Note: This consultation response was led by the University’s Bibliometrics Working Group (see http://www.lib.gla.ac.uk/bibliometrics/). Input was also sought from Deans, Heads of Department, Members of the Research Planning and Strategy Committee, Members of Territorial Research Subgroups, Faculty Research Convenors/Associate Deans for Research, RAE Champions, Faculty Secretaries and Faculty Research Administrators. Following the launch of the consultation, these colleagues were contacted by e-mail and asked for their initial feedback. In February 2008, they were consulted on a draft GU response.

Annex A

Research Excellence Framework

Consultation response form

1 Respondents should complete the electronic version of this form, which can be downloaded from the SFC website (http://www.sfc.ac.uk/) alongside this document.

2 Responses from Scottish HEIs and other respondents in Scotland should be emailed to Dr Stuart Fancey, email: sfancey@sfc.ac.uk by Thursday 14 February 2008.

3 HEIs in Scotland wishing to express an interest in taking part in the pilot of the bibliometrics indicator should indicate this separately by email to sfancey@sfc.ac.uk by Thursday 31 January 2008.

Respondent’s details

Are you responding: On behalf of an organisation

Name of responding organisation/individual: University of Glasgow

Contact name: Ms Kerry Revel

Position within organisation (if applicable): Research Strategy and Policy Administrator

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Consultation SFC/06/2007C : Research Excellence Framework

1. Introduction

The University of Glasgow is generally supportive of a framework for research assessment which is lighter in touch and makes greater use of quantitative information. We endorse the views expressed in the Russell Group response to this consultation.

Naturally, a number of key issues will need to be satisfactorily resolved to ensure that any new scheme is recognised as being robust, valid and acceptable to both the academic community and other stakeholders. In particular, we highlight the need to accommodate certain discipline-specific issues and the appropriate definition of the role of expert panels.

In relation to research assessment in general:

- It is essential that Scotland continues to participate in a UK-wide process of research assessment capable of preserving the international reputation of UK research and allowing Scottish institutions to benchmark their research performance against their English counterparts.

- We firmly support the preservation of the dual-support funding system and the use of the new assessment framework to inform the distribution of QR. Whilst the Funding Councils in the devolved administrations have freedom to develop their own funding algorithms, we would urge careful consideration by Westminster, the Scottish Government and the Funding Councils of the potential impact of developing increasingly distinct models which could lead to disparity between the constituent parts of the UK.

We therefore consider that the REF should retain what we see as the three purposes of the RAE, namely:

- To establish reputation through assessment of research quality
- To inform the allocation of QR
- To aid management processes within universities, including resource allocation

The University of Glasgow supports the development of a single assessment framework, applicable across all subject areas, both STEM and non-STEM, and based on a basket of metrics, weighted as appropriate for specific disciplines and moderated by expert panels, which delivers these purposes. Our views on a single framework are discussed further in Section 6. Further, arrangements under any new system should minimise the administrative burden placed upon institutions.

In reforming research assessment arrangements, we should be mindful of the opportunities to overcome a number of perceived problems with the RAE such as:

- Unnecessary and inappropriate game-playing, including poaching of staff
- Handling of applied research and research not published through the usual peer-review journals
Handling of interdisciplinary research
Focus on the encouragement of “safe” research.

In relation to the operation of bibliometric indicators which form a substantial component of this consultation, we support:

- **No selection** of research active staff
- **All outputs** should be assessed
- Credit for publications should **remain with the institution identified by the author’s address on the publication**

It is **crucial to allow sufficient time** for the smooth and effective implementation of the new framework. This is particularly important for the pilot exercise, which must be carried out carefully and rigorously, over a sufficiently long timescale to ensure the validity of its findings. We would recommend that the pilot exercise is given an **extra 12 months** to be run and evaluated. More detailed suggestions regarding the role of the pilot exercise are noted below under the response to Question 1b.

