Strengthening EU chip capabilities
How will the chips act reinforce Europe's semiconductor sector by 2030?

SUMMARY
The proposed European chips act, presented by the European Commission in February 2022, aims to mobilise €43 billion in 'policy-driven investment' for the EU's semiconductor sector by 2030. The Commission expects long-term private investment to exceed this. The plan serves to enable immediate EU coordination against supply disruptions, strengthen and scale up production and innovation throughout the EU semiconductor value chain, and further enhance the Union's technological leadership, practical applications and digital sovereignty in this crucial field.

The global semiconductor value chain is characterised by chokepoints and critical dependencies, including on more advanced chips from Taiwan and South Korea, US intellectual property in chip design automation, Japanese wafers and Chinese chip assembly. Europe has strong capacities in research and equipment manufacturing, in addition to some production capacity of (less advanced) chips with larger transistors, often destined for the automotive sector, as well as (chemical) inputs.

The future effectiveness of the EU chips act could benefit from further emphasis on certain key challenges to strengthen and safeguard Europe's position in the global chip value chain. Internally, reinforcing European chemical input and back-end manufacturing could be advanced by protecting European chemical suppliers against Chinese subsidies and by reshoring back-end facilities to Europe. Bilaterally, attracting and engaging in foreign semiconductor investment could see the use of relevant forums, partnerships and agreements, as well as relevant fast-track permits. Globally, enhancing foreign dependencies on the EU would require further reinforcement of existing European centres of excellence including in innovative research and equipment manufacturing.

The EU chips act, if provided with the right resources, could help to improve the EU's position in the global semiconductor value chain significantly by 2030. Meanwhile, Intel's €33 billion investment and Taiwanese interest in European chip manufacturing are also cause for optimism.
The proposed EU chips act

The EU Chips Act proposes to build on Europe’s strengths and address outstanding weaknesses, to develop a thriving semiconductor ecosystem and resilient supply chain, while setting measures to prepare, anticipate and respond to future supply chain disruptions.

Communication from the Commission: A Chips Act for Europe, 8 February 2022

On 8 February 2022, the European Commission released its proposal for a European chips act to enhance Europe’s ‘digital sovereignty’ and to ‘confront semiconductor shortages and strengthen Europe’s technological leadership’. The proposal for a regulation will follow the ordinary legislative procedure and has been allocated to the Committee on Industry, Research and Energy (ITRE) to prepare the European Parliament’s amendments. The strategic objective of the chips act package is to ‘ensure the EU’s security of supply, resilience and technological leadership in semiconductor technologies and applications’ and ‘bring about a thriving semiconductor sector from research to production’. The Commission hopes the plan will mobilise €43 billion in public and private investments. This amount been a topic of debate within ITRE. The investments would serve to double the EU’s current semiconductors market share from 10 to 20 per cent by 2030, which following growth projections will require at least a quadrupling of European chips production. This includes €11 billion in public investments, part of which is existing redirected funds, from the EU and Member States. Ursula von der Leyen has stated that the chips act is a ‘game changer for the global competitiveness of Europe’s single market’, emphasising the key role of ‘Europe’s innovators, our world-class researchers’. ITRE’s coordinator called it a ‘milestone toward EU open strategic autonomy’.

The European chips act’s main pillars are structured as follows:

- Firstly, the 'chips for Europe' initiative targeting research: the chips joint undertaking, a strategic reorientation of the key digital technologies joint undertakings under the Horizon Europe and Digital Europe programmes, will pool €11 billion from the EU, Member States, partner countries and the private sector to strengthen existing research, development and innovation. This component will receive €2.875 billion of the €3.3 billion EU budget that goes towards the European chips act for the 2021-2027 multiannual financial framework. Eva Maydell MEP (Bulgaria, EPP) is the ITRE rapporteur overseeing this file (2022/0033(NLE)), on which the Council must grant approval and Parliament will provide an opinion.

