



THE EUROPEAN CHIPS ACT

Tuesday 6 September 2022
17h00 – 18h30
Virtual Meeting

WELCOME & INTRODUCTION BY THE CHAIR & MODERATOR

Klemen GROŠELJ MEP, (Renew Europe, Slovenia) Industry, Research & Energy Committee

Welcome to this European Forum for Manufacturing discussion on the European Chips Act. For my fellow MEPs, the Commission, Council Presidency and manufacturers this is a very timely debate.

Semiconductors are the foundation of the digital transition and the driving force behind the transformation of European industry.



The EU's chip production and R&D are not competitive with major global players and the current crisis in the supply of chips has shown all our vulnerabilities in this regard. Many of our competitors are enhancing investments in chips related technologies and the EU must not only match them, but become a front runner in this particular field.

We are overly dependent on supplies from Asia. We need to strengthen our strategic autonomy in chips R&D and in the production of technologies and machinery associated to chips production, while ensuring reliable and sustainable supply chains and access to raw materials.

The proposed Chip Act is based on three pillars:

1. Bolstering large-scale technological capacity building and innovation in the EU chips ecosystem
2. Improving the EU's security of supply, by enhancing production capacities in the EU
3. Setting up monitoring and crisis response mechanism.

Chips production and related technologies are one of the most complex and sophisticated set of technologies invented by humankind. The Chips Act should therefore match this technological complexity as well as the scale of our ambition. The current proposal on the table does not meet this criterion. Besides the EU's high dependency on imports of chips and related technologies and complex supply chains, ongoing geopolitical transformations have added an additional layer of complexity to the issue of EU chips autonomy.

Chips production is also associated with high added value jobs and with multiplication effects in almost every sector of a modern, digitalised industry. This is an additional element that makes this Act even more relevant and urgent.

For these reasons I would expect the following from the Chips Act:

- To clearly define the aims that the EU wants to achieve. The Act should not be too complex and burdened by red tape. It should serve the strategic goal of increasing not only the scope of chips production for different industry sectors, but also supporting and increasing general investment in the chips sector, including public money support for R&D to all chips associated technologies.
- The goal must be a rapid commercialization of R&D results together with a well-defined technology transfer strategy that will support EU chips development. This means that publicly financed R&D must be targeted towards commercial and academic use. To achieve this, we need a robust technology transfer model applicable to the whole EU.
- With regard to security of supply, the current proposal unfortunately does not match the complexity of supply chains. We need to ensure raw material access but also technology access, for which we need partners on the global level. The idea of complete free trade is in the present geopolitical setting not realistic. Instead we need to have a holistic approach among all EU institutions to ensure sustainable and robust supply chains and unhindered access to raw materials. It is only in this way that we can mitigate the associated risks and lower or even eliminate existing dependencies.
- And last but not least, we need to invest more. The scale of the investment foreseen in the current proposal – €43 billion - is not sufficient. This amount should be at least doubled if not tripled.

EUROPEAN COMMISSION

Arian ZWEGERS, EUROPEAN COMMISSION, DG CONNECT,
Microelectronics and Photonics Industry

Background and Chips Shortages

Semiconductor chips are the essential building blocks of digital and digitised products. They determine the performance characteristics of digital systems, including security and energy-efficiency – which is essential to the EU's green and digital transitions. They are also crucial to essential digital technologies of the future, including artificial intelligence (AI), 5G and edge computing. In short, there is no “digital” without chips.



In 2020, more than 1 trillion chips were manufactured around the world. The value of the global chips market in 2021 was roughly \$550 billion. According to IC Insights, sales in 2021 were 26% higher than in 2020 and the expected growth in 2022 is 11%. It is expected to exceed \$1 trillion by 2030. The rapidly increasing demand for chips is fuelled by digitalisation across the globe.

The chips shortage over the past two years brought the strategic importance of chips to public attention. The shortage has affected many key industries, ranging from cars to healthcare, causing a significant economic shock.

Zooming in on the automotive sector, for example, analysts calculated that globally, relative to initial projections, 11.3 million cars were not produced in 2021 due to a shortage of chips. This cost the global automotive industry about \$210 billion in lost revenues in 2021.

One may think that the time of shortages is behind us, as several semiconductor companies are adjusting revenue projections downward. And for certain types of chips, acute shortages may be diminishing or may indeed be even behind us, for now. On the other hand, last week the CEO of TSMC said that the deficit of low-end chips is still holding up production in key segments of the supply chain. For instance, according to the TSMC CEO, ASML is struggling to obtain \$10 chips for its extreme ultraviolet lithography systems. And 50-cent radio chips are holding up the production of \$50,000 cars.

