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Consultation on the second Research Excellence Framework

This Word version of the response form is available to help respondents prepare responses before submitting them through the online form. Do not respond to the consultation using this Word form. Only responses received through the online form will be reviewed and included in our analysis.

1. Respondent details

Responses to this consultation are invited from any organisation, group or individual with an interest in research or research assessment. We will publish an analysis of the consultation responses. We may publish individual responses to the consultation in the summary. Additionally, all responses may be disclosed on request, under the terms of the relevant Freedom of Information Acts across the UK. Responses to this consultation are unlikely to be treated as confidential except in very particular circumstances. Please note that each question has a limit of 500 words.

Please indicate who you are responding on behalf of

- [ ] As an individual
- [ ] Higher education institution
- [X] Subject association or learned society
- [ ] Representative body
- [ ] Department or research group
- [ ] Business
- [ ] Charity
- [ ] Public sector organisation
- [ ] Other

Please provide the name of your organisation

Council for Mathematical Sciences

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2. Overall approach

1. Do you have any comments on the proposal to maintain an overall continuity of approach with REF 2014, as outlined in paragraphs 10 and 23?

In the short term, to minimize upheaval in the sector, we support the overall continuity of approach with REF 2014. However, in the medium to long term, we note the arrival of the TEF and the extra burden this will place on the sector and also the potentially antagonistic relationship between the two. We believe BEIS, and partner organizations, need to think more clearly about the whole HEI system and what it is trying to achieve by assessment. Separate assessments that focus on one aspect of academic provision without regard for others are unlikely to be the best solution.

With regard to the outcome of Lord Stern's review, we welcome that the principles of submitting all research-active staff to the REF and decoupling individuals from outputs have been adopted. However, we believe a new sampling approach should be strongly considered, to select in a scientifically justified way from the large number of submitted staff outputs. A sampling approach could mitigate the issue of staff within HEIs being overly subject to REF-driven selection criteria, while simultaneously addressing the issue of higher workload for panels. The sampling fraction would need to be carefully determined so that small submissions are assessed reliably (for example, UoAs submitting a number of outputs less than some threshold could have all of their outputs assessed).

Sampling might also lead to better assessment as reducing the burden via fair sampling will give panelists time to assess outputs properly.

To deal with a possible perverse incentive to shift staff onto 'teaching only' contracts, we also suggest that HEIs could be required to submit the total FTE of `teaching only' staff associated with each UoA (via HESA cost centres, as these concern teaching) and that this number be published along with the REF results. This would result in a `department size' to be established alongside the standard REF results and convey an idea of `research intensity' for a UoA. The numbers of 'teaching only' staff could be explained/justified in the environment section, see our response to Q34a.

3. Unit of assessment structure

2. What comments do you have about the Unit of Assessment structure in REF 2021?

We favour a single Mathematical Sciences panel, as in REF2014. However, as with other UoAs that cover a broad range of sub-disciplines, we believe it is essential that panel criteria are developed to respect and comprehensively cover the diverse nature and ethos of the included sub-disciplines.

The need to develop broad, inclusive and credible criteria is why, in Question 3b, we strongly support the early appointment of sub-panel members to carry out this task.

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4. Expert panels

3a. Do you agree that the submissions guidance and panel criteria should be developed simultaneously?

X Yes

☐ No

Comments:

We believe the benefits outweigh the disadvantages.

3b. Do you support the later appointment of sub-panel members, near to the start of the assessment year?

☐ Yes

X No

Comments:

Generally, we much prefer early appointments and the reason is precisely that stated in paragraph 33 as we have concerns that broad sub-panels (of which Mathematical Sciences is definitely one, formed by amalgamating several previous RAE UoAs) certainly require more individuals to provide sufficient breadth to adequately cover the area.

In REF2014 there was concern from sections of the mathematical sciences community, during the early stages of REF preparation, that the UoA panel was nowhere near representative enough to do its job. Ultimately, we believe actions were taken that successfully mitigated these concerns, but had they gone unchecked it could have negatively impacted on the REF's credibility. Hence, we believe early and comprehensive appointments are to be recommended.

Further, 1. Sub-panel members need lots of time to prepare for REF; 2. The late appointment of a REF sub-panel member could impact heavily on a small department where teaching and admin will need to be amended. Larger departments can absorb these changes more easily; 3. Potential panel members might be asked to participate in mock-REFs. This is not really acceptable if the person is to be a REF panel member, and so this needs to be signalled earlier.

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4. Do you agree with the proposed measures outlined at paragraph 35 for improving representativeness on the panels?

X Yes
☐ No

Comments:

We are keen on improving representativeness on the panels. A particular concern is the adequate representation of non-UK nationals as compared to their presence in units submitting to the Mathematical Sciences UoA.

