

Q1: What major challenges (scientific, social, economic, technological) should still be attempted to be addressed in the second half of HE (2025-27) and further addressed by a future FP (FP10)?

- **Food and Nutritional Security**, together with climate change, biodiversity, human health. These are best tackled together, simultaneously and comprehensively, because they interact, e.g. climate change threatening the production for food and nutritional security and hence human health.
- **Diet shift** – Both availability and consumption of phytonutrients and plant-based protein, both in developed and developing regions.
- **Climate change** – plants adapted to both changing climate and more drastically fluctuating weather conditions (causing drought, heat, waterlogging, strong winds, UV, ozone, serially and in combination); and latitudinal shifts in pest and disease organisms;
- **Biodiversity** – natural and agrobiodiversity, both in situ and ex situ. Requires sustainable intensification to conserve natural areas not under cultivation.
- Critical mass support for plant biology as a basis for crop improvement and adaptation to address the challenges above – include all approaches
 - From conventional to New Genomic Techniques.
 - From basic to applied, translational research to innovation.
 - From mono-to cross- and interdisciplinary research.

Healthy and health-beneficial plants, humans, and ecosystems. Healthy, disease- and stress-resistant plants are the foundation of human health. Healthy ecosystems need mitigation of climate change and pollution and conservation of land and water resources.

Q2: Which are the major successes of the current HE (2021-2023) and which are the **major “roadblock”/threats for success?**

Successes:

○ **ERC and MSCA**

The European Research Council (ERC) and the Marie Skłodowska-Curie Actions (MSCA) have demonstrated their exceptional ability to identify and foster excellence in Europe.

They are the only programmes currently available for conducting bottom-up, curiosity-driven, and ground-breaking research at the frontier of knowledge. Both produce new knowledge and have yielded useable outcomes and unexpected benefits to economic and social welfare.

Both programmes provide funding opportunities for the best projects, the best researchers, and the best teams across the entire European Research Area. They attract researchers from all over the world promoting the visibility of European excellence worldwide.

Most EU innovation grant winners in 2022 were ERC grantees. The roles played by the ERC and MSCA within the framework programmes are of utmost importance for European progress.

Hurdles:

○ **Lack of collaborative basic research:**

While we see a high potential in bottom-up basic research in pillar 1, e.g., in the ERC and MSCA, we also believe it essential that basic, importantly multi-partner research contributions should be included in pillar 2 of HE to maximally benefit innovation within the R&I cycle. We acknowledge that

there are dedicated Innovation Actions in pillar 2, complementing the innovation focus of pillar 3. The partnerships promote collaborative applied research in pillar 2. We therefore call for dedicated basic (and applied) collaborative research actions (RA) in pillar 2, complementing the research focus on pillar 1. The unique position of pillar 2 to cover and thereby complete and strengthen the R&I cycle in a balanced way has the potential to become one of the strengths of the Horizon Europe programme – a step change compared to H20 and HE to date.

- **Same gaps in Work Programmes as in partnerships and in missions**
The three instruments often focus on the same issues, leaving the same gaps. This repetition is costing financial resources that should be used to address the gaps.
- **Widening participation** – action(s) in each programme
Widening instruments in Horizon Europe are beneficial but are very complex and have a limited budget. Access to other programmes has not been facilitated. We suggest simplifying and adapting these schemes to the needs of researchers from EU15 countries by converting them into simpler mechanisms integrated in each of the three pillars.
- **Pillar 2: clusters still not connected**, even destinations inside a cluster are not sufficiently collaborating:
Better link between the health cluster (1) and the food, agriculture, biotechnology cluster (6) to truly enable plant biologists, breeders, processors, nutritional scientists and health experts as well as social scientists to perform interdisciplinary research and innovation to improve nutritional compounds in crops for the human diet, which are then further conserved or even enriched in crop processing for human digestion. In addition, plant made pharmaceuticals can be co-developed for medical purposes.
To date joint calls enabling this R&I are non-existent but could be implemented by an 'alternating call' system under which the call is published and financed in one year under cluster 1 and the next year under cluster 6.
- **Using research funds for activities other programmes should cover** (e.g. CAP), communication ... [there is only one research programme].
New activities / tasks were added to the EU Framework programme without transferring resources from other programmes to finance these, thereby reducing de facto the funds available for research. Examples are activities from Common Agricultural Policies, communication etc.