- Secondly, security of supply targeting business: a chips act regulation will provide a framework to improve security of supply by attracting investment in advanced production capabilities and related innovations. Dan Nica MEP (Romania, S&D) is ITRE’s rapporteur in charge of this legislative proposal, which will follow the ordinary legislative procedure (2022/0032(COD)). The proposed regulation includes: a chips fund to facilitate access to finance for start-ups to propel innovation and attract investors. For this, the European Innovation Council will provide €300 million in EU funds to provide grants and equity investments for high-risk breakthrough innovators. The Commission expects the total fund to reach €2 billion. The investment facilitation activities of the chips fund also includes a semiconductor equity investment blending facility under InvestEU that will provide the remaining €125 million in EU funds to support scale-ups and market expansion by small and medium-sized enterprises (SMEs). The Commission places the chips fund thematically under the first pillar, but legislatively it is part of the regulation, not the enactment file.

- The proposed regulation also covers benefits supporting first-of-a-kind facilities, categorised as ‘open EU foundries’, which design and produce semiconductor components mainly for other industrial players, and ‘integrated production facilities’, which design and produce components for the European market. Support comes in the form of fast-track permits, prioritised access to pilot lines and relative leniency concerning State aid rules when offered public support by Member States.
Thirdly and lastly, monitoring and crisis response targeting EU and Member State coordination: a coordination mechanism between Member States and the Commission will monitor semiconductor supply and value chains, estimate demands and shortages, gather intelligence from companies, and identify critical weaknesses and bottlenecks. It will feed into a common crisis assessment and coordinate actions to be taken from a new emergency toolbox. This monitoring and disruption mitigation toolbox is set out in a separate recommendation. It outlines immediate actions to overcome current shortages that Member States are urged to take already before the proposed regulation enters into force. The regulation (articles 18-22) sets out proposed data-sharing requirements and export controls. This pillar builds on the Industrial Alliance on Processors and Semiconductors launched in July 2021.

The Commission expects that the €43 billion in what it refers to as 'policy-driven investment' by 2030 to support the chips act will be 'broadly matched by long-term private investment'. A large part of the funds are based on anticipated public and private investments that are not yet committed, but considering Intel’s recently announced strategy to invest €80 billion in Europe's chips sector during this decade it would seem that long-term private investment will likely exceed this target.

The Commission's communication to the Parliament and Council outlines the €43 billion 'policy-driven' investment estimate, which it expects to be matched by long-term private investment:

- the 'chips for Europe' initiative, including the chips joint undertaking, pooling €11 billion in investment from the EU, Member States and, hopefully, private actors;
- the chips fund with a projected investment of over €2 billion, from unspecified sources;
- the above should result in public and private investments ‘well in excess of’ €15 billion;
- this is in addition to what the European Investment Bank can offer in loans;
- further support may come from microelectronics investment in Member States' recovery and resilience plans, unused loan capacity under the Recovery and Resilience Facility, structural, national and regional funds, and plans for important projects of common European interest (IPCEI) already under way. Some of these funding sources overlap, as with national recovery plans and IPCEIs for Member States, including France and Germany.

The chips act would serve to achieve various outcomes throughout the projected timeframe:

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<th>Short term</th>
<th>Medium term</th>
<th>Long term</th>
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<td>Enable immediate coordination to put in place crisis response measures.</td>
<td>Strengthen and scale up manufacturing and innovation throughout the value chain, improving security of supply.</td>
<td>Maintain European technological leadership and enhance its application in production and innovative downstream markets.</td>
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The two categories of first-of-a-kind facilities that would contribute to Europe's security of chips supply are recognised as such if they are first of their kind in Europe and if their operators commit to continued investment in innovation. As long as they do not crowd out existing initiatives, they
positively impact the semiconductor value chain and they fulfil other such conditions, the Commission may allow State aid supporting these facilities.