2. **Subject Groupings**

**Question 1a:** Do you endorse our proposals for defining the broad group of science-based disciplines, and for dividing this into six main subject groups, in the context of our new approach to assessment and funding?

We broadly favour the use of more aggregated subject groupings than the Units of Assessment used in RAE2008. However, we have the following comments on the proposals made:

- Should each grouping have a single expert panel, then the breadth of research to be covered will result in either extremely large panels or the panels will lack the expertise to cover the full panel remit. The six panels will therefore only be able to have a general overview of the assessment process.

- The mix of subjects in each proposed grouping is not necessarily optimum, for example:
  - It is not appropriate to include veterinary medicine, with its significant clinical component, in a grouping with basic biological science.
  - At present, the health sciences subject grouping comprises a number of disciplines, including health services research, psychiatry, clinical psychology and neuroscience. However, it is not appropriate to assign neuroscience to this subject grouping. The profile of neuroscience research differs significantly from that of these other disciplines, particularly health services research, and hence may introduce an unhelpful distortion that would affect both health services researchers and neuroscientists. Neuroscience citations are more typical of the pattern for “clinical medicine” than “health sciences” research.

- Groupings should be compiled to minimise, where possible, the potential for game-playing. At present, Annex C of the consultation document cites bibliometric statistics for the distinct groups of basic life sciences and biological sciences. There is a far greater average citation rate per paper for the basic life sciences group, however. This could influence behaviour insofar as colleagues presently in the basic life sciences group may seek to move out of this group to improve the normalised quality rating of their papers (by publishing in different journals).
We have specific comments on the inclusion and exclusion of some specific disciplines in bibliometric assessment, including allocation to subject groupings where appropriate. These are included in the following section.

3. Discipline-specific Issues

Question 1b: Are there issues in relation to specific disciplines within this framework that we should consider?

The comments in this section relate to the application of bibliometric analysis using data held in the Thomson Scientific Web of Science (WoS) bibliographic database. As suggested in the consultation document, it will be necessary for the WoS classification of journals to be reviewed by UK-based experts to ensure it is suitable for the purposes of the new framework. We believe that there should be on-going work to explore alternative data sources, which should be integrated into the analysis when there is confidence about the robustness of their data. Further, it is important that any data source used is sufficiently free from error to be reliable at whatever level of discipline disaggregation is used for the exercise.

Inclusion of disciplines currently excluded from the proposals
We propose that Psychology should be included as a STEM subject.

“Boundary” disciplines
A number of subjects straddle the STEM/non-STEM boundary. Geography is one example, where physical geography might lend itself to bibliographic assessment with adequate WoS coverage while human geography, aligned more with social science disciplines, may not be well covered by WoS. These boundary disciplines should be explored during the pilot exercise to enable robust decisions about their inclusion or otherwise in the STEM subject groups.

Disciplines with limited Web of Science coverage
We are concerned about reliance, at least initially, on WoS as the primary source of citation data. To be suitably robust, the sources of bibliometric data used must provide adequate coverage of individual disciplines (and the areas within them) as well as covering the publication types typically associated with those disciplines (including conference proceedings, monographs, books and citations within books/book chapters). Careful consideration must therefore be given to the robustness of the approach for the following disciplines and sub-disciplines:

- Health sciences, nursing, computer science and engineering, where the extent of WoS coverage is limited. In engineering, for example, Web of Science has less than 50% coverage which does not provide a robust basis for assessment.
- Particular ‘niches’ within disciplines, which WoS does not capture well, may be disadvantaged (e.g. medical ethics).
- Applied research and work published in non-western, foreign language journals where the extent of WoS coverage is limited.

We agree with the exclusion of mathematics and statistics from the STEM subject groupings.

