Luleå University of Technology looking ahead to the next Research and Innovations Framework Programme (FP10)

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CALL FOR ACTION

Supporting the future of European research and innovation

At Luleå University of Technology, we believe in the power of research to shape a better future. As we navigate global challenges and opportunities, it is essential to strengthen Europe's research and innovation landscape. We invite policy makers, industry leaders, academic institutions, and all stakeholders to recognise the strategic priorities outlined in this position paper.

Invest in research: Increased funding in research and innovation is crucial for Europe's strategic autonomy, resilience, and global leadership.

Retain stand-alone status: A stand-alone FP10 R&I programme will ensure focused, efficient, and user-oriented research and innovation, fostering scientific progress and addressing societal challenges effectively.

Encourage collaboration: Promoting synergies across EU funding schemes and encouraging participation from diverse regions and communities will maximise impact and inclusivity.

Embrace innovation: A balanced approach to research and innovation funding, combining global openness with strategic autonomy, will drive sustainable growth and technological sovereignty.

Support a mix of research types: Fund fundamental, applied, and disruptive research to drive innovation and solve real-world problems.

Champion excellence: Strengthening the European Research Area (ERA) and integrating its goals into the next framework programme will optimise Europe's research potential and contribute to a knowledge-based economy.

Elevate social sciences, humanities and art: Recognising the crucial role of social sciences, humanities and artistic research (SSHA), making those areas equally important as research within science, technology, engineering and mathematics (STEM).

Reduce barriers for participation: Reduce bureaucratic barriers and enable efficient access to funds. Encourage participation from under-represented regions and communities. Invest in smaller collaborative projects and maintain the three-pillar structure.

Support universities: Adequate funding for indirect costs will ensure financial sustainability, maintain infrastructure, reduce the need for external co-funding, and allow reinvestment into research professional support.

Together, with a united voice from universities, industries, and society, we can build a resilient, competitive, and inclusive Europe that leads the world in research and innovation.

Executive summary

This position paper outlines the strategic importance of the upcoming EU Framework Programme 10 (FP10) for Luleå University of Technology. Considering recent EU policy reports and the shifts in global priorities, Luleå University of Technology emphasises the importance of balancing global openness in fundamental research with an EU-centred approach to innovation funding that safeguards strategic autonomy. Co-funding models for foundational research could enhance global collaboration, while targeted innovation funding supports Europe's competitive advantage.

FP10 should be strategically aligned to address pressing global challenges, focusing on sustainability, digital transformation, and collaborative research efforts. Luleå University of Technology identifies key strategic priorities such as Climate engineering, Advanced materials and nanotechnology, Human brain-computer interfaces, Quantum technologies, Space utilisation, Digital sovereignty and cyber-security, Health innovations, Production of critical and strategic raw materials, Resilient buildings and cities, outlining the need for investments in cutting-edge technologies to anticipate future disruptions.

Increased funding for FP10 from 2028–2034 is crucial for enhancing EU technological autonomy, resilience against crises like pandemics and climate disasters, changes in a geopolitical context, and accelerating the transition to a circular economy. Luleå University of Technology advocates for diverse research types, including fundamental, applied, and radical, disruptive research, to meet societal needs and foster innovation. This should be funded through a stand-alone FP10 R&I programme that would also ensure focused, efficient, and user-oriented research and innovation, fostering scientific progress and addressing societal challenges effectively.

The Arctic perspective underscores unique opportunities for research and innovation in sustainable resource management, climate change monitoring, and leveraging Indigenous knowledge, contributing to global climate understanding and sustainable development. Recommendations include reducing barriers for participation, revising European Commission's contributions for indirect costs, and integrating social sciences, humanities, and artistic research within FP10 to enhance inclusiveness and impact. Luleå University of Technology further advocates for synergies across EU funding schemes to streamline processes, maximise efficiency, and facilitate seamless transitions from research to market implementation.

By implementing these recommendations, FP10 can strengthen Europe's leadership in research, innovation, and sustainability, driving economic growth and societal well-being across the continent and beyond.

This is Luleå University of Technology

LULEÅ UNIVERSITY OF TECHNOLOGY

Luleå University of Technology is in strong growth with world-leading competence in several research areas. Our scientific and artistic research and education are conducted in close collaboration with international, national and regional companies, public actors and leading universities.

