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Article

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European Chips Act proposals in detail

The proposed European Chips Act announced on 8th February has two key goals. It aims to strengthen European resilience to supply chain disruptions and to increase European capacity in semiconductor RD&I and production, particularly for advanced nodes.

In brief, the proposed Act will foster development of capacities in advanced manufacturing, design and system integration as well as cutting-edge industrial production. These ambitions are backed with significantly enlarged public and private investment in excess of **43 billion euros** up to 2030. This includes scope for very high levels of public funding for 'first-of-a-kind' facilities which can benefit Europe as a whole.

The proposed Act also addresses the vital need for skills and introduces a toolbox of measures to anticipate and avert supply shortages. These measures include establishing international partnerships – reflecting the EU's commitment to remaining open to the world while seeking to better balance interdependencies.

The implementation of the European Chips Act will also be aligned with the two EU IPCEIs on Microelectronics and the Alliance on Processors and Semiconductor Technologies.

The full release includes a Communication to the European Parliament, the Council, the European Economic and Social Committee and the committee of the Regions; a Proposal for a Regulation establishing a framework of measures for strengthening Europe's semiconductor ecosystem; a Proposal for a Council Regulation amending Regulation (EU) 2021/2085 to establish the new Chips Joint Undertaking; and a Recommendation on a common Union toolbox to start immediately addressing supply shortages via an EU mechanism for monitoring the semiconductor ecosystem.

The European Parliament and the Member States (MSs) will now discuss the Commission's proposals for a Regulation on the European Chips Act in the ordinary legislative procedure. Once adopted, the Regulation will be directly applicable across the EU.

Proposed Act confirms EU's stated objectives

Since her first mention of the European Chips Act in September 2021, Commission President Ursula von der Leyen, along with Commissioner for the Internal Market, Thierry Breton, have repeated its key ambitions: addressing supply security and increasing Europe's production capacity. Semiconductors are vital to the EU's future industrial competitiveness and the green and digital transitions.

Moreover, as the digital transition accelerates worldwide, demand for chips is expected to double by the end of the decade. This puts semiconductors at the centre of powerful geostrategic interests and a global technology race. Other countries are heavily investing: the proposed US Chips Act allocates USD 52 billion to strengthen its domestic semiconductor industry and promote research until 2026.

Ursula von der Leyen has previously said that the European Chips Act would have "considerable investment". The proposed Act sets out a total of over 43 billion euros in estimated investment up to 2030. This public investment includes 11 billion euros foreseen for the 'Chips for Europe Initiative' to finance technology leadership in research, design and manufacturing capacities up to 2030. These sums will come from pooling investment from the EU and the Member States, with private actors expected to participate as well.

Thierry Breton has frequently stressed the importance of accelerating the transition from research to the factory, investing in European mega-fabs, and promoting international partnerships. The proposed Act embodies these themes in a coherent European vision and strategy, backed with a specific programme for implementation.

It recognises that Europe is currently strong in research and areas such as power electronics, industrial automation and equipment manufacturing, analogue chips and low-power technology, but that it has vulnerabilities. These include a strong dependency on East Asia for chip manufacturing, packaging, testing and assembly, and on the US for design, as well as a lack of capabilities in the design and manufacture of leading-edge nodes.

Five strategic objectives

The Act focuses on **five strategic objectives**:

1. **Strengthening Europe's research and technology leadership**

   This is seen as vital to expand on Europe's existing strengths including world-leadership in research and in technologies such as equipment manufacturing and advanced materials – all of which are needed to build next-generation production facilities that will serve industry in Europe as a whole.

2. **Building and reinforcing the EU's own capacity to innovate in the design, manufacturing and packaging of advanced, energy-efficient and secure chips, and turn them into manufactured products**

   The EU is seeking to guarantee the supply of chips in the longer term to fulfil Europe's economic, industrial and social needs, as well as to stimulate innovation in the wider economy.

   This will include investing in pilot lines and advanced design, testing and experimentation facilities and tools, which will be accessible to a broad range of stakeholders.

3. **Putting in place an adequate framework to increase substantially EU production capacity by 2030**

   As the market is expected to double by 2030, Europe must quadruple its production to reach its objectives. However, this objective is not just about higher volumes. The goal is to move into production of highly advanced chips, serving users' needs and addressing new markets – while ensuring chip production also considers its environmental footprint. It is also about

strengthening security of supply, particularly for critical sectors such as those related to public safety.

