



Council of the
European Union

Brussels, 20 June 2022
(OR. en)

10439/22

**Interinstitutional File:
2022/0032(COD)**

**COMPET 513
IND 242
MI 491
RC 35
RECH 391
TELECOM 282
FIN 682
CADREFIN 107
CODEC 952**

COVER NOTE

From:	General Secretariat of the Council
To:	Delegations
No. prev. doc.:	6170/22 + ADD1 - COM (2022) 46 final
Subject:	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) - Opinion of the European Economic and Social Committee (EESC)

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OPINION

European Economic and Social Committee

Europe's semiconductor ecosystem

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)
[COM(2022) 46 final – 2022/32 (COD)]

INT/985

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Referral	European Parliament, 07/03/2022 Council, 17/03/2022
Legal basis	Articles 114, 172(3), 182(1) and 304 of the Treaty on the Functioning of the European Union
Section responsible	Single Market, Production and Consumption
Adopted in section	01/06/2022
Adopted at plenary	15/06/2022
Plenary session No	570
Outcome of vote (for/against/abstentions)	205/0/5

1. **Conclusions and recommendations**

- 1.1 The plan to make European industry more resilient and to strengthen the domestic semiconductor industry is to be warmly welcomed. In particular, the aim of improving transparency and cooperation along the value chain and reducing global dependencies in the areas of design, manufacturing, packaging, testing and assembly, through targeted promotion of the industry should lie at the heart of the Chips Act.
- 1.2 However, the Chips Act does not focus on the whole ecosystem to the same extent, but places firm emphasis on a semiconductor segment that will be relevant to the industry in the future but has barely come into play to date. There should be improvements in, and additional focus placed on, chip segments that are really needed in the industry.
- 1.3 The Chips Act will do little to help resolve current supply chain problems, the impact of which is now being seen in the motor industry and in mechanical engineering sectors, for example. The chip segments required for existing European industries should therefore be tackled with additional and specific measures to make these segments more crisis-resilient. This will not only strengthen and support modernisation of the existing semiconductor manufacturing industry in Europe, but, through improved security of supply, also help European manufacturing industries that rely on chips.
- 1.4 For example, industrial policy choices should not only be determined by the feature size of chips, but also by a targeted needs analysis carried out among industrial customers to ensure that the planned support measures are properly focused.
- 1.5 Additional criteria that should be applied include the energy efficiency of chips, the type of raw materials used for their production and the most circular form of production possible. The Commission, Member States and industry should therefore jointly discuss how to diversify sources of supply and, in particular, how to improve the recycling of critical raw materials as part of an industrialised circular economy in microelectronics.
- 1.6 In particular, the EU's chips strategy should not be limited to processors, but should deal with all types of integrated circuits, including passive components and packaging materials, as well as the manufacture of machines. The "from the lab to the fab" principle put forward by the Commission does not go far enough, as the value chain does not end with manufacturing.
- 1.7 In order to ensure that staff with the right skills are available to implement the industrial policy support measures, the Commission is proposing a number of skills development measures. However, it is noticeable that the focus is very much on highly skilled workers. This is a decisive factor if the technological leap to a "< 10 nm semiconductor" segment is to succeed. Nevertheless, the approach adopted should not overlook the fact that, for the industry's ecosystem to be more firmly anchored in Europe, it will also – and especially – be necessary to facilitate access for workers who are not classified as highly skilled.

2. **Introduction and general comments**

- 2.1 The EU Chips Act proposes to build on Europe's strengths and address outstanding weaknesses, to develop a thriving semiconductor ecosystem and resilient supply chain, while establishing measures to prepare for, anticipate and respond to future supply chain disruptions.
- 2.2 The *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)*¹ accompanies the Communication on *A Chips Act for Europe*².

