

CaSE response to Lord Stern's review of the Research Excellence Framework

About CaSE

The Campaign for Science and Engineering (CaSE) is the leading independent advocate for science and engineering in the UK. CaSE believes the UK government should support a healthy and thriving science base in which all parts of this integrated system are well funded and performing optimally. The extraordinary and well-documented success of the UK science base is founded on historic strength, past investment and valued principles for allocation of funding. We therefore welcome the opportunity to respond to this consultation. In preparing our response, we have received input from our members across the science and engineering sector.

CaSE works to raise the political profile of science and engineering, and ensure that the UK has world-leading research and education, skilled scientists and engineers, and successful innovative business. It is funded by around 800 individual members and 100 organisations including businesses, universities, learned and professional organisations, and research charities. Collectively our members employ 350,000 people in the UK, and our industry and charity members invest around £19.3bn a year in R&D globally¹.

Summary of key points

- Introducing further major change at a time of multiple reforms to the research funding and regulatory environment and to university teaching could be destabilising
- In the short-term, maintain the current structure but build in lessons learnt from the 2014 exercise
- There will be efficiency gains from the sector understanding the REF process and having institutional processes in place to respond
- Peer review provides a robust, transparent and credible basis for assessing outputs and should continue to be the basis of assessment, with metrics providing supplementary input
- Changing staff and output selection by decoupling of individuals from outputs, is the most substantial change proposed that could bring significant benefits and efficiencies
- Introducing small changes that would enable better use of the data from the REF could maximise the benefits of the exercise
- Further technical consultation will enable those with experience of REF2014 to help refine the next REF exercise

What changes to existing processes could more efficiently or more accurately assess the outputs, impacts and contexts of research/research environment in order to allocate QR?

Efficiency through stability

We would like to see the broad approach of REF2014 maintained. The existing processes used by the Research Excellence Framework (REF) to assess research excellence, including the measures of output, impact and environment, are now well understood by stakeholders. Much of the burden, and cost, associated with the REF exercise relates to having to adapt policies, processes and systems to come in line with new measures and requirements. This is reflected in the analysis by Technopolis which found that 65% of those they surveyed state that repeating the exercise with no changes

¹ Figures taken from latest available years of data

would reduce costs by up to a fifth². Significant changes should therefore be avoided unless they are well justified.

Where refinements based on lessons learned from REF2014 could help reduce costs and improve the REF process they should be introduced carefully and in consultation with the relevant groups.

Significant costs arise to HEIs from selecting staff and outputs. Our response to question 5 considers mechanisms for improvements in this area.

Metrics

A robust assessment framework that makes greater use of metrics where appropriate would be welcome. However, it is a longer term goal that funders and institutions would have to work towards in partnership.

Peer review provides a robust, transparent and credible basis for assessing outputs and should continue to be the basis of assessment, with metrics providing supplementary input for panels where they are relevant. Panels could be asked to consider how they can use metrics more effectively to inform decisions, drawing on lessons from how panel assessment worked in practice in 2014. In particular, research environment may be an area where more opportunities exist to increase the use of metrics based assessment.

Data and system interoperability

There are productivity and efficiency gains to be realised through reducing duplication of data capture and entry. This is complex for such a large exercise but if this kind of assessment is expected to be repeated, there should be a program of work, with sufficient funding, to support movement towards data and system interoperability across the research base.

For this to contribute to efficiencies in use of resources and streamlining of the process, institutions need to be given enough time to adapt their systems and data collection processes and is likely to be a longer term aim.

Impact

The introduction of new measures of impact in REF2014 was a significant change. Institutions have now developed systems and approaches for this. It would be both a backward step and an additional burden if this element is changed too much in the next cycle. However there is room for learning from the last cycle to inform improvements. This continuity will help embed mechanisms for generating and recording impact within the culture of HEIs and help reduce costs in the longer term.

Moving to a more consistent way of reporting impact, possibly through a more standardised pro-forma template could help reduce the burden that preparing impact case studies places on researchers and on reviewers, as well as supporting the use of the data. This is considered further in question 4. Early clarification of the definition of impact, as well as the rules surrounding re-submission of impact case studies from REF 2014 would be extremely helpful to institutions' REF preparations.

² http://www.technopolis-group.com/wp-content/uploads/2015/11/REF_costs_review_July_2015.pdf

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?

