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➤ Beyond the European Chips Act: EU Supply Chain Dependencies on China, Taiwan and the United States*

- The EU Chips Act targeted a 20 per cent global production share by 2030.
- Strategic dependencies on China, Taiwan and United States have continued to hinder the EU plans for reshoring and expand its semiconductor industry.
- European auditors have deemed current regulatory tools ineffective, sparking plans for a revised Chips Act.

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The 2023 European Chips Act is the EU's main legal tool to reshore the semiconductor industry in the continent, guarantee its resilience to external shocks, ensure continuing supply and enhance innovation.¹ The Chips Act created a 43 billion euros fiscal space within the EU common market comprising direct Union's subsidies and state aid to achieve a main benchmark: to double the EU's share of global semiconductor production capacity from roughly 10 per cent in 2022 to 20 per cent by 2030.² The 2024 Critical Raw Material Act (CRMA), in turn, sustains the agenda of the Chips Act by creating a roadmap to effectively source key materials for the reshoring of the EU semiconductor industry. The CRMA set other benchmarks for 2030: extracting at least 10 per cent of the EU's annual consumption of strategic raw materials domestically, processing at least 40 per cent within its borders and recycling at least 25 per cent of that total.³

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¹ European Commission DG for Communications Networks website: *European Chips Act*, <https://digital-strategy.ec.europa.eu/en/node/10695>.

² Bilotta, Nicola, "Chips: EU's Ambition in a Transatlantic Technology Bridge", in *IAI Papers*, No. 24|06 (February 2024), p. 6-7, <https://www.iai.it/en/node/18150>.

³ European Commission DG for Internal Market website: *Critical Raw Materials Act*, https://single-market-economy.ec.europa.eu/node/2053_en. The CRMA identifies "strategic raw materials" as a subset of critical raw materials singled out because of their importance in specific green or digital technologies or for defence or aerospace applications. See: European Court of Auditors, "Critical Raw Materials for the Energy Transition – Not a Rock-Solid Policy", in *ECA Special Reports*, No. 4/2026 (February 2026), p. 7, <https://www.eca.europa.eu/en/publications?ref=SR-2026-04>.



What did these legal tools achieve so far? Within the framework of the first “pillar” of the Chips Act – the Chips for Europe Initiative – five “pilot lines” for process development, test and experimentation and small-scale production have been established with the aim “to bridge the gap from lab to fab”: NanoIC (hosted in Leuven, Belgium), FAMES (hosted in Grenoble, France), APECS (hosted in multiple sites of the Fraunhofer Gesellschaft in Germany), WBG (hosted in Catania, Italy) and PIXEurope (primarily hosted in Eindhoven, the Netherlands).⁴ Within the framework of the second pillar, “security of supply and resilience”, the European Commission agreed to aid from member states for the establishment of 11 first-of-a-kind semiconductor facilities, for a total public and private investment of over 31.5 billion euros. Among them are included (1) ESMC, the joint venture led by Taiwan’s TSMC and including German companies Bosch and Infineon and Dutch company NXP, which will produce advanced logic chips and DAO chips in Dresden, Germany; (2) the Franco-Italian company STMicroelectronics’ fab for silicon carbide DAO chips in Catania, Italy, and (3) the joint venture between STMicroelectronics and the US company GlobalFoundries for a fab dedicated to “system-on-chip” advanced logic chips in Crolles, France.⁵ In addition, within the framework of the third pillar of the Chips Act, defined as “monitoring and crisis response”, the EU turned the European Semiconductor Board into a hub for mapping and monitoring dependencies, established a Semiconductor Alert System, and launched a Crisis Toolbox empowering the Commission to issue priority-rated orders and enforce common purchasing in case of a crisis.⁶

The structure of EU chip dependencies

»» **Three major developments fleshed out the EU manufacturing’s structural dependence on foreign actors**

