

## **EARTO Reaction to the EC Proposal for a Green Deal Industrial Plan for the Net-Zero Age**

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EARTO welcomes the [EC proposal for a Green Deal Industrial Plan for the Net-Zero Age](#). The ability for the EU to develop an industrial base on the technologies that will be needed for the climate and energy transition is at stake. RTOs are at the heart of the creation and scale up of green technologies for industry. As such, EARTO members are ready to contribute to defining an ambitious Green Deal Industrial Plan. This paper brings forward EARTO recommendations to this effect.

### **Green Deal Industrial Plan's Pillars**

EARTO very much [welcomed the ambitions of the European Green Deal back in 2020](#) and encourages the EC to develop clear links between the development of EU green tech capabilities and skills offered by actors such as Research & Technology Organisations (RTOs) to its EU industrial ambitions for the green tech deployment and manufacturing. The development of green tech manufacturing will go hand in hand with the scaling up of such technologies.

European RTOs have developed and matured state of the art technologies for deployment in all clean tech sectors and are preparing the next generations of technologies already: both through continuous improvement of performance for existing technologies and through developing breakthrough technologies. The transfer of these technologies from non-profit research laboratories to industrial deployment remains a specific challenge in Europe. Europe cannot afford anymore to waste opportunities. The Green Deal Industrial Plan is an opportunity to reconcile and better integrate EU RD&I, Energy and Climate, and Industrial policies all together.

Today, the EC proposes 4 pillars to this new plan: simplified regulatory environment, faster funding, skills and open trade. **However, the RD&I and linked technologies' development/maturation/scaling up are not obviously considered in the plan. In this context, the EC proposal misses to create a Research, Development and Innovation Pillar that should aim at linking the EU industrial strategy towards green tech industries and RD&I public & private investments (going via IPCEIs as well as already running EU RD&I programmes).**

The issue at stake is of course about investments and financing. But even most importantly it should be about the choice of the best technological options to be picked for EU industrial value chains for the coming 10 to 20 years based on long term partnerships between industry and their technology providers. In this context, the EU leadership in R&D for low carbon technologies is an asset for Europe's green deal industrial ambition (i.e. See the [recent EPO study](#) showing that the EU is the world leader in hydrogen patents). Accordingly, **EARTO recommends to build a Research, Development and Innovation Pillar supporting the industrial objectives as successfully done in the EU Chips Act for the microelectronics sector.** Such a RD&I pillar should then encompass the various existing EU instruments having RD&I components linked to green tech industries such as Horizon Europe, Digital Europe with links to the Innovation Fund, EIF activities supporting deep-tech ventures fund, etc.

For each clean tech industrial sector, such a RD&I pillar could focus on:

- In the short term: Supporting the uptake by industry of EU technologies ready for deployment by associating RTOs to the respective industrial alliances and their governance, so that RTOs can present to industry stakeholders the solutions they provide,
- In the medium to long term: Organising, within the industrial alliances or EU technology platforms, the mapping of existing technology infrastructures in RTO that can help develop and test new industrial innovation in collaboration with industry, and identify the gaps that would require coordinated investments so that the EU can maintain its technology edge

## Simplified Regulatory Environment

The focus of this new plan is the industrial manufacturing of key green technologies, partly by providing simplified regulatory framework for production capacity. Here, EARTO would like to offer the capabilities of its members to:

- Support the proper **elaboration of European standards** aiming at the fast rolling out of key technologies. As stated by the [EC Communication on "An EU Strategy on Standardisation Setting global standards in support of a resilient, green and digital EU single market"](#), global leadership in technologies goes hand-in-hand with leadership in standard-setting and ensuring interoperability. RTOs are very active on behalf of their national governments in EU and international standardisation efforts. The EC should use their knowledge to set up and enhance future EU standardisation efforts on key technologies and thus support innovation-friendly regulation. Here again, we would like to emphasize that most new EU standards for green technologies are initiated by EU RD&I projects financed by programmes such as Horizon Europe showing the clear need to link both RD&I policy to industrial strategy.
- **In addition, we would welcome EC support to Standard Essential Patents (SEPs):** As many deep-tech start-ups in Europe including RTOs start-ups and innovative SMEs are SEPs holders (or exploiting exclusively in their domain SEPs owned by RTOs) and technology providers, the EU should not weaken SEPs. Changing the current balance between technology providers and implementers would seriously disadvantage our European start-ups and innovative SMEs, including in green tech. In particular, EU should not create any legal obligation to conduct essentiality checks on all declared SEP families that SEP holders intend to license. Such legal obligation would be very harmful for the diffusion of the innovation as: 1) it would considerably lengthen the negotiations as well as lead to more disputes and lawsuits, 2) it would cause additional substantial costs in a phase where licensing revenue could normally not yet be expected (especially damageable for start-ups and SMEs), and 3) it would have to be repeated with changing standards. Moreover, if such obligations would only be placed on formal standards and not on de facto standards, such obligations may skew the innovation ecosystem and encourage major players to set up their own de facto standardization, giving an advantage to major players against start-ups and SMEs. This should be strongly discouraged as not being in EU interests (See [EARTO 1st Paper on SEPs](#) and [EARTO last paper on SEPs](#)).
- Establish proper **regulatory sandboxes, test beds and living labs**. EARTO has been actively supporting the EC services to develop a new strategy towards such test beds and living labs. Today, Member States within the [European Research Area](#) Forum are actively discussing the next steps of the ERA Action 12 looking at technology infrastructures to support joint experimentation with companies and facilitate the scaling up of prototypes and market uptake of innovative technology solutions.. A pilot on developing a strategy for technology infrastructures has already been set up for the aeronautics industry. Such pilot could be implemented in various green tech industries also.
- Address the needs of **technology development by/for the energy-intensive industries:** here again it is worth looking at the work of the European Commission supported by EARTO members within the [European Research Area](#)'s Action 12 which led to the recent publication of the [new EU ERA industrial technology roadmap for circular technologies and business models](#). This roadmap clearly defines needs in terms of tech developments and provide further guidance for future EU RD&I investments as well as suggestions for future work on test beds and living labs (i.e. under the heading of technology infrastructures).

## Speeding Up Access to Finance

The target of this new plan is to keep a certain playing field in subsidies. On this we have the following comments:

- **Simplification of State Aid:**
  1. EARTO would like to draw attention to the [EC proposal for Temporary Crisis and Transition Framework \(TCTF\) of the State Aid Guidelines](#). With a view to ensuring EU Member States' ability to match the tax incentives of the IRA, and avoid investments fleeing Europe, EARTO would urge the Commission to allow similar levels of support to alle EU/EEA Member States. It is therefore **imperative that the proposed TCTF allows each Member states to mirror the amount of subsidies available for an equivalent investment in a third country jurisdiction in all EU/EEA States, not limited to Member States with an "a"-area or in several EU/EEA countries, as currently proposed.**

2. EARTO already welcomed the revised Framework for State Aid RD&I which now allows further aid to industry for the development of Technology and Experimenting Infrastructures (TEIs). In addition, ensuring a sound implementation of EU State aid rules by avoiding over-interpretations at national level of the revised Framework for State Aid RD&I will be key (See the [latest EC DG JRC Study](#) and [EARTO-JRC report on State Aid](#)) and the [latest European Court of Justice judgment](#) related to this in favor of RPOs and academics. Furthermore, RTOs increasing their support and consequent participation to Important Projects of Common European Interests (IPCEIs), EARTO **welcome the aim of the plans to speed-up, streamline and simplify the processes around IPCEIs, and would support stronger possibilities for associating RTOs.**