5a. Based on the options described at paragraphs 36 to 38, what approach do you think should be taken to nominating panel members?

We believe that the nomination process should be as in the previous REF: invite nominations from academic associations and other bodies with an interest in research. We completely reject the idea of permitting mission groups, individual UK HEIs, or groups or subsidiaries of UK HEIs for precisely the reason that it would cause a potential conflict of interest situation and seems to go against the Nolan Principles of Public Life (as your consultation document indicates). For the same reasons we would rule out self-nominations as this could become an acceptable route for HEIs to `nominate by the back door' and it is not clear how easy it would be for an individual to demonstrate genuine community support.

5b. Do you agree with the proposal to require nominating bodies to provide equality and diversity information?

X Yes
☐ No

Comments:

We strongly back measures proposed in 35, particularly the unconscious bias training and equality and

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diversity (E&D) training of the panels.

We are concerned at 37 which suggests that nominating bodies provide statistical information regarding E&D characteristics and provide an account of how E&D was considered when selecting nominees. It is not clear how HEFCE will assess this information: will it lead to nominees being disqualified or down-weighted? As 37 says it will place an unnecessary burden on the nominating bodies, some of which are small, and may prevent them from nominating (and this would wipe out another dimension of diversity).

6. Please comment on any additions or amendments to the list of nominating bodies, provided alongside the consultation document.

No comment

5. Staff

7. Do you have any comments on the proposal to use HESA cost centres to map research-active staff to UOAs and are there any alternative approaches that should be considered?

We strongly feel that prohibiting HEIs from assigning staff to UoAs is a retrograde step. The individuals concerned, along with their HEIs, are best placed to understand the nature of that individual's research. We are firmly against the idea of using HESA cost centres to map staff to UoA for several reasons: (i) HESA data is primarily driven by undergraduate teaching, (ii) it is common for individuals to belong to a HESA cost centre for reasons other than research (e.g. teaching expertise in areas other than current research specialty, historical reasons, industrial engagement) so UoA assignment based on HESA cost centre codes would be plain wrong, (iii) using blunt and inaccurate HESA codes would penalise interdisciplinary research even more than the current silo-based REF does, (iv) the "game-playing" would shift from UoA assignment to HESA cost centre redeployment and the former is a bit more transparent.

A submission should not suffer because staff from `different departments' appear in it.

We support the concept that, in principle, all research-active staff should be returned. We refer back to our answer given in Q1 how a sampling approach might be considered to mitigate issues with selection, reduce workload, but still conduct a proper assessment.

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8. What comments do you have on the proposed definition of 'research-active' staff described in paragraph 43?

We believe the idea of using the HESA code of “Academic Professional” with “Research only” or “Teaching and research” to be a starting point to enable the selection of `research active’ staff.

Such an approach will undoubtedly lead to some staff being moved to `teaching only’ contracts and we would endorse actions that restrict the incentives for HEIs to do this on the basis of REF considerations alone. In some departments, during the last REF, some staff were transferred and some research-active staff just dropped (even if they had strong contributions to other parts of the research enterprise, such as graduate student training) leading to much unhappiness for the staff involved and their close colleagues.

To mitigate such behaviours we suggest that HEIs could be required to submit the total FTE of `teaching only’ staff associated with each UoA (via HESA cost centres, as this is to do with teaching) and that this number be published along with the REF results. This would result in a `department size’ to be established alongside the standard REF results and convey an idea of `research intensity’ for a UoA.

For some PDRAs it will be reasonably obvious if they should be submitted for the REF. PDRAs who write their own research proposal should definitely be counted as independent. RAs employed on a grant written by a different academic would not be. However, across the landscape, there are a variety of funding schemes with differing rules (about who can be the PI) and so it probably is impossible to concoct an adequate definition that works in all cases. Maybe, in these grey areas, where a PDRA is transitioning from `employed’ to `independent’ their contribution can be given a reduced weighting?

A possible idea to encourage reduced game-playing might be establishment of a policy of auditing submissions using a random sampling of UoA submissions. For example, auditors could plainly see whether research active staff has been left out (e.g. look for publications of staff members) and judge the independence of PDRAs.

9. With regard to the issues raised in relation to decoupling staff and outputs, what comments do you have on:

9a. The proposal to require an average of two outputs per full-time equivalent staff returned?

We think that the average number of publications per FTE of two is too low. Note, this average number

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does not have to be an integer. For example, the average could be three but it could also be 2.5.

