

Thematic priorities in the next EU research and innovation (R&I) programme

The University of Bergen highlights the following areas as crucial for maintaining the necessary knowledge preparedness and addressing the societal challenges facing Europe, where European R&I collaboration adds significant value. These interconnected areas require both basic and interdisciplinary research, with SSHA disciplines integrated into all themes. Sufficient investment in infrastructure, including data-sharing systems and data stewardship roles, is essential for maximizing European R&I potential. To be able to mobilize excellent R&I environments in all sectors to participate in the programme, it will be of great importance to secure long-term stability with regard to the budget as well as rules and conditions.

Health: Health R&I are essential for addressing urgent challenges in all aspects of health care. Digitalization is transforming patient care, but further research is needed to fully harness its potential in improving health outcomes. In the coming years, **sharing of health data across Europe**, combined with **advancements in AI** will be pivotal in addressing future health challenges.

Research is needed to address the alarming rise in **mental health** problems among children and young people, as well as health issues posed by **an aging population**. The socioeconomic cost of neurodegeneration is now higher than that of cardiovascular disease and cancer combined, and finding solutions to these challenges is crucial for sustaining healthcare systems in Europe. Dedicated research on **women's health** is needed to bridge the knowledge gaps related to gender-specific differences in physiology, diagnosis, and disease progression. Additionally, the **health impacts of climate change and migration** present complex issues that require coordinated, interdisciplinary research.

Through advanced surgery and new-generation drugs, a higher number of patients survive severe **brain damage**. However, **more R&I is required to improve these patients' quality of life**, and solutions in this area have the potential to reduce long-term costs of medication and treatment and thereby reduce the burden on the health sector.

Precision medicine holds significant promise in the treatment of serious diseases, including **cancer**, but major advancements are still needed. This requires focus on **basic and translational medical research** for better diagnostics and development of new treatment methods.

Priority setting in health and **inequalities in health** are related areas of increasing urgency as the gap between what is technologically possible and what is financially viable is rapidly widening, increasing pressures on public health systems. Health is a significant driver of economic inequality, and mechanisms for setting fair priorities in health are key both for the health of the population and for social cohesion and democratic legitimacy.

The **contributions of arts and art-based therapies in healthcare** should also be explored. A comprehensive and collaborative approach will enable Europe to lead in health innovation while ensuring the well-being of its citizens.

Climate: Climate change represents one of the greatest challenges faced by human societies. More research is urgently needed to understand the processes determining climate change and the multidimensional consequences, as well as the political, social, economic, and technological complexities of mitigating and adapting to climate change. Basic and interdisciplinary research is critical, with particular focus on three areas:

A future ice-free Arctic: The Arctic Ocean may become ice-free during summer season within the coming decades due to climate change. While scenarios remain uncertain, even transitional phases of diminishing ice cover present both opportunities—such as new shipping routes and access to marine resources—and significant threats, including climate feedback and ecosystem loss, with global implications. To enable sustainable management and informed political decisions, more precise predictions of Arctic ice conditions are essential, necessitating enhanced observations and deeper process understanding.

Developing Ecosystem Prediction: Integrated prediction systems that combine Earth System, Ecosystem, and Social System models need to be developed and made ready for application. These tools, enhanced by emerging technologies like artificial intelligence, can drive sustainable ecosystem management. Advancing this research requires concerted international efforts.

Just transformation: Climate change will widen social inequalities, both within and between societies, heightening the risk of social tensions. Transdisciplinary research is urgently needed to explore pathways for societal transformation that address the climate and biodiversity crises while promoting social justice and cohesion.

Oceans, Climate and the Blue economy: Our oceans are deeply affected by climate change and face multiple other stressors. We need basic research to attain a better understanding of how oceans and ecosystems, particularly coastal, Arctic, and deep-sea, are affected. The production of seafood must increase to provide a healthy diet for all, and the marine sector has the potential to supply renewable energy production and minerals, all of which require solid environmental impact assessment. This again requires increased knowledge of marine biodiversity, particularly of mid-water and deep-sea communities and their contributions to ecosystem services.