- **EU Funding for Transition to Net-zero:** One of the instruments noted for Member States to modify their Recovery & Resilience Plans (RRPs) would be the further use of tax breaks. While we understand this instrument from the point of view of leveling the playing field in a global environment for boosting manufacturing capabilities, we do not expect benefits in turn of RD&I investments in green tech development (See [OECD work](#) on the topic) and would like to point out the importance of EU RD&I funding programmes in this context.
- **InvestEU:** We would like to point out that indeed as noted in the EC communication, the EIF support to EU RTOs' deep-tech ventures funds (e.g. VTT ventures funds and CEA ventures funds) have functioned well and could be further extended.
- **Innovation Fund:** The Innovation Fund has an important role to play in the scaling up and piloting of innovative low-carbon technologies. RTOs can provide their expertise and infrastructures for technology demonstration. However, the synergies with Horizon Europe should be exploited more. There should be an overarching process across different EU funding programmes to create a streamlined pathway from research phase to close to market deployment.
- **European Sovereignty Fund:** This fund could further support the emergence and growth of clean tech start-ups based on technologies developed by EU RTOs linked to the current EIF efforts in this direction. Key recommendations for the European Sovereignty fund:
  1. **Support EU economic renewal and resilience with focus on RD&I,**
  2. **Ensure fair and open competition:** make use of existing funding instruments as much as possible,
  3. **Focus essentially on pan-EU joint cross-border activities:** the funding should not be directly divided into national plans (cf. RRF),
  4. **Ensure cost effectiveness:** make clear and well-founded choices for investments, and aim for larger and more effective projects, not to break up funding into small, detached streams.
  5. **Grant funding to RPOs' RD&I joint activities & projects with industry:** i.e. no lending or financial instruments.

## Enhancing Skills

The EC proposal includes a specific pillar on skills. Closer to market, the need for specialised and highly skilled personnel and know-how is high, in green tech sector as in many others. **RTOs are a valuable source of highly skilled and specialised human capital and know-how**, in terms of research, collaboration with the industry and support to the innovation processes, without which creating bridges between the many different disciplines and knowledge necessary to solve societal and industrial challenges would not be possible. Besides, RTOs maintain good contacts both with the academic research world and the close-to-market industrial world, ensuring that their facilities operate across the TRL scale. It is for instance recurrent for RTOs' employees to occupy part-time positions as professors in universities, and to co-supervise doctoral thesis and master's degree final projects. **RTOs strongly contribute to the training of professionals on-the-job at the front end of industry's technology needs. They also support the development of T-shaped profile skilled employees, capable to co-create and collaborate with experts in other areas and innovate across disciplines. This enables applied research to find its way into the industry and then turn into innovation. Transfer of heads between RTOs and industry is frequent.**

Accordingly, a comprehensive approach for the development, maturation and dissemination of cutting-edge green technologies should include the acquisition of the necessary skills for the deployment of such green technologies by industry. In this sense, training, upskilling, and re-skilling opportunities for the EU professionals may benefit from access to RTO-hosted labs/technology infrastructures (reaching industry-relevant TRL levels) where the highly skilled personnel from the RTOs may provide those capacity-building activities on immersive environments through realistic "*feel-and-experiment*"-like approaches.

Current skills agendas are so far focus on academics or on industry. They tend to overlook the professional training on new technologies to industry provided by RTOs as well as the roles of RTOs as orchestrators of skills developments by academics on the up-coming tech for their own needs as well as future needs of industry. Accordingly, **to support further the EC Industrial Green Deal Plan's skills pillar, it should be closely linked to the existing instruments under Horizon Europe** which in parallel should be improved by extending and improving them to cover the needed industry- green tech skilling/-reskilling activities. In this context, different EU mobility related programmes such as Marie Curie could target the development of skills in knowledge and tech transfer for green tech sectors.

### Trade Openness and Technology Sovereignty

Ambitious trade policies and free trade agreements strengthen the EU's resilience by facilitating the diversification of supply chains and reducing dependence on individual actors. In the current geopolitical context that Europe faces, the EC proposal has to be instrumental in ensuring EU open strategic autonomy in key advanced technologies that are necessary for the green and digital transitions, as already done for cloud and microelectronics thanks to the EU Chip Act (See [EARTO reaction to New EU Industrial Strategy: Towards Europe's Open Strategic Technology Autonomy](#)).

### New Critical Raw Materials Act

Cutting edge R&I and industry uptake are prerequisites for achieving the ambitious goals of the Critical Raw Material (CRM) Act. Although accelerating R&I (notably on efficiency, recovery, recycling, and substitution of CRM) is mentioned only once, R&I activities will be needed to resolve most, if not all, issues outlined in the Call for Evidence for the CRM Act. Therefore, a strong involvement of the scientific community in the development and implementation of the CRM Act and related initiatives is crucial.

