

Partnership for European Environmental Research (PEER)

Innovative environmental research for a changing society

PEER Position Paper on FP8

The Partnership for European Environmental Research (PEER)¹ wishes to contribute to the ongoing discussion on FP8. In formulating its views on issues that should be addressed in FP8, PEER has reflected on the successes and obstacles of previous framework programmes and carried out an internal foresight analysis of future challenges that strategic research should address.²

Strategic research should tackle grand challenges

The task to guarantee sound societal and economic development without compromising the environmental prospects for future generations has turned out to be extremely difficult. Radical innovations are called for to fundamentally transform the eco-social system that humanity maintains and depends on. The grand challenges of water security, energy security, food security, social wellbeing and a prosperous economy all have major environmental components that are driven by climate change, demographic development, resource depletion, natural hazards and loss of ecosystem services. Research so far may have successfully solved specific problems but has not yet been able to provide adequate solutions to deal with the links and feedbacks between the different challenges or the negative side effects of implementing partial solutions in disconnected policy areas.

What is needed is environmental research that focuses on the links between the grand challenges and develops approaches and methods for dealing with and adapting to risks and uncertainties. Such research deepens understanding of the interactions between social and ecological processes and creates the foundation for transformative social and technological innovations. This way research can deliver advice for different policy areas and bring them closer to one another to avoid inconsistencies, conflicting incentives and adverse side effects.

The strategy Europe 2020³ recognises that climate and resource challenges require drastic action to **introduce radical social and technological innovations throughout society**. These innovations will arise from research that explores both well known problems from new angles and makes links that have not been studied before. For example, integrated analyses of land use, food, water and energy can challenge many current assumptions about energy security and provide inspiration for new solutions. This research should also analyse the potential impact of radical innovations before they become widespread: environmental research provides insurance against serious adverse consequences.

Environmental research must have flexibility, resources, tools and data to thoroughly explore alternative scenarios to highlight the consequences of unknown factors in a globalised economy arising from a rapid spread of new products and services.

The capacity for such research cannot be developed overnight. It requires long-term investment in human resources, relevant technologies and infrastructures. The research should be based on tightly connected networks that can rapidly respond to new challenges and highlight them simultaneously from multiple angles and locations using different but connected methods and approaches.

Society and environment must be a lead theme in FP8

A resource efficient, green and competitive economy will only be developed with the support of research and technological development **that takes a broad view of the environment and the interdependencies between natural processes and societies.**

Research initiated through FP8 should not be limited to individual critical issues identified in sector-based research but has to face the complexity of interlinked challenges that arise in different policy areas. FP8 needs to contribute to a **holistic understanding of how anthropogenic activities and the environment interact.** With a broad perspective, European research can support and help connect and refine policies, develop industrial practices, and encourage the type of innovation that contributes to human wellbeing on a global scale. By taking **society and environment as a lead theme**, FP8 should also direct national partners in the European Research Area to contribute to novel solutions that are genuinely sustainable, both locally and globally.

This requires innovative solutions that:

- 1) Harness the existing thematic and sectoral models and databases for addressing integrated problems;
- 2) Engage the collective expertise of policy makers, practitioners and professionals in the development of scientifically sound options for tackling cross-cutting problems;
- 3) Implement the outcomes in the policy process;
- 4) Communicate solutions to the stakeholders and the public at large.

Research funded through FP8 should aim at providing new tools and knowledge for determining the chains of environmental impacts rather than singular effects. In this way the research can deliver results that help avoid environmental mismanagement and associated costs and adverse consequences. In particular research should provide ways to enhance the adaptive capacities of societies in Europe and in vulnerable areas outside EU. FP8 can also make a significant contribution to the Millennium Goals⁴ by contributing to the development of technologies and governance that are resilient to the deep and fundamental uncertainties which will characterise global eco-social systems for the foreseeable future.

Social and technological innovations can deliver systemic change

The Europe 2020 Flagship Initiative Innovation Union⁵ which was launched on October 6th suggests that the emergence of innovation can be accelerated by reinforcing cooperation between universities, research institutes and business, by implementing joint programming and enhancing cross-border cooperation to create added-value for the EU. PEER strongly supports this view and is prepared to contribute to this process. Integration of research activities can overcome the fragmentation that has been identified as one of the problems for Europe's research and innovation capacity.

Innovation activities should always be mainstreamed into the public and the private sectors. The effectiveness of research for technological and commercial innovations can be supported by ensuring coherence between innovation and procurement policies. Incoherent policies may stifle the development of innovations. Systematic studies of the successes and barriers of environmental innovation should be supported in FP8.

Non-commercial innovations that transform the public sector will be needed to respond efficiently to new and existing environmental challenges. In these cases the process from invention or development to a widespread application differs from that of technological innovations. FP8 should support research that contributes to adaptive policy development by supporting the analysis and evaluation of experiments with new types of environmental governance that could alter the traditional division of tasks between public and private actors.

New forms of integration to strengthen European research

The contribution of FP8 to the development of the European Research Area could be greatly enhanced by closer integration of research activities in institutes and universities across Europe. ERA-NETs have proven useful for getting better coordination of national competitive funding resources. Few instruments exist for aligning the core institutional funding of the many organisations that carry out research. This institutional funding accounts for a significant share of Europe's total research budget. New incentives for the integration of research programmes across organisations could therefore deliver cost effective outcomes. Such common programmes can effectively support and supplement the joint programming of national funding organisations.

Improved integration of research activities will deliver a more coherent set of research results from local to Europe-wide scales. When fragmented or piecemeal research is avoided the basis for policy briefs at a European level will improve. FP8 should encourage co-operation beyond the project level and provide financial instruments for this purpose. The institutes forming PEER began the process of integration by starting joint research initiatives in 2007⁶ and would be pleased to share their experiences and aspirations in this regard.

Research that contributes to societal transformation requires close co-operation between the research community and different levels within government, education, business and the civil society at large. Special incentives for new types of joint activities between research and other societal actors should be considered. The development of new forms of communication and interaction in networks should also be explicitly supported.

Greater integration of the research programmes between various leading institutes and universities can provide the catalyst to significantly foster innovation in Europe. Long-term co-operation is the way to overcome fragmentation and capitalise on Europe's great research capacity.

¹This paper is submitted by the following institutions: Alterra – Wageningen UR (The Netherlands), CEH – Natural Environment Research Council (United Kingdom), Cemagref (France), National Environmental Research Institute – Aarhus University (Denmark), SYKE - Finnish Environment Institute (Finland), Helmholtz Centre for Environmental Research - UFZ (Germany). JRC/IES did not contribute to this document.

²The contribution of PEER is based on its members' long-standing experience in conducting strategic environmental research for national governments, research councils and other central and regional public organisations, and the European Commission and international bodies. The relevance of PEER research for the private sector and 'civil society' is reflected by the fact that part of the PEER-research is carried out in public-private partnerships, or directly commissioned by private companies and NGOs. PEER members also have considerable experience from participation in the EU framework programmes for research.

³Europe 2020: A strategy for smart, sustainable and inclusive growth; and the Conclusions of the European Council 25/26 March 2010 EUCO 7/10, CO EUR 4 CONCL 1.

⁴ <http://www.un.org/millenniumgoals/>

⁵ http://www.leru.org/files/general/innovation-union-communication_en.pdf

⁶ More about PEER joint initiatives and other collaboration on the PEER website <http://www.peer.eu/>