3. **General comments**

3.1 Presentation of the proposal

- 3.1.1 The European Economic and Social Committee (EESC) welcomes the proposal, in particular the fact that it tackles the need to take action to ensure supply chain security as well as transparency and cooperation all along the value chain. The Chips Act addresses security of supply as being key to the success of the green and digital transformations.
- 3.1.2 The EESC therefore welcomes the fact that dependence on suppliers from third countries, particularly in the areas of design, manufacturing, packaging, testing and assembly, has been recognised as being a problem.
- 3.1.3 The EESC notes that the Chips Act will do little to help resolve supply chain problems, the impact of which is now being seen in the motor industry, for example. Chips now and in the future are and will be mainly used in the motor industry, although also in the white goods and mechanical engineering sectors, i.e. in particular semiconductors with dimensions > 16 nm. This chip segment should therefore be tackled with additional and specific measures to make this segment more crisis-resilient. This will not only strengthen and support modernisation of the existing semiconductor manufacturing industry in Europe, but, through improved security of supply, also help European manufacturing industries that rely on chips.
- 3.1.4 The EESC welcomes the objective of strengthening Europe's market position by improving connectivity along the value chain and, in particular, by focusing on those segments that are particularly cost-intensive and risky.
- 3.1.5 It essentially applauds the proposed measures, as well as the requirements placed on Member States and industry.
- 3.1.6 It deplores the fact that particularly the latter stages of production mentioned above – namely packaging, testing and assembly – will not be fully covered by the Chips Act and will thus continue to be vulnerable areas in the ecosystem.

¹ COM(2022) 46 final.

² COM(2022) 45 final.

- 3.1.7 Here, the EESC regrets that the microelectronics ecosystem is not properly covered in the Chips Act, which focuses more on the leading edge segment.
- 3.1.8 The EESC believes that the question of feature size, in particular the nanometre number indicated, is becoming less relevant. Given that the nanometre number no longer describes a real physical dimension³, discussions should be reopened as to whether the exclusive focus on nanometre range is still useful or whether other criteria should be used in addition, relating more to the specific needs of client industries, but also reflecting the objectives of the green and digital transformations.
- 3.1.9 Strategy should therefore focus on what industrial requirements need to be met in the coming decades in order to maintain and enhance the competitiveness of the European industry. In particular, the strategy should not be limited to processors, but should deal with all types of integrated circuits, including passive components and packaging materials, as well as the manufacture of machines, thus covering the full extent of the ecosystem. This strategy should likewise deal with general logistics, as well as the security of supply of commodities and critical raw materials. Furthermore, given the very dynamic nature of microelectronics markets, this strategy should also be reviewed regularly in conjunction with the relevant stakeholder forums to ensure it is up to date.
- 3.1.10 The EESC welcomes the fact that the proposal likewise focuses on semiconductor segments that will reduce energy consumption in future-oriented sectors such as the ICT sector, particularly for data centres and cloud service providers.
- 3.1.11 The EESC welcomes the designation of integrated production facilities and open EU foundries. However, the Commission is urged to define more clearly which indicators are to be used to measure whether they "have a clear positive impact on the Union's semiconductor value chain with regard to ensuring the security of supply and increasing qualified workforce".
- 3.1.12 The EESC also welcomes the fact that the possibility is included of revoking such a decision if it becomes clear that an application for this status has been based on false or outdated information. The Commission should ensure full oversight to secure compliance.
- 3.1.13 The EESC essentially welcomes the fact that the designated Member State authorities are to be empowered to collect information from the industry that will enable them to obtain an overview of delivery and value creation chains, as well as of the key players therein. It would be a good idea to make such information collection uniform throughout the EU, so that businesses do not have to adjust their responses to different requirements in every Member State. This would keep red tape to a minimum. To this end, it makes sense to consider integrated production facilities and open EU foundries to be in the public interest. It also makes sense to encourage Member States to set up national support programmes and authorisation procedures. Since the information thus obtained may contain sensitive data, it is important to keep it confidential. In particular, there should be transparency as to what happens with the data requested.

³ <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&number=9063714>.

