

Suggested Partnerships under Horizon Europe 2028–2034

A proposal for large-scale, stage-gated climate research and innovation | By Glenn Weinreb

Prepared for the European Commission consultation on European Partnerships under Horizon Europe 2028–2034

Recommendation

Europe should consider a large-scale Climate Research and Innovation Partnership focused on improving the technical and economic options available for managing climate risk. Rather than pre-selecting one technology, the partnership would support a portfolio of high-impact R&D programs across low-cost clean energy, carbon dioxide removal (CDR), climate modeling and decision-making, and solar radiation management (SRM) research.

The objective would be to create a mechanism capable of designing, testing, comparing, and—when evidence supports it—scaling large climate R&D programs. Initial analytical and design phases would be relatively inexpensive. Larger experimental, prototype, and engineering phases would proceed only after independent review and stage-gate decisions.

This approach is consistent with the purpose of European Partnerships: pooling European Union, Member State/Associated Country, industry, research, and other resources to address challenges that no single actor can tackle effectively alone.

Why this is needed

Climate strategy involves difficult tradeoffs among cost, scale, timing, uncertainty, and risk. Deep decarbonization requires enormous infrastructure investment; atmospheric carbon removal may be needed at very large scale; and SRM, if it is ever considered, would require extensive scientific, engineering, governance, and field research before any larger-scale decision could be responsibly made.

A portfolio approach helps Europe avoid betting on a single pathway. It can improve multiple options in parallel, compare them using common assumptions, and stop or redirect programs when evidence does not justify further investment.

- Lower the cost of clean energy and industrial decarbonization.
- Develop credible cost and scale estimates for CDR.
- Improve climate models and decision tools used to compare alternative strategies.
- Investigate SRM scientifically and experimentally, without presuming deployment.
- Use open data, independent review, safety controls, and explicit stage gates.

Proposed structure

1. A tripartite European partnership. The core structure could bring together the EU, Member States/Associated Countries, and industry, with research-performing organizations and, where useful, foundations or other public-interest funders. This matches the Commission's proposed direction for Horizon Europe 2028–2034, under which European Partnerships are expected to be tripartite by default.

2. Several focused program areas under one strategic framework. The partnership should be broad enough to compare different climate pathways, while individual work programs remain technically focused and independently managed.

Program area	Illustrative focus
Low-cost clean energy	Nuclear construction automation; nuclear-powered industrial processing; economic fusion and other scalable clean-energy technologies (LINK).
Carbon dioxide removal	Engineering, regional resource databases, cost models, marginal-cost curves, and large-scale removal pathways (LINK).
Climate decision-making	Improved GCMs, CDR models, integrated strategy analysis, and transparent online decision tools (LINK).
Sunlight-reflection research	SAI and MCB experiments, equipment, atmospheric measurements, safety analysis, monitoring, and governance research (LINK).

3. Stage-gated funding. Programs would begin with analysis, design, modeling, standards development, and small-scale experiments. More expensive prototypes or field programs would require independent technical review and explicit evidence that the next stage is justified.

4. Competition and multiple performers. The partnership should not assume that one institution performs all work. Research centers, universities, national laboratories, companies, and multinational consortia could compete for defined work packages.

5. Open-source outputs and common evaluation tools. Where security, commercial confidentiality, and research ethics permit, models, data, assumptions, and program architectures should be published so independent teams can reproduce results and propose alternatives.

6. Link research to industrialization and investment. For technologies that pass technical and economic stage gates, later phases should connect R&D with industrial demonstration, supply chains, standards, and scale-up financing. This is consistent with the Commission's stated goal of supporting the full innovation-to-investment journey.

Open-source reference architecture

An existing open-source “Climate Moonshot” Portfolio can serve as one possible starting point for discussion—not as a fixed program for Europe to adopt unchanged. European scientists, engineers, companies, research institutions, Member States, and the Commission should be free to add, delete, combine, redesign, or re-budget every element.

The portfolio is available at <https://www.aplantosavetheplanet.org/cmp>

The current reference architecture includes:

- A \$1M climate moonshot design effort to develop detailed billion-dollar-scale R&D proposals ([PDF](#)).
- Proposal to establish a new Large-Scale Energy Research Center. This would develop machines that automate nuclear power plant site construction and develop techniques for driving industrial processes directly with heat from a nuclear reactor ([PDF](#)).
- Proposal to establish a new Climate Decision-Making Research Center. This would develop a Climate Solution Website, improve global climate models, and improve CDR cost models ([PDF](#)).
- Billion-dollar-scale open-source reference proposals to: automate nuclear power construction ([PDF](#)), drive chemical processes with nuclear heat ([PDF](#)), develop economic fusion ([PDF](#)), improve GCM and CDR models ([PDF](#)), conduct SAI experiments ([PDF](#)), develop SAI equipment ([PDF](#)), conduct MCB experiments ([PDF](#)), and develop MCB equipment ([PDF](#)).
- Illustrative 15-year plans for SAI ([PDF](#)) and MCB ([PDF](#))
- Common framework ([PDF](#)) covering governance, procurement, open data, independent review, safety, stage gates, and stop-work authority.

Suggested use in Horizon Europe 2028–2034. The portfolio could be treated as a reference architecture to be independently reviewed by European experts. The purpose of the review would be to identify missing areas, remove weak elements, develop competing technical approaches, revise budgets and timelines, and produce a European R&D roadmap suitable for partnership funding.

The central proposal is therefore not that Europe fund the current portfolio as written. It is that Europe create a partnership mechanism capable of systematically designing and funding large-scale climate R&D programs when the expected value of better technology, better information, or lower climate risk justifies the investment.

Author: Glenn Weinreb — [Biography](#) and [Contact](#)