

Call for evidence questions

The following submission of evidence has been prepared by the Centre for Ecology & Hydrology (CEH), a public sector research establishment and a wholly owned component Centre/Survey of the UK Natural Environment Research Council (NERC). CEH undertakes basic and applied research on issues related to the land surface (soil-water-vegetation-air) and human interactions with the natural environment. CEH is involved in research to deliver the solutions to some of the greatest challenges facing human kind – enabling a health economy and society while maintaining the ecosystem services upon which we depend for survival. CEH has been involved in EU research since the 1980's, and has close working relations with other European research establishments, the EC and European industry groups.

Impact on the national interest

1. Where has EU action had a **positive impact** for the UK on research, technological development, innovation or space? What evidence is there for this? Has EU action encouraged national action in any areas?

EU Research funding through the successive Framework Programmes has supported environmental change processes – both natural (land-vegetation-water-atmosphere-marine) and anthropogenic (demography – industrialisation – policy options) at European scale which otherwise would have been difficult to undertake through Member State funding alone. One specific example is invasive species where the arrival and establishment of new organisms is a crucial phase, because once they do spread it is often difficult to control invasives and certainly near impossible to eradicate them. These EU funded studies have provided the essential regional scale for research which has enabled the European research community to lead many global studies in these fields. This European leadership has strengthened the position of EU and UK policymakers in international negotiations, and EU/UK industries on global markets for sustainable, eco-innovation, low carbon solutions, etc.

Approx 90% of UK environmental policy and regulation is derived from EU policies and Directives. Engagement in the policy issues and the science to support those policies at EU level has strongly supported the development of UK specific policies, regulations and methods and tools to implementation of that legislation.

The EU has enabled UK researchers to collaborate with researchers from other member States, to test and improve numerical models with environmental datasets which would otherwise have been difficult to access. The improved movement of researchers has increased the inflow to the UK of skilled individuals from other member States, who bring with them different experiences and approaches that enhance the UK research capabilities.

The consultation paper points out how successful UK research is compared to other countries and that its research spending as a percentage GDP is lower than average among G8 countries and even within the extended EU. National research councils have failed to fund the proportion of internationally judged excellent proposals of research that they regard as reasonable (currently set at 20%). There might be areas of research that are genuinely better suited to be conducted at the European scale, but it is also true that European funding supports some of the

excellent research UK groups can provide that the UK, nationally, cannot support financially which would ultimately lead to a loss in capability

The EU has a stronger international dimension to its science policy than the UK. This is evident in the opening up the Framework Programmes to international partners, the pro-active drive to build strategic regional collaboration agreements (INCO-Net's etc), and in funding research collaborations through other DG's (DG External Affairs, DG Education, DG Development). Through EU funded research it has been possible to build international partnerships outside the EU than would otherwise have been possible.

2. Where has EU action had a **negative impact** for the UK in these fields? What evidence is there for this? Has EU action prevented potentially useful national action in any areas?

Where Research has been prescribed as an instrument of regional policy, the pressure to include partners from less favoured regions of the EU has resulted in the inclusion of project partners that do not have the capacity to delivery at a sufficiently high level to enable high level research to be undertaken. In FP where this policy has prevailed, the EC's priority has been to build "Community" rather than to do "Research". The incentives over the past twenty years to include partners from less favoured regions of the EU has resulted in overall improvement of research capacity in those countries, AND the emergence of some very high quality individuals and group while institutions remain weak.

To some extent the EU programmes have curtailed collaboration between the most competent European research institutions who would probably work more productively if there were stronger mechanisms to support bi-lateral or tri-lateral collaborations.

3. How and where has UK engagement with partner countries or international bodies, both within and outside the EU, been helped or hindered by EU involvement?

The EU has funded global environmental research in concert with Member State programmes, and programmes funded by the USA. For example the African Monsoon Multidisciplinary Analysis (AMMA) had UK, French, EU and US funded components, but shared facilities and coordinated data collection exercises.