The shortages have highlighted Europe's dependency on the supply of chips from a limited number of companies and regions. Semiconductor manufacturing has become increasingly concentrated, and the EU is highly dependent on places such as South Korea and Taiwan, especially for the production of the most advanced nodes. The supply chain is quite fragile and there are numerous chokepoints where a disruption at a single point in the supply chain can have repercussions across multiple industries.

The effects of shortages have been felt keenly in Europe, as our share of global semiconductor production has fallen below 10% over the last decade. Europe has been chronically underinvesting in production of microchips in the last decade, especially relative to other world regions. Europe's weaknesses are especially serious in certain segments, such as memory production or logic chips below 10 nanometers, where Europe is virtually absent.

As chips are at the core of the world's digitalisation efforts, the semiconductor sector is at the core of strong geostrategic interests. Semiconductors are increasingly conditioning the ability of international players to act militarily, economically, and industrially. All major international players are massively investing in this sector, aiming to secure their supply of the most advanced chips.

A Chips Act for Europe

It is crucial that Europe develops capabilities in design and production of advanced nodes and strengthens its current strengths in sectors such as automotive, industrial automation, health care, and so forth.

Last year, the EU set an ambitious goal to double its current market share to 20% in 2030.

The Commission adopted the European Chips Act package on 8 February. It aims to ensure the EU's resilience and technological sovereignty in semiconductor technologies and applications. It is not a quick fix for the ongoing shortage, but a way of securing the EU's green and digital transitions, and to better prepare for and mitigate future crises.

Our plan is to address our weaknesses by leveraging our strengths and intervene in a situation of acute market failure. For example, at the moment the EU is failing to convert its excellent research results into industrial innovation. We call this market failure the "gap between the lab and the fab". The Chips Act targets this gap specifically and aims to put in place a prototyping and piloting infrastructure to bridge this gap.

We see a similar market failure in manufacturing. The EU has observed in the last twenty years a gradually declining share of global manufacturing capacity. Without intervention, this share is expected to drop further as other parts of the world are increasing their investments. Moreover, roughly 50% of capacity in the EU is concentrated at nodes of 180 nm and above. Future market

growth is forecast to be concentrated below 10 nm nodes, where chips are needed to process ever-higher volumes of data, perform at higher speed, and with less energy consumption.

The proposed Chips Act brings together three different policy areas in a single act: research and innovation, industrial policy, and crisis management. These policy areas are addressed in the three pillars of the Chips Act: (1) the Chips for Europe Initiative, (2) Security of supply, and (3) Monitoring and crisis response.

Pillar 1 – Chips for Europe Initiative

In Pillar 1, the Chips for Europe Initiative aims to support large-scale technological capacity building and innovation in the Union. It will create large-scale infrastructures, such as pilot lines and a design platform to facilitate research, development, test, experimentation and validation of novel technologies. This addresses the currently missing capacity to go from the lab to the fab and transforms R&D know-how into industrial innovation.

These new infrastructures will be open to all players, large or small. They will provide benefits to all actors across the European Union, including researchers, designers and SMEs.

New pilot lines will create a large capability for innovation in relevant technologies, such as FD-SOI, FinFET, heterogeneous integration, silicon photonics, and others. They will fill the existing gaps in Europe's technological capabilities and support the ambition of being at the leading edge for advanced production capabilities.

The design platform will allow for the creation of virtual prototypes of semiconductor devices. For instance, the design platform will allow designers to examine the impact of various design options on the cost and overall performance of a semiconductor device. This virtual prototyping will further shorten the product development cycle and lead to cost savings.

The design platform and pilot lines will work in synergy. After the virtual prototyping, the designs can be implemented on the pilot lines. Designers will be able to use the resulting specifications and performances to refine and improve their models before the next prototype stage, a functional demonstrator, or its transfer to manufacturing.

These new infrastructures would not be worth much without the adequate expertise needed to use them. To this purpose, we propose a network of Competence Centres to help companies, especially SMEs and small mid-caps, as well as academia, to develop and/or integrate semiconductors in their products and processes. The Competence Centres will leverage existing local competencies in microelectronics, facilitate access to pilot lines and to the design platform, provide training and skills development, offer support to find investors, and assist networking and access to innovation ecosystems.

For quantum chips, we will build up design libraries, support pilot lines, and develop testing and experimentation facilities.

A thriving ecosystem also needs access to capital. This is why we are creating a Chips Fund to support start-ups and SMEs to access finance, help them mature their innovations, attract investors, and scale up.

Pillar 2 – Security of supply

Pillar 2 focuses on the security of supply of semiconductors in the Union. The approach aims to attract investments and enhanced production capacities in semiconductor manufacturing as well as advanced packaging, test and assembly.

The proposal defines the conditions for facilities to be recognised as “first-of-a-kind”: a facility would need to offer innovation that is not yet present in the Union. This could be with respect to process, product or performance.

