

Nurse Review of Research Councils: Call for Evidence

Response Form

Please state whether you are responding as an individual, or on behalf of an organisation:

This response is provided on behalf of the Society of Biology.

Please write here your name/ the name of your organisation and contact details. This would help us to contact you if we have further questions.

Laura Bellingan (laurabellingan@societyofbiology.org or policy@societyofbiology.org)

Please provide evidence and views in relation to the following themes:

1. Strategic decision-making

Decision-making and communication

1. Well-informed and well-balanced strategy is necessary to make the UK the best research base in the world. The Research Councils (RCs) must be very effectively connected to the researcher base as well as to government, business and publics to ensure the optimum feed in of information, views, priorities and needs, as well as optimum outward communication of process, opportunity and commitment, to nurture and enable a vibrant research community.
2. Engaged and informed researcher communities, government, business and publics can foster development and help ensure that public funding is delivering against needs and with support.
3. Concern has been expressed by some members that small groups greatly influence strategy, or that existing investment attracts further, effectively constraining potential innovation. At the very least this means that improved communication is needed. Diverse perspectives and options should be considered in the identification and selection of strategic priorities, this warrants attention so that the academic community and stakeholders can be assured of a robust process; of how they can become involved in it; and of the outcomes. We know that transparency and engagement are important to RCs so they should be in a position to offer assurance that systems are robust and open.
4. Balances between fundamental and applied research and between capital and resource funding are critical. There is an urgent need to address infrastructure modernisation across a range of scales; modern infrastructure both attracts skilled researchers and enables skills development and use.
5. Strategic decisions should recognise the inherent value of speculative and fundamental research; the transformative potential of innovation; the need to support areas of vulnerable skills and expertise; the importance of deriving full value from past strategic priorities in terms of developed infrastructure and the supporting skills base.
6. Decision-making should recognise that when narrow areas of critical mass develop within institutions the risk associated with future funding failure can be difficult to manage and this can crowd out innovation but this must be managed against the need to consolidate and embed long-term expertise and stability in key areas.
7. Early Career Researchers (ECR) need support and resource to develop. Often, access to laboratory space is more achievable in less research intensive settings but access to funding opportunities is essential if nascent talent is to be nurtured. Appropriate incentive schemes could be considered.
8. Vigilance in identifying skills shortages and in building capacity remains important. Expertise is important for the research environment and also for government and

business to be 'intelligent customers' in investment, regulation and procurement. RCs can play a valuable role in developing experts.

9. Innovation thrives on diversity of people and ideas. Large pharmaceutical companies source a significant proportion of innovative research from small start-ups. In the developing model of drug discovery, the total programme can now involve input from a range of small specialist biotechnology and academic-related units. Both support for collaboration and support for specialisms is important.
10. Overall RC-funded research outputs should help to deliver public good objectives including innovative solutions for identified needs. Business and government are also increasingly likely to try to interact with researchers with the development of initiatives for this including Gateway to Research, SBRI, Catapults, and HEIF all in the mix.
11. Established researcher community understanding of the Haldane principle remains important to them regarding the research portfolio the direction of funding decisions. For many this was well expressed by David Willetts when as a Minister he said that "[P]rioritisation of an individual research council's spending within its allocation is not a decision for Ministers."

Regional balance

12. Allocation of funds should be based on peer review and unimpeachable quality of proposed research, on relevance and societal need, not according to region or geography. The UK is a relatively small, densely populated territory, and although care should be taken to ensure that research is not over-focussed in specific regions, geography should not be the only determining factor for the distribution of capital or research funding. Inevitably, place has an influence in terms of access to networks of expertise and resource but care must be taken to ensure that this influence does not preclude the emergence of new centres of excellence in established fields, or the emergence of novel ones.
13. Existing concentrations of resource and expertise such as the golden triangle, the new northern powerhouse and Scotland for example, win significantly more funding than per capita. This can bring advantages of scale but this must be managed with a long-term aim of ensuring that funding is accessible to all good applications.