The priorities outlined by the Chips Act and the CRMA reflect EU manufacturing’s structural dependence on foreign actors. Three major developments fleshed out this dependence. The first was the 2020-22 “chip crunch” affecting Taiwan’s semiconductor industry during the Covid-19 pandemic.⁷ The second was the extensive 7 October 2022 export controls launched by the Biden administration.⁸ The third major development was China’s imposition of export controls on rare earth elements (REE). A first wave of export controls launched in April 2025 included samarium, gadolinium, terbium, dysprosium, lutetium, scandium and yttrium. A second wave, comprising holmium, erbium, thulium, europium and ytterbium, was launched in October 2025 but was eventually

⁴ European Commission DG for Communications Networks website: *European Chips Act: The Chips for Europe Initiative*, 4 November 2024, <https://digital-strategy.ec.europa.eu/en/node/12013>.

⁵ Ibid. According to their function, chips are classified as “memory chips” (for data storage), “logic chips” (for data processing) and “DAO (discrete, analogue and other) chips” for executing a wide range of specific functions. A second way to categorise chips is by their “node size”, which is measured in nanometres (nm) and indicates the scale of the features etched onto the silicon wafer, particularly the length of the transistor gate. Smaller node sizes generally allow more transistors to be packed into a given area, improving performance and energy efficiency. The terminology of the US CHIPS and Science Act dubs chips below the 28nm threshold as “advanced”. Chips above this threshold are defined as “mature nodes”, even though a more common term especially among media and commentators is “legacy chips”.

⁶ Ibid.

⁷ Insisa, Aurelio, “Taiwan 2021: Heightened Geo-Economic Relevance Amid Rising Cross-Strait Tensions”, in *Asia Maior*, No. 32/2021 (2022), p. 139-146, <https://www.asiamaior.org/?p=1432>.

⁸ Allen, Gregory C., “The Post-October 7 World. International Perspectives on Semiconductors and Geopolitics”, in *CSIS Reports*, September 2023, <https://www.csis.org/node/107431>.



»» Dependencies on Taiwan and the US remain a moving target

suspended.⁹

At a surface level, EU manufacturing depends on East Asian chipmakers for advanced chips below 28nm – specifically on Taiwan for logic chips and on South Korea for memory chips. However, made-in-Taiwan logic chips, as those produced by TSMC, rely on US intellectual property (IP) and chip design. American dominance in the IP segment also affects the EU’s major player in the semiconductor industry, the Dutch company ASML, which holds a monopoly on the extreme ultraviolet photolithographic machines necessary for producing cutting-edge advanced chips. ASML relies, amongst others, on American companies such as Keysight Technologies (for measurement tools and software) and Cymer (for subsystems) – and these companies remain under US jurisdictional control.¹⁰

Furthermore, dependencies on Taiwan and the US remain a moving target: Taiwanese and US companies continue to lead in innovation in this industrial sector, from TSMC’s production of 1.4nm chips scheduled for 2027 and its development of “chip-on-wafer-on-substrate” (CoWoS) technology,¹¹ to innovations by NVIDIA, AMD and Intel in systems architecture.¹² The entire Taiwan-US ecosystem concerning advanced chips is undergoing a rapid transformation driven by American reshoring efforts and major Taiwanese investment in the country.

While the EU is better positioned when it comes to mature nodes above the 28nm, with globally relevant players such as STMicroelectronics, the Chinese build-up in this segment risks nonetheless to create dependencies in specific areas – such as in the case of power MOSFET DAO-type chips used in consumer electronics, radio-frequency applications, transportation technology and NAND flash memory chips essential for long-term data storage.¹³ An even more consequential chip-related dependence on China concerns critical raw materials and especially their REE subset.¹⁴ For instance, gallium – a critical

⁹ Kobayashi, Yuki, “China’s Rare Earth Export Restrictions and Other Countries’ Responses: Strategies for the Main Battleground of Economic Security”, in *SPF China Observer*, No. 62 (July 2025), <https://www.spf.org/spf-china-observer/en/document-detail062.html>; Gunter, Jacob and Altnay Junusova, “What You Now Need To Know About China’s Expansion of REE Export Controls”, in *MERICS Interviews*, 15 October 2025, <https://merics.org/en/node/2654>; China Ministry of Commerce, *Ministry of Commerce Notice 2025 No. 61: Announcement of the Decision to Implement Controls on Exports of Rare Earth-Related Items to Foreign Countries*, 9 October 2025, <https://cset.georgetown.edu/publication/mofcom-notice-2025-61>.

