

# Working across boundaries

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With the Chancellor's Budget statement in March, government published its *Next Steps*\* document, proposing a number of measures to create the right 'ecosystem' for science and innovation in the UK, including some significant changes in the way research councils operate. *Next Steps* notes the continuing critical importance of interdisciplinary research: 'Some of the most interesting scientific advances occur at the intersection of disciplines ...'

NERC's scientific community can justifiably claim to be trail-blazers for interdisciplinary approaches. Our mission is to address critical environmental science problems, and this has long required interdisciplinary working. Most environmental scientists have been trained in the basic sciences—physics, chemistry and biology—and in mathematics. They often then transfer, at postgraduate level, to fields within environmental science, for example atmospheric, marine, geological, ecological and hydrological science. Each of these fields requires input from the basic sciences and mathematics. Finally, many of the cutting edge scientific problems in environmental science bring together these specialist fields to address challenges in—for example—climate change, natural hazards, natural resources and biodiversity.

Recognising that the environmental problems that face society are pervasive and require a holistic approach, the social, political and economic sciences and engineering are becoming increasingly involved. Therefore our definition of interdisciplinarity for environmental science extends perforce across all the research councils and beyond. All of this means that we need to redouble our efforts to work together effectively.

NERC has developed a number of exciting and innovative approaches to interdisciplinary working, because we know that this is not always an easy thing to do. In a number of our collaborative centres we have set an agenda for close coordination and leadership to enhance collaboration. For example, the National Centres for Atmospheric Science, the new National Centre for Earth Observation and the proposed Oceans 2025 ([www.oceans2025.org](http://www.oceans2025.org)) each draw under one umbrella science communities that used to be organised to bring out their differences rather than their commonality.

In programmes such as Quantifying and Understanding the Earth System and in the Tyndall Centre (page 20) strong linkages with, for example, social

sciences and policy-makers are built into the programme design. NERC's own research centres are increasingly seeing the benefit of devoting budgets to joint funding schemes with universities – in Antarctic science, geology, marine science and ecology. And we are strongly encouraging this approach.

This diverse range of mechanisms to drive interdisciplinary research within NERC is complemented by various initiatives to work with others outside NERC. A new supercomputing partnership is emerging between NERC, the Engineering and Physical Sciences Research Council and the Met Office, recognising the vital role of advances in information technology and computing power in understanding climate change and other complex areas of environmental science.

The Environment Research Funders' Forum, ERFF, ([www.erff.org.uk](http://www.erff.org.uk)) brings together the UK's major public sector sponsors of environmental science, to make sure that funding for UK environmental sciences is both coherent and effective. ERFF concentrates on activities that clearly add value, could not be done by a single member acting alone, and have the potential to advance environmental research in the UK and internationally. In addition, Research Councils UK brings the research councils together to develop common services and approaches such as a common system for grant applications, a single shared services centre, and our recent joint science in society strategy (page 29).

Announcing its 2007 comprehensive spending review\*\*, the government also noted that the major challenges facing the UK (including environmental change and natural resources) could only be addressed by joining up activities: 'These changes will have fundamental and far-reaching implications for public services and will require innovative policy responses, co-ordination of activity across Departmental boundaries and sustained investment in key areas.' NERC is discussing with Defra and other potential partners how best to respond to this challenge.

Interdisciplinary science is core business for NERC and it is now being widely recognised as both critically important and difficult to carry out. I believe that NERC can lead the way by the example of its past approaches and by new initiatives to come.

\*Science and Innovation Investment Framework 2004-2014: Next Steps, [www.hm-treasury.gov.uk/media/1E1/5E/bud06\\_science\\_332.pdf](http://www.hm-treasury.gov.uk/media/1E1/5E/bud06_science_332.pdf)

\*\*Comprehensive spending review 2007, [www.hm-treasury.gov.uk/newsroom\\_and\\_speeches/press/2005/press\\_65\\_05.cfm](http://www.hm-treasury.gov.uk/newsroom_and_speeches/press/2005/press_65_05.cfm)