Since an aim of the new REF is to decouple individuals from outputs, along with the desire to keep the burden manageable, we strongly advocate that a sampling approach is adopted. For example, all staff FTE submit between one and four of their best outputs, the average number of outputs for the submission is maintained at 2 (or 2.5 or 3, eg.) and then a sampling strategy is used to choose the outputs to be assessed. Sampling is an important and valid tool precisely designed for this situation. Something bespoke might be needed for UoA submissions with very small numbers of outputs. For example, a submission with number of outputs less than some threshold might result in all their outputs being assessed. We also believe that sampling might lead to more accurate research assessment, as more time might be available per output, as described in our response to Q1 above.

9b. The maximum number of outputs for each staff member?

We advocate avoiding a situation where, say, seven members of staff `carried' a 20-strong unit. The worst kind of gaming would result if HEIs were allowed a free-for-all in which it is completely acceptable just to put in your research stars. An upper bound on the number of publications (we advocate FOUR) should prevent such behaviour.

Having a high number of publications from `stars' will also make it much more difficult to discern differences between UoAs and thus reduce the usefulness of the exercise. We also feel that this goes against the ethos of the next REF to mitigate issues over staff selection.

9c. Setting a minimum requirement of one for each staff member?

Definitely NOT zero. We support a minimum of 1 output on the grounds that this is a minimal requirement for someone doing research.

Our only caveat to this is that for several areas of the mathematical sciences, it is important to facilitate the movement of people between industry and academia, both as long-term career moves and for short-to-medium-term secondments. For staff coming into academia from industry, the proposal of a minimum output requirement, however low, may still inhibit this, especially if the incomer is relatively new to the HEI at the REF submission date. Where researchers are on secondment to organisations outside HEI, it should be recognised that their work on secondment may not result in research outputs (at least not in the relevant REF timeframe) and the requirement on them should be reduced accordingly.

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10. What are your comments on the issues described in relation to portability of outputs, specifically:

10a. Is acceptance for publication a suitable marker to identify outputs that an institution can submit and how would this apply across different output types?

The key points we wish to make here are: (i) the "acceptance date" of a publication is increasingly becoming a vague and even meaningless concept in many disciplines; and (ii) the REF should as far as possible welcome submission of ANY output which conforms to open access conditions, but any output submitted to more than one REF should be ruled ineligible (no double-counting).

In fact, if an article was accepted before the submission deadline but published (EarlyView, or in an issue online, or in actual print) after the deadline, as long as it was not used for a previous REF, it should be permissible.

In some sub-disciplines the practice of journal publication is dying and the cutting edge research happens around the open-access repositories. Hence, at the very least the quality of the acceptance date is different to a standard journal, plus the REF panel will have less information on the perceived quality and correctness of the article and, hence, it may well be more burdensome to evaluate such articles.

10b. What challenges would your institution face in verifying the eligibility of outputs?

We would welcome more guidance on how open-access friendly repositories are to be viewed in the next REF. For example, top publications accepted by Journals might have been on the arXiv (e.g.) for several years: e.g. which REF should they count to? Similarly, an arXiv article in the current REF period might only be published in a journal in the next one. In other words, acceptance timestamps can be manipulated especially when journal review times in the mathematical sciences can be inordinately long.

In summary: it should not be possible for publications to count more than once.

10c. Would non-portability have a negative impact on certain groups and how might this be mitigated?

The difficulties and costs of defining fairly how credit might be shared between institutions when an author moves are significant, given the wide range of publication practices across disciplines.

Overall, we have a strong view that the current REF approach is acceptable. In particular, we do not wish to restrict job opportunities for early-career researchers or for those coming into the system partway from outside of the UK. Any proposal must be tested against this criterion.

We accept that "rich" HEIs should not be able to "buy" a publication from 2015 for the REF2021, and suggest, at the most, a compromise that outputs dated within two years of the REF deadline are portable,

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but those prior to this are not. Again, whatever proposal is accepted it should also be simple to implement and difficult to game.

There are strong reasons to maintain the status quo of portability. We are concerned that non-portability would reduce dynamism, innovation and positive development of the research landscape. New research areas, or specialisations are created by acts of innovation as universities choose to focus on, and therefore resource, certain topics and look for staff in that area. For this to work optimally staff need to be mobile. The UK HE sector and the UK economy as a whole benefits from this process working smoothly. Over time, all (good) universities gain from it. Non-portability has the potential not only to create perverse 'horizon effects' on such innovation but to dampen innovation more generally as faculty perceive that publications will be 'lost' on moving. For similar reasons, it would deter researchers from moving to universities where they might find a better fit for their research profile and abilities.

10d. What comments do you have on sharing outputs proportionally across institutions?

Possibly sharing outputs is a good way forward. It seems to strike a balance between "rich" HEIs buying in outputs and giving due credit to the original nurturing institution where some of the work would have been done AND it would retain some degree of portability to the benefit of early career researchers, equality and diversity considerations and other academics.