For the chips act, the Commission outlines five strategic objectives and the means to achieve them:

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<th>Strategic objective</th>
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<td>1. Strengthen European research and technological leadership to preserve its assets in breakthrough technologies, equipment manufacturing and advanced materials.</td>
<td>Support research focusing on technologies to achieve transistor sizes below 2 nanometres, disruptive artificial intelligence (AI) technologies, energy-efficient processors, innovative integration of different and novel materials, emerging design solutions and quantum chips, through European partnerships and for applications in healthcare, communication and other key European sectors.</td>
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<td>2. Build and reinforce innovation capacities in the design, manufacturing, packaging and application of advanced, energy-efficient and secure chips.</td>
<td>1. Build a large-scale design infrastructure for integrated semiconductor technologies through a European virtual platform integrating a large number of cutting-edge and new technologies and bringing together producers and users to design and develop chips for European priority sectors. 2. Create and extend pilot lines to prototype and scale up innovation, bridging lab demonstrations and manufacturing facilities. 3. Standardise certification of sustainable, reliable and secure chips throughout the value chains including end products.</td>
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<td>3. Quadruple production capacities by 2030, including by attracting internal and foreign investments in production facilities within Europe</td>
<td>1. Introduce two categories of first of a kind, next generation technology producing and performance improving European semiconductor facilities, namely open EU foundries producing for foreign players or integrated production facilities serving the European market. 2. Provide for relatively lenient case-by-case assessment of State aid supporting these facilities. 3. Offer access to fast track permits and prioritise access to pilot lines for these facilities. 4. Establish a chips fund, investment facilitation through venture capital funds providing equity blending under InvestEU, EIB loans and an accelerator scheme under Horizon Europe’s European Innovation Council (EIC) all dedicated to increasing investment in high-risk innovative SMEs, including for start-ups and to enable scale-ups.</td>
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<td>4. Address skills shortages, attracting talent and supporting the emergence of a skilled workforce</td>
<td>1. Support access to training including postgraduate programmes, short-term courses, job placements, traineeships and apprenticeships, and training in advanced laboratories in the field of microelectronics. 2. Support a network of competence centres across Europe providing access to technical expertise and attracting innovation and new talent.</td>
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<td>5. Develop in-depth understanding and coordinated risk assessment of global semiconductor supply chains.</td>
<td>1. Improve preparedness through permanent monitoring involving national market assessments, stakeholder surveys and a new European semiconductors board composed of high-level Member State and Commission officials to put in place early warnings and anticipate future semiconductor shortages and disruptions. 2. Establishing a crisis response toolbox including measures such as mandatory information gathering, prioritization of orders for critical sectors, and common purchasing schemes during a supply shortage.</td>
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The Commission also emphasises that ensuring security of supply for chips, and destinations for European semiconductors, means building balanced and reciprocal international partnerships.
with likeminded partners (that share core values such as respect for human rights, rule of law and democracy). It acknowledges that cooperation with partners such as the United States, Japan, South Korea, Singapore and Taiwan could facilitate the sharing of information, best practice and early insights into upcoming shortages. In addition to cooperation on research and intelligence, partnerships could include commitments to ensure continuity of supply in times of crisis.

The Commission concludes its communication by stressing that ‘Reinforcing Europe's leadership capacities in semiconductors is a precondition for its future competitiveness, and a matter of technological sovereignty and security’, with the chips act being a major step in this direction. The draft regulation within the chips act package is awaiting the decision of the Parliament and of the Council. Dan Nica MEP commented at Forum Europe’s chips act conference that the act would be amended in terms of funding amounts and sources, and that the final report would be voted on at the earliest at the start of 2023. The Commission shared its working document in May 2022.

