BRIEFING
EU Legislation in Progress

European Parliament

The EU chips act

Securing Europe's supply of semiconductors

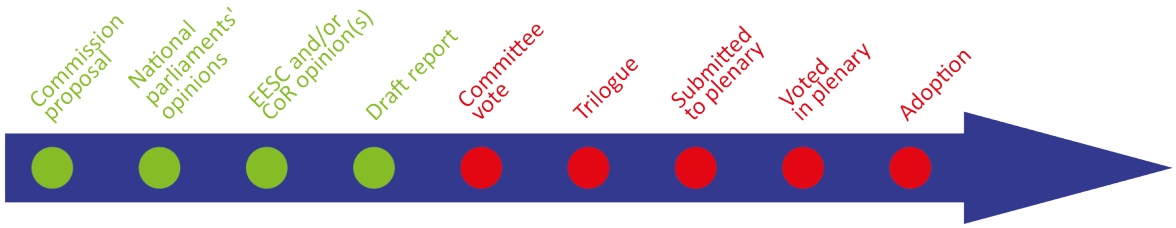
OVERVIEW

Semiconductors (or chips) are the drivers of the digital transition. Their production relies on complex and vulnerable global supply chains. Against the backdrop of global chip shortages, a global 'subsidy race' in the world's main producing regions, and a renewed EU industrial policy, in February 2022 the Commission presented a proposal for an EU chips act aimed at reinforcing the whole EU chips value chain.

The chips act is based on a three-pillar structure: pillar 1 to bolster large-scale technological capacity building and innovation in the EU chips ecosystem; pillar 2 to improve the EU's security of supply; and pillar 3 to set up a monitoring and crisis response mechanism. In the event of supply crises, the Commission would be allowed to implement three types of emergency measures: ask companies for information, ask companies to accept and prioritise orders of crisis-relevant products, and make shared purchases on behalf of Member States.

The proposal is now with the co-legislators. In the European Parliament, the Committee on Industry, Research and Energy (ITRE) is responsible for the file. The draft report was presented and discussed during the ITRE meeting on 13 October 2022. ITRE MEPs tabled a total of 804 amendments to the Commission proposal. The final vote on the report is expected to take place early in 2023.

Proposal for a Regulation of the European Parliament and of the Council establishing a framework of measures for strengthening Europe's semiconductor ecosystem (Chips Act)		
Committee responsible:	Industry, Research and Energy (ITRE)	COM(2022) 46 8.2.2022
Rapporteur:	Dan Nica (S&D, Romania)	
Shadow rapporteurs:	Eva Maydell (EPP, Bulgaria) Bart Groothuis (Renew, the Netherlands) Henrike Hahn (Greens/EFA, Germany) Marie Dauchy (ID, France) Johan Nissinen (ECR, Sweden) Marc Botenga (The Left, Belgium)	2022/0032(COD) Ordinary legislative procedure (COD) (Parliament and Council on equal footing – formerly 'co-decision')
Next steps expected:	Committee vote on draft report	



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Members' Research Service
PE 733.596 – November 2022

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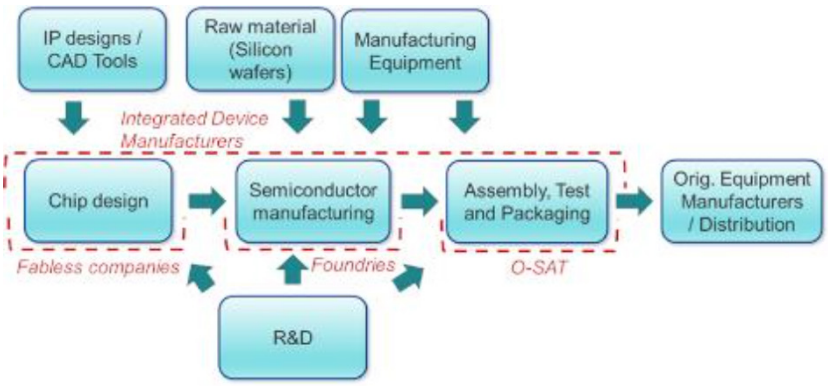
Introduction

'The birth date of the integrated circuit [a.k.a. chip] is one of the most important birth dates in the history of technology' – Prof. T. Claeson, presentation speech for the 2000 Nobel Prize in Physics.

The early developments of microelectronics were hailed by the award of the **Nobel Prize** in physics in 1956 to Shockley, Bardeen and Brattain for their research on semiconductors and their discovery of the **transistor** effect in 1947 (today, there are billions of transistors in any cutting-edge chip); and in 2000 to Kilby for his part in the invention of the **integrated circuit (or chip)** in 1958, a 'vital component in computers and other electronic equipment'. Semiconductors are also known as 'integrated circuits' or 'chips'. Like the steam engine, chips are one of the few '**general purpose technologies**', i.e. breakthrough innovations that have opened up whole eras of technical progress and economic growth. Used in an impressive range of products, from computers to medical devices, in 5G and artificial intelligence systems, and in security and defence devices, chips have become ubiquitous. Chips are the **engines of the digital transition**.