The local and national economic impact of applied research

14. Economic impact has been a focus of attention in relation to the REF. We are pleased to see increasing importance given to avoided costs and non-fiscal benefits of research to society, health, wellbeing and environment within economic impact discussions by all sectors. This should be encouraged.
15. World class application of research should be considered as a beneficial aim alongside world class generation of research and knowledge.
16. Recipients of RC grants are more likely than others to have research applied in an area of commercial interest.¹ They are among the most outward facing in activity and engagement, bringing additional impact both locally and nationally.² The UK's scientific capacity is a determining factor in its achieving a high proportion of externally funded R&D.³ Mechanisms that encourage and support this must be continued. Pathways to impact should include engagement with regional stakeholders, policy makers, and publics; some RCs already do this.
17. The role of the RCs in proposed Smart Specialisation platforms should be considered.
18. A concentration on international excellence as the highest accolade in assessments

¹ [The Economic Significance of the UK Science Base. A Report for the Campaign for Science and Engineering \(2014\) Jonathan Haskel, Alan Hughes and Elif Bascavusoglu-Moreau](#)

² Hughes, A., Kitson, M., Bullock, A. and Milner, I. (2013) The Dual Funding Structure for Research in the UK: Research Council and Funding Council Allocation Methods and the Pathways to Impact of UK Academics, A Report from the Centre for Business Research and the UK-IRC for the Department for Business, Innovation and Skills.

³ *ibid*

such as REF is not always encouraging of local impact and engagement. Impact of university research teams, on local industry should be encouraged. CASE studentships remain popular as a local and enabling mechanism to upskill and reward research.

19. Applied research relies on existing fundamental knowledge, understanding or techniques. New knowledge can provide genuinely novel approaches and solutions. Explicitly encouraging fundamental research within impact directed research programmes could be considered.
20. Application of the knowledge derived from long-term monitoring and cumulative data often has huge impact and relevance although it may be outwith the standard view of innovative approaches and contemporary science. The UK's exceptionally long history of environmental observation and experimentation provides a unique source of applicable knowledge. Care should be taken to preserve this potential. The RCs should have a view on national capability for collections and monitoring.

Individuals, teams and infrastructure

21. The need for either individual or team funding is project specific and applicants should propose whether individuals or teams are appropriate. The excellence of the science, rather than whether it is achieved by an individual or team should determine. Fellowship and investigator awards are key developers of the expert researcher community and have proven value.
22. Funding for large equipment is unavailable to some researchers and shared resource, possibly between institutions and others is needed in some areas. Pressure on funds for maintenance of, and contact time with, large pieces of core equipment (shared or not) is increasingly common. The emergence of research consortia and training partnerships has partly been a response to resource constraints and to improve competitive success. Funding initiatives must be flexible enough to encourage and maintain efficient approaches.
23. Spending should support resource sharing and collaboration to ensure good value for money. There are good examples of this within the scientific community that serve to promote interaction between the sectors.
24. Internationally competitive science requires high specification equipment. We have commented on this previously.⁴
25. A mixed portfolio of investment is required, supporting local to international infrastructure, sustaining a diversity of projects and accessible to the breadth of the scientific community. The renewal of existing equipment and facilities (including buildings) is as important as investment in new facilities and technology. Decommissioning costs of high containment or hazard facilities may need to be budgeted.
26. The allocation of project funding should be led by the scientific community in the first instance and not political priorities, in line with the Haldane principle; Government backing for priority themes is a key component of this. It is important that the process is based on peer review, research priorities, scientific and established need as well impact and economic pull. Large project funding should be prioritised according to research excellence, likely impact, accessibility and sustainability.
27. We welcome the recent upturn in capital funding for science. Capital investment must be supported by funding for resources, training and research activity, this is essential to achieve full benefit. Operation, maintenance and decommissioning costs should be available to support existing in-demand infrastructure and should be incorporated into plans for new facilities and equipment.
28. Ensuring a proper balance of capital and resource funding is essential. Resource funding associated with capital must not disproportionately call on resource budgets in RCs because this would not be tensioned across disciplines or institutions that are not capital-

intensive and therefore not ensure the best outcome. This particularly concern arises in areas such as ecology that have low, or rare capital requirements and therefore are liable to lose out if large capital investments in engineering, biomedicine etc. are preferred for matched resource support.