The Review asserts that “the primary purpose of the REF is to inform the allocation of quality-related research funding (QR).” The three primary objectives of the REF set out by HEFCE include QR allocation, accountability for public investment and building the evidence of benefits, and providing benchmarking within institutions and across the sector³.

The view across the sector on this question is mixed. The current system of units of assessment was subject to a thorough review prior to REF 2014, when the number of units of assessment was substantially reduced. There does seem to be broad agreement that performing the exercise at a more aggregated level would lose much of its value without reducing institutional burden. Our members tell us that for research management purposes it is helpful having UoAs organized so that they align with HESA cost centres is helpful to be able to link REF outcomes with other data sources that are reported more frequently. In some institutions REF information has been used to re-organise internally. This could mean that further substantial shifts in REF structure could lead to additional increased cost and disruption in the sector.

Therefore, while there is scope for minor changes in the next exercise in close consultation with research communities, a further large scale reduction of the number of units would be a substantial and costly change.

REF provides information on the health and vitality of individual disciplines, identifying pockets of excellence, and indicating where there are concentrations of capability and potential, for example for emerging areas of national importance. As new structures emerge within the national research and higher education infrastructure with responsibility for overseeing the health of disciplines, following the Nurse Review and the HE Green Paper, REF data can act as a helpful resource. Some are concerned that current levels of aggregation within UoAs is affecting individual and institutional behaviour to the detriment of some research and teaching areas. This should continue to be monitored so that essential capacity isn’t lost.

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?

Environment

We have heard from members that elements of research environment could be reported at a more aggregated level. One proposal would be to move towards a system in which there is an in-depth main panel environment statement, with short context statements at a more granular level. This builds on lessons learnt from how the process worked in practice 2014.

To further streamline the process, if there are specific measures that were looked for by panels at an institution wide or discipline level in environment statements, such as holding an Athena Swan, these could be reported pro forma, making it more straightforward and transparent for those responding.

Impact

Although the guidance for submitting to the impact dimension is quite clear, the methods used by the sub-panels to evaluate impact are less so. This should be clarified in guidance.

³ <http://www.ref.ac.uk/about/>

Future iterations of research assessment could explore how impact case studies could be assessed at a higher level. This could give flexibility for submitting more impact case studies in some areas of research and enable groups undertaking less applied work, or new and developing research groups to have their work better reflected in the REF.

What use is made of the information gathered through REF in decision making and strategic planning in your organisation and what information would be more useful?
CaSE does not directly use information from REF in our strategic planning. Our response to question 4 explores how some changes could better support its use in informing policy and funding.

From our members we hear that REF information is one of many sources of management information used in decision-making and strategic planning. Its particular distinctive qualities that are valued by the sector are: a standardized benchmarking perspective across the entire HE sector; a basket of data that encompasses income, outputs and doctoral awards; rich qualitative, but structured information, on impact and environment; information that has been validated through peer review assessment.

Significant efficiencies for the whole sector could be realised through better alignment of the reporting requirements across the funding councils, RCUK and other Government agencies for REF purposes, or value for money or policy and compliance purposes.

Does REF information support, duplicate or take priority over other management information?

What data should REF collect to be of greater support to Government and research funders in driving research excellence and productivity?

The REF exercise offers an excellent resource that is currently being under-used. From our viewpoint as an organisation that works within science policy there are some changes that could be made to the collection and reporting of data within the REF that could help better inform policy.

The impact case studies from REF 2014 provided a rich source of examples demonstrating the wide reaching benefits resulting from public investment in science. Creating a searchable database was an essential part of the process. In future iterations of the REF there are some improvements, such as creating additional pro forma fields and making other existing fields mandatory, that could increase the usability of the data from the case studies in articulating the value of investment in science improve the comparability of the case studies. The templates should however not be so prescriptive that they restrict the breadth of impacts which can be submitted by restricting the measures which can be reported.

For instance, in doing some research on the interactions between the EU and UK research, we found that there was no straightforward way to measure to what extent EU research funding was involved in the work described in impact case studies. The sources of funding, grant amounts (including a total of public investment), any leveraged funding (including a total of private and charity investment), any measure of value of outputs or return on investment (if applicable) could become pro forma fields in the impact template.

There could also be value in creating a field to log what infrastructure was used in the process to help build a picture of how capital investment is supporting excellent research and impact. A

briefing⁴ by Cancer Research UK articulates two instances of an end-to-end timeline from clinical research to impact, and there would be great value for funders, policy makers and researchers in being able to better understand how this process works in different fields and individual examples where the pathway is perhaps less linear and defined.