In 2021, the semiconductor industry surpassed the **trillion chips mark** for the first time, with its output reaching 1.1 trillion chips (i.e. around 140 per person on Earth). The same year, the global chip market totalled US$614 billion (+25 % compared to 2020) and is expected to reach US$681 billion in 2022. Furthermore, the value or content of semiconductors used in electronic systems reached a record high of 33 % in 2021, compared to 26 % in 2010 and 22.5 % in 2000. A smartphone incorporates around 160 different chips, hybrid electric cars up to 3 500. The chips market is expected to continue growing, with market analysts estimating that the market could reach around US$700 billion by 2025 and **US$1 trillion in 2030**.

Figure 1 – The semiconductor value chain



Source: European Commission, SWD(2021)352. CAD: computer assisted design. IP designs: intellectual property designs (reusable components designs or 'IP blocks'). O-SAT: outsourced assembly and test firms.

The production of semiconductors involves some of the **most complex technologies** invented by humankind. Chips rely on patterns that are printed on ultra-pure semiconducting materials at the nanometre scale (i.e. one billionth of a metre), which is close to the **atomic scale**. The manufacturing of chips involves three main steps: **chip design; production** (in 'foundries' or 'fabs'), the most capital-intensive stage; and **final assembly, testing and packaging** (ATP), the most labour-intensive stage. Producing a chip from a silicon wafer involves hundreds of steps in cleanrooms, where the air is 10 000 times cleaner than outside. Chips production also relies on around **300 inputs** (such as some specific chemicals), and on more than **50 classes of high-tech manufacturing equipment** (such as equipment for extreme ultraviolet lithography). The three main categories of semiconductors are: **logic** chips – the 'brains' of electronic devices, executing complex computing operations; **memory** chips, storing information; and **discrete, analog and other** chips (DAO), such as voltage regulators or optical sensors. Advances in chip manufacturing process technology are typically described as **nodes** – referring to the **size** in nanometres (nm) of the **transistor gates** (the key components of chips). The most advanced chips are based on the smallest nodes (below 10 nm) and consist of tens of billions of transistors.

Context

Strikingly, semiconductors **link the atomic-scale world with the current global geopolitical challenges**. This was made particularly obvious following the outbreak of the COVID-19 pandemic, which emphasised **long-standing vulnerabilities** in the **semiconductor supply chain**. It has been affected by unprecedented **shortages** since late 2020, impacting negatively on large parts of the industry and slowing down the pace of recovery.

The **extreme complexity of the global supply chain** exposes it to a wide range of potential **disruptions**. This is due to a high level of **geographic concentration** and **specialisation**, the **interdependence** of the actors involved, and the **capital-intensive** nature of the industry (a fab for advanced logic and memory chips costs around US$20 billion). A large semiconductor firm may rely on as many as **16 000 suppliers** worldwide. The global supply chain comprises more than **50 choke points** – steps where one region holds more than 65 % of the global market share.

Disruptions may be caused by natural disasters, accidents, infrastructure failures, cyberattacks and geopolitical tensions. The fragility of the chips supply chain puts potentially every sector of the EU economy at risk of disruption, threatening in particular the EU's ability to reap the benefits of the digital transition and to ensure its digital sovereignty.

Furthermore, recent developments have triggered **additional concerns** for the chips sector. The **war in Ukraine** could jeopardise the supply of semiconductor-grade **neon** – a key gas used in chip lithography; around half of the global supply of neon was provided by two Ukrainian firms, which had to shut down production in Mariupol and Odessa. In June 2022, Russia restricted exports of helium and neon sourced by chip firms. Faced with supply disruption and price increases, TSMC, the world's leading semiconductor producer, explained in November 2022 that it was aiming to secure sources of neon gas from Taiwan within three to five years.