The Chips Act distinguishes between two types of “first-of-a-kind” facilities, namely Integrated Production Facilities (IPF) and Open EU Foundries (OEF). Open EU Foundries would dedicate a significant amount of their manufacturing capacity to production for other industrial players, in particular fabless companies. Integrated Production Facilities, on the other hand, would design and produce chips for their own markets, such as for automotive.

The “first-of-a-kind” label comes with some benefits. For example, applicants would benefit from fast-tracked administrative applications, such as environmental assessments and urban planning; and priority access to the newly established pilot lines in order to test their innovations.

“First-of-a-kind” facilities may be eligible for State Aid. Here, we use the existing legal framework to allow for the creation of facilities that otherwise would not exist. To receive State Aid, applicants would have to demonstrate that their facilities would benefit Europe as a whole. Such benefits could include ensuring the security of supply and increasing qualified workforce, supporting the innovation potential of SMEs and verticals that can access innovative products at their doorsteps, or any other benefit that can be shared widely and without discrimination across the EU economy.

Pillar 3 – Monitoring and Crisis Response

This will enable the Union to anticipate future chips’ crises, and to address them through close coordination with Member States. It will equip the Union with the instruments and measures needed to mitigate supply chain disruptions.

To be better prepared for potential shortages, we are proposing a mechanism for monitoring the semiconductor value chain based on early warning indicators. Lead-time for certain chip types is one of the most important indicators, but also price changes, for both output and input, abnormal fluctuations in demand, and logistics data. Knowledge of events disrupting the supply chain, such as military conflicts and natural disasters, will also play an important role.

If the monitoring reveals serious disruptions of the chips supply, with significant negative effects for critical sectors, the crisis stage would be triggered. When the crisis stage is activated, the Commission may take appropriate and proportionate emergency measures in close dialogue with Member States through the new European Semiconductor Board. Such measures could include information requests to organisations along the value chain, priority rated orders to supply critical sectors, or common purchasing of crisis-relevant products.

A crisis stage would not be triggered for minor supply issues, but only for strictly emergency cases. Only measures that are necessary, appropriate and proportionate would be taken, and they would be limited to sectors that are critical for the EU.

First-of-a-kind facilities would also play an important role as they could be mobilised to produce chips for critical sectors or important economic sectors in times of crisis, thus strengthening Europe’s resilience to disruptions in the global supply chain.

International cooperation

Finally, it should be noted that no single country or company dominates all steps of the complex semiconductor value chain. Thus, chip production relies on collaboration and trade between the

major semiconductor-producing regions. The EU is in constant dialogue with like-minded countries to discuss joint measures to help us become more resilient in the future.

For example, in the Trade and Technology Council the US and the EU have agreed to work together on measures to advance transparency and communication in the semiconductor supply chain. This links well with our proposed monitoring and crisis response (Pillar 3 of the Chips Act) as transparency in the supply chain is key to successful monitoring.

Via the Digital Partnership with Japan, which was also concluded in May, the EU and Japan intend to enhance their cooperation to strengthen the resilience of the global semiconductor supply chain and to develop through research and innovation the next generation of semiconductors.



Dan NICA MEP, (S&D Romania) Research & Energy Committee, Rapporteur, Chips Act, Industry,

The European Commission put forward a proposal for strengthening Europe's semiconductor ecosystem, underlying in particular the focus on the Union assets to become an industrial leader in the chips market of the future.

The goal is not only to reduce dependencies, but also to seize the economic opportunities as the global market for semiconductors is expected to double before the end of the decade, so increasing competitiveness of the semiconductor ecosystem, and of industry at large;

As Rapporteur for the Chips Act Regulation, I want to have an open dialogue with all relevant stakeholders impacted by the semiconductor legislation. The idea is to identify aspects from the Commission proposal on which we could improve the legislation;

Timeline: the European Parliament is committed to have a very strong role in this important piece of legislation and we will work as fast as possible. This is why we aim for:

- 16 September - Deadline for draft report to be sent to translation
- 10 October - Presentation of draft report in ITRE Committee
- 13 October - Deadline for Amendments
- January 2023- Vote in ITRE Committee
- February 2023 – Vote in Plenary

My Priorities as Rapporteur:

- Budget: If we want the EU Chips Act to fulfil its ambition in establishing Europe as an important player in the global semiconductors arena and in achieving 20% share of the market by 2030, then the budget needs to be commensurate with the challenges. Just on wafer fabrication capacity, the EU needs at least €240 billion!

Therefore, it is important to clarify the size and sources of funding – both from the EU, from the Member States and from the private sources.

- What other sources of financing we could find? As the proposal is targeting to go far beyond the current budget cycle, we need to make sure that the upcoming Multiannual Financial Framework (MFF) is going to ensure enough budget.
- Surprisingly the Commission did not consider the Recovery & Resilience Facility (RRF) money as a possible source, even though Member States have the obligation to spend 20%

of the RRF money on digital, and many have, in their national plans, measures in relation to chips.

