



## About the Council for the Mathematical Sciences (CMS)

The CMS ([www.cms.ac.uk](http://www.cms.ac.uk)) was established in 2001 by the Institute of Mathematics and its Applications (IMA), the London Mathematical Society (LMS) and the Royal Statistical Society (RSS). They were joined in 2008 by the Edinburgh Mathematical Society (EMS) and the Operational Research Society (ORS). The CMS provides an authoritative and objective body that exists to develop, influence and respond to UK policy issues that affect the Mathematical Sciences in higher education and research, and therefore the UK economy and society in general.

- x The IMA is the UK's largest mathematical society, with around 5,000 members.
- x The LMS was founded in 1865 and has as its purpose the advancement, dissemination and promotion of mathematical knowledge in the UK and worldwide.
- x The RSS, T 1 0a

access to information regimes. Please see the consultation document for further information.

If you want information, including personal data, that you provide to be treated as confidential, please explain to us below why you regard the information you have provided as confidential. If we receive a request for disclosure of the information, we shall take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the department.

I want my response to be treated as confidential

Comments:

# Questions

Name of Organisation (if applicable): Council for the Mathematical Sciences

Please check the box that best describes you as a respondent to this consultation

	<b>Respondent type</b>
<input type="checkbox"/>	Alternative higher education provider (with designated courses)
<input type="checkbox"/>	Alternative higher education provider (no designated courses)
<input type="checkbox"/>	Awarding organisation
<input type="checkbox"/>	Business/Employer
<input type="checkbox"/>	Central government
<input type="checkbox"/>	Charity or social enterprise
<input type="checkbox"/>	Further Education College
<input type="checkbox"/>	Higher Education Institution
<input type="checkbox"/>	Individual (Please describe any particular relevant interest; teaching staff, student, etc.)
<input type="checkbox"/>	Legal representative
<input type="checkbox"/>	Local Government
<input type="checkbox"/>	Professional Body
<input type="checkbox"/>	Representative Body
<input type="checkbox"/>	Research Council
<input type="checkbox"/>	Trade union or staff association
<input type="checkbox"/>	Other (please describe)

## Section 1

assessment process. The available metrics are more sophisticated than when this question was considered prior to REF2014. However, the normal expectation of key metrics such as grant income and citations varies enormously across different disciplines. Hence we would strongly advocate a subject-specific approach to this, developed in consultation with subject specialists. It is important that the REF commands the respect of the research community and a one-size-fits-all approach to metrics would put this at risk. Subpanels should be transparent about which metrics if any they propose to use, and how they will be used.

2. If REF is mainly a tool to allocate QR at institutional level, what is the benefit of organising an exercise over as many Units of Assessment as in REF 2014, or in having returns linking outputs to particular investigators? Would there be advantages in reporting on some dimensions of the REF (e.g. impact and/or environment) at a more aggregate or institutional level?

Please tell us your thoughts in no more than 500 words:

There should be a single Unit of Assessment for the mathematical sciences, as in REF2014. All aspects of the assessment should be carried out at the level of the UoA rather than at the level of the institution because that is the level at which peer review expertise lies, and most research is conducted.

In REF2014, the environment scores correlated strongly with the size of the submission, as the attached set of plots makes clear. We would therefore question the need for having a qualitative assessment of research environment. Removing this element from the assessment would help alleviate the administrative burden of the REF.

## Section 2

## Section 3

### **The incentive effects of the REF shape academic behaviour, such as through the introduction of the impact criteria.**

5. How might the REF be further refined or used by Government to incentivise constructive and creative behaviours such as promoting interdisciplinary research, collaboration between universities, and/or collaboration between universities and other public or private sector bodies?

Please tell us your thoughts in no more than 500 words:

Our strongly held view is that REF should remain a means of assessing research quality to ensure a fair and efficient distribution of QR, and should not be used as a tool for incentivizing particular behaviours.

Assessing the quality of interdisciplinary research is an issue which needs to be addressed in the design of the REF and is of particular importance to the mathematical sciences in view of their exceptionally wide reach, as noted earlier. It is difficult to find peer reviewers with the appropriate expertise within any one panel, and a formal mechanism should be established for assessing research outputs explicitly flagged as inter-disciplinary.

We strongly advise the panel to consider the findings of the 2015 report *Evaluating Interdisciplinary Research: a practical guide*:

[https://www.dur.ac.uk/resources/ias/publications/StrangandMcLeish.EvaluatingInterdisciplinaryResearch.July2015\\_2.pdf](https://www.dur.ac.uk/resources/ias/publications/StrangandMcLeish.EvaluatingInterdisciplinaryResearch.July2015_2.pdf)

## Section 4

**Previous studies have focused on the costs of REF with respect to the time and resources needed for the submission and assessment processes. The Review is also interested in views and any associated evidence that the REF influences, positively or negatively, the research and career choices of individuals, or the development of academic disciplines. It is also interested in views on how it might encourage institutions to `game-exercise.**

6. In your view how does the REF process influence, positively or negatively, the choices of individual researchers and / or higher education



7. In your view how does the REF process influence the development of academic disciplines or impact upon other areas of scholarly activity relative to other factors? What changes would create or sustain positive influences in the future?

Please tell us your thoughts in no more than 500 words:

The assessment of the Environment in REF2014 in the mathematical sciences is widely regarded as having unfairly favoured large departments. There is a danger that such scoring will lead to ever greater concentration of mathematical sciences research in the UK, and consequently the most inspirational HE teaching, in a few locations, with large areas of the country short of such provision. As noted by Nurse (p.9):

Diversity should be protected in researchers, approaches and locations - recognising  
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mainstream. The best research should be funded wherever it is found .

Our suggestion to deal with this problem is that the environment part of the REF assessment be removed. As noted earlier, in REF2014 the environment scores related more to the quantity than to the quality of submitted research.

Two further points, made earlier in our return but pertinent to Question 7 and so restated here, are:

- x The difficulty of fairly assessing interdisciplinary research remains a serious problem which needs to be addressed, as the failure to do so risks driving researchers away from engaging across subject boundaries.
- x Much of the profound societal and economic impact of the mathematical sciences operates across very long time scales and through long chains of connected impacts, many of these intermediate links being through other academic sciences. The 5 ( ) ¶ definition of impact should be modified to take account of this.

## Section 5

**Much of REF focuses on the retrospective analysis of success achieved by institutions either through output or impact. Yet the resources provided anticipate continued success based on that track record. Are there means of better addressing forward-**

## Final thoughts

**The Review is keen to hear of creative ideas and insights and to be open in its approach.**

9. Are there additional issues you would like to bring to the attention of the Review?

Please tell us your thoughts in no more than 500 words:

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the research endeavour. Effective communication, dialogue and engagement with the  
SXEOLF DUH HVVHQWLDO IXQFWLRQV RI WKH 5HVHDUFK &  
about RCUK funding, the points should apply equally to QR-supported research. REF  
should therefore recognize the value and importance of those r 0 1 3 th