- Applied research.
- Technical excellence combined with multidisciplinary research.
- Unique experimental environments for research.

Vision 2030

We shape the future through innovative education and ground-breaking research results. Drawing on our location in the Arctic region, we create global societal benefit.

66 research subjects in

Natural Science ▪ Engineering and Technology ▪ Economics ▪ Health Science Humanities ▪ Arts ▪ Educational Science

Turnover 2 SEK billion

66 research subjects with a turnover of SEK 1.2 billion. 61% of our research is externally funded.

In the middle of the green transition

In the coming years, multi-billion investments will be made in large projects in Northern Sweden to create a fossil-free society both nationally and globally. Luleå University of Technology is involved in several of these cutting-edge research projects and in the societal transformation that they entail. We offer a broad range of courses and study programmes to match the skills in demand.

At Luleå University of Technology, research programmes prioritise innovations – both technical and social – that promote health and learning, address social challenges related to climate change and natural resource management and promote the digitalisation of businesses.

Introduction

The evolving global geopolitical landscape, combined with recent insights from EU policy reports and leadership, is shaping Europe's strategic approach to funding in Research and Innovation (R&I). Key EU policy reports, including those by Letta (2024) and Draghi (2024), stress the urgency of enhancing Europe's strategic autonomy, resilience, and global leadership in research and innovation. European Commission President Ursula von der Leyen and Commissioner Ekaterina Zaharieva also highlight the importance of EU-funded research in supporting open science while protecting Europe's economic and technological interests.

Considering recent shifts in politics, the need for Europe to secure stable, independent R&I funding becomes even more pronounced. While Europe's current framework extends to 2027, a forward-looking approach post-2027 is crucial to accommodate potential changes in global partnerships, economic priorities, and strategic imperatives.

The European Union's Framework Programme 10 (FP10) represents a crucial initiative aimed at bolstering research and innovation across Europe. With its emphasis on sustainability, digital transformation, and collaborative research, FP10 is poised to address some of the most pressing global challenges. This position paper from Luleå University of Technology (LTU) highlights the importance of FP10, outlining strategic priorities and providing recommendations to optimise its implementation.

By implementing these recommendations, FP10 can strengthen Europe's leadership in research, innovation, and sustainability, driving economic growth and societal well-being across the continent and beyond.

Necessary to increase research and innovation funding

Luleå University of Technology advocates for increased investment in research and innovation for the next period (2028–2034) ensuring EU strategic technological autonomy, reducing dependence on non-EU countries for critical technologies and resources, and ensuring possible crisis preparedness. To effectively address the multifaceted challenges posed by e.g. pandemics, climate disasters and changes in geopolitical context, it is urgent to allocate a larger share of the Multiannual Financial Framework (MFF) to research and innovation. This increased funding will empower researchers and innovators to develop robust solutions swiftly, enhancing Europe's resilience, preparedness, and sustainable growth trajectory.

Furthermore, enhancing research and innovation funding will accelerate the transition to a circular economy, promoting sustainable practices in manufacturing, resource management, and consumption patterns. Investing in innovative technologies and sustainable materials will not only reduce environmental impact but also drive economic competitiveness and job creation across the EU.

Strengthening Europe's leadership in key technological domains such as AI, quantum computing, and biotechnology requires sustained investment. This leadership is essential for shaping global standards, regulations, and ethical frameworks that ensure technology benefits society while upholding fundamental rights and values.

A substantial R&I budget will attract and retain top talents within the EU, fostering a vibrant research community and contributing to the competitiveness of EU. It will also support the training and development of the next generation of scientists, researchers, social architects, engineers, and innovators, ensuring a continuous pipeline of skilled professionals.

The need for diverse research types

As a leading university in the Arctic region, deeply engaged in groundbreaking research and innovation, we advocate for a challenge-driven approach that addresses pressing societal needs while pushing the boundaries of knowledge and technology. We call for a significant increase and dedication of budget for all types of research and innovation activities, from fundamental research to applied innovation and radical, disruptive research and innovation.

