CESAER

Boosting disruptive innovation by fostering new mindsets and co-creating innovation

position dated 9 May 2022

The leading universities of Science and Technology (S&T) united within CESAER welcome the focus in the programme of the French Presidency of the Council of the European Union (PFUE) on making Europe a leader in breakthrough and disruptive innovation, including the upcoming conference 'Europe as a Leader in Disruptive Innovation'.

We are pleased to see that (i) our previous position encouraging the European institutions to reinforce the European Research Area (ERA) by advancing investigator-driven frontier research to boost disruptive innovation, and (ii) our white paper pointing at the crucial, leading and vital role of S&T universities in building regional innovation ecosystems through an open and collaborative leadership role that goes well beyond the more passive 'third mission', are well aligned with the PFUE's efforts. In this context, we wish to underline the need for a global approach through a global framework for S&T collaboration to effectively deploy research and innovation to tackle local and global challenges.

Building on this, we urge the European Union (EU) institutions to fully acknowledge the central role of universities of S&T in stimulating disruptive innovation throughout society, also going beyond valorisation.

We recommend levelling-up the culture of innovation and broadening the competence of innovation within and beyond universities by fostering a new mindset where innovators and creators are empowered to transfer tacit knowledge, scientific knowledge and technology into innovations, participate in the co-creation process with partners in industry and society at large, followed by the opportunity to successfully upscale their concepts towards products and services.

This position provides recommendations to boost disruptive innovation at universities, within a wider innovation ecosystem and at European level by highlighting the importance of universities of S&T as trusted partners which act as the 'glue' bringing together these three levels, connecting gaps in the innovation ecosystem through cooperation and co-creation. To be able to effectively assume this responsibility, we underline the vital importance of appropriate framework conditions and sustainable funding to deploy co-creation practices and develop the right skills and mindsets within and beyond universities to ensure a safe, secure and sustainable future.

(i) Foster talent and engage people

The United Nations Sustainable Development Goals (UN SDGs) are undoubtedly the most important contemporary political agenda and narrative. Supporting and attracting innovative talents and stimulating academics' engagement with society are necessary conditions for the transitions needed to achieve the UN SDGs. Together, with over 1,400 volunteers and

leaders across our Members, we contribute to solving the great challenges of today and tomorrow. In close cooperation with our Member, the University of Strathclyde, we have partnered with the International Sustainable Campus Network (ISCN) and Science Europe, to call for collective global action among research organisations to develop the next generation of researchers for the Net-Zero Transition. To advance this agenda and for universities of S&T to fully assume their responsibilities to foster talent and engage people, action is needed.

We call on the EU institutions and national and regional governments to:

- Provide sustainable funding for universities to deliver and scale-up activities to co-create new mindsets to boost disruptive innovation, train students and scientific employees at all levels to be vehicles for taking this knowledge into establishing companies and mission-driven organisations, and to change mindsets and engage scholars;
- Establish an 'EIC Young Innovator' funding programme under the European Innovation Council (EIC) to 'develop talents to advance innovation', mirroring the success of the Marie Sklodowska Curie Actions in 'developing talents to advance research' enhancing and facilitating transformation of excellent research into disruptive innovations, and establishing equivalent programmes on national or regional levels;
- Co-create new talent and career development approaches, integrating innovation activities in incentives and reward systems, building capacity and competence;
- Enhance the flexibility of careers by providing sustainable funding for universities to offer well-designed jobs, well-structured career perspectives, career development support, and support for diverse career pathways, including innovation perspectives.

(ii) Advance innovation ecosystems by developing better cooperation processes for open innovation

Universities of S&T boost innovation by working with external partners including companies and other public and third sector organisations and groups to develop and deploy innovations. The demand for innovation is rising rapidly and more innovators can be developed by building on the success of, and going beyond, the European Institute of Innovation and Technology (EIT). We are continuously enhancing the way we cooperate with the public sector, industry and broader society, and how we integrate and coordinate networking and communication within and beyond our own institutions. Universities can act as a trusted anchor point for advancing and developing connections between the different levels (geographical and sectorial) of the ecosystems and bringing them together through open innovation. This is crucial to ensure well-funded and agile programmes, including a strong focus on bottom-up initiatives; to foster a shared mindset which strengthens the interconnectedness of ecosystems; and to strengthen links between universities and their related ecosystems, throughout Europe and beyond.

We call on the EU institutions and national and regional governments to:

- Align mission-oriented research and innovation agendas with the UN SDG;

- ➢ Establish and defend favourable framework conditions, with the European Commission taking an active role in identifying and removing legal and bureaucratic barriers for free circulation of scientific knowledge and its bearers (learners, teachers, innovators, creators and researchers) at regional, national and European levels;
- ➢ Foster open innovation for start-ups and scale-ups;
- ➢ Involve Small and Medium-sized Enterprises (SME) through strong regional innovation ecosystems around universities;
- ➢ Facilitate collaboration across all borders, geographical and sectoral. This could be in the form of offering and encouraging sabbaticals and international partnerships, and industry-science partnerships (e.g. 'scientists in residence' in companies, public sector and not for profit-organisations) as well as learning through communities-of-practice and field labs;
- ➢ Support more cooperation and exchange of best practice on how to progress innovation within companies and beyond, especially for scaling-up.

