other sectors.	Larger high-skill base.
Enabling conditions	Achieving cheap and abundant energy production; fast permits; land and water access; capital-market instruments.	Environmental risks from domestic production of materials; public opposition.	Better infrastructure and utilities for high tech.
Rules & architecture	Relax fiscal and state-aid rules; central authority to coordinate.	Governance frictions; fragmentation if not accepted EU-wide.	Faster decisions; one-stop shop for investors.
Market policy	Procurement preferences; local-content mandates.	Price inflation; trade (including WTO) disputes with partners and China; retaliation in other areas.	Guaranteed offtake for EU-produced products.
Partnerships	Minimal— emphasis on autarky.	Diplomatic isolation; lost learning from partners.	–

Scenario 2: Fortified European Critical Sectors

Participants consider this scenario unlikely to become a reality, deeply undesirable, and largely ineffective to protect the EU against geopolitical threats. In this scenario, the EU prioritizes resilience for defense, health, energy, telecoms, and other vital services rather than for the whole economy. It stockpiles chips for five years, supports selective onshoring in mature nodes and ATP, and uses strict demand-side tools in critical sectors. The participants expect this approach to be more affordable than full autarky, but it remains inward-facing and may force noncompetitive semiconductors on European end users.

What the participants expect it would take. A narrow, security-driven industrial strategy with clear definitions of "critical" sectors; massive five-year semiconductor stockpiles for defense, healthcare, telecom, and energy systems; a funded stockpile regime that would be regularly renewed to avoid obsolete semiconductors; financing partly drawn from higher defense budgets under the NATO 1.5 percent target and new sovereign tools to guarantee EU offtake; financial incentives for European ATP hubs and some mature-node capacity; and governance that prevents duplication across Member States. Energy affordability remains a binding constraint, with nuclear and long-term contracts potentially stabilizing costs. On the institutional side, a "Chips Act 2.0" would have to streamline state aid, permitting, and joint procurement; capital-market tools would have to encourage private investment. The participants consider it necessary to complement this with demand-side and protect measures—local-content requirements, protected procurement, and IP protection—that would privilege EU-based suppliers in designated sectors. Geo-economic partnerships would play a limited role.

Downsides. The participants fear that short product cycles would make multi-year stockpiles obsolete and prone to write-offs. The defense and medical sectors could end up locked into outdated chips, unable to match the pace of global innovation. There is a risk of slowing down advances in photonics, quantum, and equipment manufacturing—areas of traditional EU strength. Subsidizing duplicated capacity across the Union would fragment innovation and strain budgets. Another downside of the scenario—when compared to Scenario 1: Fortress Europe—is that Europe remains reliant on US leading-edge chips, EDA, and cloud AI, while exposure to Chinese retaliation, especially in CRMs, persists. The participants warn that downstream industries will face higher input costs, risking an acceleration of Europe's deindustrialization. Traditional European strongholds like the automotive industry will suffer equally as European innovation fragments and choke points are lost without new ones emerging.

Upside. In a severe and prolonged geopolitical shock, such as a war in East Asia, several participants think essential services have a better chance of continuing to function in Scenario 2: Fortified Critical Sectors. Likewise, stocks can help maintain deterrence vis-à-vis Russia, as this signals Europe's ability to fight a longer war. ATP growth helps automotive and industrial electronics build resilient value chains. Visa liberalization coupled with targeted reskilling can expand the workforce. Regional clusters may benefit from stable demand and predictable offtake commitments. Local-content rules may allow niche sectors such as legacy and automotive chips to regain limited market share, even if these gains remain modest compared to the broader costs.

Summary: Scenario 2

Pillar	Policies required	Downsides	Upsides
Production-centered policy	Stockpile regime; selective onshoring of mature nodes and ATP through sustained public support.	Lock-in of legacy tech Obsolescence costs; duplication.	Short-term insulation of critical sectors against shocks.
Workforce	Targeted visas; reskilling for ATP and quality control.	Talent diverted from frontier R&D and industrial activity in European semiconductor niches.	–
Enabling conditions	Investment in affordable and abundant energy (including nuclear); logistics and water for front-end manufacturing.	Rushed environmental permitting, possibly affecting prosperity of citizens.	Upgraded infrastructure for industrial clusters.
Rules & architecture	Chips Act 2.0; joint procurement; centralized technology and stockpiling roadmaps on EU level.	Governance complexity.	Predictable demand for European semiconductors.
Market policy	IP enforcement; local-content rules in vital sectors.	Higher costs for end users (including taxpayer); slower diffusion of innovation.	Niche resilience for critical sectors (e.g., defense, medical devices, telecommunications).
Partnerships	Limited; risk-managed shift of ATP toward partners in Asia (e.g., Malaysia).	Narrow diplomacy; limited leverage.	Less exposure to ATP disruptions in Taiwan and China.

Scenario 3: Allied Autonomy, European Indispensability

Participants consider this scenario both desirable and the most likely to become a reality—but still largely ineffective in protecting the EU against geopolitical threats. In this scenario, Europe focuses on what it does best—lithography and other equipment, automotive/industrial chip design, and applied research—while investing in new niches such as photonics and quantum. At the same time, the EU embeds these strengths in an allied production network that undoes China-centric dependencies. Rather than recreate the full stack at home, the EU aims to become structurally indispensable inside a broad coalition (the United States, Japan, Korea, Taiwan, India, and parts of Southeast Asia), which collectively moves bottlenecks out of China. Scenario 3: Allied Autonomy, European Indispensability provides the most innovation-friendly and fiscally efficient path that still offers meaningful resilience.