Technological solutions are key enablers for realizing the initiative's full potential. They emphasize the role of R&I, demonstrate new methods, strategies, and innovative technologies for exploration and prospection that allow access to CRM reserves in Europe (new and eventually also previously abandoned ones) in environmentally friendly and sustainable ways. Therefore, they are contingent upon a ringfenced budget for materials R&D across civil and defense applications.

Such solutions should prioritize the following areas:

1. Evaluate untapped and underexploited (primary AND secondary) resources,
2. Increase CRM supply,
3. Reduce CRM demand,
4. Improve sustainability and efficiency across the CRM value chain.

It is important to emphasize that such solutions should not be investigated or implemented individually, with a sole focus neither on demand reduction, nor on increased supply. A systemic approach with a broad scope should be considered for all research.

To drive the high-tech breakthroughs leading to the anticipated paradigm shifts in the use of CRM, a coordinated and multi-disciplinary approach is needed, engaging specialists from fields such as mining, materials development, advanced physical, chemical and biological technologies, recovery and recycling, production, manufacturing, logistics, defense, digitalization of different value chains (such as health, energy, digital technologies, mobility, fertilizers, environmental utilities), customer behavior, business modelling, policy, etc. Many European RTOs have a broad scope of in-house capabilities and multidisciplinary competencies that already are being combined to address complex challenges related in the CRM domain.

**An overarching R&I agenda is urgently needed to provide innovative solutions across the CRM value chain and close the loop of the materials cycle in terms of recovery and recycling. To bring innovations faster to maturity and to market, investments in technology infrastructures to demonstrate new technologies in relevant industrial environments should be considered as part of a strategic roadmap and gap analysis.** We must bridge the gap between different application areas, while at the same time addressing appropriately sector-specific needs. To this end, a solutions toolbox based on a fundamental system analysis instead of a one-size-fits-all approach is key.

European initiatives have been engaging all relevant stakeholders for R&I since the publication of the Commission's strategy on raw materials in 2008. We must build on previous work and experience, such as the EIT Raw Materials and the SCRREEN network, and, more recently, the European Raw Material Alliance, to boost R&I investment, and to co-create a strategic research and innovation agenda with an industrial drive to attain short-, medium- and long-term goals. Related partnerships and associations, such as the Batteries for Europe PPP, Battery 2030+, Clean Hydrogen JU, and the Advanced Materials 2030 initiative have a strong potential to amplify systemic effects and must also provide their cross-disciplinary expertise. This dialogue will ensure the continued resilience and competitiveness of our society. EARTO Members are active partners in the outlined key European networks offering competences and research and technology infrastructures across the spectrum of relevant activities.

**Moreover, the engagement of RTOs in the new CRM will be key to provide optimal conditions for the conversion of the research concepts into commercially available products, and hence applications creating impact for the European society.** Accordingly, EARTO is now looking at launching a new Working Group on Critical Raw Materials to combine its members expertise in the area to provide the EC services with proper inputs for the CRM elaboration and implementation.

EARTO remains at the disposal of the EU Institutions to further discuss these recommendations and support the EC in its work to set up an encompassing EU Green Deal Industrial Plan.

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**EARTO - European Association of Research and Technology Organisations**

*Founded in 1999, EARTO promotes RTOs and represents their interest in Europe. EARTO network counts over 350 RTOs in more than 31 countries. EARTO members represent 150,000 highly-skilled researchers and engineers managing a wide range of innovation infrastructures.*

**RTOs - Research and Technology Organisations**

*From the lab to your everyday life. RTOs innovate to improve your health and well-being, your safety and security, your mobility and connectivity. RTOs' technologies cover all scientific fields. Their work ranges from basic research to new products and services' development. RTOs are non-profit organisations whose core mission is to produce, combine and bridge various types of knowledge, skills and infrastructures to deliver a range of research and development activities in collaboration with public and industrial partners of all sizes. These activities aim to result in technological and social innovations and system solutions that contribute to and mutually reinforce their economic, societal and policy impacts.*

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