While applied research and innovation actions are needed for problem solving, focusing on practical solutions to real-world problems, it also:

- drives economic development and job creation
- fosters partnerships between academia and industry
- enhancing the relevance and impact of research

We also need radical and disruptive research and innovation that is high-risk and high gain to:

- potentially revolutionise industries
- create entirely new markets
- anticipate and prepare for future challenges and opportunities
- ensuring long-term resilience, adaptability and competitiveness

Consequently, we support funding the entire value chain of research. Research and innovation is not a linear process. It is important to take a holistic and cooperative approach that recognises how scientific and technological advancements are connected and constantly build on each other.

Looking beyond Horizon Europe, several key challenges will likely shape the research agenda in areas such as Advanced materials, Climate engineering, and nanotechnology, Human brain-computer interfaces, Quantum technologies, Space utilisation, Digital sovereignty and cyber-security, Health innovations, Production of critical and strategic raw materials, and resilient buildings and cities. To tackle this, we need to invest in developing technologies and strategies that anticipate future needs and disruptions.

Luleå University of Technology advocates for continued investment in innovative space technologies and international collaborations to maintain Europe's leadership. Addressing space debris, self-repairing space structures, and developing in-orbit servicing are critical for sustainability.

Foresight for emerging challenges

To bolster Europe's position in digital sovereignty, Luleå University of Technology predicts the rise of decentralised digital ecosystems and blockchain technologies that ensure data sovereignty while promoting innovation. This includes frameworks for secure, decentralised data management and AI governance, safeguarding privacy and fostering trust in digital interactions.

Moreover, the expansion of quantum technologies beyond computing is envisioned, with applications in quantum sensing for advanced medical diagnostics and environmental monitoring. This includes developing ultra-sensitive quantum sensors capable of detecting minute changes in biological systems and the environment.

To strengthen sustainability efforts, Luleå University of Technology forecasts breakthroughs in biomimetic materials that mimic natural systems to enhance resource efficiency and resilience. This includes materials that could play a crucial role in sectors from construction to healthcare, offering sustainable alternatives to traditional materials.

In the space sector, Luleå University of Technology emphasises the need for innovative space technologies and international collaborations to maintain Europe's leadership. Luleå University of Technology advocates for continued investment in innovative space technologies and international collaborations to maintain Europe's leadership. Addressing space debris, self-repairing space structures, and developing in-orbit servicing are critical for sustainability. We emphasise the importance of research into radically new areas such as self-repairing and self-assembling space structures, biological terraforming, and quantum communications for deep space. Additionally, advancements in artificial gravity, asteroid-based industry, and fusion-powered spacecraft are pivotal. Looking ahead, developing sustainable habitats on the Moon and Mars, advanced life support systems, and space-based solar power will be crucial for future space exploration.

The next framework programme must continue filling the gaps in above-mentioned areas by investing in interdisciplinary research fostering cross-disciplinary collaborations to address complex societal issues, continuous development of frameworks for ethical use of data and artificial intelligence technologies, as well as understanding the impact of biodiversity loss and ecosystem services.

The future isn’t just about smarter tech – it’s about stronger humans. Space, AI, and sustainability demand not only innovation but human resilience, adaptability, and cognitive endurance. Yet, we invest in machines while neglecting the people behind them. Beyond 2028, Europe must lead in human-centric research – neuroenhancement, bioadaptive systems, and psychological resilience – ensuring humans don’t just adapt to the future but shape it.

But shaping the future requires rethinking education. To meet the challenges ahead, we must invest in adaptive learning technologies for personalised education, immersive environments that enhance skills, and inclusive technologies that ensure no one is left behind. Aligning research and innovation with these goals is not optional – it is essential to achieving Europe’s vision for a resilient, future-ready society.

Opportunities and challenges from an Arctic perspective

We advocate for investments in research and innovation in the Arctic region that presents not only challenges, but also substantial opportunities for the whole European Union. More investments should be dedicated to research and innovation in sustainable resource management (critical and strategic raw materials), climate change monitoring and utilising the Indigenous knowledge and cultural practices.

In return, the Arctic region provides:

- renewable energy through wind and hydro energy potential
- fertile soils and clean water resources
- unique Arctic organisms for pharmaceuticals and bioengineering
- better understanding of global climate systems
- space systems research

Therefore, research is of utmost importance to meet the changes leading to the necessity of increased resilience and preparedness for future crises.