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11. Do you support the introduction of a mandatory requirement for the Open Researcher and Contributor ID to be used as the staff identifier, in the event that information about individual staff members continues to be collected in REF 2021?

X Yes

☐ No

Comments:

It is possible that some form of staff identifier will be mandatory in future. We would prefer to use an established independent/non-profit/community-based system, such as ORCiD, rather than HEFCs waste effort reproducing it.

12. What comments do you have on the proposal to remove Category C as a category of eligible staff?

We agree with the suggestion to abolish Category C as an eligible staff category.

13. What comments do you have on the definition of research assistants?

Please see answer to question 8. Generally, we are happy with the REF2014 definitions. Again, maybe HEFCE can provide advice in specific circumstances or some degree of auditing is conducted?

O

14. What comments do you have on the proposal for staff on fractional contracts and is a minimum of 0.2 FTE appropriate?

We agree that staff on part-time contracts should be eligible, with a minimum FTE requirement (we are happy with 0.2FTE). We support the proposal for a short supporting statement (as in para 62) to be

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assessed by the panel, but nothing too bureaucratic.

6. Collaboration

15. What are your comments in relation to better supporting collaboration between academia and organisations beyond higher education in REF 2021?

One possibility might be to give credit for 2*+ level papers that are co-written with non-academic co-authors (but not requiring these to be submitted as part of the usual REF outputs). This work would be partially assessed in the Impact category, as successful collaboration with non-academics increases the probability of impact.

For several areas of the mathematical sciences, it is important to facilitate the movement of people between industry and academia, both as long-term career moves and for short-to-medium-term secondments. For staff coming into academia from industry, the proposal of a minimum output requirement, however low, may still inhibit this, especially if the incomer is relatively new to the HEI at the REF submission date. Where researchers are on secondment to organisations outside HEI, it should be recognised that their work on secondment may not result in research outputs (at least not in the relevant REF timeframe) and the requirement on them should be reduced accordingly.

7. Outputs

16. Do you agree with the proposal to allow the submission of a reserve output in cases where the publication of the preferred output will postdate the submission deadline?

X Yes
☐ No

Comments:

We support this small technical change, in light of the frequent long publication delays in the mathematical sciences.

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17. What are your comments in relation to the assessment of interdisciplinary research in REF 2021?

It is not clear to us that HEFCE, RCUK and government really understand the value, volume and sheer importance of interdisciplinary research. This maybe because everything becomes organized according to historical silos which are difficult to break out of, due to organisational and bureaucratic structures. Of course, a large amount of important sole-discipline-research IS conducted in traditional silos and is easier to identify and assess. However, a large amount of research is conducted between disciplines and often across multiple disciplines in teams: the proposed new structures will help, but maybe only a little bit. For example, the interdisciplinary champions will still be tied to a panel and evaluate interdisciplinary research strongly tied to that panel. We think that maybe a different panel structure might be required. Maybe an interdisciplinary panel for each main board and then a REF-wide interdisciplinary panel? Overall, we think that the question of assessing and encouraging excellent interdisciplinary research maybe requires wholesale change in the future REF.

Interdisciplinary research is of vital importance to the mathematical sciences and is the lifeblood of many areas of statistics. We support suggestions in paragraphs 71a-c (subject to the caveats above). The Mathematical Sciences UoA will probably require a larger number of interdisciplinary champions as mentioned in 71a due to the breadth of interdisciplinary research intersecting with the mathematical sciences (this is because nearly every discipline in the REF possesses a quantitative side which can only be properly explored using mathematical and statistical techniques. Further many disciplines are becoming increasingly numerical/data driven which leads them to work with mathematical and statistical scientists).

We strongly advocate the need for explicit and clear assessment criteria for interdisciplinary work. Good guidelines have been developed (e.g. “Evaluating Interdisciplinary Research: a practical guide” (Prof. Veronica Strang and Prof. Tom McLeish)

https://www.dur.ac.uk/resources/ias/publications/StrangandMcLeish.EvaluatingInterdisciplinaryResearch.July2015.pdf)

It is vital that research advances are considered in the context of the interdisciplinary field. Thus, a paper in mathematical biology must be judged against its contribution to mathematical biology, not its contribution to mathematics, nor its contribution to biology.

Further, it should be noted that much interdisciplinary research (output and impact) occurs in places with less well-established records than single-discipline “silo” research. Hence, the traditional markers of research excellence (top journals, conferences, etc) will probably not be valid for interdisciplinary outputs which makes their assessment harder.

18. Do you agree with the proposal for using quantitative data to inform the assessment of outputs, where considered appropriate for the discipline? If you agree, have you any suggestions for data that could be provided to the panels at output and aggregate level?