This will require attracting investments from within and outside the EU, and in establishing the right conditions and a favourable framework for private investment.

4. **Addressing the acute skills shortage, attracting new talent and supporting the emergence of a skilled workforce**

   Attracting and retaining skills is vital to the future of the industry. The Act thus seeks to ensure a highly qualified workforce is available. Among various provisions, it envisages providing students with access to state-of-the-art design and manufacturing equipment used by the industry and more training on real-life business problems.

5. **Developing an-in-depth understanding of global semiconductor supply chains: monitor their functioning, understand future trends, anticipate disruptions, build international partnerships**

   This is a key part of the Act, as the EU aims to ensure it can react effectively to future international supply chain disruptions and take measures as necessary. Its capacity to do this will come through both a greater understanding of the needs and pressures within supply chains and through international partnerships based on more balanced capabilities and mutual interest.

   Within the EU, the Commission intends to work closely with Member States and all relevant public and private stakeholders to coordinate efforts, and pool knowledge and resources to create resilient semiconductors ecosystem in Europe.

Implementation based on three pillars

Implementation of the European Chips Act and achieving its objectives falls under three pillars: the Chips for Europe Initiative, Security of Supply, and Monitoring and Crisis Response. And a new European Semiconductor Board, composed of representatives of the MSs and chaired by the Commission, will advise the Public Authorities Board on the three implementation pillars.

1st pillar: the Chips for Europe Initiative

The proposed Chips Act will set up a '**Chips for Europe Initiative**'. This initiative will support large-scale capacity building through investment into cross-border and openly accessible research, development and innovation infrastructure within Europe. It will enable the development of cutting-edge and next-generation semiconductor technologies that will reinforce the EU's advanced design, systems integration, and chips production capabilities, including emphasis on start-ups and scale-ups.

The initiative builds on and complements the **Digital Europe** and the **Horizon Europe programmes,** using for most of its actions a **new EU 'Chips Joint Undertaking',** extending the scope of the current KDT Joint Undertaking.

The **Digital Europe Programme (DEP)** supports digital capacity building in key digital domains where semiconductor technology underpins performance gains – notably High Performance Computing, Artificial Intelligence, and Cybersecurity, together with skills development and the deployment of digital innovation hubs. The **Horizon Europe (HE) programme** supports intensive pre-competitive research, technology development, and innovation in the area of materials and semiconductors.

Specifically, the Chips for Europe Initiative will:

- build a virtual design platform, which integrates existing and new design facilities with extended and EDA tools. Stakeholders including SMEs and RTOs will have access to the design infrastructure with clear IP rules
- support pilot lines that provide the means for third parties to test, validate and further develop their product designs. Three new pilot lines are already foreseen: one on FDSOI (10 nm and below), one on leading edge nodes (below 2 nm), and one for 3D heterogeneous systems and integration and advanced packaging
- set up advanced technology and engineering capacities for quantum chips e.g. in the form of design libraries for quantum chips, pilot lines, and testing and experimentation facilities
- support a network of competence centres across Europe that will provide expertise and support skills development for stakeholders, including end-user SMEs and start-ups as well as vertical sectors.

Addressing skills shortages

The Chips for Europe Initiative will also support education, training, skilling and reskilling initiatives. This includes access to postgraduate programmes in microelectronics, short-term training courses, job placements/traineeships and apprenticeships, and training in advanced laboratories.

Investment and financial measures within 'Chips for Europe'

The EU budget will support the Chips for Europe Initiative with a total of up to 3.3 billion euros, including 1.65 billion euros via Horizon Europe and 1.65 billion euros via the EU's Digital Europe Programme. Out of this total amount, 2.875 billion euros will be implemented through a new Chips Joint Undertaking (see below), 125 million euros through InvestEU (to be complemented with other by 125 million under InvestEU itself) and 300 million euros through the European Innovation Council.

In line with the five objectives of the Chips Act, this funding will go to build up Europe's capacity and expertise in areas such as advanced chips below 2 nm, disruptive technologies for AI, ultra-low power energy efficient processors, novel materials, as well as heterogeneous and 3D integration of different materials and emerging design, for instance based on the open-source RISC-V computing architecture.