29. Targeted schemes notwithstanding, it is important that funding mechanisms are not or do not become overly biased towards established scientists and long-running track records to the extent that new talent is effectively dissuaded.

2. Collaborations and partnerships

30. Collaborations should add value and be a means to advance, rather than an end in themselves. They must be genuine, and will achieve most when they are motivated by science and ambition rather than being strategic and solely to gain competitive advantage for funding purposes – the latter is a recognised driver of initial collaborative engagement.
31. Collaboration is important in the face of tighter budgetary limits, and as the need to compete with emerging nations increases. This drive must be managed and monitored; collaboration to remove competition may not always be in the best interests of the science outcomes overall and can negatively influence diversity.
32. Competition can drive innovation, but so can good collaboration. The RCs should engage with the planning exercise for the next REF (or equivalent) to ensure that collaboration within universities and within units of assessment (UoA) can be properly rewarded.
33. RCs should consider how to enhance the ease with which international collaborations can be funded; and they could further enhance joint funding initiatives, e.g. with council equivalents in a range of countries as appropriate to the science challenges and opportunities.
34. RCs could better enable the mobility of researchers across institutes – for example by advocating assessment systems that allow for excellence and skills to be noted (not only by publishing record), this is particularly relevant for more applied research (e.g. forestry) and the recruitment of researchers into specialist research areas.
35. The FLIP scheme run by BBSRC has been well received as it also encourages exchange between academic and non-academic institutions. FLIP grants may be easier to get than standard grants however, so failed standard research grants may often be rebranded as FLIPs and this gaming approach is less welcome.
36. One important arena for collaboration is translation of research findings into improved patient care. Whilst some universities are ideally placed next to hospitals, with shared staff and resource, true understanding of effective mechanisms to fully tap opportunities is still developing. In particular different priorities between institutions can hinder the fluidity of the research links and outcomes. Whilst there are examples of excellent interactions, it is common to hear of communication/management problems that limit development of excellence elsewhere.

Innovate UK, other funders and Government Department R&D

37. Collaborations between RCs and Innovate UK can bring strategic and material benefit – see our response to the Dowling Review.⁵ There are many good examples of RC funded research collaborations with Innovate UK and wider industry, this is to be encouraged.

⁵ Industry members tell us that the UK's many mechanisms that foster collaborative research between academia and industry (i.e. the aforementioned CASE Studentships, Industrial Partnership Awards (IPA), LINK, and Innovate UK competitions for example), make the UK stand out as a place to invest in R&D by allowing a combination of

38. Research undertaken by Departments may be to answer specific questions for policy, implementation or procurement purposes; this is different to research routinely receiving RC funding. Good communication between RCs and Departments could manage this but this is not necessarily guaranteed by experience. The solution to any perceived problem of lack of connectedness could be addressed by mechanisms other than opening up the availability of the funding pool but by enhanced communication between all these groupings delivering public good outcomes with public money
39. The identification of research priorities and vulnerabilities occurs at different time scales for the researcher community as opposed to departments. For example, researchers were concerned about underfunding and vulnerability in pollinator research long before any departmental momentum developed.
40. NERC do not fund research where there is an existing government research institute operating (as for some Forest Research activities).
The number of RC-funded research institutes has decreased and we note their absence from questions here. A review could debate whether the UK would benefit from something equivalent to the highly successful Max Planck institutes in Germany. RC's provision of matched funding for EU research has been a great success and pan-European research should continue to be promoted as it brings great benefits both to UK research institutes and EU research generally.
41. While departments are cutting activity it is important that key research does not disappear; communication with RCs could help with this. RC's could help to ensure that the science being done is excellent.
42. Departments must be suitably funded to react to emerging threats, whilst maintaining existing important programmes. It has been reported that when ash die-back (*Chalara fraxinea*) was imported from Denmark in nursery stock Forest Research and FERA needed to divert resources and close down ongoing research programmes in order to meet the need for research on a disease that was well known to be a potential threat. Crisis perception is different in science and politics.