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☐ Yes
X No

Comments:

The subpanel has to decide whether it will make use of metrics and how they are to be used. It is important that any use of metrics is documented and stated (at least post facto).

Having said this, the use of metrics in most UoAs, including and especially Mathematical Sciences, is a minefield and most metrics are not fit for purpose nor fit for research assessment. For example, citation metrics vary wildly across the discipline and are notoriously hard to normalize for sub-discipline. Moreover, large numbers of citations might indicate an excellent article or a flawed one. Hence, we would continue to advocate expert judgement as the primary judge of research quality.

8. Impact

19. Do you agree with the proposal to maintain consistency where possible with the REF 2014 impact assessment process?

X Yes
☐ No

Comments:

Yes, with important caveats noted in the following responses. In particular, consistency should not outweigh changes due to important lessons learned from REF2014.

20. What comments do you have on the recommendation to broaden and deepen the definition of impact?

We strongly support the recommendation to broaden and deepen the definition of impact.

We strongly support the alignment of impact definitions between research councils and funding councils.

We advocate that wider impact can also mean impact in teaching and learning, at all levels. Indeed,

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"wider impact" can be generated in multiple dimensions and a definition that brought out these dimensions would be welcomed. Indeed, established literature on Knowledge Exchange includes "direct instrumental impacts" of a particular piece of work in a particular application, the "conceptual impacts" that can reshape a whole field, "capacity building" impacts through education and training, "attitude or cultural change" and "enduring connectivity" of long term relationships with research users.

The proposed consultation actions (in 79) are vitally important for the mathematical sciences where immense "wider impact" (as in 79b) is generated (e.g. "The Deloitte Report: Measuring the Economic Benefits of Mathematical Science Research in the UK") as well as immense "academic impact" (again, as in 79b). See Meagher, L. and Martin, U. (2017) Slight dirty maths: The richly textured mechanisms of impact", *research evaluation*, https://doi.org/10.1093/reseval/rvw024

We also endorse the Nurse Report, which identifies the three broad categories of research `discovery' (or fundamental), `applied' and `translational'. He goes on to write:

"Societal impact should play a role in assessment especially for applied work, but should be proportionate in its use. More consideration needs to be given to highly significant scholarly impact, that is, work which has a major influence on a field, resulting in a 'paradigm shift' to use the language of Thomas Kuhn[8]. This is not always so well captured by conventional scientific review and requires the highest quality scientists to make the assessments." (bullet points at foot of p.7)

We would also advocate a longer time frame than the current period of 15 years. Impact in the mathematical sciences sometimes takes a long time to come to fruition. Nor can impact, such as creation of a new field, always be attributed to a single source and requires the input of a wide range of people. Take, for example, the developing field of topological data analysis.

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21. Do you agree with the proposal for the funding bodies and Research Councils UK to align their definition of academic and wider impact?

X Yes

☐ No

If yes, what comments do you have on the proposed definitions?

Yes, see answer to Q.20.

On the definition of 'wider impact', we suggest making it clear that impact at the micro-level, for example individual organisations or community groups, is also included

22. What comments do you have on the criteria of reach and significance?

It is certainly challenging to assess reach and significance, especially on the very short timescales that the REF system is operating under. Some mathematical sciences may take decades to obtain reach and significance as it takes time for the community to comprehend and assimilate new developments and even longer for cognate fields.

In terms of assessment, maybe there is a need to attach estimates of uncertainty to assessments of reach and significance and if the levels of uncertainty are unreasonably high then such measures should be abandoned or, at least, heavily down-weighted.

23. What do you think about having further guidance for public engagement impacts and what do you think would be helpful?

1. It would be helpful to have further guidance for public engagement impacts. One has to take into account the nature of the subject and the subsequent challenge of public engagement here; the abstract and underpinning nature of Mathematics can make such engagement much more challenging and this needs to be taken into account in the assessment.

2. At the cutting edge of pure mathematics it is not practical to link public engagement activities directly

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to research outputs. (For example, if you work in topology, you would in a public lecture play with Mobius strips or other low-dimensional examples, even if you main interest was high-dimensional manifolds). However, public engagement advertising 'discovery' or 'fundamental' research should be recognised and valued in the REF. The key point is that the REF2014 requirement for such public engagement activity to be explicitly developed from specific research outputs of at least 2* quality should be changed, as being totally unrealistic for much of the mathematical sciences. Rather, engagement activities built on a culture of high-level research work in relevant field(s) should be the requirement.

3. Providing evidence that you have changed the way people think following a public engagement activity is very challenging and realistic expectations and guidelines would be very welcome. For example, impact evidence should be more than just 'numbers of attendees' or 'numbers of events'.