- 3.1.14 The EESC welcomes the fact that skills shortages are specifically addressed, in particular focusing on the need to make the semiconductor ecosystem more attractive to young talent and on the fact that the existing workforce in the sector has a clear need for further training and retraining in order to plug the technological gap. However, the proposed measures for the latter group do not go far enough and more targeted programmes should be put in place to safeguard employment.
- 3.1.15 The EESC welcomes the announcement of the establishment of a European Chips Infrastructure Consortium and calls on the coordinator and the Commission to take account of representativeness in the consortium's composition, in particular ensuring that all parts of the semiconductor ecosystem are represented.
- 3.2 Responses to crisis situations: Transparency and product prioritisation as valuable instruments to support security of supply
- 3.2.1 The EESC essentially welcomes the proposal to put together a toolbox to ensure resilience to global market fluctuations. It will help ensure transparency along the value chain and thus contribute to improved security of supply.
- 3.2.2 In particular, the early warning system – if all players fulfil their obligations and have the necessary confidence that the information is being handled properly – will help anticipate bottlenecks in supply and allow appropriate countermeasures to be drawn up. Here, steps should be taken to ensure that reporting options exist for all sectors and players and that, in particular, appropriate mechanisms are also put in place for business and social partners.
- 3.2.3 The possibility of prioritising strategically relevant orders in integrated production facilities and open EU foundries, as well as in production facilities which have accepted this as an option in return for State aid, can be an appropriate means of ensuring security of supply; this does, however, also mean intervening in the market. The Commission is therefore urged to define more clearly the situations in which this is appropriate and can be expected.
- 3.2.4 In public procurement, joint procurement projects can also be a useful complement to the above and will make raw materials and final products available that may otherwise be unavailable to individual Member States, or only available to a limited extent.
- 3.2.5 However, in addition to these mechanisms, the Commission and Member States should also think about the strategic stockpiling of both critical raw materials and certain chip types selected on the basis of transparent criteria, in order to ensure security of supply in critical areas. In view of the plethora of chip requirements and ongoing technological developments, the Commission should develop clear, transparent criteria for deciding whether and where strategic stockpiling is appropriate.
- 3.3 A comprehensive risk assessment needs to take the whole ecosystem into account

- 3.3.1 The EESC welcomes the fact that a risk assessment will be carried out for all areas in the ecosystem and the entire value chain, in particular with regard to sources of raw materials in third countries.
- 3.3.2 However, it stresses that a solution-oriented risk assessment also implies the need for a strategically managed reduction of critical dependence, so as to make the European Union more resilient. The Commission should therefore discuss with Member States how to diversify sources of supply and, in particular, how to improve the recycling of critical raw materials as part of an industrialised circular economy in microelectronics. To this end, it will be essential to discuss how the necessary infrastructure, such as dismantling facilities, can be built up, what product requirements will be needed for a recycling industry that is as comprehensive and industrialised as possible, and which certifications are useful and practicable in order to enable the raw materials to be recycled as quickly and as fully as possible.
- 3.3.3 The EESC likewise underlines that promoting European production facilities will help achieve the objectives of the European Green Deal. Not only will supply chains and transport routes be shortened, but investing in state-of-the-art production technologies will reduce pressure on the environment and can focus on optimal use of raw materials, as well as on the greatest possible recycling of waste and on efficient drinking water treatment. Thus, production of the latest generation of chips will not only focus on improving the energy efficiency of chips, but also on diminishing their environmental footprint.
- 3.3.4 The EESC stresses, moreover, that promoting European production facilities will improve compliance with minimum social standards, such as those enshrined in the European Social Charter and the European Charter of Fundamental Rights, and thus improve the social footprint too.
- 3.3.5 It points out that, for European industry to achieve strategic resilience, the whole semiconductor ecosystem needs to be taken into account. The "from the lab to the fab" principle put forward by the Commission does not go far enough, as the value chain does not end with manufacturing. This principle is therefore only to a limited extent suitable for making the European market more independent of global risks. If the back-end segment of the value chain is not specifically addressed, the risk of natural disasters or interrupted transport routes, which has exacerbated the current supply crisis, remains much greater. As stated by the Commission in the Chips Act, the EU's market share in the packaging segment is only around 5%, i.e. significantly smaller than the market share of the whole industry.
- 3.3.6 The EESC stresses that a comprehensive view of the ecosystem, including back-end processes, also contributes to achievement of the European Green Deal. For example, from an environmental point of view, it does not make sense to keep the front-end production process in Europe, then to ship the products to third countries for testing and packaging, only to reimport them back into the EU afterwards. In addition to the environmental issues surrounding this matter, the supply chains that are extended in this way are prone to much greater risk. The right balance has to be struck here in terms of open strategic autonomy, in order for the EU to become resilient without running the risk of being decoupled from the global market.