The EU’s position in the global semiconductor value chain

Background

According to the Commission, the chips act was developed in response to the global shortages and resulting factory closures during the pandemic starting in early 2020. These events dramatically exposed the vulnerabilities in the semiconductor supply chain and the vital role of chips in modern economies. European car manufacturers were hit especially hard. In early 2020 they cut back chip orders due to falling demand and chip foundry (factory) capacity was reallocated to IT equipment makers. Once car orders picked up by the end of the year, foundries were already running at full capacity, leaving automakers with long waiting times of up to a year or more. As a result, car factories were shut down across Europe and workers laid off. According to the Commission’s communication, 11.3 million cars could not be produced globally in 2021 due to the shortage and some Member States saw their car production drop 34 % from 2019 figures, back to 1975 levels. Industrial equipment producers suffered just as much. In other sectors, delivery of healthcare devices was delayed, consumer electronics went out of stock, and even security, defence and aerospace sectors were threatened by shortages. Following the shortages, European car manufacturers called for increased EU chip production and reduced reliance on imports.

Current shortages have resulted mainly from a combination of rapidly growing demand (a trend that existed pre-pandemic but surged owing to skyrocketing IT equipment sales during the lockdown), long manufacturing cycles colliding with just-in-time production models of users, supply inflexibility adapting poorly to economic developments during the COVID-19 crisis, temporary semiconductor factory closures because of the pandemic and natural disasters, supply chain issues caused by pandemic-related transport restrictions, and geopolitical tensions. Shortages are unlikely to dissolve by 2023 or even 2024 as demand keeps rising, while scaling up production requires considerable time and effort.

Semiconductor production is knowledge and capital intensive. Hardly any other industry invests more of its returns in research and development (R&D). A foundry producing the most advanced chips costs around US$20 billion. Running it could require as many as 2,000 semiconductor engineers and thus a robust local talent pool. The Commission has stressed Europe’s world-leading position in technological innovation and equipment manufacturing in the semiconductor field. European research is a driving force behind the miniaturisation of chips, which is key to rapid technological evolution within the sector. According to Moore’s Law, every two years technological advances will
roughly double the number of transistors per area of semiconductors, and therefore also the computing power and energy efficiency of the most advanced chips of the same size. Leading-edge chips now fit tens of billions of transistors on one square centimetre of silicon, compared to only dozens for the earliest chips in the early 1960s and thousands in the 1970s.

Semiconductors have been described as being for the digital transition what steam engines were for the industrial revolution: a general purpose technology that defines a whole era of economic growth and progress. Chips are universally present and essential components of digital and digitised products, devices and infrastructures, from smartphones and vehicles to healthcare, energy, communications and industrial facilities. With the digital transformation and the emergence of highly automated cars, the internet of things, AI, cloud-, edge-, and quantum computing, supercomputers, industrial production automation, and applications in space and defence, chips will only grow more crucial as economic and strategic assets. With the relentless expansion of computing capacities, AI and connectivity, including the need to manage ever growing data volumes and the widening digitalisation of electrical devices, industrial machines, and vehicles, the market for semiconductors is expected to double from US$550 million currently to over US$1 trillion by 2030. It is therefore fundamental for the EU’s future open strategic autonomy, digital sovereignty, and competitiveness vis-à-vis other players for it to reinforce its technological capabilities, industrial capacity and security of supply in the field of semiconductors.

Figure 3 – Global semiconductor market growth

After all, other players are implementing their own plans to reinforce their domestic semiconductor capacities, thus further indicating the need for European action to keep up. The EU chips act will have to compete or find synergies with existing investment strategies in the US and east Asia. The US and Japan have announced investment plans worth US$52 billion and US$6.8 billion respectively to attract advanced chip manufacturers, including Taiwan’s TSMC, to build production facilities. China is reportedly providing US$97 billion in national and regional funds for the 2014-2024 period, and South Korea has introduced 6-10 % breaks and other measures, in efforts to attract another US$225 billion and US$450 billion in Chinese and Korean investments over a 10-year period. Taiwan’s chip giants are expanding their foreign assets and are building production facilities in the US and Japan. Europe could be next. Preliminary talks with German officials have taken place following the intention expressed by TSMC and Taiwan’s foreign minister to establish a foundry there and engage in semiconductor cooperation in Europe. Taiwan welcomed the EU chips act as an opportunity to facilitate such efforts. Europe remains keen to draw in Taiwanese chip investments and cooperate on semiconductor supply chain security. In this context, an online trade and
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Investment dialogue took place on 2 June 2022 between the European Commission’s Director-General for trade, Sabine Weyand, and the Taiwanese minister for economic affairs, Wang Mei-hua.