¹⁰ Insaia, Aurelio, “Italy’s De-Risking Efforts in the Semiconductor Industry, the European Chips Act and Sino-American Geo-Economic Competition”, in *IAI Papers*, No. 25|05 (June 2025), p. 5-8, <https://www.iai.it/en/node/20190>.

¹¹ CoWoS is a sophisticated advanced packaging architecture that vertically integrates memory and logic components at the microscopic level. TSMC website: *CoWoS®*, <https://www.tsmc.com/node/31>.

¹² Chernicoff, Dave and Matt Vincent, “NVIDIA GTC 2025 Unveils Revolutionary Chips, Systems, and Optical Networking for Hyperscale AI Data Centers”, in *Data Center Frontier*, 8 April 2025, <https://www.datacenterfrontier.com/machine-learning/article/55279633/nvidia-gtc-2025-unveils-revolutionary-chips-systems-and-optical-networking-for-hyperscale-ai-data-centers>; AMD website: *AMD CDNA™ Architecture*, <https://www.amd.com/en/technologies/cdna.html>; Intel, *Intel Unveils Panther Lake Architecture: First AI PC Platform Built on 18A*, 9 October 2025, <https://newsroom.intel.com/?p=7473>.

¹³ Rühlig, Tim, “China’s Legacy Chip Buildout: A New EU Strategic Dependency that Needs De-risking?”, in *UI Briefs*, No. 2/2025 (March 2025), <https://www.ui.se/butiken/uis-publikationer/ui-brief/2025/chinas-legacy-chip-buildout-a-new-eu-strategic-dependency-that-needs-de-risking>; Rühlig, Tim, “Curbing China’s Legacy Chip Clout. Reevaluating EU Strategy”, in *EUISS Briefs*, No. 21 (December 2024), <https://www.iss.europa.eu/node/3313>.

¹⁴ Teer, Joris and John Seaman, “Starting with the End in Mind: De-Risked Gallium, Germanium, and Rare Earth Value Chains by 2030. Workshop outcomes”, in *EUISS Events*, 6 March 2025, p. 3, <https://www.iss.europa.eu/node/3318>.



»» Authoritative sources have deemed both the European Chips Act and the CRMA as ineffective remedies

raw material whose extraction and processing is monopolised by China – is a crucial material for the manufacturing of highly durable chips needed for weapon systems.¹⁵ Similarly, the 2025 export controls on REE directly affect the sourcing of key materials necessary for intermediate processes in chipmaking such as polishing and wet-processing, and for the high performance magnets and magnetic field based motion control systems used in chipmaking tools.¹⁶

In short, the EU and its member states are not only dependent on Taiwan and the United States for chips they cannot manufacture domestically – they also rely on China for the critical raw materials needed to produce those they can.

Ineffective remedies

Authoritative sources have deemed both the European Chips Act and the CRMA as ineffective remedies. The special report issued by the European Court of Auditors in December 2025 deemed the 20 per cent target established by the Chips Act unrealistic, due to incorrect estimations of the original baseline of production capacity within the EU – a problem compounded by a persistent lack of clarity on timetables and monitoring.¹⁷ In addition, recent policy analyses on the Chinese build-up in legacy-chip manufacturing highlight a problematic misalignment between the European Chips Act and the demands of EU manufacturers. The European Chips Act focuses on reshoring manufacturing capacities for high-end chips championing innovative technologies, without addressing local manufacturers’ continuing need for legacy chips and China’s emerging dominant position in this segment.¹⁸