3.3.7 The EESC therefore recommends that, particularly in order to avoid undesirable geographical segmentation and concentration of certain highly profitable or cost-intensive market segments, the role of the entire supply chain should be examined more closely and, in particular, the semiconductor strategy should attach more importance to back-end processes within the EU.

3.3.8 It therefore suggests looking into and placing greater focus on advanced packaging technology that can be used in Europe in a cost- and energy-efficient manner, thus ensuring the EU is more independent of global risks and market fluctuations.

3.4 Co-financing as a valuable measure for reducing risk and costs

3.4.1 The EESC welcomes the fact that State aid is to be facilitated under the above-mentioned criteria, especially if the facilities concerned would otherwise not be available in the EU or only available here to a limited extent, and if they are of particular strategic interest.

3.4.2 It also welcomes the fact that, in particular, the installations concerned must also be expected to be viable in the longer-term without further State aid, as well as the fact that there will be a strong commitment to promoting innovation in the EU's semiconductor ecosystem in the future.

3.4.3 The EESC stresses that incentive effects must be measurable in practice and that co-financing of undertakings already planned must be avoided in order to ensure that the funds allocated really do have a positive effect on innovation and employment in the whole semiconductor ecosystem.

3.4.4 However, the EESC would like to see additional criteria, especially in view of the required ability to plug up to 100% of a proven funding gap. Social policy criteria, such as the attitude of the undertaking concerned to social dialogue and collective bargaining, and priority cooperation with suppliers established in the EU – but also the number of additional sustainable jobs created by the investment, as well as the quality of working conditions – should all play a role here.

3.4.5 The EESC also suggests that funding not concentrate on individual segments of the semiconductor ecosystem, but – in addition to the above criteria – endeavour to ensure that financial support is evenly distributed along the value chain.

3.5 Skills and qualification measures as additional drivers of innovation

3.5.1 The EESC welcomes the fact that the Chips Act includes a focus on skills and qualifications. Targeted public investment in education and training, and essentially in skilling and reskilling, is particularly crucial for the green and digital transitions to succeed. However, it is noticeable that the focus is very much on highly skilled workers and especially on post-graduate programmes. This is undoubtedly a decisive factor if the technological leap to a "< 10 nm semiconductor" segment is to succeed. Nevertheless, the approach adopted should not overlook the fact that, for the industry's ecosystem to be more firmly anchored in Europe, it will also – and especially – be necessary to facilitate access for workers who are not deemed to be highly skilled.

- 3.5.2 The semiconductor ecosystem must be made more attractive to employees. In addition to attractive post-graduate programmes, an approach that takes the whole education system into account is recommended. The ecosystem should be promoted in secondary education establishments, for example by revamping science curricula to address the specific needs of the ecosystem. This will enable early career planning and associated decision-making. Simplified access to high-quality, tailor-made and paid traineeships, job-shadowing and mentoring programmes in the industry, as well as up-to-date professional information opportunities, can further enhance the attractiveness of the sector.
- 3.5.3 Finally, it is also important to train those already working in the semiconductor ecosystem to deal with new production methods and the specific requirements of the design and production of < 10 nm semiconductors, in order to allow a seamless transition to the next generation of technology. To this end, the creation of a European network of competence centres should be welcomed; care should be taken here to provide targeted measures in practice to train those already employed in the industry.
- 3.5.4 In order to ensure that the green and digital transformations are successful, particular attention should be paid to upskilling and reskilling workers employed in industries and regions that are now undergoing structural change or will be doing so in the future. An active industrial policy should aim to take particular account of those regions affected by deindustrialisation and disproportionate outward migration of people of working age and to incentivise investment in these regions. There should also be a debate on how to combine upskilling and reskilling measures with short-time work or unemployment benefits and on how affected workers are to be offered the opportunity to retrain in this domain, possibly through transfer companies.
- 3.5.5 Member States, for their part, should also be encouraged to set up programmes and to enshrine these in their national skills strategies.

Brussels, 15 June 2022.

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