International dependencies

Figure 4 – Global semiconductor supply chain

Source: EPRS.

Under 10% of global semiconductor production occurs in Europe, which is limited to the larger chips (of 22 nanometres and above). Only two companies in east Asia, TSMC in Taiwan and Samsung in South Korea, are capable of manufacturing leading-edge chips (at 2 to 7 nanometres), while the necessary equipment for that production is produced solely in Europe, by ASML in the Netherlands. The EU’s current 10% share of global chip revenues has shrunk from 20% in the 1990s. Without rapid and significant investment, the EU’s global market share could drop below 5%, putting its industrial competitiveness and technological autonomy further at risk. ASML has warned that European chip manufacturing would thereby become ‘virtually irrelevant on a global scale’. The EU remains highly dependent on foreign suppliers. Severe disruption in the supply chain could deplete Europe’s limited chip reserves within a few weeks, which would cause production in many European industries to grind to a halt.

Most European chipmakers outsource their semiconductor fabrication to external foundries, with chip testing, assembly and packaging traditionally occurring in east Asia. Better known European chipmakers, such as NXP in the Netherlands, Infineon and Bosch Semiconductors in Germany, and STMicroelectronics in France and Italy, manufacture the larger chips for the automotive and industrial sectors, but also outsource part of their production to foreign manufacturers, like TSMC in Taiwan. While Europe depends on Asia for advanced chip manufacturing and assembly, European producers also heavily rely on American intellectual property in the form of US-owned chip design tools. European chipmakers are most competitive in the automotive sector, with a global market share of 37%, followed by the industrial sector with a 17% global market share.
Mutual dependence will persist. **No country is self-sufficient** when it comes to semiconductors due to the complexity, geographic specialisations and deep interdependencies characterising the supply chain. Figure 5 above and Figure 6 below, for instance, indicate that the US dominates global private R&D spending, Taiwan the foundries and most advanced manufacturing technology, Japan wafer fabrication, and China raw material inputs. Chip making, from design to production, assembly, testing and packaging is comprised of over 1,000 steps using around 300 materials including silicon wafers, gases and chemicals. Large semiconductor producers rely on up to 16,000 suppliers worldwide. A supply chain crosses the border 70 times before reaching an end user and passes over 50 choke points, where one region holds more than 65% of the global market share. This makes the supply chain vulnerable to disruptions such as natural disasters, infrastructure failures and geopolitical tensions.

Some critics have **questioned** the sense of subsidising European research and facilities to produce the most advanced 2 nanometre (nm) chips, as their current end-users – namely smartphone and tablet manufacturers – are also located abroad and especially in Asia. However, according to Imec’s vice-president, Jo De Boeck, the application of smaller chips in the automotive sector will on the contrary be vital to enable European production of more energy-efficient electric and self-driving cars, and therefore cannot be ignored in Europe in anticipation of such future trends. European excellence in any part of the global advanced semiconductor supply chain would also provide leverage to improve the EU’s security of supply and open strategic autonomy in this field, or enhance the EU’s ‘**reversed dependency**’ for chips, in Imec CEO Luc Van der hove’s words.
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Europe's semiconductor assets

Europe is home to world-leading semiconductor organisations, including ASML in the Netherlands, the only company that builds the equipment used by TSMC and Samsung to produce the smallest chips, and innovative research facilities including imec in Belgium, Leti in France and Fraunhofer in Germany. Multiple European semiconductor manufacturers, often specialised in supplying Europe's automotive, healthcare and industrial equipment sectors, are also present. German companies also have significant market shares in supplying advanced chemical inputs and wafers for semiconductor production (see Figure 7).
Challenges to watch