24. Do you agree with the proposal that impacts should remain eligible for submission by the institution or institutions in which the underpinning research has been conducted?

X Yes

☐ No

Comments:

The answer to this question depends on what behaviour the REF is attempting to stimulate. The path to impact maybe can be split into two parts: the fundamental research [FR] that permits the impact to be generated and the `technology transfer process' [TTP](for want of a better term) that takes the fundamental research and converts it to a form that has impact. Generally, either of these should be rewarded wherever they take place. If Researcher X undertakes FR at two different institutions then perhaps both of those should be rewarded and allowed to form part of an impact case (with clear evidencing of the contribution and importance of both the FR and TTP). However, if Researcher Y undertakes FR and TTP at one HEI and then moves to another HEI just before the REF then the latter new HEI should not benefit.

25. Do you agree that the approach to supporting and enabling impact should be captured as an explicit section of the environment element of the assessment?

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X Yes

☐ No

Comments:

Yes, there would be a clear gain in saving effort in submission preparation. However, effort would be needed to ensure that submitting units did not view this as an occasion for perfunctory boilerplate and indeed were reassured that assessors would look carefully at any distinguishing tactics or mechanisms for fostering impact generation. Impact case analysis has shown that units varied greatly in the degree to which they facilitated and/or rewarded impact generation.

26. What comments do you have on the suggested approaches to determining the required number of case studies? Are there alternative approaches that merit consideration?

If REF2021 decides to include all research active staff then this should be accompanied by a reduction in the associated number of impact cases per submitted FTE so that the total number of impact case studies is less than or equal to the number in the previous REF.

Inclusion of institutional impact case studies should also lead to a reduction in the number of UoA case studies.

It would be terrible, for small submissions, for the score of a single impact case study to become known. There are ways to obscure such information using methods of statistical disclosure control.

We are suspicious of the claim that the requirement to submit all research-active staff will remove pressure to keep submitted numbers below impact case study thresholds. Rather, the problem will be transferred elsewhere: institutions will be under pressure to re-assign staff as teaching only.

With reference to paragraph 90, the Royal Statistical Society Working Group on Research Excellence Framework (REF) League Tables published a report identifying precisely the submission staff `discontinuity' and possible solutions. See

http://www.rss.org.uk/Images/PDF/about/press-releases/rss-press-release-ref-league-tables-report-11-05-2015.pdf

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27. Do you agree with the proposal to include a number of mandatory fields in the impact case study template to support the assessment and audit process better (paragraph 96)?

X Yes

☐ No

Comments:

We support the creation of mandatory fields but the web form aspect should be limited to the collection of standard information, allowing the textual component to be uploaded as a PDF. Otherwise, submissions will be limited to plain text, inhibiting, for example, the use of mathematical or other scientific notation and symbols.

28. What comments do you have on the inclusion of further optional fields in the impact case study template?

Fine, we support this. In particular, it could be useful for research funders in highlighting the impactful nature of the work they sponsored. These additional fields should not reduce the limited word count for the rest of the impact statement.

29. What comments do you have in relation to the inclusion of examples of impact arising from research activity and bodies of work, as well as from specific research outputs?

This is, perhaps, one of the most important changes. We have seen repeatedly that impacts most often arise from interactions and relationships, often far more than the hypothetical “academic paper to impact” chain postulated in the previous REF. Thus we would strongly agree with including examples of impacts arising from research activity and bodies of research work (e.g. a dedicated centre such as the Oxford Centre for Industrial and Applied Mathematics or the Heilbronn Institute for Mathematical Research, or an individual being invited to sit on a disciplinary-relevant government or industry advisory board or enquiry), as well as specific research outputs.

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30. Do you agree with the proposed timeframe for the underpinning research activity (1 January 2000 to 31 December 2020)?

☐ Yes
X No

Comments:

The Mathematical Sciences UoA would argue strongly for a longer time window, as impact in this UoA often takes longer, sometimes due to the many stages of impact pathway that ideas in mathematics have to traverse from idea to eventual application.

31. What are your views on the suggestion that the threshold criterion for underpinning research, research activity or a body of work should be based on standards of rigour? Do you have suggestions for how rigour could be assessed?

For this purpose it is necessary that underpinning research is rigorous and has originality, both of these are important. Significance in research terms (judged within the academic discipline) is less important but obviously impact should measure the significance of impact.

Rigour needs to be backed up by originality.

32. Evaluation of REF 2014 found that provision of impact evidence was challenging for HEIs and panels. Do you have any comments on the following:

32a. The suggestion to provide audit evidence to the panels?

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This proposal is attractive in principle, but will likely be burdensome and time-consuming in practice. We continue to be deeply concerned about the lack of rigour in the assessment of impact case studies and the "wider impact" concept is often impossible to evidence for purer subjects (hence we welcome the possibility of alignment of the REF and RCUK definitions of impact).