Small and newly-emerging research fields
We suggest that further work is required to explore whether small and newly-emerging fields may be discouraged by the bibliometric approach:

- Work within small fields is less likely to achieve a status of being significantly different from the world average. Small fields can end up having a significant impact on other research communities and should not be prejudiced as a result of their size.
- Research in newly-emerging fields could be under-represented by bibliometric analysis as it will take time for a significant number of citations to build up.
Under the present proposals, self-citations will be excluded from citation counts. This is of particular concern in small and newly emerging fields where researchers working in groups are so far ahead of their field that their work is not yet understood. As long as the primary objective of the exercise remains to provide a quality-driven method of allocating QR at an aggregated level (e.g., main subject groupings), the elimination of self-citations is not an issue. If the intention is to deliver the finer grained, more detailed assessment outcomes associated with RAE2008, however, the exclusion of self-citations would not afford adequate recognition to those researchers in emerging sub-disciplines who are yet to receive the recognition of their peer group.

Collaborative research
The exclusion of self-citations is also an issue in areas where collaborations are commonplace as it could act as a disincentive for colleagues maintaining collaborations (apart from those which are particularly meaningful).

In areas where very large scale collaborations are common (for example in particle physics), citation analysis is unlikely to produce assessment results capable of differentiating between the quality of groups within different institutions. This concern should be addressed in the work of the pilot exercise. For those disciplines dominated by large scale collaborations, panels may have more of a role to play in terms of peer review/moderation.

Role of the Pilot Exercise
We suggest that the pilot exercise is an ideal opportunity to explore a number of the issues identified above, including:

- Testing of the validity of the STEM subject groupings outlined in the consultation document (or as amended according to the consultation response), carefully considering the position of computer science and engineering in particular.
- Consideration of the most appropriate output metrics for each subject area (e.g., citations, citation rate, citation half-life, etc), the weightings to be applied and appropriate window lengths.
- Exploration of the applicability of bibliometric principles to “boundary” and non-STEM disciplines, including the use of additional data sources (e.g., Scopus).
- Testing of the ability of citation analysis to deal adequately with the assessment of interdisciplinary research and outputs in multidisciplinary journals or journals normally associated with other disciplines.
- Testing of the ability of citation analysis to deal adequately with the assessment of outputs produced as a result of very large scale collaborations.
- Exploration of granularity effects to inform degree of subject disaggregation which might be appropriate or reliable in assessment results; in particular, this should include consideration of disciplines where constituent sub-disciplines can have quite distinct characteristics (e.g., Physics).
- Exploration of the role of self-citations to identify any disproportionate impacts.
- Testing of whether certain output types (for example reviews) should be included in the outputs to be assessed in specific disciplines.

Further, it would be helpful if the pilot exercise could also be used to explore and inform:

- Assessment of the behavioural impact of any proposals and how negative behaviours might be mitigated.
- The role of experts and expert panels.

We propose that the pilots should not only involve data-collection from HEIs, but should also include an element of role-play to identify unforeseen and inappropriate behaviours arising from the proposed Framework methodology. This could be conducted with a subset of the pilot HEIs in an online gaming format.
4. Quality Indicators

Question 2a: Do you agree that bibliometric indicators produced on the basis that we propose can provide a robust quality indicator in the context of our framework?

Bibliometric analysis provides a measure of the international academic impact of outputs. We agree that bibliometric indicators are capable, in theory, of providing an indicator of quality provided they are used as part of a carefully selected basket of appropriately-weighted metrics. We propose that other metrics should include those assessed in RAE 2008, namely research income, postgraduate research students, and potentially some measure of research sustainability (see Section 10).

The report to HEFCE by the Centre for Science and Technology Studies, Leiden University plays down the major criticisms of bibliometric methodology (including journal coverage, behavioural effects, manipulation of citation indicators, field definitions and time lags). Notwithstanding this, it will be essential to ensure that these issues are appropriately handled under final assessment arrangements. We make the following, specific observations:

Time lags
A common criticism of the use of citations is that they take time to accumulate. To take an average of the number of citations per paper over a fixed period (say 2001-2007) will under-rate the impact of papers published in 2005-07 compared to those published in 2001. It is essential to ensure that citation windows are long enough to take account of time lags in different subjects but are not so long as to result in much older research influencing how new research is funded in the future. Panels, informed by pilots and expert advice, should decide on an appropriate window length for each field.