What the participants expect it would take. A selective industrial strategy that scales and fortifies European choke-point technologies and converts research excellence into commercial advantage ("lab-to-fab"). This would demand lower energy costs (including stable, long-term contracts and nuclear capacity), deeper capital markets, faster permitting, and consistent, long-horizon policies. Europe would double down on its existing strengths while selectively re- or friend-shoring integrated device manufacturers with operations in China. At the EU level, the participants find that market integration and a true single capital market would give firms more scale; the scope of implementation of the European Chips Act should be extended to more enabling technologies, such as photonics. Externally, several participants argue that the EU would need to negotiate zero-tariff or low-barrier sectoral regimes across the coalition; coordinate export controls and investment screening; co-fund joint R&D platforms; and diversify critical-material supply chains. This would hinge on broad industrial alliances with the United States, Japan, South Korea, Taiwan, India, and Southeast Asia, combining joint subsidy schemes with demand-side measures (e.g., EU-and-partner-content requirements and tariffs) that raise costs for Chinese products. The participants contend that demand-side levers such as rules of origin, procurement preferences, and standards can succeed in raising the relative price of high-risk, China-produced inputs without closing off markets between partners.

Downsides. The participants stress that a narrower industrial policy can still back the wrong projects. Reduced exposure to Chinese R&D ecosystems may slow learning in certain fields. Diversifying mining and refining within the coalition introduces environmental and political risks in partner countries and perhaps also in Europe. Strategically, Europe remains exposed to swings in US policy: The success of Scenario 3: Allied Autonomy, European Indispensability is partially dependent on Trump and his successor's long-term commitment to this system. Through the transition to this scenario, Europe and the rest of the coalition remain vulnerable to Chinese coercion, including curtailing the supply of a variety of CRMs to specific individual alliance members (to pick them off). Moreover, losing access to China's vast STEM workforce could deepen Europe's talent shortages, slowing progress in manufacturing and R&D. If EU governance fails to lower energy prices, simplify regulations, and provide incentives for domestic manufacturing, Europe's position within the coalition may weaken rapidly as firms offshore to faster-moving partner markets such as the United States.

Upside. Europe preserves and deepens access for its industries to large allied markets and research networks, replacing the "must-have" Chinese market that Beijing is in the process of closing anyway; it scales its strongest firms operating in semiconductor niches; and it acquires new and shared choke points that raise Europe's negotiating leverage in relations with China—as well as within the coalition. The participants expect that improved talent pipelines and a more competitive investment climate will fuel scale-ups and deep tech growth. Over time, several participants expect that this scenario would enable the EU to be strong on economic security while remaining commercially vibrant. Enhanced cooperation with like-minded partners could strengthen Europe's influence, increase resilience to systemic shocks, and consolidate its role in the global innovation network, which would be anchored by indispensable European assets in lithography, photonics, and quantum technologies.

Summary: Scenario 3

Pillar	Policies required	Downsides	Upsides
Production-centered policy	Scale EU choke points; invest in advanced packaging, design, and research; targeted reshoring.	Misallocation risk by investing too narrowly; environmental costs from diversified production of materials.	Larger private investment; vibrant start-up to scale-up pipeline.
Workforce	Attract global talent; reform STEM education; mobility within the EU.	Loss of access to some Chinese talent pools.	Stronger human capital; managerial and operator depth.
Enabling conditions	Lower energy costs; faster permitting for semiconductor and infrastructure projects; long-term, rules-based support.	Competitiveness gap with coalition partners and China if energy reforms stall.	Cross-industry competitiveness gains.
Rules & architecture	Single capital market; limited loosening of state-aid and competition rules.	Less public capital for innovation projects.	No moral hazard and unfair intra-EU competition because competition rules are not loosened.
Market policy	Reduce internal EU barriers; reciprocal enhanced market access within the alliance; joint IP protections; trade defense where needed.	Requires long-term buy-in from key partners, which cannot be assumed of Trump 2.0.	Broad available non-China sales markets for European products.
Partnerships	Broad coalition: US, Japan, Korea, Taiwan, India, SE Asia; joint R&D and controls.	Exposure to allied politics (including whims of the Trump administration; Chinese retaliation and efforts to undermine establishment of coalition.	Resilience by diversification; allied leverage to keep Beijing in check.

Scenario 4: Continent of Choke Points

According to the participants, this scenario is somewhat likely to become a reality, relatively undesirable, and very ineffective in protecting the EU against major geopolitical crisis events. In this scenario, Europe narrows its ambition to defending its technological bottlenecks, which are, above all, lithography and specialized equipment. Europe backs these with strong IP, export controls, and targeted R&D. The strategy is lean and efficient, but it trades breadth for depth: A shrinking manufacturing footprint increases exposure to supply shocks and foreign coercion, and dependence on the United States and China deepens. This scenario is plausible given Europe's budget-constrained politics, but it leaves Europe entirely exposed to major, prolonged crises, such as a war over Taiwan or a Chinese curtailment of CRM exports.

What the participants expect it would take. A choke-point-centric industrial strategy with active state support for strategic firms requires improving access to affordable and abundant energy, accelerated permitting, dedicated land and water, and tailored visa paths for global talent, including engineers, managers, and operators. At the EU level, the participants encourage less fragmentation in research funding. Likewise, several participants point to the need to build a mechanism to wield choke points credibly as leverage: Indispensability buys influence only if the threat of denial is credible—for example, if China expands its curtailment of CRM supplies to Europe. Some participants thought this would require a second leg of the European Chips Act with a sharper focus on choke points and industrial AI applications. Partnerships would not have to go beyond mostly technical cooperation with like-minded countries. Some participants expect European firms to maintain access to China's market (which Beijing is in the process of closing) for slightly longer, as this scenario would not involve adopting policies Beijing deems provocative.