This misalignment underscores a broader issue for the EU and its member states. Aspirations of technological sovereignty in a crucial industrial sector such as high-end chips – clearly tied to wider aspirations of “strategic autonomy” – cannot be divorced from the concrete, looming risks of deindustrialisation facing the Union’s manufacturers. It remains uncertain whether domestic demand – particularly in sectors such as automotive and industrial automation – will prove sufficient to justify the push to reshore high-end chip manufacturing. As Grgić and co-authors exemplify, “if Europe commits to producing advanced chips for next-generation vehicles, it must ensure that its automotive sector remains globally competitive and sizable enough to guarantee a return on that investment over the coming decades”.¹⁹

¹⁵ Patey, Luke, “Military Minerals: Europe’s New Defense Industrial Capacities Demand Reliable Supply Chains”, in *DIIS Policy Briefs*, February 2026, p. 3, <https://www.diis.dk/node/28153>.

¹⁶ “Germany’s Chip Crisis Deepens: When Semiconductors Collide with the Rare Earth Squeeze”, in *REEx News*, 29 October 2025, <https://rareearthexchanges.com/?p=14489>; “Chip Shortage Intensifies in German Industry, Says Ifo”, in *Reuters*, 29 October 2025, <https://www.reuters.com/world/china/chip-shortage-intensifies-german-industry-says-ifo-2025-10-29/>; Ghiaie, Hamed and Filippo Gorelli, “From Chips to Turbines: Europe Depends on These Critical Rare Earth Materials”, in *World Economic Forum*, 29 October 2025, <https://www.weforum.org/stories/2025/10/from-chips-to-turbines-europe-depends-on-critical-raw-materials>.

¹⁷ 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”, in *ECA Special Reports*, No. 12/2025 (April 2025), p. 17-23, <https://www.ea.europa.eu/en/publications?ref=sr-2025-12>.

¹⁸ Rühlig, Tim, “China’s Legacy Chip Buildout”, cit., p. 4-5.

¹⁹ Grgić, Gorana et al., “Europe’s Semiconductor Strengths and Strains”, in *CSS Analyses in Security Policy*, No. 360 (May 2025), p. 2-3, https://css.ethz.ch/en/publications/css-analyses-in-security-policy/details.html?id=n/o/3/6/no_360_europes_semiconductor_strengths_a.



»» **Beyond the “China challenge”, the EU’s efforts to reshore advanced semiconductor manufacturing also face formidable US competition**

The European Court of Auditors’ special report on the CRMA’s impact on the energy transition, published in February 2026, arrives at a conclusion similar to the report on the Chips Act. The auditors find that the CRMA has failed to spark a meaningful diversification of import sources or to ease the financial, legal and administrative bottlenecks that continue to constrain domestic critical raw materials production across member states, which in turn remain dependent on extra-European polities – with China foremost among them.²⁰

Beyond the “China challenge” spurred by Beijing’s increasingly successful indigenisation of its semiconductor industry and its continuing dominance of the critical raw material supply chain, the EU’s efforts to reshore advanced semiconductor manufacturing also face formidable US competition. First the CHIPS Act passed under the Biden administration in 2022 and, successively, the second Trump administration’s “pursuit of industrial supremacy”, have led to a powerful mix of incentives and investment-for access coercive measures that have diverted potential investments in the EU semiconductor industry to the American one.²¹ Beyond the multiple cases concerning Taiwanese, South Korean and Japanese companies, the recent 4 billion US dollar investment plan in the US by Nokia – a Finnish company – is a case in point.²² While still in its embryonic state, the US Department of State’s flagship initiative Pax Silica, launched in December 2025, also reflects this centripetal logic.²³ As of March 2026, only two EU member states, Greece and Sweden, are among its signatories, with Brussels currently resisting US calls to join it.²⁴