Contribution to research
One of the limitations of bibliometric citation data is that it does not automatically give authors credit for their contribution to the work in terms of their authorship position. This will result in a person's position as first, last or corresponding author (depending on the discipline) being less important than it is now. Credit is not automatically given for an individual's intellectual contribution to the work (where another named author may have simply provided equipment or patients for a study, for example) and institutions leading a piece of work might get no more recognition than peripheral institutions playing only a minor role.

Citation clubs
The Leiden report expresses the view that the formation of "citation clubs" will not have a material impact on the assessment. It would be useful to track this issue as the system is implemented, to identify the impact on any behaviours.

5. Significant Issues

Question 2b: Are there particular issues of significance needing to be resolved that we have not highlighted?

Behavioural changes
It is inevitable that any assessment system will influence institutional and individual behaviours. These should be recognised and, where possible, any negative impacts minimised. The following possibilities should be considered:
As the significance of their contribution will not be taken into account, could researchers be less inclined to take up leadership positions? This underlines the importance of institutions having effective promotion procedures to recognise & reward research leadership.

Will there be an incentive for researchers to put their names on more papers (resulting in more citations) or to reserve authorship for high quality papers to avoid being trapped by the self-citation rule in subsequent publications?

Will researchers be less inclined to collaborate with colleagues at other HEIs given that other, potentially competitive, institutions will also receive credit for the papers produced?

Might researchers be less inclined to cite their supposed ‘competitors’? This could have negative scholarly implications.

How will the proposals affect interdisciplinary research? There is potential for staff to be assessed in different areas depending on their work or where they publish. Might this have an impact on recruitment practices or joint working arrangements should there be a perceived advantage in hiring/publishing in “core” areas of a discipline rather than in interdisciplinary research areas?

In relation to the development of bibliometric indicators, the consultation document proposes selection by institutions of staff to be included in the assessment. We would argue that this issue, together with options for selection and allocation of outputs, are not yet resolved. The University of Glasgow’s views are as follows:

Assigning credit for outputs
Credit for the quality of outputs should be assigned to the HEIs at which outputs were published. All relevant outputs published within the period by each HEI should be assessed over a time frame appropriate to the discipline. Staff transferred from other UK HEIs during the period will contribute to volume at their new institutions for the purposes of funding (assuming that volume will still be a driver).

Assigning credit to the institutions where outputs have been published would:

- Provide a more automated method of assessment.
- Minimise the onerous task of HEIs keeping a track of the publications produced by members of staff who may have been employed by several different institutions during the assessment period.
- Help address the problem of individuals publishing under the same name or using their middle initial, for example.
- Reward HEIs for their investment in high quality research by high calibre staff. The present system provides no such return unless staff remain with their institution throughout an RAE cycle.
- Suppress poaching. Provided funding algorithms also include additional drivers such as research income and employed staff volume, then measured recruitment as part of normal career progression, team building and investment in growth by an institution, would not be discouraged.

It should be noted that crediting outputs to the publishing institution effectively precludes staff selection, as staff selection in these circumstances could:

- Discourage institutions from submitting those staff whose best publications were produced prior to recruitment by the submitting HEI, as the benefits would go to the employee’s former institution.
- Discourage institutions from investing in the recruitment of “star” researchers; although this could serve to slow down the active staff transfer market experienced under existing arrangements, equally, it could also inhibit it, which would also be damaging.
Outputs to be assessed
We favour the evaluation of all publications and the development of a citation profile which shows the percentage and number of cited publications within different crown indicator bandings (i.e. relative to the normalised world average score).

If all outputs are to be assessed, the following issues need to be considered:
- There may be a strong incentive for institutions to avoid journals or even sub-fields that are seen as less likely to generate substantial citations or to discourage the publication of certain types of output, for example training materials, chapters in books, letters, correspondence or review articles, to maximise the proportion of publications in the highly cited band. This could penalise PhD students and ECRs whose careers frequently depend on more minor outputs.
- It will be essential to ensure that the sources of bibliometric data used provide adequate coverage of typical publication types associated with specific disciplines. This will ensure that disciplines are rewarded according to their normal publication types and should discourage changes in publication behaviours.