Coastal and shelf sea regions should receive particular attention as they emerge as a focal point of the multiple impacts of climate change, land use, freshwater discharge, and land-based and sea-based human activities. A key question is how to reconcile the necessity of restoration and biodiversity conservation with the need for provision of more energy, food and bioresources from the sea. There is a critical need for coordinated interdisciplinary and intersectoral research to increase our understanding of coastal processes under multiple stressors. Further, we need research on the trade-offs between use and conservation of the marine environment, as well as on cross-border governance and management principles. Research is also needed on the regulatory and legislative framework. EU R&I funding in this area can create tools necessary for knowledge-based policy decisions, including global climate models, digital twins of the ocean, and data and monitoring systems.

Efficient energy systems and energy system management: To efficiently harvest intermittent, renewable energy resources, and avoid over-investment in energy production, we need improved energy system management tools, as well as high quality input data. At present, we lack an energy system management tool that combines and allows interaction between new and existing tools for intelligent and automated power system operation.

The introduction of large shares of unregulated power production from solar PV and wind power are common to European countries and efficient solutions for energy storage at various time scales, energy management and demand flexibility are needed. The legal and economic framework must be designed to balance the need for energy security and sufficient production capacity and to avoid overinvestment and unnecessary area use.

An integral part of optimal handling of unregulated power production is efficient use of surplus energy, i.e. power-to-X. This includes novel, energy efficient methods for production of e.g. hydrogen and ammonia, as well as safe storage and handling of such energy carriers.

Sustainable area management: Area is a scarce resource in Europe, and a source of potential conflicts between different stakeholder interests, including court cases brought by traditional and indigenous communities. In particular, a massive deployment of renewable energy will intensify current conflicts about area use. More knowledge of how such processes can be structured to minimise conflicts and risks of human rights abuse is needed.

A key question is how we can allow for ***maximum production of renewable energy while minimizing ecological harm*** by e.g. multiuse of areas and the use of ecologically degraded areas for renewable energy development. Balancing energy production with climate mitigation and nature management will be crucial for ensuring a just and sustainable development. This requires new knowledge of the costs associated with loss of biodiversity, ecosystems, and ecosystem services in renewable energy projects, and developing digital tools to integrate these into energy system models for informed decisions.

Democracy and sustainable, just, and inclusive societies: A range of developments over the past years has resulted in new challenges for European democracies: shifting geopolitical landscapes; changing dynamics of

globalization and protectionism; widening inequalities; increased migration; climate change; new developments in AI and other technologies; foreign interference and fake news influencing elections; and a sharp increase in populist parties and movements challenging the liberal democratic order. To secure the knowledge needed to protect and enhance sustainable, just, and inclusive democratic societies, R&I on these issues should be prioritized. Areas of focus should include:

- **Law and socio-legal research**, e.g. related to the green transition and AI, contemporary forms of judicialization of politics and its consequences, the pressure on human rights and international law, including legal frameworks related to migration and asylum, as well as research related to the study of resilient and adaptable legal rules.
- **Democracy in societal transformations**: The politics and governance of societal transformations are exceedingly complex. They require far-sighted, often trans-generational decisions, and this raises fundamental questions of how democratic participation and governance can be re-structured to enable far-sighted decisions as well as broad participation.
- **Inequality and inclusion**: Research on the nature and drivers of multidimensional and intersectional inequalities should be prioritized along with research on barriers to, and mechanisms for social inclusion.
- **The role of cultural heritage for inclusive societies**, including Cultural Heritage Science.

Children and youth: In many European societies conditions for children and youth are worsening. Child poverty is on the rise, as is child abuse, mental illness and suicide among children and youth, and serious crime committed by children. Child migrants are particularly vulnerable. It is urgent to have a transdisciplinary focus on how children can be better protected, included and enabled. There is great potential for advancing actionable knowledge that can guide policies and improve children's lives, by mobilizing across a wide range of academic and professional silos and including children's voices in research.

Digitization and Artificial Intelligence: As our societies become increasingly reliant on digital solutions and AI, Europe must advance research within ICT, particularly in cybersecurity and AI, and its theoretical underpinnings. Key research questions include how to make the ICT-systems and data secure, ensuring privacy while maximizing data utility for individuals and society. This requires foundational research in computer science and cybersecurity at all TRL-levels to maintain a strong knowledge base. Research is needed to improve energy efficiency of algorithms, trustworthiness, and cybersecurity of e-infrastructures and AI-systems. Interdisciplinary collaboration is essential, combining informatics with natural sciences, medicine, psychology, social sciences, humanities, law, and artistic research, to develop beneficial digital and AI-solutions.