Downsides. In the Continent of Choke Points scenario, with manufacturing offshore in both China and coalition countries, Europe's exposure to global disruptions rises. In addition, the participants fear that a narrow industrial policy may back the wrong niches and miss growth markets such as application-specific AI accelerators. A smaller industrial base would erode employment and "process knowledge" among engineers and workers. Reliance on both the US and China would deepen, amplifying Europe's exposure to increasingly unilateral and erratic policies in Washington and a coercive Beijing. Participants fear that an overt "choke points as leverage" posture could provoke Chinese retaliation, especially through critical materials.

Upside. The participants expect that concentrating investment would reinforce the research base and sustain specialized industry clusters whose spillovers would benefit industrial AI, robotics, metrology, and advanced materials. Strategically, control of key segments preserves European relevance in global negotiations, particularly when exercised with allies.

Summary: Scenario 4

Pillar	Policies required	Downsides	Upsides
Production-centered policy	Invest in next-gen equipment and niche R&D; protect IP; targeted support for key firms.	High risk of missing growth markets due to narrow investment; thinner manufacturing base, eroding deterrence.	Limited strain on public spending; world-class research clusters.
Workforce	Maintain pipelines for training specialist STEM talent; attract global talent by easing migration for engineers and operators.	Aging cohorts, rapidly reducing the EU's STEM workforce.	Retained capability in strategic firms due to avoiding talent demand in "hollow industries".
Enabling conditions	Making abundant and cheap energy more widely available; quicker permitting.	Competitiveness gap with coalition partners and China if energy reforms stall.	Cross-industry competitiveness gains.
Rules & architecture	Tight export controls and investment screening; removing internal EU barriers to trade.	Higher coercion risk by China (and the US) because of deeper external dependence.	No moral hazard and unfair intra-EU competition because competition rules are not loosened.
Market policy	Limited, as absence of onshoring targets makes local-content requirements and other protective measures unnecessary.	High exposure to foreign supply shocks (e.g., because of geopolitical crises).	Premium pricing for exports of EU-produced indispensable inputs.
Partnerships	Technical cooperation with like-minded partners; but no coordination on taking all bottlenecks out of China.	Narrow coordination on taking bottlenecks out of China and therefore limited crisis protection.	Knowledge exchange within the coalition and prevention of technology leakage to China.

Table 3 • Four 2035 semiconductor scenarios and the policies required to make them a reality

	Fortress Europe	Fortified Critical Sectors	Allied Autonomy (EU Indispensability)	Continent of Choke Points
1) Production-centered industrial policy	Full-chain intervention (materials → design → fabs → ATP); create an EU AI-chip/design champion; large, long-term subsidies and public–private finance; accept trade-offs against non-semiconductor sectors.	Define "critical" sectors and bills of materials; finance/mandate rotating stockpiles; selective onshoring of mature nodes and ATP (esp. advanced packaging).	Improve investment climate; scale EU choke points (lithography, other equipment, photonics); invest in advanced packaging, design platforms, throughout the coalition; targeted reshoring where resilience/economics align; stay within a sharpened Chips Act (with few blanket subsidies); diversify mining/refining outside China; avoid single-partner dependence.	Invest in next-gen equipment and niche R&D; double down on EU choke points; targeted support for strategic firms; limit intervention to areas with a clear EU edge.
2) Workforce development	Redirect STEM pipelines toward semiconductors; front-load engineering training for the early 2030s; liberalize visas/immigration for global talent.	Relax visas for STEM talent to come to Europe; expand STEM and technical upskilling, for example tied to ATP.	Attract global talent (especially when losing access to Chinese talent); speed up training of domestic STEM talent.	Maintain specialist talent pipelines (lithography/other equipment/photonics); ease migration for engineers and operators; strengthen university–industry links.
3) Enabling conditions (manufacturing & valorization)	Unlock large volumes of private capital; make available affordable and abundant energy production (including nuclear); speed up permitting and site access.	Chips Strategy 2.0 with realistic segment goals; invest in automation, reskilling, and productivity; reopen/expand nuclear for affordable baseload.	Strengthen lab-to-fab; reduce energy costs and create abundance (incl. nuclear energy).	Support strategic firms with energy, land, infrastructure, workforce; focus valorization on specialized areas; build out ASML/photonics/other equipment ecosystems.
4) EU rules & policy architecture	Suspend/reshape fiscal rules to enable long-term EU and Member State spending, including larger state aid; central coordination on the EU level.	Prevent duplication within Europe; coordinate national strengths; Chips Act 2.0 with clear long-term roadmaps; semiconductor sovereign fund; Capital Markets Union; more flexible state aid.	Create a genuine single capital market in the EU; accelerate Chips Act (incl. research/prototyping); reduce over-regulation; only gradual loosening of state-aid and other competition laws in the EU.	Long-term, choke-point-centric strategy with less fragmentation; build a top-down EU mechanism to credibly wield choke points: Threaten cutting off China from supply chain choke points if Beijing weaponizes the parts of the value chain it controls itself; Maintain Chips Act continuity aligned to strategic niches.
5) EU market protection & cultivation	"Buy European" and local-content mandates across downstream and midstream sectors.	Roadmap for risk management and supply security; local-content rules in vital sectors; IP protection, capital access, RTO collaboration; Disincentives (e.g., tariffs) for non-EU chips.	Remove intra-EU trade frictions; lower trade barriers within allied coalition; joint IP protections and calibrated trade defense (incl. tariffs) in the coalition; selective reshoring; invest in packaging/R&D/design leveraging EU strengths.	Remove internal EU barriers; defensive measures (export controls, investment screening, IP enforcement); protect choke points from foreign capture.
6) Geo-economic partnerships	None (autarky) but would likely accelerate China's process of closing off its markets and will cause partners to rapidly close their own markets.	Risk-managed ATP diversification with trusted partners; secure logistics.	Broad coalition (US, Japan, Korea, Taiwan, India, SE Asia); coordinate export controls/investment; joint R&D; targeted joint subsidies.	Deepen trade/tech ties with SE Asia, India, US and others to strengthen an innovation ecosystem.

