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## IFEs innspill til FFA om EUs kommende rammeprogram for forskning og innovasjon

*1. Hvilke tematiske områder er det spesielt viktig at vi samarbeider om på europeisk nivå i det kommende rammeprogrammet?*

**Critical raw materials:** The EU Critical Raw Materials Act (CRMA) and the Norwegian strategy for minerals are important frameworks to secure Europe and Norway access to critical materials through European value chains. That is important for the green shift, for industrial development, European competitiveness, value creation and jobs.

The geopolitical situation leads to some unique opportunities for Norway. In 2024, Norway has entered into cooperation agreements with the EU and the US (Strategic Mining Initiative) in mineral extraction to ensure access to critical materials. Norway has significant mineral resources on land, and this presents a unique opportunity to build up a valuable industry in an area where we have special and lasting competitive advantages.

There is a need for research at different TRL levels for critical raw materials to ensure industrial needs in the short and long term. It is also important that financial support is provided at all levels of the industrial value chain, such as exploration, mining, processing, and the final development of products. It is also important to emphasize support schemes that contribute to diversification to build resilience and supply security in the value chains. In the current situation, Norway does not have sufficient research funding to cover the need, and European research cooperation is necessary.

**Dual-use:** In the upcoming framework program, we need to prioritize dual-use technologies, which have applications in both civilian and defense sectors. By investing in dual-use research, Europe can strengthen its resilience and security while also fostering innovation in sectors like cybersecurity, artificial intelligence, and space. Dual-use collaboration across Europe enhances efficiency, as shared resources and knowledge reduce duplication of effort and increase impact. Additionally, it gives Europe a competitive advantage, as dual-use innovations can be scaled for civilian markets, supporting economic growth. Finally, a unified approach to dual-use technology strengthens Europe's strategic autonomy, making it less dependent on external suppliers.

**Energy systems, sector coupling and land use:** Adaptation to low emission society requires competitiveness and innovation ability. The Intergovernmental Panel on Climate Change (IPCC) (UN) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services both speaks to the importance of seeing climate and nature in context to find solutions for reducing emissions and adjusting to climate change. This global challenge is also a challenge for Europe and for Norway.

The transition to a low-emission society requires a thorough analysis of the impacts of policy, technology, and societal development. Europe needs to understand the long-term effects of this transition on its energy systems to build a solid knowledge base for decision-making.

Developing theory, methods, and expertise is essential to make informed decisions in the energy and climate sectors. Energy system modelling is especially crucial for assessing the long-term impacts of different approaches.

The potential conflicts between energy development and environmental preservation—such as impacts on biodiversity and ecosystems—are gaining attention. Addressing today’s pressing challenges means not only solving the climate crisis but also preventing nature loss. Currently, the necessary technologies, models, processes, and data for implementing solutions are still lacking. Incorporating the costs of nature and land use into energy system models is critical for developing energy systems with minimal environmental impact.

**Standardization:** In the upcoming framework program, standardization is particularly critical in areas such as military defence, electricity grid, critical raw materials, digital infrastructure, and renewable energy. By establishing common standards, Europe can drive seamless cross-border collaboration and integration, enabling solutions to be rapidly deployed and adopted. This approach not only accelerates progress toward shared sustainability and lowering costs, but it will also ensure that the EU is updated on scientific developments in the U.S. and China. Through the work with ISO standards, the EU and Norway will gain influence over future standards that may significantly impact operational procedures that must be followed to remain competitiveness. The EU should look to how standardization was done in the telecom market, where unified standards like GSM enabled seamless communication across borders and made Europe a leader in mobile technology. This model shows how a collaborative approach to standards can stimulate innovation, reduce costs, and create a thriving, competitive market.

**Emissions in hard to abate sectors:** In the upcoming framework program, prioritizing emission reductions in hard-to-abate sectors like heavy industry, shipping, and aviation is essential to meet Europe’s climate goals. These sectors are responsible for a large share of emissions and lack readily available low-carbon alternatives. This approach not only positions Europe as a global leader in green technology but also builds a secure, competitive foundation for future growth. Collaborative efforts in these areas will therefore provide European added value through both environmental sustainability and strategic independence.