32b. The development of guidelines for the use and standard of quantitative data as evidence for impact?

The main problem here is the lack of evidence on the reliability and quality of and comparability between the various metrics that exist. Usually, little is understood about metrics' mean performance and even less on their variability and co-variability. If robust evidence was supplied by HEFCE or associated bodies then this could be evaluated and adopted. However, we see little sign or prospect of such evidence. For example, many metrics vary wildly between disciplines. Discipline-corrected versions exist but these tend to be at a too-coarse scale and also individuals/outputs often overlap several disciplines. Hence, we believe such metrics will likely severely disadvantage cross-disciplinary work.

32c. Do you have any other comments on evidencing impacts in REF 2021?

Narratives connecting bodies of work and sets of activities by a researcher/research group should be allowed in evidencing impact.

33. What are your views on the issues and rules around submitting examples of impact in REF 2021 that were returned in REF 2014?

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The 'reach' of impact can clearly grow over time so we support the principle of using additional impact from old case studies. This also rewards long-term impact and long-term relationships which are vital and common in the mathematical sciences. Narratives need to set out clearly the 2014 status quo and the new impact claimed. Clear instruction should be given on how much added information needs to be provided in the second submission, with a hypothetical example.

We agree with the idea that no more than a certain percentage of case studies should be submitted based on REF2014 cases (25%?).

9. Environment

34a. Do you agree with the proposal to change the structure of the environment template by introducing more quantitative data into this aspect of the assessment?

X Yes

☐ No

Comments:

We approve of the use of a more structured template for the environment part of the submission. However, extremely careful thought will have to be given as to what additional metrics are sought. Such metrics MUST be discipline-specific: such robust metrics are difficult to identify.

Careful attention must also be paid to the influence of certain metrics that might be collected as part of the environment submission. In past exercises (REF and RAE) it has been the case that some academic judgements of key quantities (such as outputs) has not discriminated as much as the entire research community might have expected. However, the inclusion of over-influential metrics can dominate the overall result, purely due to their discriminative power. The effect of inclusion of any metrics can and should be tested by panels to ensure that they do not dominate the overall judgement. Overall, the key point is that not only are metrics potentially dangerous on their own, they can be devastating when combined in thoughtless ways, especially when they are measured on different scales and/or have different levels of variability.

It is also vital that environment is not just a proxy for size of UoA. Many parts of the mathematical sciences community felt that the environment measure in REF2014 became simply an elaborate means of rewarding larger departments. Appropriate steps should be taken to prevent this recurring. One idea might be to tension environment assessment to what might be expected by a UoA of a given size. I.e. what is a UoA providing over and above what might be expected of a department of that size, i.e. what is the value-added. Formal benchmarking would probably be too cumbersome, but some quality of value-added could well become part of the UoA criteria.

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34b. Do you have suggestions of data already held by institutions that would provide panels with a valuable insight into the research environment?

No comment

35. Do you have any comment on the ways in which the environment element can give more recognition to universities' collaboration beyond higher education?

Such evidence should be part of the narrative.

36. Do you agree with the proposals for providing additional credit to units for open access?

- [ ] Yes
- [ ] No

Comments:

The definition of “published on an open-access basis” could do with some clarification. Does pre-publication on repositories such as arXiv count? In some subfields on the mathematical sciences almost everybody does this and has done for many years (in some of these the tradition of publication in “proper” journals is dying). Further, all REF-institutions already require compulsory upload of outputs from staff to institutional repositories (albeit sometimes with embargoes). So, for both of these open access routes (public and institutional repositories) it would seem a waste of time to have to demonstrate this, tedious and time-consuming to do so and a zero-sum game and, hence, not useful for assessment.

However, we firmly believe that additional credit SHOULD be accrued to UoAs which adhere to more stringent forms of open-access. For example, sharing data (where not justifiably confidential) and code as part of a reproducible research mandate, or publishing appropriate experimental protocols to enhance reproducibility.

Only responses received through the online form will be reviewed and included in our analysis.

37. What comments do you have on ways to incentivise units to share and manage their research data more effectively?

Again, UoA or HEI practices and policies to encourage the proper and useful husbandry could be rewarded. Merely mentioning it as part of the assessment criteria will steer future behaviour.

10. Institutional level assessment

38. What are your views on the introduction of institutional-level assessment of impact and environment?

We are not convinced of the idea of an institutional-level impact case study. However, it is the case that there might be a good case for permitting case studies to be submitted and counted from research resulting from collaborations between UoAs. One could also permit cross-institution impact case studies where, e.g., fundamental research in one UoA transfers to applied research in another UoA in another discipline (any subject to any subject), or two same-subject UoAs in different HEIs both work together on a single impact case which might work because personnel have worked across both HEIs. These "multiple-UoA" impact case studies could be very flexible and reflect the reality of research and multiple UoAs could submit the same case across several HEIs if necessary.