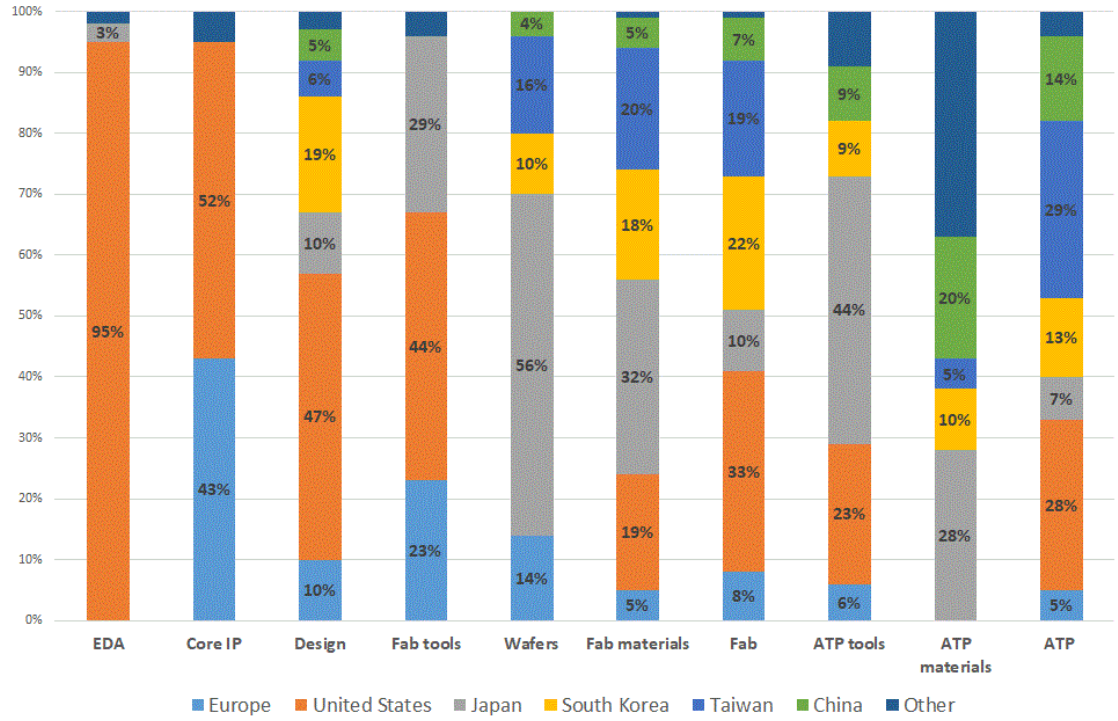
Existing situation

The **share of Europe** in global fabrication capacity is **below 10 %**. For advanced technologies (the 7- and 5-nm nodes), 100 % of global capacity is based in east Asia (Taiwan and South Korea). Only TSMC (Taiwan) and Samsung (South Korea) are able to manufacture chips at 5nm, and the global economy relies on Taiwan for 92 % of the production of these chips. In **2013**, the Commission adopted a European strategy for micro- and nanoelectronic components and systems; its objective was to **reverse the decline of the EU's share of world supply**. However, the Commission itself has recognised that the strategy has **failed**. Furthermore, along the chips supply chain, Europe has a strong position in some segments (e.g. in the provision of core intellectual property (IP) blocks and fabrication tools), but lags behind in many other segments (Figure 2). The EU has notable weaknesses in design and design automation tools, all vendors of the software used to design chips being based in the United States. Moreover, most of the companies that are active in the assembly, packaging and testing segment are based in Asia. In 2018, around 219 000 people were employed in the manufacturing of electronic components in the EU, with an annual growth rate of 3 % over the 2012-2018 period. The EU microelectronics sector, including design and production of components, materials and equipment, is directly responsible for 455 000 high-skilled jobs. Moreover, as an enabling sector for the entire electronics value chain, from materials to systems, it accounts for **2.6 million jobs** in total. For each worker employed by the semiconductor industry, an additional 5.7 jobs are supported in other sectors of the economy.

The development and production of semiconductor components in the EU is concentrated mainly in **Germany, France, Italy, the Netherlands, Austria, Belgium and Ireland**. EU companies supply the automotive, industrial automation, security and healthcare sectors, as well as aeronautics, energy production and telecommunications, with significant market shares in some industries (Figure 3). In December **2018**, the Commission approved an important project of common European interest (IPCEI), involving five Member States until 2024, to support the development of innovative

microelectronics (such as energy efficient chips) with €1.75 billion from Member States and €6 billion from the private sector. Furthermore, in December **2021** a new IPCEI on microelectronics was put forward by Germany on behalf of 20 Member States, in the context of the EU's recovery plan. This IPCEI is intended to support investment in industrial capacity at all the choke points in the supply chain. It has not yet been approved by the Commission.

Figure 2 – Global market shares in the different segments along the chips value chain

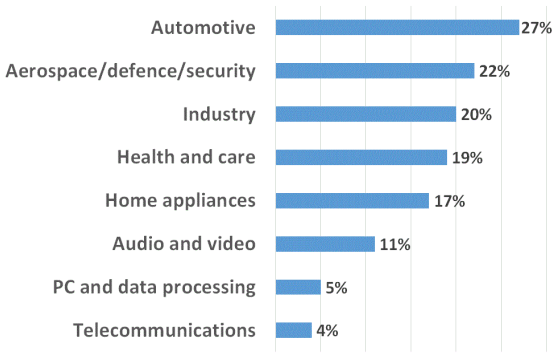


Source of data: Kearney, 2021. EDA: electronic design automation. Core IP: core intellectual property blocks. ATP: assembly, testing, and packaging.

Comparative elements

While EU policies supporting the semiconductors sector have remained modest (and mainly focused on research), government support to the chips industry is widespread worldwide (and sometimes referred to as a 'subsidy race'). It comprises support provided through government budgets (e.g. grants and tax concessions, mainly for R&D activities), but also that provided by state-owned enterprises through the financial system in the form of below-market borrowing and below-market equity (mostly in China). **China**'s 2015 plan 'Made in China 2025' set the aim of producing 40 % of the country's chip consumption in 2020 and 70 % by 2025; between 2015 and 2025, Chinese government support to its domestic chip industry could reach US$200 billion.

Figure 3 – Europe's market shares in chips production for different sectors



Source of data: European Commission, SWD(2022)147.