More investments should be dedicated to research and innovation in sustainable resource management (critical and strategic raw materials), climate change monitoring and utilising the Indigenous knowledge and cultural practices.

The Arctic perspective underscores unique opportunities for research and innovation in sustainable resource management, climate change monitoring, and leveraging Indigenous knowledge, contributing to global climate understanding and sustainable development.

Recommendations for the next Framework Programme beyond Horizon

In the evolving landscape of research and innovation (R&I), a balanced approach to funding is essential to foster global collaboration in fundamental research, ensure strategic autonomy in applied research, enhance synergies across EU funding schemes, strengthen the European Research Area (ERA), increase inclusiveness, elevate the role of social sciences, humanities, and artistic research, and adequately support universities through increased indirect cost contributions to enhance excellent research through excellent support.

Balanced approach to EU funding

Global openness in research: Europe's commitment to fundamental, pre-competitive research should continue to be open to global collaboration, aligning with the European Research Council's (ERC) model, which is primarily EU-funded but accessible to international participants. We propose expanded co-funding model where fundamental research could be supported not only by the EU but also by global partners. This collaborative model would promote an open scientific environment in which discoveries are shared, advancing knowledge and innovation worldwide while ensuring Europe's leadership in fundamental research.

EU-Centric innovation funding for strategic autonomy: On the other hand, we agree that applied research and innovation – closely tied to competitiveness and security – should be funded primarily by the EU, with restricted third-country participation to safeguard European strategic autonomy. By adopting a more Europe-centred innovation framework, the EU can ensure that investments benefit its economy, drive sustainable growth, and preserve technological sovereignty in a rapidly changing global market.

Balancing openness and strategic independence: The EU's strategy for R&I must, therefore, balance openness in fundamental research with controlled access to innovation funding. This approach will further allow the EU to maintain its status as a global leader in science while securing its economic interests and technological leadership.

Increase synergies of EU funding schemes for R&I

We advocate for stronger and better synergies across all EU funding schemes and programmes. Navigating EU funding is challenging due to its complexity and fragmentation, with over 50 programs still active. This lack of coordination results in overlaps and gaps, diminishing the overall impact and transparency of funding. Aligning and integrating the EU's funding schemes for research and innovation is essential for maximising their impact and usability. By developing joint strategic research agendas, simplifying administrative processes, enhancing communication and coordination, and building capacity, the EU can create a more cohesive and efficient funding ecosystem.

To achieve this, we advocate for clear pathways that allow projects to progress seamlessly from fundamental research to applied research, and market implementation. Moreover, we recommend harmonised application and reporting procedures across different funding schemes to reduce complexity and increase accessibility. Promote data sharing and knowledge transfer across projects funded by different EU schemes to maximise impact and avoid duplication.

The ERA Policy Agenda focuses on optimising Europe's research potential and its contribution to a knowledge-based economy. While Horizon Europe has already made significant strides in funding ERA-related topics, integrating ERA into FP10 offers an opportunity to push the boundaries even further. By aligning FP10 funding priorities with ERA's goals, EU can create more targeted and impactful research projects that contribute to economic growth, job creation, and the development of innovative solutions to societal challenges. This will help ensure a better integration, facilitate the seamless flow of ideas, knowledge, and expertise across member states, as well as strengthening Europe's global competitiveness.

Industrial leadership and societal challenges belong together

Firstly, we advocate for a stand-alone FP10 programme. A stand-alone FP10 R&I programme will ensure focused, efficient, and user-oriented research and innovation, fostering scientific progress and addressing societal challenges effectively. Secondly, we support the ambition that FP10 must be a game changer and new ways of thinking, structuring and enhancing the next framework programme is essential for the competitiveness of EU's R&I system. However, the proposal to establish additional two councils such as a European technology and industrial competitiveness council and a European societal challenges council will create silos in R&I funding again.

We believe that industrial competitiveness cannot be achieved without complementarity of dealing with societal challenges, therefore, while we support the idea of a clear governance and ownership of Pillar II in the current R&I Horizon Europe programme, we strongly encourage to keep technology and industrial competitiveness and societal challenges together.

