



## **Answer to the European Commission's public consultation on the mid-term review of the Horizon Europe programme**

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The CEA (French Atomic Energy and Alternative Energies Commission) is a French public research organisation, and a major participant in the Horizon Europe programme. As such, we take this opportunity to provide feedback and suggestions for improvement in the course of the European Commission's public consultation on Horizon Europe's mid-term review.

Within this position paper, the CEA will address the following topics:

- A lack of clarity of the content of Pillars 1 and 2 of Horizon Europe for researchers;
- A lack of accessibility of the drafts and the consultation deadlines to participate in the co-construction and dissemination of Horizon Europe's work programmes;
- A lack of practicability and certain obstacles and barriers in the course of the implementation of certain instruments of the Horizon Europe programme, and in particular:
  - o new partnerships;
  - o political involvement in the missions;
  - o inclusion of technological infrastructures;
  - o development of synergies between Euratom and Horizon Europe;
  - o the need to increase the number of collaborative research projects with low TRLs (1 to 4).

## Structure of the framework programme

### Architecture of the Horizon Europe Framework programme

#### Pillar 1

##### General thoughts on Pillar 1

**In the Research Infrastructures programme, the European Commission, via the INFRASERV calls, is strongly encouraging communities to group together, resulting in an excess of partners in these projects. Fragmented funding of partners is the outcome in this case, limiting the leveraging effect of targeted research.**

Furthermore, we note, that the new infrastructure networks that were launched under the previous framework programme (H2020) no longer have the means to ensure their sustainability as a network.

Additionally, the removal of integrative activities represents a threat for European competitiveness. In addition to supporting access to infrastructures for researchers, it also allowed for diverse research

activities aimed at improving the performance of research infrastructures. As such, we recommend that integrative activities are maintained.

## Pillar 2

### General thoughts on Pillar 2

**As compared to Horizon 2020, technological research has lost visibility in Horizon Europe, whose pillars are structured differently.** The architecture of Horizon Europe's Pillar 2, within which key technologies have been grouped together with societal challenges, raises the question of the coherence of its clusters. CEA would like the impact of this new structure to be evaluated by the Commission.

**The work programmes, especially for Pillar 2, are challenging for researchers to fully comprehend due to both the format and content of the documents.** We suggest a more succinct elaboration of the main points leading to a reduction in the length of the document itself. We consider that the mid-term review of Horizon Europe is an opportunity to clarify both the concept of “destination” and to issue recommendations in making it more accessible in the work programmes.

In Cluster 4, the inclusion of Space-related topics with those of Industry and Digital lacks coherence. Moreover, in Destination 5 of Cluster 4, we note a limited budget allocated to scientific topics related to Space (data, instrumentation/innovative technologies).

The topics of Cluster 6 are particularly fragmented, with only one or two projects per topic. This leads to high competition for these projects and overall, low clarity.

### Lack of TRL level consistency between clusters in Pillar 2

**In regards to the TRL levels for the same type of action, we find that there are strong disparities between clusters, and sometimes even between destinations within a same cluster.**

**Having TRL consistency between clusters and destinations ensures that the whole TRL scale is covered in each cluster with the appropriate instruments. A dedicated review of this topic is important** to ensure the ideas developed by research become solutions deployed by industry to address the major challenges of the Union.

RIA calls should target TRLs between 2 and 5. AI calls should rather target TRLs 4 to 7 (8 in rare specific cases). This proposed scale, in addition to ensuring coherence within Pillar 2, also allows for good articulation with the three EIC programmes in Pillar 3 (Pathfinder TRLs 1-3, Transition 5-6 and Accelerator 5/6 to 8).

## Co-construction and dissemination of work programmes

**Concerning the co-construction of the work programmes,** an increase in the time for a more in-depth consultation of the work programmes by national representatives through their Member States and stakeholders is requested.

**As related to dissemination, the CEA would appreciate the reissuing of the quasi-final drafts of the work programmes, as the Commission has done in the past.** As the Commission has announced the publication of the 2023-24 work programmes for next December with the first submission deadlines in March 2023, this reissuing would allow the inclusion of as many people as possible in the process. The current process is conducive to the uncontrolled sharing of documents, which is detrimental to fairness between players. The same could be true for the next programme (2025-2027).