Limitations

While the workshop produced outcomes grounded in the insights of 32 European semiconductor ecosystem representatives and 18 other participants with relevant expertise, it is important to acknowledge certain limitations inherent to this scenario-based exercise:

Underestimation of the difficulty of moving supply bottlenecks out of China

Participants may have underestimated the scale of effort required to achieve Scenario 3: European Indispensability, Allied Autonomy. Although this outcome was often considered the most likely, its underlying assumptions rest on a rapid diversification of semiconductor and CRM supply chain bottlenecks away from China, an objective for which Europe and its partners are not even remotely on track. Ongoing or planned European and partner initiatives to reduce CRM dependencies and prevent overconcentration of front-end and back-end semiconductor manufacturing in China have not yet produced convincing results. Misplaced optimism about CRM specifically may stem from semiconductor manufacturers themselves only relying on relatively small volumes.

Achieving the "Allied Autonomy" scenario will demand sustained policy intervention (creating strong market protections against China's below-market price products) and major investment to expand front-end, back-end, and upstream material production capacity outside China. After all, projections are that most new semiconductor fabrication will come online in China in the upcoming years. Without decisive action, Scenario 4: The Continent of Choke Points, marked by continued or deepened dependence on Chinese bottlenecks in materials, ATP, and legacy chip front-end manufacturing capacity, remains a likely outcome.

Underestimation of the potential impact of a major geopolitical crisis

If an extremely high-impact event such as a major conflict in the Taiwan Strait or on the Korean Peninsula occurs on the path to 2035, this will severely disrupt the global semiconductor ecosystem—and any efforts to achieve Scenario 3: Allied Autonomy: European Indispensability. After all, the value chain still depends heavily on East Asia, where about 75 percent of global front- and back-end manufacturing still took place in 2022—despite recent industrial policies in the United States and the European Union. War in the world's manufacturing hub will lead to major production issues, which is likely to also disrupt any construction projects aimed at limiting European and American dependence on China and other countries.

Absence of end-user industries

If the event had surveyed end-user industry representatives, including the defense, medical, energy, and automotive sectors, they may have attached much greater importance to achieving autonomy than indispensability. After all, these mid- and down-stream industries would

[12] Semiconductor Industry Association and Boston Consulting Group, Emerging Resilience in the Semiconductor Supply Chain, May 2024. p. 11, https://web-assets.bcg.com/25/6e/7a123efd40199020ed1b4114be84/emerging-resilience-in-the-semiconductor-supply-chain-r.pdf.

maybe have sought to prioritize their own production continuity under crisis conditions by advocating policies that guarantee the supply of semiconductors. The surveyed semiconductor industry and RTO representatives prefer an indispensability focus for their own sector, but several did express an autonomy mindset for their suppliers: some advocated the creation of multi-year stockpiles of CRMs. In future, involving end-user industries, both critical sectors that are low-volume users of semiconductors and high-volume commercial users, more closely in CHIPDIPLO activities would strengthen the findings.

Geopolitical events after the workshop

After the workshop took place in late June 2025, several geopolitical events occurred that could have affected the participants' endorsement of Scenario 3: Allied Autonomy, European Indispensability. For example, the August 21 EU-US Trade Deal included the US imposition of 15 percent tariffs on European goods. While the tariffs do not cover SME, they do make other European semiconductors and inputs for semiconductor production in the US artificially more expensive on US markets. Knowledge of the outcome of the US–EU trade negotiations may have negatively impacted participants' preference for Scenario 3. On the other hand, China's curtailment of the supply of rare earths and many other CRMs to Europe and its (temporary) ban on the export of Nexperia chips may have made Scenario 3 even more popular. After all, in this 2035 scenario, Europe and its partners succeed in taking all semiconductor bottlenecks out of China. Both events—the CRM and the Nexperia crisis—underline the danger of relying on Beijing for low economic value-added but strategically indispensable goods.

Conclusion

The dialogue participants emphasized that Europe's long-term semiconductor strategy should focus on achieving indispensability within an allied autonomy framework—balancing resilience, competitiveness, and geopolitical leverage—rather than pursuing unrealistic self-sufficiency or a narrow indispensability strategy that does not strengthen resilience. According to the participants, the EU's long-term success depends on embedding its semiconductor strength within a resilient network of allies and partners that collectively reduces dependence on high-risk actors—most importantly, China. In other words, they advocate taking supply chain bottlenecks out of China. Almost all participants regarded complete autonomy as neither realistic nor desirable. Instead, they agreed that Europe's best course lies in reinforcing indispensability within a secure allied autonomy, leveraging the continent's strengths in lithography, other manufacturing equipment, automotive and industrial semiconductors, and investing in innovation in photonics and other emerging niches.

The participants in the dialogue converged on a clear hierarchy among the four scenarios considered. Scenario 1, the "European Semiconductor Fortress," was widely regarded as economically unviable and politically counterproductive. Replicating the entire semiconductor value chain within Europe would require an almost impossible level of fiscal mobilization, distort markets, and provoke retaliatory measures from partners and rivals alike. The participants warned that such an approach would at best produce "hollow European champions" across different segments of the value chain—firms unable to compete globally and offering substandard technologies to Europe's defense, medical, and industrial sectors. Scenario 2, the "Fortified Critical Sectors" approach, was seen as offering only limited protection against geopolitical shocks. While selective stockpiling and partial onshoring could help buffer critical sectors such as defense, health, and energy, they would likely stifle innovation. Furthermore, these measures would lock downstream industries into outdated chip generations, leading to inefficiency and technological stagnation.