In the **United States**, the Biden administration has identified semiconductors as a critical good and has urged Congress to pass legislation supporting additional domestic investment in the industry. In August 2022, President Biden signed into law a US$52.7 billion 'CHIPS (Creating Helpful Incentives to Produce Semiconductors) and Science Act'. US$39 billion is allocated for manufacturing incentives

(US$2 billion of which for the production of 'legacy chips' (i.e. based on larger transistors) used in the car and defence industries); US$13.2 billion for research and development, and workforce development (the President's Council of Advisors on Science and Technology (PCAST) put forward 10 recommendations to foster the country's chip R&D ecosystem using these funds); and US$500 million for chip supply chain activities and information and communications technology security. The Act also provides a 25 % investment tax credit for capital expenses for manufacturing of chips and related equipment (corresponding to US$24.3 billion). The beneficiaries of CHIPS Act funds will be required to demonstrate significant worker investments and ensure well-paid jobs, and will not be allowed to build certain facilities in China or certain other countries. For 2023 alone, the CHIPS Act will add US$5.5 billion to public investment in chip R&D. Furthermore, since September 2022, exports to China of some Nvidia and AMD advanced chips used by artificial intelligence systems have been restricted. In October 2022, the US government introduced wide-ranging export controls aimed at slowing the progress of Chinese military programmes. Exports of leading-edge chips and critical chip manufacturing tools and technologies to China are not allowed. US citizens and companies are prohibited from supporting Chinese companies involved in advanced chip manufacturing. Moreover, all companies worldwide are prohibited from supplying certain Chinese entities with hardware or software whose supply chain contains American technology.

Japan, the world leader in chip technologies in the late 1980s, introduced a new growth strategy in 2021, which focused on strengthening its semiconductor industry. In June 2021, the Ministry of Economy, Trade and Industry (METI) adopted a strategy for semiconductors and the digital industry, promoting the manufacturing of cutting-edge (and next generation) logic semiconductors, strengthening design and technological development of cutting-edge logic semiconductors for post-5G technologies, and develop manufacturing equipment and materials that will support the global chip ecosystem and supply chain. The Japanese budget for 2021 included US$6.8 billion for domestic semiconductor investment. In May 2022, Japan and the US agreed to set up a joint task force on next generation semiconductors, based on some basic principles adopted under the Japan-US Commercial and Industrial Partnership (JUCIP). The Japanese government will contribute US$3.5 billion to a US$8.6 billion investment by TSMC in a new chip manufacturing plant. In 2022, Japan subsidised Micron (US$320 million) and Western Digital (US$644 million) to increase their chip production in the country. In July 2022, Japan and the US agreed to set up a new joint research centre for next-generation semiconductors. It will aim to develop faster and more power-efficient semiconductors at the 2nm node. Japan plans to establish the centre by the end of 2022. In November 2022, Japan announced that it would invest around US$500 million in a new chip company (Rapidus), together with companies such as Sony, Toyota and IBM. It aims to start producing next generation chips (under 2 nm) in the second half of the decade.

In May 2021, **South Korea** unveiled plans to spend around US$450 billion up to 2030 to reinforce its chips industry. Tax breaks, lower interest rates, eased regulations and reinforced infrastructure, secured water supply for the next 10 years and reinforced power supplies were among the announced measures. South Korea wants to attract more foreign investment and is seeking to build a 'K-semiconductor belt' stretching south of Seoul, bringing together chip designers, manufacturers and suppliers. It is estimated that South Korea's subsidies reduce the cost of facility ownership by around 25 to 30 %. In June 2022, Trade, Industry and Energy Minister Lee Chang-yang announced that new measures to develop the industry would be presented at a later stage.

Taiwan provides subsidies for fabrication facilities, including 50 % for land estate costs, 45 % for construction and facilities and 25 % for semiconductors, in addition to R&D investments and other incentives. It is estimated that incentives in Taiwan reduce the total cost of owning a semiconductor fab by approximately 25 to 30 %. In June 2020, Taiwan announced a US$1.3 billion annual fund to attract foreign companies to establish chip R&D projects, subsidising up to 50 % of all R&D costs incurred. It announced that it would invest US$335 million to incentivise foreign companies to establish chip R&D facilities in Taiwan. In 2021, 39 fab construction or extension projects were announced worldwide (four of them in the EU).

Parliament's starting position

In its resolution of 7 July 2021 on the trade-related aspects and implications of COVID-19, Parliament called for a dialogue on semiconductors to be started with Taiwan. In its resolution of 16 September 2021 on a new EU-China strategy, Parliament recalled the importance of trade and economic relations between the EU and Taiwan on chips. Parliament pointed to the need to invest in research and innovation, and to develop a competitive and sovereign industrial strategy in semiconductor production to decrease the EU's reliance on China. For Parliament, better coordination of these policies with those of other like-minded liberal democracies should be sought. Furthermore, in its resolution of 9 March 2022 on foreign interference in all democratic processes in the EU, Parliament stressed that the EU's lack of investment in technology has contributed to its current dependence on foreign suppliers. Parliament considers that the chips act represents an important step in limiting dependence on third countries such as China and the United States. It also believes that investment in chip production must be coordinated across the EU and on the basis of a demand-side analysis, in order to avoid a race to national public subsidies and fragmentation of the single market. Furthermore, Parliament called on the Commission to set up a dedicated European semiconductor fund. This fund could foster a skilled workforce and offset the higher setting-up costs of manufacturing and design facilities in the EU. Parliament also reiterated that it considers Taiwan to be an important partner in boosting the production of chips within the EU.

Council and European Council starting position

Member States

In December 2020, 22 Member States adopted a joint declaration on processors and semiconductor technologies. They agreed to work towards strengthening the semiconductor ecosystem and the supply chain, in order to address key technological, security and societal challenges. The signatories also agreed to build on and reinforce the EU's strengths, and aim to set up advanced EU chip design capabilities and production facilities for cutting-edge nodes.