Q3: Which sub programmes of HE should be to be **preserved and strengthened in a future FP** (i.e., FP10) and which should be **altered**? How far a future FP (i.e., FP10) should keep/alter the current basic **three-pillar architecture of HE** (i.e., Pillar 1: Excellent Science; Pillar 2: Global Challenges and European Industrial Competitiveness; Pillar 3: Innovative Europe)?

Preserve and strengthen:

- **ERC and MSCA:**
The ERC and the MSCA have demonstrated their exceptional impact in and beyond the Framework Programme (see Q2).
Both programmes are underfunded as a significant number of submitted proposals evaluated above the threshold of excellence can currently not be funded.
Pillar 1 budget should be shielded from any cut during the remaining years of Horizon Europe and be increased in the upcoming FP10.
- **3 Pillars Structure:**
We see a high potential in bottom-up basic research in Pillar 1, e.g., in the ERC and MSCA. Pillar 2 should bring together basic and applied research with demonstration and innovation actions to

become the R&I spiral (improvements urgently needed to achieve this see below). Pillar 3 focuses on innovation.

- **Research collaborations with developing countries:**

Countries of equatorial regions and the global south, many of which are developing, face the same needs and risks regarding the major challenges, such as Food and Nutritional Security, together with climate change, biodiversity, human health, the developed countries of the north. Moreover, while they have much of the genetic diversity that can contribute to solving these challenges, they currently lack the research infrastructure and funding to unlock the solutions. Hence, funding mechanisms for collaborations with developing countries enables projects with win-win outcomes for the major challenges benefiting all.

Alter:

- Clusters – **add Research Actions** (see Q4); **increase bottom-up calls** to have ~ 50% bottom-up and 50% top-down.

- **Widening action(s) into each pillar:**

(see Q 2) We suggest simplifying and adapting the widening instruments to better address the needs of researchers from EU15 countries by converting them into simple mechanisms integrated in each of the three pillars

- e.g. test some RIAs to require 10% of partners from EU widening countries in pillar 2.

Reduce / end:

- **EIT** – there is not clear benefit of this instrument.
- **Missions** – some missions overlap with the Work Programme and even Partnerships, leaving the same gaps (see Q3).

Q4: What would be a catalyst to overcome current roadblocks of HE and be implemented in a future FP (i.e., FP10)? What should be the **most important innovations to be considered in a future FP** (i.e., FP10)?

- **Add Research Actions** (in current pillar 2).

Pillar 2 is of utmost importance to tackle Global Challenges and enhance European Industrial Competitiveness. Since it constitutes a translational bridge between the Excellent Science and the Innovative Europe pillars, its actions should be better designed to support basic and applied collaborative research together with the demonstration and innovation aspects in a balanced way. We envision this pillar as closure of the R&I cycle, where research and innovation outcomes grow through a positive feedback loop.

To help overcome the gap of collaborative basic research and complete the research and innovation cycle, we recommend making collaborative basic research an intrinsic component of R&I Actions and introducing Research Actions focussed on basic and applied research. This is particularly necessary to address Global Challenges. In this way an upward spiral would be created that is adding new knowledge in each round, elevating the innovation to the next higher level – a step change in the Framework Programme.

- **Define the goals, but not the pathways** how to reach these to truly enable innovation.

Policy makers should define these goals but leave choice of the pathways to them open to the stakeholders to encourage innovation, flexibility, and evidence-based confirmation. In this way pathways can compete as they are neither preferred nor excluded and combining the advantages of different approaches can be encouraged. Through this approach, policy makers will be able to

mobilize the European research community and all interested actors in research and innovation to achieve the targets set out in the EU Green Deal and in the UN Sustainable Development Goals.