In contrast, Scenario 3, "Allied Autonomy, European Indispensability," emerged as both the most desirable and the most plausible pathway by 2035. It capitalizes on Europe's strengths in lithography, manufacturing equipment, and industrial semiconductors while embedding them within a coalition that includes the United States, Japan, South Korea, India, and other partners. This strategy reinforces Europe's indispensability within a resilient network of allies and partners, reducing dependency on a high-risk actor, China, while sustaining access to a large joint coalition market and fostering innovation. Scenario 4, "The Continent of Choke Points," was viewed as fiscally manageable but strategically narrow and risky. Although concentrating resources on a few technological niches might preserve Europe's competitiveness in specific areas, it would erode the broader industrial base, limit growth opportunities, and increase vulnerability to external coercion.

The participants proposed the following policies to make the European Indispensability, Allied Autonomy scenario a reality:

1. **Demand-Side Levers**

   Demand-side levers beat blank checks. The participants expect that allied autonomy requires recreating an international market in a large coalition, which corrects for the cost advantage of

China's state-supported products, for example through European-and-partner-content requirements. The participants argue that economic security standards, rule-of-origin tools, joint tariffs, and aligning public procurement strategies for products from partner countries can steer markets toward supply from those countries. A demand-side strategy prevents the costs and risks of indiscriminate subsidies (the failure-prone strategy of "picking winners") and other support measures. According to the participants, these levers enable private investment while preserving the corrective mechanisms of markets. Likewise, they will help sustain production in like-minded and non-like-minded partner countries throughout the entire value chain. Promoting measures like state support, on the other hand, will risk subsidy races between partners. The participants argue that coordinated export controls, investment screening, and research security policies would be good means of maintaining the coalition's technological edge.

2. Selective Domestic Support

In specific value-chain segments (at risk) of overconcentration of supply in China (like CRMs, legacy chips, and packaging), achieving resilience may require the EU and its partners to provide selective domestic capacity support (to prevent overreliance on China). Such support measures are definitely needed to break China's (near) monopolies on the production of a variety of CRMs.

3. Talent & Energy

Talent and energy are binding constraints on Europe. According to the participants, Europe's prospects of expanding its indispensability rely on people and power. They stress that to expand European indispensability, a reformed STEM policy would be necessary, including a relentless push to attract talent (researchers, engineers, and workers) from around the world and incentivize Europeans to choose STEM careers. Another necessary condition is rapidly expanding the production of reliable, affordable energy, including nuclear, to overcome Europe's very high energy prices. Without acting on talent and energy, the participants argue, any industrial policy will be prone to failure.

4. Institutional Efficiency

Institutions determine speed and scale. The participants contend that, to convert plans into capacity, the EU must reduce internal barriers by simplifying state-aid tools, accelerating permitting, and building a genuine single capital market. They argue that capital formation at scale, equity, credit, and patient investments can make the difference between lab-grade excellence and globally competitive manufacturing.

5. Redundancy and Reciprocal Dependencies within the Coalition

Overdependence on any single coalition partner, including the US and Taiwan, for specific niches will be hard to prevent but is still undesirable. Whereas under Trump, the US may become unwilling to supply specific semiconductor technologies (for example, to exert leverage), Taiwan (and Korea and perhaps even Japan) may become unable to continue to export because of a military conflict. Efforts should be made to hedge against this with redundancy, reciprocal access (e.g., a 0-for-0 sectoral agreement on semiconductor technologies), and ensuring that Europe also maintains choke points vis-à-vis Washington, according to the participants.

If the action plan that the participants propose is expanded upon and implemented coherently together with partners, this approach would position Europe as an indispensable semiconductor hub within a resilient network of allies, safeguarding prosperity, innovation, and strategic influence through 2035 and beyond.

Appendix A. Four 2035 Scenarios for the EU's Semiconductor Future (in Full)

Scenario 1. An Extraterritorial Patchwork: Rapid Expansion of US Controls

In this scenario, Europe replicates a mini version of the entire global semiconductor value chain within its borders. By 2035, it has met its target of producing 20 percent of the world's semiconductors, covering the full spectrum of memory, logic, and DAO chips, including the production of the most advanced AI chips by European companies and TSMC in Europe. Europe's autonomous ecosystem encompasses not only chip production but also Assembly Testing and Packaging (ATP), with Europe accounting for 20 percent of global ATP capacity through advanced packaging solutions. Furthermore, European companies also master chip design for all aforementioned semiconductor types, even replacing Nvidia chips in European servers, data centers, and other applications. These European design companies started to use a combination of cutting-edge European-produced and open-source design software around 2029 to accomplish this.

Europe's semiconductor fortress is further strengthened by robust domestic manufacturing capabilities for all types of semiconductor manufacturing equipment (SME), ensuring that Europe's production infrastructure does not rely on foreign inputs at all, including SME components. Additionally, Europe gains control of the mining, refining, and component-making of the critical raw materials (CRMs) essential for chip and SME production through a combination of onshoring and friendshoring. Likewise, Europe manages to halt the decline of its energy-intensive industries, becoming self-sufficient in the production of specialty gases and chemicals for its semiconductor production. Europe even extends domestic production to the whole set of material inputs needed for chips production, including production of a wide variety of wafers.

However, ASML does not manage to hold onto its monopoly on extreme ultraviolet (EUV) lithography systems, as it loses the Chinese market to Shanghai Micro Electronics Equipment (SMEE). SMEE started producing immersion DUV systems in 2031 and EUV systems in 2034. In 2032, Beijing forced Chinese chip producers to use domestically produced systems instead of ASML's tools. Europe's world-class research and technology organizations, such as IMEC, CEA-Leti, and Fraunhofer, remain globally competitive, but the US and China establish similar research institutes. Europe also fails to carve out new choke points, such as in photonic chips and quantum technologies.