**In terms of supporting actions, the webinars (and the possibility to access their recording) presenting the programmes are appreciated.** They provide a clear comprehension of the expectations, as well as the opportunity to directly exchange with the EC staff responsible for the implementation of the calls. **Efforts to present topics in detail should be maintained.**

## Implementation of the Framework Programme

### Partnerships

The CEA wants to reiterate the importance of partnerships as a relevant form of conception and implementation of R&D activities on a European scale: Partnerships allow stakeholders to be involved in the definition of research priorities and to structure communities. Public-private partnerships in particular help in bringing together industrial, academic and technological stakeholders to achieve common goals. They have given the EU the capacity to strengthen the coherence of its actions in support of European R&D by developing programme coherence, beyond the financing of isolated projects. They also contribute to long-term links between public and private players, beyond one-off collaborations in individual projects.

An internal analysis of the 'targeted' public-private partnerships in new energy technologies (NTE), digital technologies (DT) and high performance computing (HPC) demonstrates that the CEA has been able to align its programmes with French initiatives and European priorities, leading to a coherent and structured continuum at all levels: Regional, national and European.

The CEA's teams have a strong presence in 21 industrial associations in four fields that are at the heart of our organisation's priorities: HPC, hydrogen, batteries and digital. This strategy has led to extremely positive returns for the CEA in the context of H2020.

**It is with this mind-set that the CEA proposes that new public-private co-programmed partnerships be initiated on subjects that have emerged since the establishment of the first partnerships in 2019, as a response to the new challenges of the European strategic autonomy (in particular in the energy field):** Direct solar energy conversion (fuels and solar chemistry) and small modular nuclear reactors (SMR). The relevance of co-programmed public-private partnerships is currently being explored for other topics such as solar photovoltaics and materials<sup>1</sup>.

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<sup>1</sup> See the Advanced Materials Initiative: <https://www.ami2030.eu/>

The 'Materials 2030' manifesto of February 2022:

[https://ec.europa.eu/info/sites/default/files/research\\_and\\_innovation/research\\_by\\_area/documents/advanced-materials-2030-manifesto.pdf](https://ec.europa.eu/info/sites/default/files/research_and_innovation/research_by_area/documents/advanced-materials-2030-manifesto.pdf)



In the field of health, the CEA supports the need to launch a 'Mental Health' partnership, which, given the impact of the andemic crisis over the last two years, is a welcome and necessary addition.

**The CEA would also like to see the KICs' assessment separated from that of the other partnerships.**

## Missions

**Funds reserved for the missions come essentially from the Horizon Europe R&D programme, however, the calls are formulated to respond to public policy issues that require the involvement of stakeholders from various regions, local authorities and civil society, and serve to remove mostly non-technological barriers.** The CEA therefore questions the actual role of R&I in this perspective, and the capacity to achieve the ambitious objectives set for each mission, given that the missions' launch has been slow, and their implementation and governance remain very complex.

**The missions must be the subject of a European policy linking with the regions' intelligent strategies. And this policy will also need to be financed by other funds.** The part of the Horizon Europe budget dedicated to the missions will not be sufficient to address the major challenges they tackle, such as adaptation to climate change or the protection of oceans and seas. Horizon Europe should not define these European policies, but rather contribute to their success.

## Technological infrastructures

In support of the European Commission's preparation of a strategy for technological infrastructures, as requested by the Council in its 2021 conclusions, dedicated resources for technological infrastructures should be provided in the Horizon Europe programme.

European actions to structure the definition of EU needs, based on strategic industrial value chains, would also be fully in line with the new European innovation agenda. It would make it possible to organise the networking of technological infrastructures and associated services (legal and intellectual property in particular), and to propose support arrangements for coordinated investment by the EU, Member States, regions and stakeholders in the technological infrastructures needed to ensure Europe's technological leadership<sup>2</sup>.