The scope of RC funding; university sector and other actors

43. Bringing additional organisations into scope would necessarily require an agreed commensurate increase in the pot available to the RCs. In principle they could then prioritise excellent research in a variety of settings. This would need careful and agreed management.
44. Diversity in the research landscape is important and a key element of both resilience and future innovation and quality.

Interdisciplinary and cross-disciplinary research

45. Interdisciplinarity, like collaboration must not be an end in itself but present the most fruitful means to approaching a research problem.
46. Judging panels need appropriate expertise available to assess interdisciplinary research. There must be mechanisms for those best equipped to comment on the importance and quality of the research to input.
47. Interdisciplinary grant applications are frequently large, challenging to write and present a big target for reviewers.
48. Recent analysis of the REF impact case studies showed that the majority were interdisciplinary.
49. Proposal rejection by one RC on the basis that part of the work falls under the remit of another RC is reported and is potentially problematic as it may result in rejection of high

public and private funding. Expansion of these schemes, and designing and choosing further tailored initiatives might therefore help retain companies in the UK and attract new R&D-based businesses, and in the case of IPAs for instance, an expansion to fit with more applied industry interest would be welcome.

quality proposals. Having elements that fall within the remit of another council this should not be adequate justification for rejection. A mechanism whereby cross referral is easily and indeed regularly triggered should be given very serious consideration.

50. Cross disciplinary funding is commonly cited as a challenge for our members, and more cross-council initiatives are needed.

3. Balance of funding portfolio

51. Certain subject areas inevitably are cross-council. Improved cross-council working and establishing mechanisms to address this within open calls will help to ensure that overlap is not unhelpful or duplicated. There should be greater recognition that excellent research can span the boundary between RCs. Cross-Research Council programmes deserve some priority. The successful Rural Economy and Land Use (RELU) programme provides a proven and useful model for example.

52. It will be important to ensure that disciplinary divisions do not compromise the delivery of individual RC's objectives.

- On the physics/biology interface scientists draw on funds for similar or related research from either EPSRC or BBSRC.
- Synthetic biology is relevant across councils but is predominantly supported by BBSRC.
- EPSRC funds chemical engineering whereas BBSRC is responsible for funding biochemical engineering. These areas are very closely related.
- Pollinator research can fall within the remit of NERC (impacts of climate change on ecophysiology and phenology) or within BBSRC (impacts of climate change on food security).
- Healthy ageing falls in a boundary area between the MRC and BBSRC. Joint funding schemes are important. The BBSRC, MRC, ESRC have recently released a joint strategy on food and nutrition and health.
- The aims of the BBSRC strategic priority include 'soil science⁶ and agri-systems approaches;' and NERC's priority research area on 'management of land and natural resources' clearly overlap. Within an overall major research theme of 'sustainable agriculture' ensuring that differing funding sources ensures the best outcome, and not confusion, is essential. The British Ecological Society has raised this.
- There is increasing and important collaboration between scientists and social scientists.

53. Many of the current divisions are effectively porous in areas such as agriculture, health, food, water, energy and environment. In these areas a failure to support multi, inter and trans-disciplinary science because of divided responsibilities will ill-equip the sector as a whole to produce good science. Much depends on the Councils' ability to work seamlessly with each other. However some attempt to categorise is entirely appropriate and a single seamless entity covering a wide area would be unworkable and militate against the building of deep disciplinary knowledge.

