Advanced Materials R&I in the global setting – views from India

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Advanced materials – what does it encompass?


# Advanced Materials for Industrial Leadership

## Key Priorities for 2024

### A European Green Deal
- European Wind Power Package
- 2040 climate target
- Initiative for water resilience

### A Europe fit for the digital age
- EU Space Law
- Strategy on Space Delta Economy
- Initiative to open up European supercomputer capacity to ethical and responsible AI startups

### An Economy that Works for People
- EU Biotech and Biomanufacturing Initiative
- Follow up to the Val Duchesse Summit
- Advanced Materials for Industrial Leadership
- Initiative on rules on the European Works Council

### A Stronger Europe in the world
- Strengthen partnership with Africa
- European Defence industrial strategy

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**Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions**

Commission work programme 2024

Delivering today and preparing for tomorrow

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Strategic autonomy and technological sovereignty for Green Deal technologies/twin transition

- **Materials circularity and efficiency**: less complex materials, using less (scarce) materials, cleanness of secondary materials for performance, new recovery technologies to reduce dependencies, traceability and cooperation across value chains.

- **Digital tools as a game changer**: databases and tools to accelerate the development of new materials. First national initiatives exist: increased collaboration with all EU MS and accessibility to all stakeholders needed to exploit the full potential.

- **Accelerate up-scaling and deployment**: High commercialisation costs of advanced materials innovation. Technology infrastructures – opportunities for SMEs to access testing and accelerate the deployment. Continuity of development from low to high TRL and improve feedback loop between industry and academia.
Green Deal – many new research challenges in advanced materials

New Technology & Innovation: resources and processes optimization (energy, production, performance increase), materials data, digital twins & passports, big database, AI, blockchain, mass customization, sensing, new biotechnology methods

New Policies: Harmonized norms & standards, certification schemes, Eco-label compliance on all products levels, insure sovereignty & EU autonomy, lifecycle assessment
Digitisation of design of advanced materials
Example US

- **US**: Materials Genome Initiative [www.mgi.gov](http://www.mgi.gov)
  - The 2021 strategic plan identifies three goals to expand the impact of the initiative over the coming five years:
    - Unify the Materials Innovation Infrastructure (MII), a framework of integrated advanced modeling, computational and experimental tools, and quantitative data
    - Harness the power of materials data
    - Educate, train, and connect the materials research and development workforce
Advanced materials

- R&D&I investments and trends in advanced materials
- Start-ups and innovation leaders.
European competitive edge: EU really still leading? Existing studies say yes

India

- **Ranked 3\textsuperscript{rd} out of 181 countries in material sciences and advancements.**
- **Specific R&I programme on Advanced Materials like the EU?**
  - **Mission on Nano Science and Technology (Nano Mission):** under Department of Science and Technology (DST)
  - **Clean Energy Material Initiative:** low-cost clean energy materials
  - **Integrated Clean Energy Material Acceleration Platform:** Solid-State -- International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad
WORKING GROUP 1 (WG1): “Strategic Technologies, Digital Governance and Digital Connectivity”

EU-INDIA TRADE AND TECHNOLOGY COUNCIL
A work plan for 2023-24 has been adopted with key 6 focused areas

- EU-India TTC Working Groups met in May and will meet to look at operational aspects

1. Microelectronics and supply chain resilience ➔ MoU on Semiconductors
2. Telecom and IT standardization
3. Digital Skills
4. High Performance Computing and Quantum Technologies
5. Digital Public Infrastructures (DPI)
6. Artificial Intelligence

Working Group on
“Strategic Technologies, Digital Governance and Digital Connectivity”
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