European Council

To avoid supply shortages that could jeopardise the EU's digital transformation, the European Council stressed, in its conclusions of October 2021, the need to make rapid progress in fostering the setting-up of a cutting-edge EU chip ecosystem and to improve its resilience, including concerning the supply of raw materials. The European Council looked forward to the upcoming proposal on the European chips act. In March 2022, EU leaders adopted the Versailles declaration, highlighting that reducing the EU's strategic dependencies in semiconductors was key to building a strong economic base. To this end, the European Council stressed the need to diversify chips supply value-chains, maintain technological leadership and enhance EU production capacity in order to secure, through the chips act, 20 % of global market share by 2030.

Preparation of the proposal

On 10 March 2020, the Commission adopted a new industrial strategy setting a 'new industrial way for Europe'. The strategy aims to reinforce Europe's industrial and strategic autonomy, for instance by reducing the EU's dependence on critical technologies, such as microelectronics (one of the 'key enabling technologies' that are strategically important for the EU's industrial future). The electronics ecosystem is among the 14 key industrial ecosystems identified in the strategy for close monitoring by the Commission. The May 2021 update of the strategy pointed to the need to address strategic dependencies. Concerning semiconductors, it points out that the EU chips supply chain is increasingly vulnerable due to high entry cost, large subsidies in producing countries, escalating trade tensions, dependence on Asia for advanced chip manufacturing and on the United States for chip design tools. It concluded that the EU needs to strengthen its own industry to minimise risks.

In its communication of 9 March 2021 entitled '2030 digital compass: the European way for the digital decade', the Commission proposed a target of at least 20 % of world production in value by 2030 for the EU production of cutting-edge and sustainable semiconductors. Furthermore, co-legislators reached a provisional agreement on 14 July 2022 on a proposed decision setting up a governance framework, cooperation mechanisms and funding to help achieve the 2030 targets. The final agreement was approved by Parliament on 24 November and is still subject to final approval by the Council. Taking into account the projected market size of US$1 trillion by 2030, the EU would have to increase its annual sales by a factor of four or five to achieve this goal.

In its communication of November 2021 on a competition policy fit for new challenges, the Commission explained that it may envisage approving public support to fill funding gaps in the chips ecosystem for the setting-up of 'first-of-a-kind' facilities (see the section on pillar 2 of the chips act), based on Article 107(3) TFEU. Such aid would have to be subject to strong safeguards to ensure that it is necessary, appropriate and proportionate, that undue competition distortions are minimised, and that benefits are shared widely and without discrimination across the EU economy.

The proposal on a chips act was not accompanied by an impact assessment. Instead, the Commission published a staff working document on 11 May 2022.

The changes the proposal would bring

The proposal for a regulation setting up a framework of measures to strengthen Europe's semiconductor ecosystem (the **'chips act'**) is part of a **'European chips act** package**'** put forward by the Commission on 8 February 2022. The chips act is based on **a three-pillar structure**.

Pillar 1: A 'chips for Europe initiative'

The proposed regulation sets up a 'chips for Europe initiative' (Chapter II, articles 3 to 9) aimed at bolstering **large-scale technological capacity building and innovation** in the EU chips ecosystem. The initiative is expected to improve the transition **'from lab to fab'**. It would be based on five components (article 5):

1. **Design capacities for integrated semiconductor technologies**: the initiative would set up an EU virtual platform integrating existing and new design facilities with extended libraries and electronic design automation (EDA) tools. It would also include innovative developments, such as processor architectures based on the open-source reduced instruction set computer architecture (RISC-V).
2. **Pilot lines for preparing innovative production, and testing and experimentation facilities**: access to these pilot lines for experimentation, testing and validation of new design concepts integrating key functionalities would promote large-scale innovation in the chips ecosystem. Existing pilot lines would be improved and new advanced pilot lines would be developed. The aim would be to focus on next generation chips production technologies, such as leading-edge nodes below two nanometres, Fully Depleted Silicon-on-Insulator technology (FD-SOI) at 10 nanometres and below, and 3D heterogeneous systems integration and advanced packaging, novel materials and architectures for power electronics fostering sustainable energy and electro mobility, lower energy consumption, security, higher levels of computing performance or integrating breakthrough technologies such as neuromorphic and embedded artificial intelligence chips, integrated photonics, graphene and other 2D material-based technologies. Some specific manufacturing facilities, defined in pillar 2, would have priority access to the new pilot lines (see below).
3. **Advanced technology and engineering capacities for quantum chips**: capacities for accelerating the development of quantum chips would be bolstered.
4. **A network of competence centres and skills development**: a European network of competence centres would be set up. It would aim to strengthen capacities and offer a broad range of expertise to stakeholders in the chips value chain. It would also aim to address the

skills shortage, attract new talent and support the emergence of a suitably skilled workforce, including via reskilling and upskilling of workers. The Commission would set up the procedure for establishing competence centres by means of implementing acts (article 8).

5 **'Chips Fund' activities for access to debt financing and equity** to start-ups, scale-ups, SMEs and other companies in the semiconductor value chain through a blending facility under the InvestEU Fund, and via the European Innovation Council (promoting breakthrough innovation). The aim would be to improve the leverage effect of EU funding and to provide support to companies facing difficulties in accessing finance. The activities would also accelerate investment in the field of semiconductor manufacturing technologies and chip design, and improve security of supply for the whole semiconductor value chain.