**Digital sovereignty and resilience:** The upcoming framework program must address the impact of the new geopolitical situation on our digitalised society, the lack of European digital innovations, and the productivity of European digital industries. Strengthening and supporting democracy, trust, sovereignty, resilience, and security is necessary as part of society's digital transition. Digital resources have the potential to enable innovations that will impact sustainability, build new global value chains, influence social mobilisation, and generate new revenue streams. Conversely, the same technologies are subject to cyber-attacks, manipulation, exploitation of market power and monopoly situations, which impact the country's political climate. Google, Amazon, Meta, Apple, and Microsoft (GAMAM) are the world’s most valuable big tech companies. They dominate the technology race and potentially control the use of their technologies by states, companies, and individuals. As pointed out in Draghi's report on the future of European competitiveness, there are three ways for Europe to reignite growth: (1) closing the innovation gap with the US and China in key technologies, (2) seizing opportunities from the ongoing global decarbonisation process, and (3) securing supply chains from geopolitical

dependencies that are turning into vulnerabilities. Research-driven innovation should be the enabler for building a strong European cluster of companies providing tools, infrastructures, services and platforms that integrate trustworthiness, governance, interoperability, cyber security, human centricity and new business models and ecosystems.

*2. De europeiske partnerskapene og samfunnsoppdrag (missions) er virkemidler EU benytter i tillegg til regulære utlysninger. På hvilke områder er det særlig viktig for Norge at disse virkemidlene benyttes?*

**Hydrogen:** The new hydrogen program under FP10 should adopt a comprehensive strategic approach, emphasizing research to boost the competitiveness of European technologies by enhancing performance, reducing reliance on critical materials, and lowering CAPEX and OPEX intensity. This should be coupled with coordinated support for the initial phases of industrial deployment and commercialization, along with efforts to grow early markets and expand support for regional hydrogen valleys. The Hydrogen Europe Research partnership is leading the way in hydrogen development, and it is crucial that this momentum is maintained through ongoing financing in the upcoming FP10 framework program. Continued investment will not only support innovative advancements in hydrogen technology but also strengthen Europe's position in clean energy solutions

**Battery:** Batteries are crucial for zero-emission mobility as well as a key technology for a decarbonized power grid with variable renewable energy sources as well as diverse applications within the defence industry. FP10 should therefore aim to enhance the research and development of entire battery-related value chains connected to improved current technologies as well as target leadership in next-generation technologies. Access to necessary raw materials and components is crucial, which will need support both for upstream activities, including active materials and other components, as well as recycling activities to maintain materials in Europe in an efficient manner. On European level, battery activities are supported by several actors, such as EERA and BEPA, which brings academic and industrial partners together. Maintaining support through FP10 is crucial for the continued European development of the battery industry through improved collaboration between industrial and academic actors.

**Solar energy:** Within solar energy, the European Commission has decided to form a Co-programmed European Partnership (EUPI-PV) together with the European Technology and Innovation Platform (ETIP PV). So far, the Green Deal has pushed PV development in Europe, both regarding installation and building of the whole PV value chain. The new Clean Industrial Deal is expected to continue this development. Norwegian participation within the EUPI-PV Partnership is crucial if the Norwegian PV industry and research institutions are to contribute to and build on this development. Of particular importance is:

1. The activity towards achieving an integrated 30 GWP manufacturing capacity along the entire value chain and further lowering of the LCoE of utility-scale PV, rooftop and Integrated PV.
2. New applications through integration of PV for dual use, ensuring high lifetimes and reliability along the way.
3. Smart energy system integration including intelligence in distributed control and hybrid systems. To be able to capitalize on the growing industry, research must be focused on lowering CAPEX and OPEX, and towards higher TRL levels (6-8).
4. Support the establishment of partnerships on PV.
5. Transparency around the drafting groups is important.



Med vennlig hilsen

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