

Brussels, 29 November 2024
(OR. en)

16183/24

RECH 522
IND 536
MI 979
COMPET 1160

OUTCOME OF PROCEEDINGS

From: General Secretariat of the Council
On: 29 November 2024
To: Delegations

No. prev. doc.: 15398/24

Subject: Commission's communication on advanced materials
- Council conclusions (29 November 2024)

Delegations will find in the annex the Council conclusions on the *Commission's communication on advanced materials*, approved by the Council at its 4063rd meeting held on 29 November 2024.

**COUNCIL CONCLUSIONS ON THE COMMISSION'S COMMUNICATION
ON ADVANCED MATERIALS**

The COUNCIL of the EUROPEAN UNION

RECALLING

- its conclusions of 2 December 2022 on the New European Innovation Agenda which sets out an innovation policy to position the EU as a global leader¹ ;
- its policy debate of 23 May 2024 on Research and Innovation (R&I) for advanced materials for Industrial Leadership, focused on the coordination of research and innovation on advanced materials between the Union and the Member States to avoid fragmentation, the application areas to be prioritised, and the best practices in the Member States²;
- its conclusions of 23 May 2024 on Strengthening knowledge valorisation as a tool for a resilient and competitive industry and for strategic autonomy in an open economy in Europe, where it underlines the strategic importance of critical and emerging technologies – such as artificial intelligence, life-science technologies and advanced materials - in strengthening the Union's position in global value chains and driving its resilience and sustainability³ ;
- its conclusions of 24 May 2024 on a competitive European industry driving our green, digital and resilient future where it stresses the need to promote advanced materials and circularity⁴;
- the report “The future of European competitiveness” prepared by Mario Draghi, published on 9 September 2024, in particular its recommendation to boost EU industrial leadership in advanced materials;

¹ 15602/22.

² 9333/24.

³ 10182/24.

⁴ 10127/24.

1. WELCOMES the Communication from the Commission on Advanced Materials for Industrial Leadership, published on 27 February 2024⁵, which sets out a European strategy to ensure research, innovation and industrial leadership in advanced materials, a key enabling technology. RECALLS that the communication places European research and innovation on advanced materials as a launchpad for the twin transition, addresses advanced materials under five different pillars ranging from research into future advanced materials under EU, national and regional research programmes to production and use of already available advanced materials.
2. ACKNOWLEDGES that the demand for advanced materials is expected to grow significantly in the coming years in various sectors. UNDERLINES that the Union needs to accelerate research and development in advanced materials; scale up its innovation and manufacturing capacity and encourage the smart industrial use of advanced materials to strengthen the Union's competitiveness, enhance its economic security and reinforce its resilience and strategic autonomy while preserving an open economy.
3. RECOGNISES the necessity to further develop a dynamic, secure and inclusive ecosystem for advanced materials across the Union that contributes to a competitive green and digital transition. CONSIDERS that such an ecosystem should build on existing strengths, tackle gaps, support fundamental and applied research, development and innovation in the Union, and stimulate competitiveness and growth. STRESSES in this context the importance of making use of European research infrastructures and technology infrastructures with the potential and unique capabilities to enable scientific breakthroughs in materials science. EMPHASISES the need to support regional innovation ecosystems to structure and connect value chains.

⁵ 7172/24.

4. RECALLS the importance for the next generation of advanced materials to be safe, sustainable, circular and resource efficient. EMPHASISES the need to implement the “reduce, reuse, recycle” principle in designing and processing advanced materials, which are cost-effective and competitive. CONSIDERS that foresight studies are needed to explore different scenarios of future needs and possible circular and sustainable solutions, as well as the desirable production and use of advanced materials that may be critical in the future. CONSIDERS that these materials should be ‘safe and sustainable by design’ to meet the Green Deal’s targets for zero pollution and a toxic-free environment, and offer solutions to meet the ambition of achieving a European Circular Economy, to contribute to the objectives of the Green Deal Industrial Plan - including the Critical Raw Materials Act, the Net-Zero Industry Act, and the objectives of the European Chips Act – as well as to improve energy and resource efficiency. CALLS ON the Commission to identify as soon as possible evidence-informed criteria and policies to mitigate the risks of European strategic dependencies on critical raw materials by means of advanced materials. RECOGNISES the necessity for methods and assessment tools for the characterisation, testing and validation of advanced materials, and for the integration of circular economy principles and the conducting of comprehensive lifecycle assessments to ensure sustainable production, use, and disposal of advanced materials. UNDERLINES the need to reduce the general use of materials, as well as their complexity in products, increase resource efficiency, and thus promote circularity and reuse of materials to reduce environmental impact and resource dependency.

5. STRESSES that advanced materials are critical for the European economic security. Therefore, INVITES the Commission and the Member States to develop further proportionate and efficient measures to improve research security and risk management, in line with the values and principles identified in the Council Recommendation of 23 May 2024 on enhancing research security⁶.

6. HIGHLIGHTS that the Union, national and regional level priorities in R&I on advanced materials need to be coordinated with the Union's strategies on the twin transition and economic resilience. RECALLS the preliminary priorities identified by the Commission's communication, in the areas of energy, mobility, construction and electronics, as these are critical for the Union's green and digital transition. CALLS on the Commission to continue working with Member States to identify the common objectives and to revise and update, as appropriate, priority areas for the research, development and deployment of advanced materials, including consideration of thematic areas such as healthcare and agri-food. REITERATES the importance of co-creation between the Member States and the Commission to effectively progress the advanced materials R&I priorities. NOTES that the next priority areas for advanced materials should cover sectors of outstanding importance from economic, strategic and social point of view.

⁶ OJ C, C/2024/3510, 30.5.2024, pp. 3-9.