STEM projects frequently attract greater funding, resulting in an underrepresentation of SSHA-led initiatives. We need to recognising the crucial role of social sciences, humanities and artistic research (SSHA), making those areas equally important as research within science, technology, engineering and mathematics (STEM).

Strengthen the role of social sciences, humanities and artistic research

We advocate for a holistic approach to addressing complex societal challenges, emphasising the necessity of elevating the social sciences, humanities, and artistic research roles in future research programmes.

While natural sciences provide critical insights into ecosystem functions, and technical fields generate solutions to address these challenges, a deeper understanding of institutions, social dynamics, and human behaviour is essential for effectively navigating future societal transitions.

Despite ongoing efforts, disciplinary silos persist, with social sciences, humanities and artistic research often treated as supplementary rather than integral to addressing these challenges. STEM projects frequently attract greater funding, resulting in an underrepresentation of SSHA-led initiatives. This imbalance reflects a continued need for more awareness among both researchers and policymakers regarding the vital contributions that SSHA can make. It is imperative to emphasise the crucial role of SSHA in shaping societal understanding and fostering cultural advancement. To rectify this, we propose the establishment of interdisciplinary clusters within FP10 that mandate equitable representation of STEM and SSHA and an increased acknowledgment of the potential of Artistic Research. Such a framework would ensure a more balanced funding distribution across all fields of inquiry.

At Luleå University of Technology, research programmes prioritise innovations – both technical and social – that promote health and learning, address social challenges related to climate change and natural resource management, and promote the digitalisation of businesses. Often in collaboration across faculties. The rapid development of AI technologies underscores the growing need for social perspectives – not only to comprehend AI's societal impacts but to ensure its responsible and beneficial use. Moreover, artistic research will assume greater significance, as it embodies the uniquely human capacity for creativity and expression. This is particularly important as the creative industries and artistic enterprises are poised to assume a more prominent role in the future.

Reduce barriers for participation

We advocate for reducing bureaucratic barriers and enabling efficient access to funds. We advocate for encouragement of participation from a wide range of stakeholders, including underrepresented regions and communities. To strengthen the European Research Area, we need to be more inclusive.
Not only towards widening countries but also encourage participation of newcomers and underrepresented regions. This could be done by investing in smaller collaborative projects and those at lower Technology Readiness Levels (TRL). This would give beginners opportunities to access EU funding for research and innovation.

Keep the three pillars structure in the next framework programme. Because it is clear and familiar.
The widening programme could be under the Pillar I, as it focuses on strengthening the excellence or making it a cross-cutting opportunity in all pillars. However, this might not be enough. More investments should go into strengthening research management and administration support structures across ERA. Excellent research needs excellent support.

Increase European commission contribution to indirect costs

The overhead (OH) rate in Horizon 2020 was standardised at 25 per cent, which, while simplifying administrative processes, has placed a significant financial burden on universities. This rate is insufficient to cover the true indirect costs associated with participating in EU-funded research projects. Consequently, universities are often compelled to seek additional co-funding to bridge the gap, which can hinder their capacity to engage fully in research and innovation activities and overall interest in EU funding.

The 25 per cent overhead rate does not adequately cover the actual indirect costs such as infrastructure maintenance, administrative support, and utility costs. The financial strain may deter universities, particularly smaller or less well-funded institutions, from participating in EU research programmes, thus limiting the diversity, inclusivity and equity of the research community. To address these challenges, it is recommended that the overhead rate for universities in FP10 be increased to at least 40 per cent of the direct eligible costs. This rate is proposed based on a balanced consideration of financial sustainability for universities and the need for prudent management of EU research funds. Adequate funding for indirect costs will enable universities to maintain and develop the necessary infrastructure and reinvest in professional research support, thus fostering a more conducive environment for research and innovation. An adequate support for universities through increased indirect cost contributions will enhance excellent research through excellent support.

A higher overhead rate will reduce the need for universities to seek external co-funding, making EU research programmes more attractive and accessible to a broader range of institutions. By alleviating the financial burden, universities can allocate more resources to high-quality research activities, thereby enhancing the overall competitiveness and impact of EU-funded research. We urge the European Commission to consider this recommendation increasing the overhead rate to better support universities and strengthen the overall impact of FP10.

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