Also, including this information in the REF could help in the task that BIS and the Research Councils have attempted a number of times to identify centres of established and emerging expertise, and capacity and capability across the research landscape.

As this is a major undertaking for the sector and for the government bodies involved, it is prudent to look ahead to determine if the exercise could be a means for collating data that will be useful in future. For instance, would it be beneficial to have a field which allowed submissions to be easily identified as involving Official Development Assistance funding or European funding?

There is much discussion around interdisciplinary research, and how it can be accounted for within REF, and even encouraged, as discussed in the next question. Regarding data capture, there could be a field to better describe internal partnerships (within the institution) and external partners (academic or otherwise) who formed part of the research team or who were involved at different points of the pathway and would not fall under the unit of assessment linked with the research output or case study.

To reward effective and efficient use of research funds, a new measure could be to weight prior allocations of research income against performance of excellent research. However, this should be performed as an evaluation at the end of a process, rather than at the start.

Any new fields, or metrics, required for the next REF would have to be defined and published very soon to ensure that institutions can adjust their systems and processes and gather the required data.

Building on their experience of working closely with the case studies, Digital Science would be a key stakeholder to work with in the development of improvements. Further, ensuring end users of research are involved in the refinement process as well as in the assessment itself will help ensure that measures of impact are meaningful for that research area or sector.

How might the REF be further refined or used by Government to incentivise promoting interdisciplinary research and collaboration?

Interdisciplinary working isn't an end in itself but the focus on this kind of work is recognition that new research challenges and solutions to major problems are more likely to be found at the boundaries between disciplines and through a combination of disciplinary approaches and knowledge.

In the long term, it may be that rather than seeking to include incentives for interdisciplinary work, the focus could instead be on reducing the current structural incentives for research within disciplinary boundaries. The structure of REF around disciplinary panels and the discipline focus of research councils are two such structural incentives. The research council structure is currently in the process of change with an aim of improving working across the disciplinary boundaries of the funders. Another disincentive for interdisciplinary working is that it will usually involve taking more risks, both from funders and from researchers putting forward grant applications. Increased protectionism and reduced risk taking can be amplified when resources are constrained. The funding

⁴ <http://www.mrc.ac.uk/documents/pdf/investment-and-impact-how-government-supports-science-in-the-uk/>

of the UK research base, although stable, is becoming increasingly constrained year on year, and without substantial change, will continue to be until the end of the decade. In the long term, securing a healthy funding environment will be essential to driving the growth of interdisciplinary work.

A major area of policy focus in recent years has been university-business collaboration. The Review team should work closely with those who worked on Professor Dame Anne Dowling's most recent review to assess whether there could be opportunities to test and ensure, at the least, the REF is not creating any systemic disincentives, and, ideally, rewards collaboration. For instance, the Review could explore how to measure and reward international collaboration, collaboration with SMEs, and industrial secondments in both directions.

Reviews following the completion of REF have shown that the vast majority of outputs submitted to REF were journal papers. Improved guidance on what the assessment criteria are for outputs which are not journal papers could encourage more diverse research and therefore submissions. For instance some concerns have been raised about the devaluing of academic reviews, and of publication of negative results. Both of which play an essential role in the research process. Other outputs such as patents, reports written for companies and consultancy were very underrepresented in the REF but are valuable contributions to the body of research output, with particular importance in some disciplines, for instance across engineering.

How does the REF process influence, positively or negatively, the choices of individual researchers and / or higher education institutions?

The REF has become a driver of change in sector behaviour, from institutions to individuals. It has been used by government as a mechanism to actively drive behaviour change, for instance through the inclusion of impact in the REF 2014. This is due to continue, for instance with the changes to open access requirements. We would also support continuing to strengthen incentives and reward for improvements in equality and diversity. The role as a driver of change in the sector should therefore be made explicit in the purposes of REF in the interests of transparency and so that the effectiveness of REF can be appropriately evaluated.

REF helps shape institutional and individual esteem, funding levels, and career progression. The expectation should be that institutions and individuals would seek to optimise their performance in the exercise, for instance through tailoring their hiring or publication strategies, just as you would expect in any other sector. However, some of this activity has resulted in negative consequences for individuals and for UK science, and undoubtedly affected productivity in the sector. Learning lessons from 2014 to limit the negative consequences of optimising performance, or 'gaming', is in the interest of UK science.