7. HIGHLIGHTS the critical role of digitalisation of R&I in advanced materials, in particular digital modelling tools, common data analytics/ontologies and artificial intelligence that have the potential to accelerate the discovery and to suggest the composition of new innovative materials. TAKES INTO ACCOUNT the suggestion of setting up a common digital infrastructure for advanced materials, open to all Member States, to fully exploit the potential of material's data and artificial intelligence in Europe to speed up the design and development of advanced materials throughout the whole lifecycle, taking into account the ecosystem of already existing research infrastructures and technology infrastructures and data spaces such as the EuroHPC Joint Undertaking and the European Open Science Cloud. STRESSES that such common digital infrastructure should be supported by the Union and the Member States, fostering contributions from both academia and industry and facilitating the integration of national initiatives.

8. NOTES the Decision of the Commission of 5 July 2024 for a governance structure in the form of a Technology Council for Advanced Materials, which will coordinate the actions on advanced materials with Member States, research performing and funding organisations and industry. REQUESTS the Commission, when setting up this forum, to take into account existing structures, where relevant, and to avoid unnecessary administrative burden for Member States and any overlaps with the decision-making role of the Council and the work carried out within the R&I Framework Programme's committees, in line with the principles of good governance and transparency. WELCOMES the cooperation on common objectives and priorities with the R&I Framework Programme Associated Countries, and with third countries, where relevant, in line with the Union's strategic autonomy.

9. EMPHASISES that public and private funding and investment in research, development and innovation of advanced materials is key to the proposed actions. HIGHLIGHTS the importance of aiming for a balanced and need-based approach in R&I actions, including all Technology Readiness Levels, through Horizon Europe. NOTES that the new ‘Innovative Materials for EU’ partnership is a further step in joining forces between industry and academia and generating more private investment. STRESSES that this new industrial partnership should embrace a transparent, open and inclusive approach, based on excellence and striving for the widest possible participation across Europe when establishing collaborations, in order to exploit knowledge, resources and expertise from the whole EU, paving the way for more resilient and interconnected industries. TAKES INTO ACCOUNT the work in the Joint European Forum for Important Projects of Common European Interest on advanced materials which could play an important role in the deployment of innovative advanced materials.
10. NOTES the intention of the Commission to support the development of advanced materials through the European Innovation Council. ENCOURAGES the strengthening, mobilising and managing of public and private investment through the Strategic Technologies for Europe Platform (STEP) and other EU instruments such as the Innovation Fund and InvestEU. Therefore, CALLS on the Commission to reinforce synergies between EU funds and programmes relevant for the development of advanced materials and, on the Member States, to fully exploit such synergies. HIGHLIGHTS the need to implement synergies between such EU funding opportunities at their design stage, and to encourage synergies with national and regional funding.
11. RECALLS that the valorisation of knowledge and the strategic use of intangible assets - including intellectual property rights and trade secrets - are essential factors for industries, and in particular Small and Medium-sized Enterprises (SMEs), to attract investment, to generate value and to increase their competitiveness. Therefore, CALLS upon developers of advanced materials to make best use of the guidance for knowledge valorisation.

12. RECOGNISES the critical role of SMEs and start-ups in conducting research and development and driving innovation in advanced materials. POINTS OUT that innovators and SMEs should be supported right from the early phase to design and test high-performance and sustainable materials. UNDERLINES the necessity of support mechanisms such as grants, financial instruments, equity investment, incubators, mentorships, and access to infrastructure to help SMEs to overcome market entry barriers and scale up their innovations.
13. RECOGNISES the need to facilitate and accelerate industrial and commercial scale-up, in support to researchers, innovators, industry, and particularly to SMEs and start-ups. HIGHLIGHTS the role of regulatory sandboxes and standards as enablers of innovation.
14. ACKNOWLEDGES the importance to leverage public procurement to drive the demand of advanced materials. NOTES that this requires information sharing about state-of-the-art innovations available for procurers as well as better coordination between large buyers so that innovative firms can scale effectively and efficiently.
15. EMPHASISES that new skills are needed for innovative methods and tools, and the design and development of new materials. ACKNOWLEDGES that skills in materials science, chemistry, physics, engineering, and information technologies are especially needed. NOTES the launch by the Commission of an Academy of Advanced Materials, in collaboration with the European Institute of Innovation and Technology in 2024 and ENCOURAGES other relevant existing structures and programmes to engage in delivering on new skills. SUGGESTS that, in accordance with national competence and institutional autonomy, these skills are mapped and, where needed, considered in relevant education and training programmes, in vocational education and training (VET), and in higher education as well as in other relevant upskilling programmes.

16. RECOGNISES the importance of promoting Science, Technology, Engineering, and Mathematics (STEM) education, supporting VET initiatives, and facilitating career development pathways for researchers and professionals in this field including intersectoral mobility mechanisms. UNDERLINES that efforts should be made to address women's underrepresentation in STEM studies through enabling inclusive and supportive learning and working environments, ensuring hands-on experiences and internships, and promoting role models and mentoring. CALLS FOR the promotion and sharing of best practices and successful case studies in the development and application of advanced materials to foster learning, innovation, and replication of successful models across the Union.
17. ACKNOWLEDGES the ethical considerations and societal implications of advanced materials, including their impact on health and the environment. STRESSES the importance of raising public awareness regarding the responsible production and use of advanced materials. EMPHASISES the crucial importance of societal acceptance and trust for advanced materials to ensure their successful integration into everyday life and economy. Therefore, ENCOURAGES the Commission and the Member States to provide extensive information at Union, national, regional and local level with the aim to raising public awareness and understanding on advanced materials. CONSIDERS that such information could highlight the benefits, safety and sustainability of these materials, could address potential concerns and foster public trust, and, where relevant, it could be linked to existing communication initiatives.
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