(iii) Promote and implement scientific knowledge

Individuals and activities engaged in advancing disruptive innovation are not only driven by (scientific and technological) curiosity, but also by solving societal challenges. To do so, universities of S&T combine excellence, inter- and transdisciplinarity, research in both basic and applied areas. We call for enabling technologies, as well as a balance between 'technology pull' and 'technology push'.

We call on the EU institutions and national and regional governments to:

- ➢ Promote investigator-led frontier research as foundational for disruptive innovation (as stated previously), and ensure balance between (i) top-down strategies and bottom-up approaches empowering universities and their researchers & innovators (who are often the same people); and (ii) fundamental research and applied research to drive disruptive innovation;
- ➢ Embed the creators of scientific knowledge and technology within the innovation ecosystem to transform excellence in research into disruptive innovations;
- ➢ Encourage system innovation (disruption at systems level) combining scientific, technological and societal change in addition to 'pure' product and service innovations and commercialisations;
- ➢ Promote development and deployment of key technologies such as artificial intelligence, quantum technology and biotechnology;
- ➢ Ensure a suitable legal context for the digital landscape to boost disruptive innovation through scientific knowledge and technology generation, ensuring a Europe fit for the digital age;
- ➢ Fund scientific technological developments that can measure environmental impact and create measurable standards to the benefit of protecting the environment and advancing sustainability;
- ➢ Facilitate development of technologies from low to high Technology Readiness Levels (TRL) to release their innovation potential by, for instance, creating open labs and test-before-invest-labs as well as through demonstrators and test projects.

(iv) Promote a risk-taking mindset to boost disruptive innovation

Crises are often catalysts for new ideas and innovation to be recognised by the wider public. However, learning from the climate change crisis, the Covid-19 pandemic and the ongoing war in Ukraine, we must move on from a reactive strategy of only taking interest in innovative ideas when they are suddenly in demand, to a more proactive way of innovating which anticipates crises and prevents them when possible. To do so, we must foster a trust-based mindset that allows for failure and risk-taking. The objective is to empower universities to teach and encourage adaptability in high-risk areas with uncertain outcomes among their researchers, students, innovators and creators, to allow them to experiment. Universities need to be allowed to provide appropriate training to cooperate and co-create. We should also establish frameworks and regulations on how to turn start-ups into scale-ups, to boost and encourage disruptive innovation and the development of innovative ideas. Universities are spaces of creativity and innovative new ideas, so it is important to stimulate innovative thinking to allow for new partnerships that can innovate, especially between complementary partners and interdisciplinary domains. In addition, many innovations are not implemented due to institutional barriers and long lead times, and, depending on the domain, regulations tend to differ (e.g. in health, there are many regulatory schemes, while in the digital field the lighter regulations allow for quicker responses).

We call on the EU institutions and national and regional governments to:

- ➢ Embrace and encourage proactivity among start-ups, scale-ups, corporations and companies and to stimulate industrial and societal partners to be open to experiment and take risks with new ideas and innovations;
- ➢ Provide conditions that enable universities to experiment with high-risk/high-reward innovation activities by ensuring sustainable levels of long-term, strategic (non-competitive) funding streams that complement competitive funding streams;
- ➢ Standardise and normalise regulations and frameworks to allow for faster responses (‘need for speed’), including support for sandbox approaches which enable quick success/fail cycles in near-real environments;
- ➢ Provide facilities, open regulative schemes and experimental spaces and infrastructure;
- ➢ Provide structural funding for ‘living labs’.

Our offer

We underline that local and global challenges, such as the ongoing climate crisis, demand immediate and drastic global efforts and solutions. Recalling the crucial role that universities of S&T play in many innovation ecosystems as a trusted partner and as a vital source of talent and frontier scientific knowledge and technologies, and the strong commitments and long-standing efforts of our Members and association in boosting innovation, we offer our continued partnership and expertise to support the follow-up of the PFUE conference ‘Europe as a Leader in Disruptive Innovation’, and initiatives to boost disruptive innovation including in the context of the ERA Policy Agenda. We offer to help identify missing elements from the existing programmes, and then enrich and revise them to better reflect the current needs, to

reflect our conviction that valorisation is as important as high quality research and education. This will help develop a long-term strategy for valorisation that advances beyond primarily project-based programmes to a much needed life-cycle focus.

For more information and enquiries, please contact our Advisor for Sustainability & Innovation Louise Drogoul and our Deputy Secretary General Mattias Björnmalm.

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CESAER is the European association of leading specialised and comprehensive universities of science and technology that: champion excellence in higher education, training, research and innovation; influence debate; contribute to the realisation of open knowledge societies; and, deliver significant scientific, social, economic, and societal impact.