These five components may be implemented in the **work programme of the Chips Joint Undertaking** referred to in the proposal for a Council Regulation amending Council Regulation (EU) 2021/2085 (currently under negotiation). **European Chips Infrastructure Consortia** ('ECICs') may be set up to implement eligible actions and other tasks funded under the chips for Europe initiative (article 7). The Commission may approve proposed ECICs by means of an implementing act if a number of requirements are met. The chips for Europe initiative is supported by **funding** from the Horizon Europe programme and the Digital Europe programme (Specific Objective 6).

Pillar 2: Security of supply

The proposed regulation is also intended to boost projects aimed at improving the EU's security of supply, by **attracting investment and enhancing production capacities** (Chapter III, articles 10 to 14). It defines two EU 'labels' for manufacturing facilities providing a range of benefits to the laureates: **'integrated production facilities'** (IPF, article 10) and **'open European foundries'** (OEF, article 11). To receive one of these labels (through a Commission decision), a semiconductor manufacturing facility has first to qualify as a **'first-of-a-kind facility'** (FOAK) (article 2(10)), meaning that it is not already substantively present in the EU (i.e. it is beyond small-scale or beyond R&D production) or not already committed to be built in the EU (e.g. in terms of specific technology node, substrate material, performance level, process innovation, or energy or environmental performance). They must also have a clear positive impact on the value chain, in terms of security of supply and provision of a qualified workforce, and must commit to investing in the next generation of chips. IPF would be FOAK manufacturing facilities that are vertically integrated (i.e. producing and marketing the chips that they design), while OEF would be FOAK manufacturing facilities that produce chips that are designed and marketed by other companies. IPF and OEF would be recognised as contributing to the security of supply of semiconductors in the EU and therefore be in the public interest (article 13). Member States must then ensure that the quickest treatment legally possible is given to applications for the construction of an IPF or an OEF (article 12). A single point of contact for the IPF or OEF must be designated in the public administration concerned, to facilitate the manufacturing process. Furthermore, without prejudice to State aid rules, Member States may grant them specific support. In addition, IPF and OEF would have priority access to the pilot lines set up in pillar 1. IPF and OEF could also be forced by the Commission to accept and prioritise some specific orders of chips in the event of a crisis (see pillar 3 below).

Pillar 3: Monitoring and crisis response

The proposed regulation also sets up a **monitoring and crisis response mechanism** (Chapter IV, Articles 15 to 22). Section 1 establishes a **monitoring and alerting system** (article 15). The Commission must carry out a **'Union risk assessment'** on the risks to the EU supply of semiconductors, which must identify a set of **early warning indicators** (article 16). National competent authorities must map undertakings operating along the semiconductor supply chain in their national territory, and notify this list to the Commission. Member States must monitor the early warning indicators, as well as the availability of the services and goods provided by **key market actors** in the chips supply chain (article 17) – actors being 'key' due to, for example, the number of

other companies relying on their output or their EU or global market share. Member States must **regularly inform the newly created European Semiconductor Board (ESB)** about their findings. The ESB advises and assists the Commission in the implementation of the regulation (Articles 23 to 25). Composed of representatives of the Member States, it would be chaired by the Commission; some stakeholders or experts may also be invited as observers. The Commission must invite a representative from the European Parliament as an observer. Member States must also set up a mechanism to facilitate the exchange of information with stakeholders in the chips supply chain.

Member States must alert the Commission if they suspect a potential semiconductor crisis or have information on a significant fluctuation in chips demand or any other relevant risk (**'early warning'**). Once alerted by a Member State (or by any other source), the Commission must rapidly convene a **meeting of the ESB** to assess whether the activation of the crisis stage is needed and to discuss whether it may be appropriate for Member States to jointly purchase (**coordinated procurement'**) semiconductors, intermediate products or raw materials affected or at threat of being affected by a potential semiconductor crisis. The Commission must also enter into consultations or cooperation, on behalf of the EU, **with third countries** with a view to seeking cooperative solutions to address supply chain disruptions (e.g. in international fora). The provisions in Section 2 concern the **crisis stage**, which may be **activated in the event of supply disruptions and shortages**. A chip crisis occurs (article 18) when disruptions in the supply of semiconductors lead to shortages that cause **significant delays or negative effects to important economic sectors in the EU**, or **prevent the supply, repair and maintenance of essential products used by critical sectors**. The Commission may activate the crisis stage through implementing acts, specifying its duration. Member States must coordinate national measures concerning the semiconductor supply chain within the ESB.