As the interinstitutional negotiations on the chips act will soon be taking off, policymakers could consider tackling the following strategic challenges at EU, bilateral and global levels to improve the act’s chance of success in reinforcing the EU’s semiconductor sector by 2030:

1. At EU level, reinforcing chemical inputs and back-end manufacturing:

   ➢ The chips act integrates research and supply chain monitoring as key pillars of its strategy, in line with the recommendations of a key study by MERICS and SNV, but does not equally reflect the study’s emphasis on the need to invest in back-end semiconductor supply chain capacity and protect chemical input suppliers. The experts describe the EU’s focus on front-end manufacturing, or foundries, as insufficient. The European chips sector accounts for less than 5% of the global back-end manufacturing market, consisting of the assembly, testing and packaging of chips after leaving the foundries.

   ➢ Like the rest of the world, Europe heavily relies on China for this later step in the supply chain. This comes with technological competitiveness risks as advanced packaging techniques will increasingly determine the performance and energy efficiency of future chips, especially as exponential miniaturisation (Moore’s Law) could be reaching its limits. It also entails serious security risks such as the future possibility of Chinese tampering with chips to install hardware backdoors that enable espionage but are difficult to detect. Increasing back-end capacity could be a bigger priority than for instance expanding wafer fabrication, as this step lacks the same security risks and is dominated by a likeminded partner, namely Japan.

   ➢ Cooperation with alternative countries that have relatively robust back-end manufacturing capacity such as Singapore and Malaysia could facilitate efforts to strengthen European back-end manufacturing capabilities and to reduce dependence on China through diversification. Internal back-end manufacturing could be concentrated in Member States with relatively low and competitive labour costs, including in southern and eastern Europe as this step in the value chain is considered to be labour intensive. The provisions for first-of-a-kind semiconductor facilities may also help to bring back-end manufacturing to Europe.

   ➢ Europe, especially Germany, is already globally competitive in supplying chemical inputs for semiconductor manufacturing. Policies should prevent Chinese subsidisation of their sector from undercutting or crowding this valuable European industry out of the European and global markets, as with the solar sector in the past.

2. At bilateral level, promoting foreign investment cooperation with overseas partners:

   ➢ In addition to the MERICS and SNV expert recommendations, policymakers should consider the importance of foreign investment in reinforcing the EU chips sector. Recently the US chip manufacturer Intel announced its intention to invest up to €80 billion in the European semiconductor sector, with a first injection of €33 billion to build two foundries in Germany, expand a foundry in Ireland, acquire a foundry in Italy and expand research facilities in France, Poland and Spain. Meanwhile Taiwan has shown interest in extending its semiconductor cooperation with Lithuania to the rest of Europe. Attracting foreign investment by the world’s most advanced chip-makers could bring in the great amounts of expertise and capital needed to expand and upgrade European semiconductor manufacturing. European policymakers could make smart use of tax breaks and subsidies to draw in foreign semiconductor assets, and learn from foreign strategies in doing so. While the US and Japan have already set precedents, clear limits on the EU chips act third pillar’s data sharing requirements and exports controls (for instance to pre-defined emergencies and enterprises receiving support) could help prevent them from discouraging foreign semiconductor investments in Europe.

   ➢ In addition to attracting favourable foreign investments, European investment in foreign assets should be intensified to acquire a larger foothold in valuable industries abroad. A good
example here is Siemens’ 2017 acquisition of Mentor, one of the three main US semiconductor design automation firms with valuable US intellectual property, considered to be one of the many chips value chain chokepoints.

- International semiconductor investment could be facilitated using existing forums and partnerships, such as the EU-US Trade and Technology Council and the EU-Japan Strategic Partnership, through targeted agreements with Taiwan and others, and by either replicating or including the EU in relevant new international initiatives such as the US-ROK Supply Chain Task Force between the US and South Korea and the Quad’s Semiconductor Supply Chain Initiative by Australia, India, Japan and the US.