- Research and innovation: we need stronger focus on the research and innovation part, especially as when it comes to the commercial exploitation of the research results, the Union lags behind its main international competitors and often, EU-led R&I is deployed in third-country markets.
- Skills shortage: Europe should address the skills shortage and find ways to attract and retain new talent and support the emergence of a skilled workforce to build competences and skills in all Member States. European competence centres should not limit their focus to device manufacturers, but also include other parts of the semiconductor value chain, such as the equipment manufacturers. Additional support for competence centres in Europe will facilitate sourcing of talent and services for the entire industry.
- State aid will be a contentious issue.

There are different views on the definition of “first of a kind” facility language to permit government funding and I definitely want to hear your views on this point.

As the EU plans to double its global semiconductor production share by 2030, and national governments will provide much of the funding support, subject to the EU state aid rules, the Important Projects of Common European Interest (IPCEIs) will continue to be an attractive route to state aid approval for Pan-European projects in the semiconductor space.

- Pilar III raised many critics and instead going for radical solutions like deleting parts of Pillar III, the focus would rather be in finding solutions that will deliver a strong and implementable mechanism for monitoring and alerting and crisis coordination. Constructive suggestions are welcomed!
- Some of the main critics to Pilar III are:
 - data handling: is a critical question as there is no explanation or indication on how the Commission and Member States will establish a trust relationship with the semiconductor industry.
 - lack of incentives for semiconductor companies to share meaningful data with governments;
 - Market forecasts that are tricky and do not reveal scarcities;
 - lack of resources and supply chain expertise. To request the right information from companies and correctly interpret the received data to anticipate future disruptions, the authorities in the Member States and the Commission staff would need substantial expertise in the semiconductor value chain, including a solid grasp of the semiconductor manufacturing processes, the different technologies and materials involved, end-customer requirements, and market dynamics, to name just a few!

To conclude:

- EU needs to find the right balance between:
 - being at the forefront of technology innovation and the next-generation of chips, and
 - building on existing European strengths in the value chain such as the semiconductor equipment industryand between
 - Reinforcing Europe’s already existent strengths,
 - while reducing current weaknesses.

- The EU Chips Act should further strengthen Europe's capabilities in chip research, improve its commercialisation of IP and spur larger manufacturing capacity on the continent, including securing the availability of necessary resources and materials for production;
- EU has to find alliances with likeminded partners.
The industrial value chain is highly complex and closely intertwined. Different regions of the world and countries specialise in different activities in the global value chain.

None of us is in a position to design, manufacture and assemble chips on our own!

Regarding the U.S. both parties agreed that close cooperation to advance the resilience of supply chains is more important than ever. For instance, the EU and US have agreed to develop a common early warning and monitoring mechanism on semiconductor value chains, to increase awareness of and preparedness for supply disruptions, and information exchange to avoid a subsidy race.

Prof. Danuta HÜBNER MEP, (EPP, Poland) International Trade Committee, EU Chair of the Transatlantic Policy Network Advisory Steering Committee

We all know where and how concentrated semiconductor manufacturing is, including the highly advanced ones.

To rebalance the global supply chains of semiconductors, the transatlantic partnership is fundamental. It can enhance the security of supply.



The EU and the US need to continue working together on both identifying gaps in the semiconductor value chain and on strengthening their domestic semiconductor ecosystems. On both sides of the Atlantic, already the pandemic revealed the limited capacities to increase supply of chips in the short term.

Then, the war has brought new challenges to the resilience of supply chains and especially in a time of a global technological race.

It is also clear that building semiconductor production capacities requires time, especially if what is at stake is building a cutting-edge manufacturing base that is globally competitive.

The challenge not only relates to having a general manufacturing expertise, but also improving specific expertise in advanced design; building, expanding or modernizing facilities and equipment; and developing complex software.

In reality, R&D and developing the necessary skills seem crucial throughout the entire chip supply chain.

Both the EU and US have undertaken policies that should result in substantial additional public and private investment in support of their Chips Acts.

The US President signed the US Chips Act into law on August 9, 2022.

The Act allocates more than \$54 billion authorizing the departments of defence, commerce and state to develop onshore domestic manufacturing of semiconductors critical to US national security and competitiveness, invest in research & development in advanced semiconductors, and into workforce trainings.

The Act promotes US domestic competitiveness and accelerates development of an open model that would allow for alternative vendors to enter the market for specific network components, rather than having to compete with Huawei end-to-end.

It also limits the scope of global involvement of telecommunication companies with close ties to other countries presenting national security concerns.

The importance of transatlantic cooperation on semiconductors was underlined in the inaugural joint statement of the Trade & Technology Council (TTC) in September 2021.