However, whatever model is adopted, since this would be a new feature of the next REF we advise that a low percentage (10-15%) of impact case studies can be formed in this way.

We also note that these ideas break the link between UoA and QR funding, so, the weighting afforded to these should necessarily be small.

The UoA environment template (see Q34a) should have a section where a single institutional statement can be embedded, which is then referred to and reflected in the Unit level text.

39. Do you have any comments on the factors that should be considered when piloting an institutional-level assessment?

It is important to allow for the range of HEI organisational structures --- from centralised to devolved (similarly for environment). Both assessments need to be discipline-neutral.

Only responses received through the online form will be reviewed and included in our analysis.

11. Outcomes and weighting

40. What comments do you have on the proposed approach to creating the overall quality profile for each submission?

These seem reasonable.

However, we would draw your attention to the Royal Statistical Society Working Group on Research Excellence Framework (REF) League Tables report

http://www.rss.org.uk/Images/PDF/about/press-releases/rss-press-release-ref-league-tables-report-11-05-2015.pdf

which draws attention to the fact that the "actual effect of Outputs on the reported overall quality profiles was markedly less than the announced weight of 65% for Outputs might be taken to imply". This is partly due to the low variation between sub-profiles for Outputs. Recommendation R.2 of the Working Group's report is that the `overall profiles' should be made more informative, so at least observers of the REF outcome are fully informed of these sources of variability and the likely effects on the overall profile.

41. Given the proposal that the weighting for outputs remain at 65 per cent, do you agree that the overall weighting for impact should remain at 20 per cent?

X Yes

☐ No

Comments:

The preferred impact weighting - whether 20%, 25% or 30% - varies across the mathematical sciences

community. However, we believe it is vital to (i) beware of any adverse consequences of a higher level of impact weighting for the flourishing of high quality mathematics research; (ii) ensure that REF and Research Council definitions of impact are aligned as proposed above, before any increase is implemented; and (iii) not change too many features at one time, so allow a revised definition of impact to bed down before any potential increase.

42. Do you agree with the proposed split of the weightings between the institutional and submission-level elements of impact and environment?

☐ Yes

X No

Comments:

Given that the institutional components are a new feature, we think that the weights associated with them (5 and 7.5%) are too high for an untested proposal.

Also, as above, we are not convinced of the case for institutional level impact case studies, but rather what could be encouraged were genuine cross-disciplinary case studies (which could be submitted across different UoAs, even in different HEIs, to properly mirror what actually goes on in the research community).

12. Proposed timetable for REF 2021

43. What comments do you have on the proposed timetable for REF 2021?

It looks reasonable.

13. Other

Only responses received through the online form will be reviewed and included in our analysis.

44. Are there proposals not referred to above, or captured in your response so far, that you feel should be considered? If so, what are they and what is the rationale for their inclusion?

A. What about calibration? It is important to calibrate assessors both within and between panels. Within panels is essential, else panels have arguments about whether some sub-discipline is getting more favourable or harsher treatment than another. It is easily dealt with by the chair allocating outputs to pairs (or more) of assessors in such a way as to make the assessment graph highly connected, requiring independent scores from each, and then inferring assessor bias and true scores for each output, using the CwC method. http://www.calibratewithconfidence.co.uk/model

The method can also incorporate declared confidences/uncertainties in each score. Between panels is essential because however much the authorities say that there is no basis in the REF for comparing scores in different UoAs, people do it, institutions base strategic decisions on it, and the REF claims consistency across panels! This can be achieved by much more cross-referral of outputs, in particular, having them scored by both the home and the other UoA. The CwC method will show relative panel biases and enable cross-panel comparison. There is a wide scientific literature on such problems and this should be consulted and assimilated.

B. In any well-designed assessment exercise it is vital to include not only the (mean level) results such an exercise but also estimates of the underlying levels of variability. As far as we are aware no RAE or REF has ever presented assessment and results of uncertainty in the assessments. We are strongly of the view that inclusion of some rational well-thought-out uncertainty assessment would be best practice (and not doing it is scientifically negligent).

C. Along with the scientific community, we are very concerned about reproducibility and not only because of statistical illiteracy/lack of protocols. How much credit in the UK research system is being given to reproduction of scientific findings? The lack of adequate reproduction is perhaps causing waste in the research ecosystem. See, for example, "Reality check on reproducibility" Nature editorial, 25th May 2016 for a starting point.