- Informal exchanges between European Parliament and Taiwan officials indicate that regulatory obstacles have in part kept Taiwanese firms from establishing semiconductor facilities in Europe. During negotiations with European officials in Germany or elsewhere, Taiwanese chip-makers have apparently been distraught by the regulatory barriers and amount of red tape, to the point that they asked themselves whether Europe even wanted their investments. Construction speed will factor in the decision making of Taiwanese semiconductor investors on where to build their overseas production facilities, as will the amount of local subsidies, the capacity of local market demand to absorb manufactured chips, and the size and quality of the local talent pool, a conversation with a Taiwanese semiconductor delegation passing through Brussels indicated. To attract promising foreign investment in Europe’s chips sector and enable the swift construction of new facilities, policymakers should assure that the chips act’s provisions for first-of-a-kind semiconductor facilities, especially regulatory facilitation including fast-track permits, apply and respond to the needs of key foreign investors, such as US firm Intel, Taiwan’s TSMC, and South Korea’s Samsung. Further indicating the importance of maximising benefits from this provision, Intel’s vice-president of European government affairs identified the European chips act’s expedited permits for the quick construction of advanced facilities as one of its most tangible advantages over the US chips act.

3. At global level, enhancing reversed dependency to improve open strategic autonomy:

- Stakeholders should avoid approaching the reinforcement of the EU’s semiconductor sector through an excessively narrow interpretation of strategic autonomy, meaning exclusively with regard to reshoring and expanding the manufacturing of chips within Europe. Instead, they should prioritise building supply chain security by further enhancing foreign dependencies on existing European semiconductor assets. Luc Van den hove, CEO of Imec, expressed the view on semiconductors that ‘Production may be largely in Taiwan and South Korea, but with ASML in the Netherlands and Imec here in Leuven, we have indispensable links in the chip sector. The world depends on our expertise. If Europe ramps up its ambitions, there are opportunities to further expand that dependence. I call that ‘reversed dependency’. This concept fits seamlessly in with the EU’s balanced principle of open strategic autonomy as it combines European competitiveness with international linkages.

- Enhancing reversed dependency would be achieved by reinforcing, securing and building on Europe’s existing world-class centres of excellence that are currently most internationally competitive or even dominant, including in innovative research (Imec, Leti, Fraunhofer, etc.) and equipment manufacturing (ASML), in addition to expanding Europe’s manufacturing base (Bosch, NXP, Infineon, etc.) and promoting international investment cooperation. Politically, enhanced foreign dependence on European semiconductor assets could give rise to chip diplomacy, or microelectronics as a soft power tool, by increasing others’ incentives to cooperate with Europe. The key is not autarky in chips, which is considered impossible, but rather as in the Commission’s words, ‘promoting more balanced interdependencies’ to improve Europe’s position, leverage and supply security in the global semiconductor value chain.
Negotiations between the co-legislators will decide on the final shape of the European Chips Act and to what extent the means provided will suffice to realise EU ambitions in this field. This together with its resonance among the private sector and other factors will determine what will be achieved in terms of **Europe's open strategic autonomy in the field of semiconductors by 2030**. A forthcoming briefing will elaborate on global policy trends with regard to the semiconductor strategies by the US, China, South Korea and Taiwan and on potential scenarios for Europe’s future position in the global chips value chain.

**MAIN SOURCES**


*Digital sovereignty: Commission proposes Chips Act to confront semiconductor shortages and strengthen Europe's technological leadership*, European Commission, February 2022.


**ENDNOTES**

1 The rapporteurs for opinion are Karlo Ressler (EPP, Croatia) for the Committee on Budgets, Eva Maydell (EPP, Bulgaria) for the Committee on Economic and Monetary Affairs, and Maria-Manuel Leitão-Marques (S&D, Portugal) for the Committee on the Internal Market and Consumer Protection, with the rapporteur for opinion of the Committee for Legal Affairs not yet announced at the time of publication.

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