

Reforms to the second Research Excellence Framework

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1. The UK has a world-leading research base. It provides the foundation for new ideas and discoveries and fuels our knowledge-driven economy. In an increasingly competitive global environment, it is essential that the UK's research system supports our excellent researchers, and cultivates a culture that fosters and encourages science that is high-quality, ethical and valuable.
2. Dual support underpins the UK's world-leading research system. The Research Excellence Framework governs one of the two complementary funding streams, namely a block grant that can be used flexibly by institutions to support a sustainable high quality research environment, according to its research strategy.
3. The REF has previously been based on submission of individual researchers linked to their research outputs. The funding received depends substantially on the number of researchers submitted adjusted by the quality of the research outputs.
4. There are a number of problematic features associated with REF2014 including:
 - Higher Education Institutions (HEIs) have adopted appointment and performance management systems for individual researchers overly dominated by perceived REF output criteria, with damaging effects on the morale and careers of researchers.
 - Hiring authors just before the close of the REF window and submitting outputs which may have been produced totally at their previous institution. This creates distortions in the academic job market, prompting hiring peaks before the REF submission deadline.
 - Funding based on the number of submitted researchers incentivises appointment of researchers over support for other elements of the research environment, such as research support staff and infrastructure.
 - Research that can produce REF-able outputs within the REF cycle has been incentivised, discouraging longer-term, more exploratory, collaborative or synthetic lines of inquiry.
 - The pressure to produce research that meets a conservative definition of a 4* output has disincentivised investing time on the publication of negative or confirmatory results, or developing research resources of use to the general community, such as databases. It has also led to uncertainty regarding the wisdom of submitting outputs that might be perceived as crossing UOA boundaries.
 - The focus on submittable individuals has devalued those whose contributions are primarily collaborative, for example providing technical expertise to diverse projects.
5. While it is not possible to remove all perverse incentives, and any assessment system is likely to have some unintended consequences, the Society agrees with the Stern review that an institutionally-focused REF, where only outputs, not researchers are submitted will help address the issues listed above. In the proposals we set out in this submission, individual researchers are not submitted to the REF, a portfolio of research outputs from an institution is submitted.

A focus on the institution

6. A truly institutionally-focused REF requires a new, more holistic way of assessing the research quality of an institution. This should be based on the institution's research environment, evidenced by a portfolio of research outputs from its constituent UOAs.
7. Such a research portfolio should include outputs that meaningfully represent the quality and breadth of research carried out at that institution. The Society believes the changes in incentives this would introduce would facilitate broader aspects of what it means to be a researcher, including public engagement and outreach, policy work, translation to industry and more. An excellent research portfolio should comprise:
 - A number of outputs that is defined by a new volume-measure based on an estimated, averaged over time, headcount¹;
 - Outputs should only be submitted where the institution or UoA can demonstrate a significant part of the research was carried out by its staff. New mechanisms will be needed to allocate outputs to institutions. For example, a short statement could be required for each output evidencing this, which for many outputs could simply be "all authors in post during the REF period".
 - Research outputs that demonstrate the Institution and its UOAs' strategic approach to research, as set out in their Environment Statements.
8. When assessing the Environment section, assessment panels should satisfy themselves that the UOA and institution have evidenced in their submission their overall strategy for supporting a breadth of excellent research, including through collaborations with other UOAs and external partners and other activities such as production of new research instruments and the support of research database tools (see Annex A). The submitted outputs must demonstrate all important aspects of research activity in each of the sub-fields of research carried out at that institution.
9. Despite its administrative burden, peer review should remain at the heart of the REF. The use of metrics can however provide panels with helpful supplementary evidence on which to make their assessments. Using a broad basket of metrics to provide an institutional level context would not carry the same risks that result from a narrow use of metrics to assess the contribution of individual research outputs.
10. Using a new volume-measure and portfolio approach to assessment means there would be no need to set a maximum or minimum number of outputs per staff member, thus avoiding re-coupling outputs and individuals, with all the invidious consequences highlighted by the Stern Report, including on the equality and diversity front (see Annex B).

¹ We suggest that UOA volume measures are derived from an average number of staff engaged in research (including postdoctoral staff). New mechanisms may be required to gather, and audit, this data. There is no need for the relationship between the volume measure and the number of outputs per unit of the measure to be the same for each UoA.

Interdisciplinarity

11. Institutions should be recognised and rewarded for support provided to interdisciplinary research initiatives, which by their very nature will cross UOA boundaries. The assessment framework must provide the research community with confidence that interdisciplinary research will be judged on a level playing-field with mono-disciplinary research. Additionally, the Society recommends that Institutional Impact case-studies should include a minimum of one interdisciplinary submission, thus signalling the desirability and importance of such work in addressing today's complex challenges.
12. The Society believes an interdisciplinary panel would be more effective than appointing interdisciplinary champions on each UOA panel. An interdisciplinary panel could function in a number of ways, but however constituted, this panel must be able to call on the expertise of discipline-specific panels as necessary. The Society looks forward to HEFCE's Interdisciplinary Advisory Group's proposals, and stands ready to help develop these as necessary.

Wider system change

13. The wider higher education and research system is currently facing significant changes. These include the proposed establishment of UK Research and Innovation (UKRI) and the Office for Students (OfS) and the introduction of the Teaching Excellence Framework (TEF). This is a key opportunity to ensure different parts of the future public funding system work together. The funding councils should consider in particular how timings, processes and incentives of the new REF and TEF align, and that research-led teaching is recognised and rewarded.