These topics should be addressed in the successor of pillar 2 in FP10, which is an important instrument for universities in Horizon Europe. Cross-sectoral and cross-disciplinary research and innovation creates added value within the EU Programme. Open and competition-based calls for proposals through the renowned cluster set-up and work programmes known from the present programme should continue in the next FP. Where partnerships create an added value to such clusters, they can be set up and it is important to secure Norwegian access to the partnerships relevant for the topics mentioned above. UiB regards partnerships contributing to the green transition, such as Clean Hydrogen, Sustainable Blue Economy and Clean Energy Transition as important for Norwegian actors. Within the health field, UiB recommends Norway's participation in the upcoming co-funded partnerships Rare Diseases, One Health Antimicrobial Resistance, Pandemic preparedness, and Brain Health. We also recommend participation in the new partnership on Resilient Cultural Heritage. For general reflections on **Missions and Partnerships**, UiB refers to the recommendations in our position paper on FP10: [A New Framework Programme for Research and Innovation \(FP10\)](#).



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A New Framework Programme for Research and Innovation (FP10)

*Position Paper from the University of Bergen
September 2024*

ABOUT THE UNIVERSITY OF BERGEN

The University of Bergen (UiB) is a modern, international research university. We are a classical knowledge- and culture-bearing institution founded on European democratic values, with academic freedom as a guiding principle. Long-term and fundamental research of high international quality and research-based education form the foundation of all our activities. Our wide-ranging academic expertise fosters the deep specialization and interdisciplinary collaboration which equip us to address current and future challenges.

UiB has participated in the EU Framework Programmes for R&I since their inception and is among the most successful universities in Norway in securing funding across the Programmes' funding portfolio. UiB emphasizes that the Framework Programme plays a critical role in supporting European and international research and innovation, promoting scientific breakthroughs, solutions to societal and global challenges and groundbreaking innovations.

INTRODUCTION

Because of the central role that R&I plays in determining European competitiveness, it shapes the context for present discussions around the EU's next Framework Programme for R&I (FP10). The University of Bergen (UiB) strongly promotes a holistic, systematic approach to competitiveness and to the many contributions that can be made by R&I. This implies that we update our understanding of competitiveness to take into account the need for comprehensive, long-term sustainability. Delivering a strong budget for European R&I is critical for European competitiveness. UiB is a key initiator of the [Research Matters campaign](#). This aims to mobilize and unite the European research and innovation community in advocating for a doubling of the FP10 budget and increase awareness of the vital importance of research.

In the current context, where we confront the complex and intertwined crises of climate change, biodiversity loss, and pollution, along with challenges connected to demographics, threats to democracy, and health and security risks, it is clear that our understanding of competitiveness cannot focus solely on growth and increasing productivity. It must also include firm positions on long-term sustainability, well-being, and societal robustness. This requires us to take into account the limited availability of natural, human, and other resources, the key societal roles of attractive jobs and social cohesion, and the need to address the complex interests of people as social, political, historical, and cultural beings to secure well-functioning and just societies. It is equally clear that multi- and interdisciplinary research and innovation, alongside research across all disciplines, will play a fundamental role in enhancing European competitiveness in this new, broader sense. This position paper presents UiB's recommendations for FP10.



KEY MESSAGES FOR FP10

- **Excellence:** Scientific excellence and open competition should be guiding principles throughout FP10.
- **Core European Values:** UiB supports a renewed focus on democratic values, academic freedom, ethics, gender equality, and diversity in FP10.
- **Boost the ERC and MSCA budgets:** The ERC and MSCA are highly successful instruments that foster creativity and freedom in research by supporting excellent, researcher-initiated projects across all fields. As flagships of European research, these bottom-up programmes should continue with substantially increased budgets in the next Framework Programme to fully realize their potential, support research careers, and avoid leaving talent untapped.
- **Better balance in funding opportunities:** FP10 should ensure a balanced approach to funding basic research, applied research, and innovation, and adequate support across the entire R&I landscape from curiosity-driven to challenge-driven research and innovation.