Scenario 2: Fortified European Critical Sectors —Guaranteed Five-Year Semiconductor Supply for Medical, Defense, Telecommunication, and Other Vital Industries

In this scenario, Europe fails to meet its ambitious goal of producing 20 percent of the world's semiconductors. However, European capitals shift focus to safeguarding the supply of key components, including semiconductors, for its most vital sectors. By 2035, it has achieved 10 percent of production of all memory, logic, and DAO chips, but fails to design and manufacture AI chips in Europe. Likewise, the continent continues to depend on American and open-source software to design semiconductors. Onshoring production in combination with other policies like stockpiling necessities for vital industries ensures that even at a time of crisis, all semiconductor needs of Europe's medical, defense, telecommunications, water management, energy grid, and other critical sectors can be met for a period of five years. Europe secures a foothold in ATP, increasing its share to 7 percent. Meanwhile, countries such as Malaysia, Singapore, Vietnam, and India keep expanding their ATP share rapidly, carving out the market share previously held by China.

However, ASML loses its monopoly on extreme ultraviolet (EUV) lithography systems. Even worse: It loses the Chinese market for DUV systems to Shanghai Micro Electronics Equipment (SMEE). SMEE started producing immersion DUV systems in 2031 and EUV systems by 2034. In 2032, Beijing forced Chinese chip producers to use domestically produced systems instead of ASML's tools. Europe's world-class research and technology organizations, such as IMEC, CEA-Leti, and Fraunhofer, remain globally competitive, but the US and China establish similar research institutes. Europe also fails to carve out new choke points, such as in photonic chips and quantum technologies.

Scenario 3: Allied Autonomy, European Indispensability —Moving Semiconductor Bottlenecks Out of China

In this scenario, Europe strengthens its position in the global semiconductor ecosystem by forging robust alliances with like-minded partners and reducing its dependence on China. By 2035, Europe's share of semiconductor manufacturing is only 6 percent, focusing on specific areas rather than the entire range of chips. Europe and partners such as Japan, South Korea, and the United States successfully adopted policies that prevented overreliance on semiconductor technologies from China in 2026, including boosting the manufacturing of legacy chips outside China. China's share of total chip production in 2035 remains at 24 percent. These alliances extend beyond chipmaking. Europe has succeeded its packaging capabilities by relocating traditional ATP to Southeast Asia and India while establishing advanced ATP within its borders. Together, the EU and its partners relocate the mining and refining of essential semiconductor materials such as rare earths, gallium, germanium, and cobalt away from China. Similarly, the bloc secures wafer and chemical production from a broader range of trusted suppliers. Due to high energy prices, more and more production of specialty gases and chemicals moves away from Europe to partner countries but not to China.

Europe has leverage within the coalition because it remains indispensable. In 2035, ASML continues to hold a global monopoly on EUV lithography systems, as China fails to even produce immersion DUV systems by then. Meanwhile, Europe leads in promising new technological fields such as photonics chips and the development of quantum technologies, perhaps generating new choke points in the late 2030s. Europe's world-leading RTOs, such as IMEC, Fraunhofer, and CEA-Leti, flourish within the alliance, accelerating innovation and industrial collaboration. There was, however, a price to pay: In exchange for coordinating semiconductor policies, Washington demanded the exclusion of Chinese researchers from these RTOs.

Scenario 4: Continent of Choke Points —Indispensable Europe in a Coalition of the Indispensable

In this scenario, Europe's footprint in semiconductor manufacturing shrinks significantly. By 2035, Europe produces just 4 percent of the world's semiconductors and has failed to attract major producers of memory, logic, and DAO chips to its shores. Likewise, the EU remains entirely dependent on AI chips manufactured in Taiwan and designed by US companies with US-produced software. Meanwhile, China's share of global manufacturing continues to grow, from 24 percent in 2022 to 40 percent by 2035. It also maintains its iron grip on the production of critical raw materials such as gallium, germanium, rare earths, and cobalt. Within Europe, still no ATP takes place, while Malaysia, Vietnam, Singapore, and India gain ground at the expense of China and Taiwan. But China continues to expand its share in wafers, specialty gases, and chemicals.

However, Europe's strategic relevance endures through its control over choke points in the global value chain. ASML maintains a monopoly on EUV lithography systems, as China fails to even produce immersion DUV systems by 2035. Europe's RTOs continue to lead globally, advancing semiconductor research and development. Simultaneously, Europe's partners remain formidable: Taiwan in advanced logic chips, South Korea in cutting-edge memory, Japan in photoresist production, and the US, Japan, and Europe in SME. Though China controls choke points too, Europe anchors itself in a coalition of indispensable partners that still controls niches in the value chain. Europe's future, in this scenario, is defined not by its total production but by the strategic leverage of the value-chain segments it controls, ensuring a continued seat at the table in an era of intense geopolitical competition.

Appendix B. Survey Questions

Question	Scale	Score
1. To what extent is Scenario X achievable? Meaning, how likely is Scenario X to become reality by 2035?	Please insert score on a scale (from 1-to-10): 1 = Totally unachievable/Extremely unlikely; 10 = Entirely achievable/ extremely likely	
2.1 What policies/actions would the EU and its Member States have to adopt/take today to make Scenario X a reality by 2035?	Please list these policies...	
2.2 What would be (unintended) negative effects (e.g., economic, commercial, diplomatic, political) of these policies/actions? What risks do these policies pose to the competitiveness of the EU semiconductor sector and EU prosperity more broadly?	Please list these unintended negative effects...	
2.3 What would be positive spillover (e.g., economic, commercial, diplomatic, political) effects from these policies/actions? What opportunities do these policies present to the competitiveness of the EU semiconductor sector and EU prosperity more broadly?	Please list these positive spillovers...	