Overall, the public investment for the Chips for Europe Initiative would be in the order of 11 billion euros, to finance technology leadership in research, design and manufacturing capacities up to 2030.

This budget will be complemented by equity support to start-ups, scale-ups and other companies in the supply chains, through investment facilitation activities described collectively as the '**Chips Fund'**. This will have a projected overall investment value of at least 2 billion euros. Through this funding, the EU will seek to support the development of a dynamic and resilient semiconductor ecosystem that includes start-ups, scale-ups and SMEs.

2nd pillar: Security of Supply

This second pillar will create a framework to ensure security of supply by attracting investments and new advanced production facilities within the EU. It will also cover facilities for advanced packaging, test, and assembly. Establishing new facilities is imperative to safeguard supply and the EU's supply chain resilience. Plus, it will deliver beneficial ecosystem spillovers and interactions, while generating significant positive impacts to the wider economy.

In particular, pillar 2 will focus on the creation of 'first-of-a-kind' facilities. These may take the form of Integrated Production Facilities (factories that design and produce components that serve their own market) or Open EU Foundries for chip design (facilities that design and produce components mainly for other industrial players).

In either case, such facilities will need to show their benefit to the entire EU value chain and be committed to continued innovation and investment. Moreover, they should demonstrate that they go beyond the state-of-the-art, for instance in terms of technology node, substrate material (such as silicon carbide and gallium nitride), or other product innovations that can offer better performance, process technology or energy and environmental performance.

The EU recognizes that private investment in these advanced facilities may likely require significant public support. As such, it may be justified to cover with public resources up to 100% of a proven funding gap, if such facilities would otherwise not exist in Europe.

3rd Pillar: Preparedness and Monitoring

The third pillar is the setting up of a coordination mechanism between the EU Member States and the Commission to monitor supply chains and avert shortages. This coordination will involve the monitoring of the supply of semiconductors, estimating demand, anticipating shortages, and triggering the activation of a crisis stage if necessary.

The measures will include the creation of early warning indicators of potential bottlenecks and shortages. Should a warning occur, the EU executive will have the power to request information from industry and issue a priority rated order for crisis-relevant products, mandating Integrated Production Facilities, Open EU Foundries, or other chipmakers. The new European Semiconductors Board will have an advisory role in applying these mechanisms.

To enable a rapid response to the current shortages, the Commission has also issued a Recommendation to the Member States. If agreed, this would allow a common toolbox of coordination mechanisms to be put in place immediately without waiting for the Chips Act to pass through the legislative process.

In addition to these internal measures, the EU will seek to establish strong international partnerships with like-minded partners. Its goal is to enhance coordination and minimise potential conflicting objectives. Such partnerships will provide for a close assessment of third country's policies in the sector as well as for joint approaches to address supply challenges, including through mutually beneficial diversification strategies.

Impact for KDT JU and industry's role

As indicated above, the Chips for Europe Initiative will transform the existing Key Digital Technologies Joint Undertaking (KDT JU) into the 'Chips Joint Undertaking'. By changing the mandate of the KDT JU set up under the Single Basic Act, the Commission is responding to urgent needs. The Chips Act is a promising opportunity for a wide range of stakeholders, not only for chip manufacturers but also for user industries, in transport, healthcare, communication, manufacturing and others.
Consequently, the transformation of the KDT JU into the Chips JU will boost its funding for capacity building. And under its renewed mission, the JU will become the lighthouse of the EU's effort in semiconductors.

Budget

With the increased EU budget from both Horizon Europe and the Digital Europe Programme for the Chips for Europe initiative, the Union financial contribution to the Chips Undertaking shall be up to 4.175 billion euros.

Objectives

The Chips JU will focus on increasing large-scale capacity throughout the EU in cutting-edge and next-generation semiconductor technologies. It will mostly consist of 2 streams, one dedicated to RD&I extending the scope of the current KDT JU, and a new one on capacity building, with a dedicated governance in line with the challenges to address.

More details in the text of the proposal for the new Council Regulation for the Chips JU.

What's next? The proposed Regulations will be discussed by the European Parliament and the Council. The Commission will assist the co-legislators to reach an agreement as soon as possible.