Addressing the diverse challenges we face, such as climate change, healthy oceans, pollution, biodiversity loss, health risks, the need for better medical treatments, and the transition to renewable energy, requires a strong foundation in basic research. This is essential to enhance our understanding of complex systems and processes and serves as a prerequisite for innovation and the development of new technologies.

We therefore recommend introducing opportunities for **basic collaborative research** through **Research Actions (RA) in the successor to Pillar II in FP10**. These Research Actions would support explorative, challenge-oriented research projects with lower TRL-levels, facilitating collaboration among leading research environments across Europe. This approach would provide a critical knowledge base to inform responses to the global societal challenges addressed within FP10.

- **Creativity, diversity, and freedom of research:** providing research funding that allows for creativity, diverse perspectives, and freedom to choose research topics, approaches and methodologies is crucial for Europe. Such support has the potential to generate the solutions and innovations of tomorrow and to reinforce the foundations of European democracies, contributing to the open, knowledge-based policymaking that is central to European values.

FP10 should be designed to promote creativity and a diversity of approaches, enabling European research to reach its full potential. UiB recommends introducing **more open, less prescriptive Calls in the successor to Pillar II**, and a greater variety of project sizes, making room for **smaller and more explorative projects** in which researchers and innovators might test creative ideas on a smaller scale. This would allow for a diversity of approaches to a given challenge and potentially to a more comprehensive understanding and a greater number of complementary solutions. It would also facilitate greater engagement of younger researchers and new actors in challenge-oriented projects.

- **Social Sciences, Humanities and Art (SSHA),** psychology and legal research are essential for understanding and addressing societal and technological challenges. FP10 should ensure these fields are fully integrated into all challenge-driven elements, with dedicated calls for projects that allow these disciplines to define research topics on their own terms. This includes expanding opportunities for the humanities and legal and artistic research, which have been underrepresented in Horizon Europe and previous programmes. FP10 should also provide adequate funding for bottom-up fundamental research and interdisciplinary research and innovation within these fields, ensuring a comprehensive approach to tackling complex societal challenges.

- **International cooperation:** FP10 should harness international cooperation and competition to secure and enhance research quality, as far as is compatible with research security and ethical considerations. Any measure developed or employed in FP10 should be designed and implemented so that they do not jeopardize the possibility of R&I-cooperation between entities from the EU Member States and the EEA/EFTA States.
- **An integrative approach to innovation and knowledge valorisation:** UiB recommends that FP10 strengthen innovation funding instruments and enhance valorization and impact by considering the broader contexts in which innovations take place. The success of technological and non-technological innovations – and their resulting societal impacts – are dependent on factors that include societal acceptance, economic effects, legal frameworks, environmental sustainability, security concerns, and unintended consequences. Innovation projects in FP10 should therefore be assessed against indicators that ensure excellence and originality, and also economic, societal and environmental sustainability (a techno-socio-sustainability approach) so that EU-supported innovations create effects that are aligned with European core values. To achieve these objectives, a multi-disciplinary effort is needed. FP10 funding instruments supporting innovation should therefore invite all disciplines to contribute.

FP10 should further take into account that valorisation may follow more diverse knowledge transfer routes than those primarily supported in Horizon Europe, and that the market may not always be the main driver for value generation. Other mechanisms of valorisation include social innovation, the erasing of inequalities, the strengthening of democracy, efficiency gains and savings in public and private organisations, and change of policies, regulations and standards. FP10 should therefore also target alternative knowledge transfer routes and support these through innovation funding instruments and dedicated support systems.

- **Simplification of rules and procedures:** FP10 should reduce the administrative burden for participants.
- **Easier access and increased transparency:**
 - The Commission should provide a clear and accessible overview of the different instruments available in FP10. Work programmes should be fully digitalized with effective filtering options to simplify navigation, making it easier for newcomers and smaller actors to participate.
 - The Commission should have a continued focus on securing transparent evaluation processes in which applicants are given constructive guidance and feedback.
 - In general, the Commission should make processes connected to the implementation of the programme more transparent – for example within Partnerships and in the shaping of thematic challenges in Pathfinder Challenges.
- **Dual use:** UiB recommends that FP10 remain a civilian programme and that R&I involving technology with dual use potential is supported through the European Defense Fund. Better synergies between FP10 and EDF may be sought through “spin-in” and “spin-out” calls in the European Defense Fund.