About this submission

14. The Royal Society is the UK's national academy of science. It is a self-governing Fellowship of many of the world's most distinguished scientists working in academia, charities, industry and public service. The Society draws on the expertise of its Fellowship to provide independent, authoritative and accessible scientific advice to decision-makers and to inform public discourse. As the UK's national academy of science, the Society is concerned with the health of the nation's research, innovation and education system as a whole.
15. This consultation response was written following consultation with a group of Fellows of the Society representing a wide range of scientific disciplines, as well as with Society grant-holders including early-career researchers.

Annex A: Research environment and impact

Publication and knowledge dissemination

1. The way researchers share data, experimental protocols and outputs is changing. The use of open access and research repositories will continue to increase and new and disruptive models for knowledge dissemination will continue to emerge². Despite the exclusion of journal impact factors as a consideration by previous REF panels, and strong evidence that this ruling was followed, many HEIs disproportionately submitted research published in high impact journals. The next REF should continue to emphasise that impact factors are not considered by assessment panels, and that there is no prejudice against research outputs disseminated through new and emerging publishing models.

Impact

2. As the Stern review highlights, the impact element of the REF 2014 has triggered a culture of wider engagement within the HEI landscape, thereby expanding the benefits arising from research.
3. By removing the requirement for impact case studies to be linked to specific research outputs, REF2021 could better capture the many ways in which research benefits society. Guidelines on the submission of impact case studies in the REF should make clear that assessment is guided by a broad definition of impact, including through public engagement and outreach as part of the research process, policy advice, and translation.
4. Given the proposed establishment of UKRI, the definition of impact used by Higher Education research funders should be the same as that used by the Research Councils, and by UKRI once it is established.
5. The impacts of curiosity-driven research are often not apparent until long after the original research has taken place. The REF should continue to include the impact of research undertaken outside of the REF assessment period, and it would be appropriate to allow the re-submission of impact case studies to subsequent REFs where significant additional impact can be demonstrated.

List of areas that could be included in Institutional-level Statements

6. The Stern Review includes an illustrative list of the content that HEIs might include in their Institutional Environment statement. The Society has identified additional categories that might be included. This list is not exhaustive and HEIs should be encouraged to add more and different information categories according to an HEI's mission and research focus, and should cross-reference but not repeat information contained in UOA Statements. The research output portfolio returned by individual UOAs should support and evidence the Institutional Environment sections.
7. As well as institutional case studies, we would expect institutions to submit a number of outputs that were at an institutional level as evidence supporting their Institutional narratives on Impact and Research Environment. These would be expected to include some outputs exhibiting interdisciplinarity. Thought will need to be given as to how such Institutional level submissions will be reviewed.
8. An excellent institutional-level environment statement could include:
 - **Research strategy:** Setting out how an HEI supports a sustainable high-quality research environment. Where appropriate this could also showcase how institutional taught courses are

² The Royal Society, June 2012: "Science as an Open Enterprise":

<https://royalsociety.org/~media/policy/projects/sape/2012-06-20-saoe-summary.pdf>

responsive to emerging research, students develop key skills and graduates are equipped for employment.

- **Staff strategy:**

- Hiring strategy for a balance of roles, reflecting how an institution supports its strategic goals;
- Career development: Transparent structures and criteria for staff promotion and progression. Institutional commitment to developing research talent at all levels from doctoral student to professorial appointments, and supporting individuals that choose to pursue non-academic careers or 'braided' career paths inside and outside of academic research.

- **Diversity and inclusion:** Policies, programmes, and data showing how the whole institution supports full participation from a broad and diverse range of researchers, covering all protected characteristics. HEIs should evidence how they are measuring progress over time and adapting their strategies based on data collected. Suitable metrics may include (but not exclusively) SWAN awards, outcomes and subsequent actions from staff surveys and changes in demographics of the staff profile.
- **Collaboration:** Institutional strategies that facilitate the development of strong, sustained, and impactful research partnerships with major academic and non-academic collaborators. These could include, industry, policy, the charitable sector and schools.
- **Interdisciplinarity:** Institutional action to incentivise and promote interdisciplinary research across departments, academic institutions and other sectors and organisations.
- **Public and stakeholder engagement:** Institutional strategies which enable HEIs and their staff to connect and share their research with audiences including the public, schools, industry and policy.
- **Leadership:** Setting out how the institution supports the national and international research endeavour.
- **Openness:** Institutional action to support open science. For example, researchers making data and outputs available via searchable open access repositories and routinely having ORCID IDs.

Annex B: REF reforms, diversity and early-career researchers

1. The measures outlined above, particularly moving to a portfolio-based approach would enable a more inclusive research environment, and allow a broader range of contributions to be recognised.
2. The de-coupling of individuals from output should reduce pressure on those who take time out of research and on early-career researchers, whose recruitment would be based more on their research potential and not their 'REF-ability'. It would also begin to remove disincentives to hire, and reverse the de-motivation and restore morale to technology specialists, industry collaborators and members of large teams. The research activities of the former two may not have not been submitted to previous REFs because of an assumption their outputs are less likely to achieve a 4* rating, the latter because it may be harder to attribute contributions to individuals.

Early-career researchers

3. There has been considerable discussion of the potential for and perverse consequences of non-portability, particularly on the career paths of early-career Researchers. Our discussions with the Society's grant-holders indicated that they supported the move to non-portability on the whole, if this could be managed practically. Our grant-holders identified the following benefits from the introduction of an institutionally-focused portfolio approach:
 - A smoother profile of HEI recruitment throughout the REF period, benefitting people at different career stages and those taking career breaks;
 - Incentivising institutions to focus on the development of current staff
 - Recruitment processes moving to considering future potential
 - Incentivising HEIs to recognise and showcase a broader range of knowledge-generation activities, including collaborative and interdisciplinary work, policy and public engagement and translation.