Staff and output selection

Staff selection is an area a number of members have commented on. Currently, it is a resource intensive feature of REF. It also gives universities strong incentives to base their recruitment and promotion decisions on expected good performance in the REF, rather than on a more comprehensive evaluation of their broader research and teaching needs. This can lead to the perverse practice of hiring high-achieving staff on short-term or part-time contracts designed to fit the REF criteria for submission, but with little credibility in terms of real contribution to research activities and career development.

Returning all research-active staff and decoupling individuals from research outputs is a proposal with some support in the sector. It could reduce some of the incentives for unproductive hiring

strategies and relieve the pressure felt by individual researchers and provide a more complete picture of the research taking place in an institution. It also addresses a weakness in the current process which has been shown to disadvantage certain groups, inadvertently or otherwise⁵. As such, departments' choices can lead to bias with knock on effects on careers, as well as contributing to a negative research culture. This proposal could also allow for research outputs to be non-portable, allocated to institutions they were undertaken at regardless of where the author is currently employed, taking away the incentive for institutions to have backward looking recruitment process based on the outputs they will bring with them, rather than their capacity for future research success.

This is the largest change I've seen recommended by a number of organisations. There could be large gains from successful implementation, but such an approach would require careful testing recognition of the role of those who balance research with other valuable roles such as teaching and administration, and of the pockets of research excellence within institutions across the sector. It would also require changes to how many outputs are required to be submitted per FTE so as not to unduly increase the level of burden on panels.

Short wholesale changes, some have instead proposed a portfolio approach for outputs that could be explored further. This would allow institutions to submit a group of researchers with a specified number of outputs, with each contributing at least 1. This would avoid having to exclude staff who are research-active but have published fewer than the required 4 outputs. The portfolio approach would make it less divisive to manage the selection of outputs and staff for submission, particularly in areas where co-authorship is common practice.

There is also a danger that the REF could inhibit collaboration by over-incentivising REF performance of individual institutions and competition for authorship of papers, including within the same institution. Some of the issues and possible solutions to balancing and recognising the contributions of individuals within research teams are discussed the Academy of Medical Sciences report, Team Science⁶. The report also highlights the trends in team contributions to research, outlining that from 1950-present the average number of authors per paper has risen from 1-2 to 5-6 making this an increasingly necessary issue to address.

How does the REF process influence the development of academic disciplines or impact upon other areas of scholarly activity relative to other factors, and what changes would create or sustain positive influences in the future?

Long-term projects and 'non-REF' outputs

Some in the sector have voiced concerns about the detrimental effect of committing to long-term projects that do not produce outputs or impact over a single REF cycle. Many research investments such as building new equipment, developing new techniques, development of new academic disciplines, and on exploring new avenues of research may take longer than a REF cycle to come to fruition. Over the long term, the review could consider how the REF recognizes these kinds of developments.

If environment statements are assessed at main panel level it could be that there is a section for submissions to include these long-term projects and investments capturing their potential to deliver in the future.

⁵ <http://www.hefce.ac.uk/pubs/year/2015/201517/>

⁶ <http://www.acmedsci.ac.uk/policy/policy-projects/team-science/>

By successfully driving a focus on research, REF overlooks the reality of how universities operate, across teaching, research and knowledge exchange. Whilst the introduction of impact assessment has helped to recognise the relationship between research and knowledge exchange, there is at present little scope in the REF to reinforce the interdependence of research and teaching.

The Government's new Teaching Excellence Framework (TEF) is being designed, in part, to redress this balance. Its development must go alongside development of REF to ensure they complement and inform each other to avoid driving teaching and research activity and practice further into silos.

How can the REF better address the future plans of institutions and how they will utilise QR funding obtained through the exercise?

The future plans and past performance of institutions are well-reflected in the complementary funding streams that make up the dual support system; with QR rewarding past performance and Research Council awards based on prospective performance. A defining characteristic of QR funding is that it is unhypothecated. This is highly valued by institutions and contributes to the effectiveness of QR and REF. Any moves to specify the purpose of QR in greater detail risks diluting that effectiveness and obscuring an agenda that is currently clear. We would therefore caution against a more prescriptive allocation of QR.

To help strengthen the evidence base around use and effectiveness of QR, it may be useful to ask specifically in environment statements how QR funding has been and will be used to support the institutional research strategy.