RECOMMENDATIONS ON SPECIFIC PROGRAMME COMPONENTS

- **MSCA:** MSCA is a bottom-up research programme that promotes brain circulation in Europe and fosters cross-border connections. To further strengthen MSCA, the EU should consider introducing a steering model similar to the ERC's independent Scientific Council which effectively engages researchers in advancing research. Additionally, it would be advantageous to offer the possibility to extend the duration of a MSCA PF from two to three years to give early career researchers more time to consolidate their careers and become qualified for a tenure track or permanent position.

- **Research infrastructure:** European collaboration on research infrastructure is highly successful, providing obvious added value, and it is vital for the development of European science that this is highly prioritized in FP10. FP10 should seek to maximize national investments in research infrastructures through the continuation of a dedicated instrument for research infrastructures in FP10. The European Strategy Forum on Research Infrastructures (ESFRI) should prioritize long-term, sustainable funding for data steward initiatives. This would contribute to strengthening the European data stewards' community and enhance their ability to train the next generation of data stewards under the ESFRI implementation agenda.

Initiatives to support sharing of health data across Europe should be continued and infrastructure that facilitates sharing of health data should be prioritized.

- **Missions:** The Missions should be thoroughly evaluated before deciding whether they should continue in FP10. FP10 should in any event fund only Mission activities that clearly fall under the category of research and innovation activities.
- **KICs:** Knowledge and Innovation Communities should be structured according to a model that allows universities to play a role beyond the end of the Commission's funding period and to make their valuable contributions to the important functions of education, innovation and technology transfer as well as to life-long learning initiatives.

- **Partnerships:**

- UiB recommends limiting the number of Partnerships in FP10 and only establishing Partnerships when such organization of the R&I effort provides a clear added value.
- Opportunities for participation and engagement for different types of actors, including universities, should be communicated in a more accessible manner.
- Co-funded partnerships should to a greater extent include Calls for projects with lower TRL thresholds.

- **Innovation projects:**

- introduce a new techno-socio-sustainability approach in assessing innovation and building project portfolios;
- increase and diversify innovation funding to give all disciplines a stake in European innovation processes;
- establish and fund mechanisms that support innovation following different knowledge transfer routes that include, but go beyond, commercialization.
- UiB would welcome further incentives for researchers who wish to innovate. The ERC Proof of Concept works well and could be used as a template for instruments that could be made available for a larger group, e.g. beneficiaries of MSCA and RIAs.

THEMATIC PRIORITIES

For the parts of the programme oriented towards addressing societal and global challenges, UiB wishes to emphasize the following thematic areas:

CLIMATE CHANGE:

R&I with a broad interdisciplinary approach is needed, including perspectives from health, SSHA, psychology and legal research. Research on the future ice-free Arctic and the development of integrated prediction systems that combine Earth system, Ecosystem and Social system models should receive particular attention.

OCEANS, CLIMATE AND THE BLUE ECONOMY:

Our oceans are deeply affected by climate change and face multiple other stressors. Interdisciplinary and intersectoral R&I and basic research are both urgently required to achieve a better understanding of how oceans and ecosystems, particularly coastal, Arctic, and deep-sea, are affected.

EFFICIENT ENERGY SYSTEMS AND ENERGY SYSTEM MANAGEMENT:

To efficiently harvest intermittent, renewable energy resources, and avoid over-investment in energy production, we need research into improved energy system management tools, as well as high quality input data.

HEALTH:

Health R&I in the fields of aging, infectious diseases, neurodegenerative diseases, child health, women's health, mental health, multimorbidity, digitalization of healthcare, health issues connected to climate change and migration, and precision and personalized medicine in relation to various diseases, including cancer, are all required.

DEMOCRACY:

Democracy-relevant R&I with a broad, interdisciplinary approach, covering democratic issues in societal transformations related to e.g. climate change and AI, including perspectives from psychological, legal, cultural, philosophical, historical, literary, linguistic, and artistic research is required. Research on priority setting should also be covered as key to handle limited resources in a sustainable way.

ARTIFICIAL INTELLIGENCE:

Research and innovation on AI including disruption through AI and subsequent consequences is required. This entails a multi- and interdisciplinary approach, in which perspectives from legal and psychological research and the broad range of relevant SSHA-disciplines are included.



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