Question	Scale	Score
2.4 Given these negative consequences and positive spillovers, how Desirable is Scenario X overall? (Meaning, to what extent are the policies that the EU has to adopt to achieve Scenario 1 in Europe's interest?)	Please insert score on a scale (from 1-to-10): 1 = entirely opposed to the EU's interests; 10 = entirely in line with the EU's interests	
3.1 To what extent are the EU's critical state functions and commercial industries in Scenario X protected from interruptions in the supply of semiconductors, if China imposes an export embargo against the EU (including of critical raw materials / legacy chips)?	Please insert score on a scale (from 1-to-10): 1 = Not at all protected; 10 = Entirely protected	
3.2 How likely is the EU to be able to deter China from imposing an export embargo against the EU (including of critical raw materials / legacy chips) in Scenario X?	Please insert score on a scale (from 1-to-10): 1 = Extremely unlikely; 10 = Extremely likely	
3.3 To what extent are the EU's critical state functions and commercial industries in Scenario X protected from interruptions in the supply of semiconductors, if the United States imposes an export embargo against the EU (including of semiconductor manufacturing equipment and SME parts produced in the US / chip designs)?	Please insert score on a scale (from 1-to-10): 1 = Not at all protected; 10 = Entirely protected	
3.4 How likely is the EU to be able to deter the US from imposing an export embargo against the EU (including of semiconductor manufacturing equipment and SME parts produced in the US / chip designs) in Scenario X?	Please insert score on a scale (from 1-to-10): 1 = Extremely unlikely; 10 = Extremely likely	
3.5 To what extent are the EU's critical state functions and commercial industries in Scenario X protected from interruptions in the supply of semiconductors, if there is a war in the Taiwan Strait?	Please insert score on a scale (from 1-to-10): 1 = Not at all protected; 10 = Entirely protected	

Question	Scale	Score
3.6 How likely is the EU to be able to deter China from starting a war in the Taiwan Strait in Scenario X?	Please insert score on a scale (from 1-to-10): 1 = Extremely unlikely; 10 = Extremely likely	
3.7 To what extent are the EU's critical state functions and commercial industries in Scenario X protected from interruptions in the supply of semiconductors, if there is a war on the Korean Peninsula?	Please insert score on a scale (from 1-to-10): 1 = Not at all protected; 10 = Entirely protected	
3.8 How likely is the EU to be able to deter North Korea / China from starting a war on the Korean Peninsula in Scenario X?	Please insert score on a scale (from 1-to-10): 1 = Extremely unlikely; 10 = Extremely likely	
Optional: please insert any remaining comments you may have about Scenario X; or any explanation you wish to provide on the scores inserted above.		

Or will Europe's semiconductor configuration be something else entirely by 2035?

Question
Optional: Please enter a description of a scenario that is not covered by the first four; and the policies that would be needed to achieve that scenario.

Question
Optional: Please insert any feedback you may have on the survey.

Appendix C. Participation Breakdown For The Pre-Event Survey, Post-Event Survey, And Event

Table 4 • Breakdown of the pre-event survey respondents

Group	Number of respondents
European semiconductor industry or semiconductor industry association	16
European research technology organizations (RTOs) or technical university	2
Regional tech-economic development organization	1
Partner-country think tank	2
European think tank	3
Government (EU Member States)	2
EU institutions	0
Total	**26**

Table 5 • Breakdown of the post-event survey respondents

Group	Number of respondents
European semiconductor industry or semiconductor industry association	16
European research technology organizations or technical university	3
Regional tech-economic development organization	0
Partner-country think tank	2
European think tank	4
Government (EU Member States)	1
EU institutions	1
Who filled in the survey but did not specify the sector	5
Total	**32**

Table 6 • Breakdown of the participants in the event

Group	Number of respondents
European semiconductor industry or semiconductor industry association	23
European research technology organizations or technical university	5
Regional tech-economic development organization	4
Partner-country think tank	3
European think tank	10
Government (EU Member States)	1
EU institutions (Commission and Parliament)	4
Total	**50**

Appendix D. Pre-Workshop Survey Outcomes

Table 7 • EU semiconductor ecosystem views on the EU's 2035 semiconductor future: pre-dialogue survey outcomes

Survey Question	Scale	Scenario 1: European Semi-conductor Fortress	Scenario 2: Fortified European Critical Sectors	Scenario 3: Allied Au-tonomy; EU Indispensa-bility	Scenario 4: Continent of Choke Points
Q1. Achievability, meaning likelihood that Scenario X is a reality by 2035	1 = Totally unachievable; 10 = Entirely achievable	**2.1**	**5.5**	**7.8**	**7.5**
Q2.4 Desirability, meaning whether Scenario X is in the EU's interest	1 = Entirely opposed to the EU's interests; 10 = Entirely in line with the EU's interests	**4.2 ***	**4.2 ***	**7.7**	**5.6 ***
Q3a. Effectiveness(i), meaning whether the EU's critical state functions and commercial industries are protected against semiconductor supply interruptions, if Europe faces…					
Q3.1 a Chinese export embargo (in-cluding CRM / legacy chips)	1 = Not at all protected; 10 = Entirely protected	6.2 *	4.9	6.5	3.3
Q3.3 a US export embargo (including of SME and SME parts / chip designs)	1 = Not at all protected; 10 = Entirely protected	5.5 *	4.3	3.9	3.5