Cooperation on semiconductors is an example of what we badly need in our transatlantic relationship, which is working not on the issues of yesterday, but addressing challenges ahead of us.

Technical discussions have been taking place within the TTC framework in Working Groups (WG) 1, 3, and 5.

In particular, WG 3 has a dedicated track on semiconductors where the US administration and the Commission exchange information on the incentives mechanisms of their respective CHIPS acts to guarantee that subsidies are in line with WTO rules.

In May of this year, the EU and US made clear their intention of increasing transparency and monitoring of value chains, including setting up an alert system, sharing information, increase production while avoiding subsidy race.

However, with such major cash-injection in domestic semiconductor industries, there is a risk of a subsidies race to the bottom.

The EU and the US should prevent at all costs a new “Airbus-Boeing”-like WTO case.



Wolfgang WEBER, ZVEI – Electro & Digital Industries, Chief Executive Officer

It is a very positive sign that the EU, its institutions and the Member States together aim to strengthen Europe's position in the global microelectronics supply chain and build up a stronger microelectronics eco-system.

ZVEI, representing the German electro and digital industries, strongly engages in that discussion. In our organisation, we assemble not only the major semiconductor companies but also some of the downstream

user industries.

In October 2021, we have published an analysis of the current situation and developed scenarios for the future in order to provide orientation for the political debate.

The German government has asked us to take the lead in drafting the first so-called Chapeau text for a second ME IPCEI - together with industry representatives from more than 20 EU Member States. The official notification has taken place in December 2021 and we await final clearance by the European Commission very soon.

ZVEI believes that a future-proof ME ecosystem needs three pillars:

- Pooling of public and private funding across all EU Member States - at a level competitive to public spending in other parts of the world (US Chips Act, Korea, China etc.)
- Regulatory framework that fosters more R&D along the semiconductor value chain and attracts more international investments in Europe (as is the intention of the EU Chips Act)
- Platform for exchange and coordination among all relevant players from industry and politics. This could be the EU Semiconductor and Processors Alliance that was proposed by the EU COM last year. Here we believe that this platform should be launched quickly and allow also market players from non-European countries to join.

The proposed European Chips Act goes in the right direction but needs some improvements:

Pillar 1: Chips for Europe Initiative:

- EU chip architecture ecosystem is key
- Initiative needs to target specific EU industry needs
- Focus on IP in EU's key verticals such as mobility, industrial automation and telecommunications (where industry needs a variety of different chips sizes)

Pillar2: Security of supply

- Allowing First-of-a-kind support is positive for creating a better global level playing field
- Focus should be on innovation - not on technology or specific chips sizes
- Scaling-up should be recognized for state-aid
- State Aid should be open for all kinds of chips needed in order to strengthen European industry

Pillar 3: Supply-Chain monitoring + crisis response:

- Proposed measures in toolbox do not reflect market realities
- Freedom of contract, contractual obligations and confidentiality need to be guaranteed
- Chips shortage is a global phenomenon (not a specific European one) and can only be overcome by improved global cooperation along the microelectronics value chains

Concluding Points:

- EU Chips Act needs to allow more market and global cooperation
- Platform for regular exchange such as the proposed Alliance is a better tool to coordinate demand and supply
- EU Resilience needs to be strengthened by investments in the microelectronic ecosystem
- The European Commission should avoid any kind of conflicting extra-territorial legislation in particular in the EU-US transatlantic relationship.

Petter SUNDBERG, ERICSSON, Director, Strategic Technology Development

Ericsson develops and provides systems for mobile communication towards a global market.

Advanced semiconductor technology and components are key for all electronic communications. A single 5G base-station can contain more digital processing than a hundred laptops, together with the worlds most advanced analog semiconductors for high-frequency radio transmission. Ericsson has factories on four continents, with lead manufacturing sites for mobile communication equipment within the European Union. We also believe 5G communication technology can enable the next leap in advanced manufacturing, enabling advanced digitalization and 'Industry 4.0'.



Ericsson develops world-leading signal processing chips in latest available digital technologies in-house and we have deep technology and research collaborations with leading global semiconductor technology companies in both digital and analog domains.

We have around a thousand engineers directly involved semiconductor development, developing what we call 'Ericsson Silicon', and more than ten thousand engineers developing systems based on these components that we manufacture and sell globally. The majority of our semiconductor R&D is done in Sweden, with key development also in other European countries.

Ericsson is highly dependent on a strong semiconductor eco-system. Therefore, Ericsson welcomes initiatives to strengthen the European semiconductor eco-system, expanding the geographical redundancy of semiconductor manufacturing.