- **Add funds from other programmes for actions transferred from these** – e.g. CAP, communication... [there is only one research programme].
To compensate for previously added activities / tasks to the EU Framework programmes Horizon 2020 and Horizon Europe. Examples are activities from Common Agricultural Policies, communication etc. In addition, for future addition of tasks / activities always transfer resources from other programmes to finance these to avoid reducing de facto the funds available for research.
- **Increase trust in and flexibility for beneficiaries.**
By further increasing trust in beneficiaries, the administrative burden could be substantially reduced, and the impact of the projects increased: give more flexibility to beneficiaries in **shifting funds within one project** (currently limited to 10%) as long as the goals are achieved or even more could be achieved:
 - shifting their own funds without limit between Work Packages and between categories (e.g. between 'Personnel cost' and 'Other Direct Cost')
 - shifting funds between partners up to 20% based on approval by the project coordinator.In addition, increasing trust in beneficiaries can ease the reporting burden by replacing monthly signed timesheets by one page per reporting period that is signed by all people that worked on that project in that period. This could be further eased by a **flat rate agreement / extending lump sum calls**.
- **Further simplify proposal / project / reporting to no longer need consultancies to succeed.**
The complexity of HE proposal applications and project reporting drives many or most applicants to employ consulting firms for these tasks, draining money from science itself and restricting the coordinating institutions to large, relatively affluent ones. Given that much of the paperwork becomes boilerplate used to tick the boxes, greater resource efficiency would be obtained from simplifying the entire process.
- **Strategic investment in crucial R&I areas** –
e.g. Critical mass support for **Plant biology and crop improvement / adaptation** to address the challenges above (Q1) – include all approaches: comprehensive approaches from all branches of basic plant biology, ranging from molecular and genomic to cellular, developmental, physiological, and systems, to deliver novel crop varieties (crop improvement and plant breeding) adapted to climate change and contributing to Food and Nutritional Security, environmental sustainability, biodiversity (natural and cultivated) and human health. This will enable the shift from reliance on 'elite varieties under optimal conditions' to 'nutritious and resilient varieties under a range of constraints' (environment, climate, input, processing, consumer demands).

Other comments:

- **Consult European academic associations** for research strategy and policy development.
To date the Commission consults scientists mainly directly or through Member States, whereas other stakeholders, such as NGOs and farmers, are consulted both, directly / through Member States and through their European level organisations. We strongly recommend applying the same practice to scientists and thus consulting scientists in addition through their European associations, which can be reached directly or through the Initiative for Science in Europe (ISE) and the League of European Research Universities (LERU). This will add to individual expertise a broader, well balanced, reflection from the entire science community from the respective discipline (medical, animal, plant science; physics, mathematics, chemistry, social sciences ..).

This is crucial for identifying strategies and funding priorities, but equally important for High-Level Advisory Groups, Stakeholder Groups and governance structures for European Innovation Partnerships (EIPs) and Public-Private Partnerships (PPPs).

Similarly, *in Commission consultations*, there is a category for company associations and for NGOs, but no category yet for academic associations, this should be added in future to truly reflect their status – currently they have to be ‘academic/research institution’ or ‘other’. In consequence, to state the organisation size, to the choice of ‘number of employees’, a choice in ‘members represented’ should be added, as an association with 1-5 employees could well represent many thousands of people.

- **Plant research infrastructure:**

Large research infrastructures for plant research and plant breeding are needed to tackle the major challenges described under question 1. One example is the EMPHASIS – “The European Infrastructure for Multi-Scale Plant Phenotyping and Simulation for Food Security in a Changing Climate”. EMPHASIS is in the Implementation Phase under Horizon Europe, progressing towards becoming an ERIC (European Research Infrastructure Consortium). Support for infrastructures both at EU and national levels are crucial for delivering innovations from basic and applied plant research. As an example, EMPHASIS is an essential endeavour for analysing genotype performance and exploring the diversity of crop traits across challenging environments and renewed agricultural practices.

- **Balance small scale and large-scale projects:**

According to the goal to be achieved, a comprehensive approach to address several challenges in one species (see Q1) is better addressed by larger scale, whereas a specific question can be addressed in a smaller scale approach.

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Based on the discussion at the EPSO General Assembly in Oeiras, 11.6.2024 and previous EPSO and ISE position papers on HE and FP10:

- EPSO: [Contributions from plant research & innovation on the past, present & future of the European Research & Innovation Framework Programmes 2014-2027](#), 21.2.2023
- [EPSO welcomes the European Commission’s Horizon Europe Strategic Plan 2025-27](#), 29.3.2024
- EPSO [feedback to the European Commission Horizon Europe Work Programme 2025](#): Need to catch up with the Strategic Plan, 29.5.2024
- ISE main recommendations on Horizon Europe and towards FP10, 26.10.2023 [Link](#)
- [ISE position on Horizon Europe](#), 12.7.2021

About EPSO

EPSO, the European Plant Science Organisation, is an independent academic organisation that represents around 200 research institutes, departments and universities from 31 countries, mainly from Europe, and 2.700 individuals Personal Members, representing over 26 000 people working in plant science. EPSO’s mission is to improve the impact and visibility of plant science in Europe, to provide authoritative source of independent information on plant science including science advice to policy, and to promote training of plant scientists to meet the 21st century challenges in breeding, agriculture, horticulture, forestry, plant ecology and sectors related to plant science. <https://epsoweb.org> | EU Transparency Register Number 38511867304-09.