The CEA will closely follow the creation of the new strategy on Technological Infrastructures and the forthcoming establishment of a group of experts to prepare further work.

## Developing synergies between Euratom and Horizon Europe

Nuclear research can no longer be considered and programmed totally independently of the general issue of new energy systems. Nuclear energy is a component of more integrated and complex energy mix<sup>3</sup>. All dimensions of such an energy mix, and the interactions between production, storage and network management tools must be considered in an integrated manner.

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The 1<sup>st</sup> version of the 'Materials 2030' roadmap, presented to IndTech in June 2022:

<https://indtech2022.eu/page-3961>

<sup>2</sup> See CEA's contribution to the public consultation on the European Innovation Agenda for more details.

<https://www.cea.fr/english/Documents/european-positions/2022-05-european-innovation-agenda.pdf>

<sup>3</sup> The energy mix is a group of different primary energy sources from which secondary energy for direct use – such as electricity – is produced.



The CEA therefore advocates that such an integrated approach be applied to the definition of priorities and instruments under the Euratom and Horizon Europe programmes. This would enable synergies between the Euratom and Horizon Europe programmes to be applied to diverse subjects such as the use of digital tools, R&D on materials, the role of nuclear power in decentralised production systems, etc., all of which concern the nuclear sector and other energy sectors.

The definition of a European public-private R&D partnership on SMRs would fully fit into such an approach. A strategic research agenda for the development of a European SMR could thus be defined with interested actors and countries, and implemented by mobilising both the Euratom programme and the Horizon Europe programme on the non-nuclear specific aspects of this agenda, such as new industrial processes or digitalisation.

Similarly, it should also be possible to make greater use for nuclear research of generic Horizon Europe instruments, such as the Marie Skłodowska Curie programme or infrastructure actions such as support for transnational access. The opening of the MSCA programme to the Euratom programme must be intensified by an increase in the planned allocation (1M€ 2021 + 1M€ 2022) but also in the typology, allowing the possibility of MSCA Staff Exchange beyond the Postdoctoral Fellowship.

This is the first time that a coupling between the Euratom programme and the MSCA programme has been made possible. It is a good start, which should be generalised. Later on, building on the feedback should make it possible to extend it to other fields.

### Need for low TRL collaborative research

Research at TRL levels below 4 is today, mainly concentrated in the ERC, with significant resources, but in the form of grants for individual projects. Collaborative research projects, under Horizon Europe's Pillar 2, on the other hand, are increasingly oriented towards downstream projects. The Pathfinder instrument of the European Innovation Council, which replaces the FET instruments of Horizon 2020, remains a limited niche for upstream collaborative research, with the aim of increasing the TRL and transferring a disruptive technological innovation to the market.

**What is missing from this overview is an objective to support low TRL collaborative research projects (between 1 and 4), aimed at advancing knowledge and bringing out new concepts that have no direct application in the short and medium terms but which are essential to feeding the innovation cycle.** While the desire to provide solutions to global and competitive challenges encourages the achievement of maximum efficiency, it is also important to support in pillar 2 longer-term collaborative basic research activities, which are the source of future innovations.

**In each cluster, priorities in terms of upstream research needs should be identified to enable certain S&T barriers to be removed,** in order to support original proposals from research communities leading to breakthrough innovations. **Sufficient resources should be devoted to this type of action in the annual work programmes.**

We suggest having an experimental pilot phase on a few clusters/destinations in 2023-2024, before these calls are generalised in Pillar 2 in each cluster from 2025 onwards, in the framework of the new strategic programming.

### Financing projects with lump-sums

The extension of the instrument for 2023-24 still seems premature as the evaluation of the pilot phase in H2020 is not yet complete. **Moreover, its use should be reserved for CSA-type projects or small**



**high TRL collaborative projects**, and not for low TRL funding where the uncertainties on the completion of a milestone or deliverable are stronger, as for example for the ERC, which has an exclusive objective of scientific excellence.

In this respect, CEA would like to reiterate the call for vigilance on the use of lump-sums [issued by EARTO with the EUA and CESAER](#).