Ericsson's view of the European Chips Act is:

Pillar one

- Highly welcomes the strengthening of European research and innovation in semiconductor technologies
 - This must however not be done at the expense of other important research ambitions, such as 6G
- Welcomes the Chips fund
 - Access to venture capital is essential for a strong innovation ecosystem

Pillar two

- Welcomes investments in manufacturing capacity
 - For the purpose of strengthening the ecosystem, competence supply, and to secure access
 - Calls for caution on responding to challenges caused by inadequate procurement strategies and overreliance on outdated technologies thus the priority must be to build strengths rather alleviating weaknesses

Pillar three

- Concerned with the idea of creating a European market supervision and intervention mechanism
 - Calls for great care, clarity, and transparency in the assessment and solution

- Should be analyzed (and possibly implemented) separately to avoid delays in the implementation of pillars one and two

Ericsson's strategic view towards EU initiatives:

- Ericsson welcomes initiatives strengthening the European competence base in the semiconductor domain
- Ericsson welcomes initiatives to support geographical diversification of semiconductor manufacturing and supply
- Ericsson welcomes initiatives that supports the creation of new players in the semiconductor domain
- Ericsson is continuously strengthening its engagement in semiconductor research activities for the continued evolution and technology leadership in 5G moving into 6G.
- Ericsson sees a need for widening investments across industrial sectors to realize the full commercial, environmental, and societal potential of 5G
- Ericsson sees strong potential for semiconductor technology and value chain synergies across telecommunications, automotive, industrial, consumer, and other sectors.
- Ericsson considers AI/ML a critical technology area for the evolution of the communications industry and access to specialized AI/ML semiconductor technology a key differentiator
- Ericsson has no plans to invest in semiconductor manufacturing.

Fundamental information technology is key

Ericsson is one of the strongest processor and chip design companies in Europe.

To maintain and strengthen our technology leadership we need strengthened research and education in key areas like:

- Computer architecture and processor design
- Integrated circuit design including energy management
- Analog and microwave circuit design
- Communications theory, control theory and signal processing
- High-performance computing
- Hardware-software co-optimization including embedded software
- Solid state physics and materials science.



Gabriele FAVARO, CECIMO - European Association of the Machine Tool Industries and related Manufacturing Technologies, Policy and Projects Officer

As the European Association of machine tool builders, we can confirm that our members have been affected in different ways by the semiconductors' shortage crisis, started in 2020. This unprecedented situation is still impacting industrial actors involved in several of our supply chains.

Semiconductors are crucial enabler of the digital and green transition. In our sector, for instance, chips are vital for the development of emerging industrial AI applications. For these reasons, our industry and our members welcome the proposal for a European Chips Act and believe that strengthening EU semiconductors production is a shared necessity to remain competitive at the international level.

Today, Europe needs to improve its capacity, strengthen the parts of the supply chain where European manufacturers have the leadership, develop capabilities in digital design and advanced node production, and foster connections with partners overseas.

Considering the impact of the new measures, the Commission's clarifications on public and private investment for large semiconductor producers will facilitate new necessary assets in Europe. However, as mentioned before, we should not underestimate the importance of guaranteeing resilience to the part of the supply chain where we already have expertise and market share without focusing only on highly specialised applications. This action might require high investments and generate low returns, with the risk of escalating in a never-ending need for funding support to develop competitive products for the global market.

The approach of a geographic specialization has permitted the enhancement of the quality of produced chips as well as a reduction in the overall R&I and Capital Expenditure. Nevertheless, this approach has shown vulnerabilities and risks linked to exceptional circumstances such as pandemics, seismic events or geopolitical tensions. Thus, the role of policymakers and industry experts is to find a compromise solution that could guarantee chips supply while safeguarding European companies and consumers from unexpected crises and production slowdowns.

Moreover, it is of fundamental importance to understand that with "chips" we consider a huge variety of products that can differ according to their typology (microprocessors, RAM, etc.), their performances and their manufacturing techniques. In this regard, the vast majority of chips that are traded and used on a daily basis are low or medium tier chips.

Therefore, even though we admire the aim to develop strategic autonomy and investing in research for high-end applications, we should strengthen the production of those chips that are crucial for the industry 4.0 applications such as Industrial IoT. Starting from this market segment might be a way to seek independency while lowering the burden on some of the key economic players of the European economy.

To conclude, we can certainly affirm that the topic of semiconductors needs a multi-stakeholder approach with the involvement of industry, EU institutions, national governments, and private investors. Without a clear strategy at the European level, we could risk investing billions without having high-quality chips in return. And without a systemic strategy of matchmaking and partnerships among European players, we might see European companies involved in the chips supply chain, closing deals with Chinese firms, weakening our role in semiconductors' manufacturing.

William MOREAU, CLEPA - European Association of Automotive Suppliers, Senior Policy Manager for Government Affairs

CLEPA represents European producers of vehicle parts, components, and systems. This includes practically everything that makes up a car: chassis, engine parts, wheels, windows, seats, lighting. But of growing importance are electronic components, which already represent over a third of the value of new vehicles. A share that is expected to exceed 50% by 2030.