The activation of this stage allows the Commission to implement three kinds of **emergency measures**, under certain conditions. The Commission would **gather information** (article 20) **from companies in the chips sector** (production capacities, disruptions, etc.) to better understand the semiconductor crisis and identify potential mitigation or emergency measures at national or EU level. Companies supplying incorrect, incomplete or misleading information would be fined. Furthermore, to ensure the operation of certain critical sectors (article 2(16)), the Commission may **oblige IPF and OEF** (or other semiconductor companies that have accepted such a possibility when receiving public support) to **accept and prioritise an order of crisis-relevant products**, i.e. only products affected by the shortage (**'priority rated orders'**) through specific decisions (article 21); the company would be obliged to accept and prioritise a priority rated order. The Commission, upon the request of **at least two Member States**, may also carry out **common purchasing**, acting as a central purchasing body (article 22) on behalf of some Member States for the public procurement of some crisis-relevant products for certain critical sectors; the Commission may refuse this request from Member States. Moreover, in the event of a crisis, the ESB may advise on further crisis measures, concerning the need to introduce an export authorisation scheme pursuant to Regulation (EU) 2015/479 on common rules for exports, to increase transparency in the supply chain. A Commission recommendation on a common toolbox to address semiconductor shortages and an EU mechanism for monitoring the semiconductor ecosystem includes possible crisis response measures that Member States could implement before the new regulation enters into force. The Commission has claimed that the chips act would mobilise more than **€43 billion in public and private investment**.

Advisory committees

The **European Economic and Social Committee** (EESC) appointed Dirk Bergrath (Workers – Group II, Germany) as rapporteur on the proposal for a chips act, and the EESC opinion was adopted on 15 June 2022. The EESC stressed that the proposal was too much focused on next generation chips, and should also target the chip segments that are currently needed in EU industry (e.g. in the motor and mechanical engineering sectors). More attention should also be paid to the latter stages of the supply chain. On skills development measures, the EESC considers that the proposal is too focused on highly skilled workers, and that it should put additional emphasis on job access for lower

skilled workers and on retraining of workers. The EESC also asked the Commission to keep red tape to a minimum when collecting information on the supply. The Commission should also define more clearly the situations in which market intervention can be expected. Furthermore, the EESC thinks that the Commission and Member States should consider using strategic stockpiling of both critical raw materials and certain chip types, to ensure security of supply. The EESC also suggested that the Commission should take into account additional social criteria while assessing State aid requests (e.g. quality of social dialogue and collective bargaining, priority cooperation with suppliers established in the EU, number of jobs created by the investment, or working conditions).

The **European Committee of the Regions** (CoR) (Rapporteur: Thomas Schmidt, EPP, Germany) adopted its opinion on 12 October 2022. It includes 27 amendments to the proposed chips act. For the CoR, the funding allocated to the chips act is far too low. It also criticised the re-directing of funds from Horizon Europe and the Digital Europe programme. The CoR argued the chips act should promote the production of chips above 10 nanometres, which are important for EU industry. It was concerned that the environmental impacts of chip production should not be overlooked, and stated that particular focus should be placed on promoting circularity. The CoR argued that local and regional authorities should be given a key role in implementing the chips act. The CoR also called on the Commission, under the first-of-a kind principle, to allow support for the production of chip precursors, such as wafers. To ensure that there would be enough skilled workers, the CoR stressed the need for a specific traineeship programme. The Commission should develop programmes to attract workers from third countries. Moreover, a 'knowledge and innovation community' on chips, as well as a 'semiconductor academy' (similar to the battery academy) should be established. The CoR stressed that cooperation and coordination should always take precedence over intervention. For the CoR, the proposed crisis response mechanism could discourage investment. Furthermore, local and regional authorities should be involved in the coordination mechanism; and industry and the CoR should be represented on the semiconductor board.

National parliaments

The deadline for the submission of reasoned opinions on grounds of subsidiarity was 25 April 2022. No such opinion was delivered within the time limit.

Stakeholder views[1]

The feedback period on the proposal was open between 14 March and 9 May 2022. The Commission received 219 contributions from stakeholders. The European Semiconductor Industry Association (ESIA) stressed that the quick adoption of the chips act should be a top priority for EU legislators. On pillar 1, ESIA called on the EU to focus on IP design for the automotive, industrial, telecommunication infrastructure (6G), health, personal electronics and smart home and energy sectors. Furthermore, innovation should be supported across a wide range of technologies, since the concept of 'leading edge' varies strongly based on applications: node shrinkage should not be the only denominator for defining innovation. In addition, R&D&I programmes should take rapid commercialisation into account. ESIA welcomes the fact that the scope of a FOAK facility in the EU is not limited to certain technologies and/or node sizes, allowing projects on chips in the 40/28-12 nanometre range or in memory. On pillar 3, ESIA believes the proposed toolbox measures do not reflect the complexity of the chips supply chain, the requirements of users (downstream) and the wide range of possible reasons explaining the occurrence of a shortage. ESIA thinks that the measures proposed would not prevent supply disruptions and in shifting to instruments that could help chip users enhance their security of business continuity. It considers that pillar 3 should be revised entirely.

For ASD, the Aerospace and Defence Industries Association of Europe, the chips act could provide a model for other sectoral industrial policy initiatives. ASD recommends that the chips act should integrate better the dimension of raw materials to ensure security of supply for chips. All industry stakeholders from the semiconductor and downstream critical sectors should be involved in its governance. Furthermore, support for the defence, aeronautics and space ecosystem should be

prioritised across all pillars. ASD also stressed that the Commission should clarify the sources of the €43 billion overall that the chips act aims to mobilise, as the financial breakdown remains vague.