EU has considerably (potentially) greater leverage than the UK in discussions with the USA, Japan, India, Russia etc. This apparent increased leverage can however be compromised by limitations on the EC's capacity to commit to long term strategic research, and support actions to follow-up / embed collaboration between researchers funded by FP's / H2020 and achieve greater benefits from collaboration.

EU funded research (FP2-7) has been instrumental in building a cohesive community of European climate change researchers. Outputs from the resulting collaborative actions have strengthened the EU position in forum such as the IPCC and UNFCCC. Similarly, EU funded research for EU scale studies on biodiversity, water and air quality have strengthen the role and of European researcher in large international programmes, and build an awareness of European capacities to develop policies, formulate effective regulations and to manage these resources.

4. What benefits or difficulties has the objective of a European research area (ERA)²⁵ delivered for the UK?

The greater access to European research and mobility for EU researchers has made a significant contribution to CEH efforts to transform itself from one which was in danger of being a parochial British institution, to one which is both European and more widely international in its science perspective. This has been achieved by encouraging British researchers to participate in EU FP's, and encouraging incoming researchers from other EU Member States to work at CEH.

While the efforts by the EU to drive industrial growth and increased competitiveness of European industries on global markets through mechanisms such as the Technology Platforms has had a catalytic, optimisation of UK participation by coordinated Public-Private partnerships has been lacking. This is a problem of the UK's capacity to engage with an ERA process.

A second benefit must lie in the opportunity for the UK to spend on research issues that are best addressed at a pan-European scale, but that affect the UK in particular. By combining funds with EU partners the UK gets access to research resources outside its boundaries, which in environmental research might be field sites to measure for instance gradients for which the UK is geographically too small (climate, habitat ranges, ranges in diversity, etc.). One example to illustrate the benefit might be the BiodivERsA network and the call for international research on biodiversity research in 2008. The call funded 12 projects at true European scales and all but one, if not all, had an UK partner in the consortium. The difficulty lies in the way the funding is structured where national governments make funds available and those are expected to fund all the groups from that country taking part in any of the consortia, and if any country withdraws that country's research base cannot contribute. A better approach maybe to have single pool of available resource.

5. How has the EU sought to coordinate the policy instruments at its disposal across different policy areas to create an enabling environment for researchers and innovators? How successful has this been?

The second largest funding theme of DG Regional Policy in 2007-2013 has been Research, Development and Innovation (approx €65bn). This compares to €50bn for FP7 over the same period. DG REGIO's Cohesion funds have been disbursed to the less favoured regions of the EU with the objective of promoting innovation, increasing economic growth and levelling economic conditions across the EU. However, most of the EU's pre-eminent research centres are NOT located in less favoured regions and are largely ineligible for DG REGIO funding. It is questionable whether this proportion of RD&I funding into research poor areas of the EU will deliver the breakthroughs that historically have come from the EU's pre-eminent research centres. Changes in rules applying to eligibility for Structural funds in 2014-2020 may go some way towards redressing this problem. The focus of DG REGIO's spend on RD&I have been misaligned with the increased emphasis in FP7 on high quality research – eg through the ERC.

The EU's efforts to improve policy coherence between the areas of the environment, climate, agriculture, energy, transport, etc have made some improvements in the ability to formulate and deliver more integrated research and solutions. However, there is still a considerable way to go – with a need to improve coordination and collaboration mechanisms between the respective DG's (Environment, Agriculture, etc) and between them and DG Research and Innovation.

With the current drive to facilitate economic recovery, and the resulting emphasis upon involvement of industry and SME's, there will be challenges in aligning growth objectives with the need to deliver science for to inform policy and regulation.

Future opportunities and challenges

6. What could the EU most helpfully do to promote scientific and technological progress and innovation (including in the space sector)?

The emergence of the ERC and emphasis on excellent science is welcome.

Where the EC funds applied research in support of specific policy or industrial needs there is a need for improvement in the way both the ERC and the applied research are put into use. This requires different types of mechanisms – for the ERC new players are needed to support faster impact from blue skies science. This should not be left to follow-up funds for ERC Fellows.