Towards a European Chips Act 2.0

What are the next steps of the EU and its member states in the wake of the shortcomings of the Chips Act and the CRMA? On 29 September 2025, the 27 member states of the EU signed the Brussels Declaration calling for a revised EU Chips Act to strengthen and revitalise Europe’s position in the global semiconductor industry. The Brussels declaration envisions a European Chips Act 2.0 receptive of the criticisms raised by European auditors. This new Chips Act would thus be (1) tied to realistic and measurable targets, (2) more effectively tailored to the needs of European stakeholders in the semiconductor industry, (3) designed to foster complementary ecosystems both to secure the supply chains and guarantee innovation, and (4) capable of developing cooperation with like-minded countries outside of the EU.²⁵ In concrete terms,

²⁰ European Court of Auditors, “Critical Raw Materials for the Energy Transition”, cit., p. 20-22, 28-30.

²¹ Duchâtel, Mathieu and Pierre Sel, “A New Economic Security Consensus? Semiconductor Nationalism in China and the United States, and Europe’s Choices”, in *Expressions by Montaigne*, 17 March 2026, <https://www.institutmontaigne.org/en/node/12246>.

²² Lo Nostro, Gianluca, “Nokia Plans \$4 Billion AI Investment in the United States”, in *Reuters*, 21 November 2025, <https://www.reuters.com/business/nokia-plans-4-billion-ai-investment-united-states-2025-11-21>.

²³ García de Viedma, Darío, “Pax Silica: Alliances, Frontier and Markets in the Geopolitics of the Chip”, in *Elcano Royal Institute Analysis*, 14 January 2026, <https://www.realinstitutoelcano.org/en/?p=106124>.

²⁴ Haeck, Pieter, “US Pressures Brussels to Join AI Chips Club”, in *Politico EU*, 30 March 2026, <https://www.politico.eu/?p=8195012>.

²⁵ Semicon Coalition, *Declaration of the Semicon Coalition Calling for a Revised EU Chips Act in Order to Strengthen and Revitalize Europe’s Position in the Global Semiconductor Industry*, Brussels, 29 September 2025, <https://ec.europa.eu/newsroom/dae/redirection/document/119761>.



>> The Brussels declaration envisions a European Chips Act 2.0 receptive of the criticisms raised by European auditors

as figures in the European semiconductor industry argue, the European Chips Act 2.0 would drive a shift from a “big-fabs-only” approach, embodied by the launch of ESMC in Germany and of STMicroelectronics’ silicon carbide chip plant in Italy, to a “design, advanced packaging, and enabling ecosystem”, leading to a further specialisation in “adjacent high-value niches” such as “packaging for AI accelerators, MEMS, wide-band-gap power devices”.²⁶

The Brussels Declaration reflects EU member states’ commitment to playing an active role in the ongoing institutional process toward a European Chips Act 2.0. The road towards new regulations, however, is not straightforward. Following a public consultation and a call for evidence on the original Chips Act between September and November 2025, the European Commission signalled its intention to deliver a proposal for a “Chips Act II” by March 2026 in its 2026 Work Programme,²⁷ but failed to meet this original deadline.

The original European Chips Act, while failing to achieve its objectives, has been instrumental in providing a more comprehensive diagnosis of the EU “malaise” in the semiconductor sector. The key challenge now is to move beyond a purely reactive, crisis-driven approach to a realistic yet proactive industrial policy capable of conjugating aspirations of technological sovereignty with the needs and capabilities of the EU’s industrial base. To do so, EU actors and member states could deepen engagement with European chipmakers that perceive EU derisking policies towards China as unrealistic or simply opposite to their interests, while at the same time explore new pathways to engage with Taiwanese, South Korean and Japanese companies in the semiconductor industry to foster innovation in the Europe.

²⁶ Nick Flaherty, “Industry Groups Look to Drive EU Chips Act 2.0”, in *eeNews*, 8 December 2025, <https://www.eenewseurope.com/en/?p=488775>.

²⁷ European Commission, *2026 Commission Work Programme. Europe’s Independence Moment* (COM/2025/870), 21 October 2025, annex II, <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52025DC0870>.

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