Digital Europe proposed clarifying, in pillar 1, the terms and conditions for development of and third-party access to the virtual design platform and to the pilot lines. In pillar 2, the eligibility criteria for EU FOAK semiconductor facilities should be more precise. Digital Europe suggests ensuring, in exceptional circumstances, 'continued operating support' for such facilities. Moreover, in pillar 3, a single EU central entity should be in charge of reporting requirements rather than 27 national bodies. Confidential data should be removed from the scope of reporting obligations in a crisis stage, and industry involvement in the European Semiconductor Board should be enhanced.

Bruegel stressed that the Commission had not clarified which market failure the chips act was expected to address, or how obtaining a modest market share in cutting-edge logic chips would actually increase the EU''s geostrategic influence. Moreover, Bruegel pointed out that overcapacity may occur in the future for some chips segments. In addition, Bruegel thinks that the emergency measures proposed in pillar 3 would not fit the reality of supply and demand dynamics in the cutting-edge chips segment (where chips are highly customised to clients'' demand).

Legislative process

Council

Rapidly starting work on the chips act was among the priorities of the French Presidency (first half of 2022). The proposal was presented to Coreper on 9 February 2022, and has been discussed by the working party on competitiveness and growth since 14 February (not the budgetary aspects). The French Presidency circulated a first compromise text to national delegations and published a report identifying the most sensitive political issues. These include, in pillar 1, the need to clarify the procedure for establishing chips competence centres and their interaction with the rest of the ecosystem; in pillar 2, concerning the 'first-of-a-kind facility' concept, the need to preserve an EU-wide level playing field and to avoid a 'subsidy race'; and in pillar 3, the need to specify further the role and powers of the Commission in the event of a semiconductor crisis, as well as the functioning of emergency measures (information gathering, priority rated orders, and common purchases). The proposal for a chips act was presented by the Commission at the Competitiveness Council meeting of 24 February 2022, and was debated at the meeting of 9 June 2022. Promoting the development of the chips sector to ensure the EU's digital sovereignty is one of the priorities of the Council's 18 month trio programme (1 January 2022 to 30 June 2023). Strengthening the resilience of the chips supply chain is also one of the priorities of the Czech Presidency for the second half of 2022.

European Parliament

In Parliament, the Committee on Industry, Research and Energy (ITRE) is responsible for the file, with Dan Nica (S&D, Romania) as rapporteur. The Committees on the Internal Market and Consumer Protection (IMCO) and on Legal Affairs (JURI) are associated under Rule 57, with some shared competences on parts of the proposal. The Committee on Budgets (BUDG) will contribute with a 'Rule 56+' opinion. ITRE held a public hearing on 14 July 2022, where MEPs and a panel of experts debated how the chips act could put Europe back in the tech race. The draft report in ITRE was released on 21 September 2022. The rapporteur tabled 116 amendments to the Commission proposal. In pillar 1, he reinforces the provisions concerning the development of quantum chips, as well as those aimed at tackling the skills shortages in the sector. The rapporteur also clarifies the provisions concerning the establishment of a European chips infrastructure consortium (a new legal instrument aimed at implementing actions under the chips joint initiative). Furthermore, he makes the setting up of a European network of competence centres in chips mandatory, and increases their role in developing skills for the sector, in particular by better connecting students with companies. Concerning pillar 2, the rapporteur proposes to broaden the scope of the definition of FOAK facilities to include industrial facilities manufacturing materials or equipment used for chip manufacturing,

and processing raw materials. He also specifies that integrated production facilities and open EU foundries should contribute to competitiveness and cohesion of the EU. For the rapporteur, applications for FOAK status should be processed within 6 months.

When it comes to pillar 3, the rapporteur promotes crisis prevention. In particular, a new article is introduced on a continuous mapping of the chip value chain to be carried out by the Commission, and shared with Member States. For the rapporteur, in a crisis, the Commission should minimise requests for confidential business data. Furthermore, a pan-European alliance involving a range of stakeholders, including industry, should be consulted by the Commission, for instance when activating the crisis stage. Moreover, the rapporteur introduces a new article on the promotion of international cooperation to address supply chain shortages, and another to ensure adequate protection of intellectual property rights in the sector. The draft report was presented and discussed during the ITRE meeting of 13 October 2022. ITRE MEPs tabled 688 additional amendments (amendments 117 to 346; 347 to 576; 577 to 804). In total, in ITRE, 804 amendments were tabled to the Commission proposal. The final vote on the report in ITRE is expected to take place in early 2023.

EUROPEAN PARLIAMENT SUPPORTING ANALYSIS

Ragonnaud G., Section 2: Securing Europe's supply of semiconductors in Bassot E., Ten issues to watch in 2022, EPRS, European Parliament, January 2022.

Ragonnaud G., Section Semiconductor supply chain disruption in Bassot E., Future Shocks 2022: Addressing risks and building capabilities for Europe in a contested world, EPRS, European Parliament, April 2022.

Van Wieringen K., Strengthening EU chip capabilities. How will the chips act reinforce Europe's semiconductor sector by 2030?, EPRS, European Parliament, July 2022.

OTHER SOURCES

Chips Act, 2022/0032(COD), Legislative Observatory (OEIL), European Parliament.

ENDNOTES

[1] This section aims to provide a flavour of the debate and is not intended to be an exhaustive account of all different views on the proposal. Additional information can be found in related publications listed under 'European Parliament supporting analysis'.

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