Semiconductors are therefore an essential component of road mobility, and play a central role in both the automation of vehicles and their connectivity, in addition to the infotainment systems that are by now commonplace in our cars. They also play a significant role

in the electrification of road transport. And, as a result, the demand for semiconductors is growing exponentially, although this demand mostly concerns chips from slightly “older” generations, as miniaturisation is less critical for automotive applications than, for example, mobile phones.

As CLEPA, we find ourselves in a unique position, as our member companies do not only include chip consumers, but also chip producers, such as Bosch, Intel, or NXP. This gives us, I believe, a special insight into how the proposed Chips Act can boost the European industry. We very much support the Commission’s proposal, which we believe can foster public and private investment in R&D, chip design, and chip manufacturing capabilities. That being said, there are a few aspects which are essential to take into consideration for this to become reality.

First, Member States will need to commit concrete investments reflecting the needs of the industry, reducing supply chain risks, and strengthening innovative capabilities. The Chips Act provides semiconductor producers with a framework to consider investing in building production capacities in Europe.

Member States need to quickly confirm appropriate resources to reach the stated objective of €43 billion in public and private investment. But to realistically reach the target of 20% global chip production, the industry actually estimates that a total private investment of between €240 billion and €600 billion will be needed. For this reason, it is critical that the supply chain intervention toolbox does not create legal uncertainty nor excessively disrupts efficient allocation through market mechanisms. Public investment is critical to generate a positive investment cycle but will never do the job alone. Private investment will play a much bigger role in volume and attractiveness for private investment therefore matters.

In addition, security of supply may require financial support not just to first entrants, but also for second or third entrants within a product category, who are actually first-of-a-kind in certain material, specification, application, or production methods. Therefore, the definition of ‘first-of-a-kind in Europe’ needs to be implemented in a broad sense, allowing investments not just in leading-edge, but also advanced and mature nodes. This should be closely linked to what the European industry actually needs, with a market-driven approach.

For the automotive sector – the largest industrial sector in the EU – electrification, connectivity, and automation are the main drivers. But obviously the needs of other major sectors need to be considered as well. This means that industry, research & technology organisations, and academia need to be brought together to help define the priorities of the Chips for Europe Initiative.

Another aspect of the proposed act that merits careful consideration, in our view, is the supply chain intervention toolbox, which is meant to respond to future semiconductor shortages and crises to ensure the security of supply. We feel that the proposed toolbox would allow very far-reaching market interventions. As the proposal currently stands, clear definitions are missing, which creates legal uncertainty and potentially conflicting legal requirements for companies.

It remains unclear, when a crisis occurs, under which criteria a selection of critical sectors could be conducted and how prioritisation could be enforced in a legally sound manner. A designated EU body responsible for monitoring and gathering information could possibly create transparency in crises. But overall, more efforts are needed to balance, on the one hand, the need for greater visibility, and on the other, the need for businesses to protect sensitive data.

We are not fully convinced of the added value of joint purchasing and distribution of chips by the European Commission. Such strong interventions could risk further disturbing supply chains and result in an inefficient allocation of chips to important and critical sectors, which is precisely the opposite goal of the toolbox. The successive crises that we have experienced in the last two years really illustrate how difficult it is to predict the evolution of the semiconductor market and where bottlenecks will arise. Excessive market intervention could exacerbate this.

On top of this, chips very often come with specific technical specifications depending on the final product and use. They are designed and produced with a very specific purpose in mind. So joint purchasing at a centralised level would therefore be unpractical, in reality.

With these few considerations in mind, we are looking forward to working with the Parliament and the Council to improve this proposal. We believe that it has the potential to make a difference for the European industry, and it is our hope that the final result will match the Commission's high ambitions.

Alvaro VILAS, APPLiA - Home Appliance Europe, Digital & Competitiveness Officer



Chips as a Driver to More Energy Efficient and Quality Smart Appliances

The importance of semiconductors has increased in recent years. The success of the digital and green transition depends heavily on the industry's capacity to manufacture products that comply with EU sustainable and digital requirements, embracing the transition. These products entail the use of chips as an essential component to address consumers' demand.

Here are some figures that help illustrate core market dynamics:

- According to the latest APPLiA Statistical Report, the number of users of smart appliances is expected to grow from 14.6 million in 2020 up to 31.3 million, by 2024, marking a soaring increase of 123%, in four years.
- The number of smart homes is also set to increase by 2024, reaching up to 72,1 million units; four times the number registered in 2017. This trend is deeply related to the rising number of connected devices globally, from 36 billion in 2021 to 75 billion.
- Finally, when it comes to energy, the revenue from energy management in smart homes will be equivalent to €3.16 billion by 2024.