54. Funding support for the biosciences is crucial for the major challenges facing the UK. Biology research and application interacts closely with all other sciences broadly defined.

4. Effective ways of working

55. Effective working across Councils and with the researcher community is essential.

56. It would be useful to communicate what systems are routinely used to evaluate RC outcomes and identify what works well and to share good practice with the rest of the

⁶ Indeed this results from merger of AFRC and SERC many years ago.

research community.

57. Funding outcomes are patchily reviewed in terms of end of grant reporting, in part due to the existing pressures on reviewers. This is not optimal.
58. Communication across the board could be improved; not just to leading groups or universities, but to the entire UK researcher network, that is essential to ensure the quality and diversity of UK research.⁷
59. RC's engagement with the researcher community is generally confined to fund and fellowship holders. Recently, BBSRC conducted a survey of their ECR (mainly post-doctoral scientists) that allowed them to establish direct contact. It was clear that this contact was highly valued by the scientists and a joint workshop that we held with BBSRC highlighted many potential opportunities for improved engagement with this group that we would support. It is clear that other RCs have a similarly remote relationship with ECRs on their funded projects. We believe this is a missed opportunity for improved working, and one where learned societies may be willing to help.
60. Improved transparency of the peer review process and panel meetings is requested. If a reviewer gives constructive feedback on how a grant can be improved, but such improvements can't be used because a re-submission is not possible, the reviewing process is dis-incentivised. The Councils should review the resubmission policy, which is harsh for those who could demonstrate amendment of the application and particularly for young researchers in specialist areas seeking to develop a track record. Project reviews should involve similar numbers of reviews, simplified forms and full journal references. Resubmission is a particular concern for plant scientists who are heavily reliant on a single major funding agency in the BBSRC with a restricted portfolio of plant science covered by NERC.⁸ A consequence is that plant scientists, unlike biomedical scientists, have very few opportunities to submit re-worked proposals elsewhere. This situation is impacted by the re-submissions policy and potentially by policies that set institutional limits. The advice and support available through constructive external peer review is a particular benefit to ECRs. NERC have recently adopted an institution-level resubmission policy as a form of [demand management](#).

5. Any other comments?

61. The UK is rightly recognised for the excellence of its science and scientists; the RCs underpin much of the internationally visible work, demonstrating a success to date in supporting this.
62. However, other nations are investing heavily in developing their R&D – RCs must continue to champion and support the capacity of the UK to be world leader in science.
63. The RCs have a vital role to play in ensuring the diversity of the UK research base – which is essential to ensure resilience and nurture innovation, and while avoiding the temptation to focus on each new emerging technology of promise supporting the bedrock activities with a track record that have contributed to our knowledge.

Biology and bioscientists interact with all of the Research Councils. The Society of Biology is a single unified voice, representing a diverse membership of individuals, learned societies and other organisations. We are committed to ensuring that we provide Government and other policy makers - including funders of biological education and research – with a distinct point of access to authoritative, independent, and evidence-based opinion, representative of the widest range of bioscience disciplines.

⁷ The Culture of Scientific Research in the UK (2014) The Nuffield Council on Bioethics
http://nuffieldbioethics.org/wp-content/uploads/Nuffield_research_culture_full_report_web.pdf

⁸ <http://www.nerc.ac.uk/funding/application/howtoapply/topics/>

The closing date for responses to this call for evidence is **Friday 17 April 2015 at 23:45**.

Please provide your response in Microsoft Word format. In order to be considered, submissions should be no longer than 3000 words.

Please email or post the completed response form to:

Email: nursereview@bis.gsi.gov.uk

Postal Address:

Nurse Review Secretariat
Research Councils Unit
5/ Victoria 1
Department for Business, Innovations and Skills
1 Victoria Street
London SW1H 0ET

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