For applied research – greater emphasis is needed in structured long term partnerships between users (policymakers and/or industry) and the research community. These partnerships need to take a long term approach

- How could the EU use its existing competence differently to deliver more in your area?

Widening the types of actions that ERA-nets and JPI's can undertake – apart from joint Calls for projects, there needs to be more workshop type actions to share information about MS programmes, and discuss alignment/ synergies – and to have the instruments available to promote those synergies - eg joint conferences, publications on research between programmes funded by different Member States

- How might a greater or lesser degree of EU competence deliver more in your area?

The principle of subsidiarity applies well in the area of research, innovation and demonstration. EU competence should be maintained in areas where there is a need for actions at European scale – both to assess continental scale Earth system processes, issues of trans-boundary interest (pollution, invasive species, health, natural hazards, and economic production, etc) or in increasing uptake of and impact from research by industries across the European market.

- How could improvements to existing EU activities make them more effective and efficient?

The narrow range of types of FP instruments that are currently available to the Commission are a considerable barrier to more effective working by the EC. These result in short term project funding for coordination and support activities that should be funded over longer periods of time. These longer term services are delivered to other DG's through renewable, open tender framework contracts.

EU international cooperation actions (eg with Japan, USA) need to go beyond high level discussions or meetings that merely present research being done by the EU and other industrialised countries. The EU's S&T cooperation agreements need to be supported by practical working between active researchers where details can be discussed and alignment of research activities can be agreed. There also needs to be better coordinate funding judgements e.g. for joint EU/US research projects there should be one review to avoid the double jeopardy of separate reviews in separate countries with different results leading to the failure of the project.

The current actions funded by the EU to close the gap between science and users (policymakers or industry) need to be significantly improved.

7. Where might future EU level action be detrimental to your work in this area?

Actions which increase administrative complexity would be detrimental to CEH's interests. Compared to some Member States, the UK science based enjoys considerable support from government. The compulsory opening up of UK funds to EU research organisations, particularly if there are political pressures to hand funding to non-UK bodies, would not be welcome.

8. Where might action at national rather than EU level be more appropriate / effective?

Fundamental research is an area that often involves a proof of concept and is tied less to particular set of conditions "on the ground". National governments should emphasise support in this area, allowing it to benefit first from fundamentally new insights, new drugs, technologies, etc. The EU has increased its involvement in this area with the ERC programs. While the budgets and grants in these schemes are very well funded, in terms of the number of individuals the schemes supports the programs are still small. The schemes do allow cross disciplinary and serendipity across national borders..

Where local or regional issues are subject of applied research, national bodies should clearly be better suited than the EU. At what scale European involvement would benefit an issue should be decided on a case by case basis. A bilateral effort on an issue concerning two nation states should in most cases be more effective than a European action that would dilute the focus of a local issue.

9. How could EU and national policies and funding streams interact better?

Current JPI's are driven to focus upon joint Calls – there is scope for this instrument to be used to build better communication between respective MS and EU research funding institutions. The objective of better communication is to facilitate better alignment of activities, and increasing impact. This communication should be arranged around major challenges – and not by partnering specific research funding bodies from each Member State (a particular problem in the UK). Better communication should lead to forms of coordination between researchers from MS

funded programmes/projects. The role of the EU should be to fund the improved communication, coordination and collaboration between MS research programmes.

10. What impact would any future enlargement of the EU have on this area of competence?

The danger will be being driven by political imperatives to work with partners from much less scientifically skilled/resourced countries. Efforts to raise the RD&I capacities of low GDP countries need be more carefully focussed on:

- 1) Using appropriate instruments – DG REGIO funds where the objective is to build from a very low base, rather than to deliver the best science to support EU environmental policy
- 2) Improving background skills in sectors relevant to specific industrial sectors / policy challenges for those new MS's;
- 3) Skills / geographical factors that will lead to unique capabilities in these new MS's.

11. Are there any other points you wish to make which are not captured above?

²⁵ http://ec.europa.eu/euraxess/pdf/research_policies/era-communication_en.pdf