Home appliance industry's ideal scenario is to meet supply with this future demand, by listening to the numbers. To use technology as a tool to advance sustainable lifestyles, manufacturers need to innovate. Here, chips are a crucial component to produce more sustainable and smart home appliances. This requires not only the latest cutting edge 2 nanometer technology chips, but also the older - yet still widely used - 50 nanometer ones, and more.

On the one hand, to address the upcoming soaring demand for chips, the EU Chips Act must ensure investment in 'less sophisticated' and more widely used technologies, with an eye to avoid a State Aid race which would risk triggering a fragmentation of the Single Market. On the other hand, the Act must guarantee more agile administrative procedures and industry participation in the crisis response mechanism. Thereby, European industry will be an essential asset to

address the shortage of semiconductors and contribute to incentivise investment in the EU. In other words, to strengthen Europe's strategic autonomy.

A Europe that is fit for the Digital Age and an ambitious Green Deal will inevitably rely on the European industry's access to chips of all kinds, to deliver better, more sustainable, smart products.

Alex AGIUS SALIBA MEP, (S&D Malta), Vice President S&D Group, Internal Market Committee, Industry, Research & Energy Committee



Semiconductor chips are central to our digital economy. In today's digital world, they make everything work. Without chips, there is no digital, and there will be no smartphones, smart cars, or other communication and automation for most other industries and sectors.

The COVID pandemic and disruption in the supply chain caused a significant shortage of semiconductor chips across multiple European industries. In the automobile sector in Germany, we had eleven million fewer cars produced in 2021, a drop of 23%. We also had significant problems in many other industries and strategic sectors, such as health, security, and energy. Several essential components were missing in the health care area, and there was disruption on the production of brain scanners, for example.

Today's chip shortage has spotlighted the degree to which the European economy depends on semiconductors. Despite having major research and academic constituencies and of the most important research and technology organisations in the world, as well as several production facilities spread in a number of Member States, when it comes to manufacturing chips, Europe, with its 7% of manufacturing capabilities is definitely in a weak position and depends mainly on chips from abroad.

Europe must reinforce its strategic autonomy by becoming more independent in semiconductor production within the global value chain. At the same time, maintaining robust manufacturing capabilities in Europe is also essential to ensure that other strategic industries have a highly resilient supply chain.

That is why the Chips Act, which we are discussing today, is so important. First, it recognises the strategic importance of semiconductors for Europe's core industries, and second aims to increase the EU's market share across the semiconductor value chain - from laboratory to fabrication.

Assuming that Europe will leverage on the high-added-value chain segments, the European Chips Act, if provided with the right resources, could help to improve the EU's position in the global semiconductor supply chain significantly.

Therefore, the Chips Act is a unique opportunity for Europe to provide long-term investments, strengthen its production capacity, increase the design and manufacturing of chips in Europe, and expand its technological knowledge and R&D.

However, the current chip shortage is a systematic issue with no quick fix, and we should not expect miracles. Still, we should lay down the foundations to support the expansion of our semiconductor industry. If we manage to do that properly, nearly all other sectors of the economy will benefit beyond the semiconductor industry itself, which will position Europe as a technology leader in innovative downstream markets.

COUNCIL PRESIDENCY

Jan NEMEC, EU Czech Presidency, Chair of the Council Working Party on the Chips Act

The unprecedented disruptions in the supply chain of semiconductors have caused significant damages to European economy and have revealed long lasting vulnerabilities and dependencies on other regions of the world when it comes semiconductor production.

Therefore, the Chips Act is a top priority file for the Czech Presidency and we have devoted maximum energy into advancing the discussion.



At the moment technical discussions are taking place at the level of the Council Working Party basically every week.

Besides technical issues, Member States are debating the envisaged functioning of the measures proposed by the Commission and first key political areas are looming.

The Czech Presidency also intends to open the debate on the financial aspects. The final aim is to reach an agreement in the Council Competitiveness Council in December

CONCLUDING REMARKS

Antony Fell, EUROPEAN FORUM FOR MANUFACTURING, Secretary General

We have heard some very informative presentations this evening. I would like to thank Arian Zwegers from the Commission for his very comprehensive statement on the Chips Act.

We would especially like to thank the Rapporteur Dan Nica MEP for his participation in this important debate. We wish him well for his final report and particularly thank him for the way in which he continues to listen and understand the views of European Manufacturers.



I would also like to thank the other MEPs, Professor Hübner and Alex Agius Saliba, and the European Manufacturers for their detailed presentations as well as Jan Nimec, for his useful update as Chair of the Czech EU Presidency Council Working Party on the Chips Act.

Finally, on behalf of everyone, I would like to thank the Chair Klemen Grošelj MEP for his inclusive chairing and moderation on this subject of vital importance to the future of European Manufacturing across Europe.

I formally close this European Forum for Manufacturing virtual meeting.