Survey Question	Scale	Scenario 1: European Semi-conductor Fortress	Scenario 2: Fortified European Critical Sectors	Scenario 3: Allied Autonomy; EU Indispensability	Scenario 4: Continent of Choke Points
Q3.5 a war in the Taiwan Strait	1 = Not at all protected; 10 = Entirely protected	5.7 *	4.0	4.0	2.4
Q3.7 a war on the Korean Peninsula	1 = Not at all protected; 10 = Entirely protected	5.7 *	4.7	4.8	2.9
Q3b. Effectiveness(ii), meaning EU ability in Scenario X to...					
Q3.2 deter a Chinese export embargo (including of CRM / legacy chips)	1 = Extremely unlikely; 10 = Extremely likely	**4.5**	**3.5**	**4.5**	**4.0 ***
Q3.4 deter a US export embargo (including of SME and SME parts / chip designs)	1 = Extremely unlikely; 10 = Extremely likely	**4.4 ***	**3.8**	**5.2**	**4.8 ***
Q3.6 deter China from starting a war in the Taiwan Strait	1 = Extremely unlikely; 10 = Extremely likely	**2.5**	**2.4**	**3.6 ***	**3.1**
Q3.8 deter North Korea / China from starting a war on the Korean Peninsula	1 = Extremely unlikely; 10 = Extremely likely	**2.5**	**2.4**	**3.5 ***	**3.0 ***

The color filling of each cell—gold, silver, bronze, or white—indicates the rank of the scenario on each of the three indicators. For example, Scenario 3 is ranked first place (gold-colored) in terms of overall 1. Achievability and 2. Desirability but only in second place (silver) in 3a. Effectiveness(i) and in third place (bronze) in 3.3 protection against a US export embargo. Scenario 1 is ranked fourth place (white) in 1. achievability. The majority of respondents included representatives of the European semiconductor industry, followed by exponents of related industry associations, RTOs, European and international think tankers, and, last, policymakers from the EU institutions and Member States.

Appendix E. Full EU Semiconductor Ecosystem Dialogue Methodology

The CHIPDIPLO Consortium welcomed fifty participants, including executives and researchers from across the European semiconductor ecosystem (meaning industry, research technology organizations (RTOs), technical universities, industry associations, and development organization representatives) and leading geopolitical experts from Europe, Japan, Taiwan, and the United States to a Delphi workshop. Before and after the event, the Consortium asked participants to rate the achievability, effectiveness, and desirability of four different futures for the EU and the global semiconductor value chain in 2035. In addition, the participants were invited to propose scenarios that were not covered among the original four.

Participants filled out the pre-event survey after reading a CHIPDIPLO Consortium discussion paper. This included background information on the shape of the EU and global semiconductor value chain and its evolution over the past decade, as well as a detailed description of each scenario (please see Appendix A). At the start of the workshop, the Consortium presented the outcomes of the pre-event survey. At the close of the event, the participants offered their definitive judgments on the policy package in a post-event survey.

The pre-event survey received twenty-six responses between 12:35 p.m. on June 12 and 12:44 a.m. on June 25, 2025. The majority of respondents included representatives of the European semiconductor industry, followed by exponents of related industry associations, RTOs, European and international think tankers, and, last, policymakers from EU institutions and Member States.

All respondents to the post-event survey completed their responses directly at the close of the event (June 26 from 5:15 p.m. to 5:45 p.m.). The post-event survey received thirty-two responses. The share of respondents per job category roughly reflected the pre-event survey (see Appendix C). The outcomes of the pre-event survey can be found in Appendix D. To ensure full anonymity of all participants, the Consortium is not publishing the answers of the survey respondents to the qualitative questions or the identity of the workshop participants. The Chatham House Rule applied to the entire meeting.

Acknowledgements

The authors would like to thank **Mathieu Duchâtel** and **Pierre Sel** of Institut Montaigne and **Filip Sebok** of CEIAS for their careful review of various drafts of this paper. Likewise, CHIPDIPLO would like to express its gratitude to Brainport Development for their contributions to organizing the June 26 dialogue and to the workshop's participants for patiently and granularly sharing their insights.

Institut Montaigne
59 rue La Boétie, 75008 Paris
Tél. +33 (0)1 53 89 05 60
institutmontaigne.org/en

Printed in France
Legal filing: December 2025
ISSN: 1771-6756

CHIPS DIPLOMACY
SUPPORT INITIATIVE

The hyper-specialized division of labor underpinning the global semiconductor value chain has produced acute vulnerabilities. China increasingly weaponizes supply chains against Europe, while President Trump threatens stopping supply of Nvidia's AI chips too. The risk of military conflict in East Asia, for example over Taiwan and on the Korean Peninsula, has structurally increased as well. These developments threaten Europe's economic and national security.

In this new geopolitical era, Europe's semiconductor strategy needs a lodestar: autonomy or indispensability. Full autonomy means seeking resilience through rebuilding the entire value chain at immense cost in Europe. Indispensability means pursuing leverage by consolidating control over strategic choke points that others rely on. The question is which end goal and policies will actually strengthen security of supply of semiconductors to Europe and the competitiveness of EU industry and research technology organizations.

This second CHIPDIPLO policy paper draws on a structured consultation with fifty industry leaders, policymakers, and think tank experts who examined four distinct 2035 backcasting scenarios. Each captures a radically different outlook for European and global semiconductor ecosystems.

The conclusion is unequivocal. Full autonomy is neither realistic nor desirable. Indispensability without any autonomy leaves Europe unprotected from geopolitical fortuna. Europe's only viable strategy lies in Allied Autonomy, European Indispensability: leveraging Europe's core strengths, embedding them within trusted partnerships, and securing durable influence by expanding its choke points. To operationalize this strategy, the paper advances six sets of concrete policy recommendations, grounded in the workshop's collective assessment.

ISSN : 1771-6756
CHIP002

INSTITUT Montaigne
CEIAS Central European Institute of Asian Studies
VUB BRUSSELS SCHOOL OF GOVERNANCE CENTRE FOR SECURITY, DIPLOMACY AND STRATEGY
euiss European Union Institute for Security Studies
Co-funded by the European Union