Staff selection
Given our views on attribution set out above, staff selection from the perspective of citation analysis becomes irrelevant. The outputs of the institution, not individuals, in the relevant period would be analysed.

Eliminating selection in this way will reduce the administrative burden of selection, the need to ensure compliance with equalities legislation and the potentially damaging effect on early career researchers who have yet to build up a strong citation profile.

6. Light-touch Peer Review for non-STEM Disciplines

Question 3a: What are the key issues that we should consider in developing light-touch peer review for the non science-based disciplines?

Question 3b: What are the main options for the form and conduct of this review?
(answered together)

The University of Glasgow supports the development of a single assessment framework applicable across all subject areas. This avoids the creation of a sharp division in the sector between STEM and non-STEM subjects and promotes the stability of funding arrangements for all subjects. We support the creation of a continuum within which the assessment approach progresses from almost exclusively metrics-dominated at one end (with the minimum involvement of panels), to predominantly peer review assessment at the other, according to the characteristics of individual disciplines. Our expectation is that STEM subjects, as categorised as a result of this consultation, will be the first grouping to be assessed through the metrics-dominated approach.

It is essential for work to be carried out immediately, fully exploring the extent to which citation analysis, research income and PGR numbers can usefully be applied, over time, to non-STEM subjects. As discussed in Section 3, it would be useful for this work to start as part of the pilot exercise.

We would call for an immediate and clear indication of the timetable for the consultation on the introduction of light-touch peer review for non-STEM subjects. Should this not occur, there is a risk of this work being sidelined.
The documentation available so far pays very little attention to how non-STEM subjects might be assessed. In developing light-touch peer review for the non science-based disciplines, the following issues should be considered:

- It is likely that a peer review element will be required for the foreseeable future for the assessment of non-STEM subjects.
- In addition to research income and PGRs, other forms of research metrics could be considered. These might be based on the evaluation of end-of-grant reports by the Research Councils, for example.
- It probably remains appropriate for research assessment in Arts and Humanities subjects to be carried out every 6-7 years.

Looking to the future, work should be undertaken on an on-going basis to explore the longer-term application of bibliometric analysis to non-STEM subjects:

- The Leiden method of citation analysis is not applicable to most Arts and Humanities subjects at the moment, partly because the bibliographical data for these subjects is very incomplete and partly because of the different pattern of citations. At present, the Web of Science does not adequately cover certain types of research outputs common in non-STEM disciplines (notably books and monographs), nor does it take into account citations within books/book chapters. This lack of coverage means that research quality would not be measured in any effective way under the proposed form of citation analysis.
- For bibliometric analysis to be applied non-STEM subjects, further exploration is therefore needed to identify the most appropriate bibliographic databases to use in the assessment process.
- Issues such as the unreliability of negative citations and populist positive citations need to be considered.
- Care needs to be taken when assigning specific disciplines as either "science-based" or "non-science" based. Whilst in many cases this decision will be straightforward, in some disciplines, for example public health where social scientists undertake qualitative research and publish across a wider range of social science journals, a light-touch peer review approach may not be appropriate.
- We believe that, notwithstanding the need for peer review in the ‘non-STEM’ disciplines, greater aggregation is needed for consistency with the assessment of STEM subjects, with quality judgements being made across broad subject groupings and not of individual academic disciplines.
- Consultation on appropriate non-STEM subject groupings will be essential.

7. User Value

Question 4: Is there additional quantitative information that we should use in the assessment and funding framework to capture user value or the quality of applied research, or other key aspects of research excellence? Please be specific in terms of what the information is, what essential element of research it casts light on, how it may be found or collected, and where and how it might be used within the framework.

The University of Glasgow has consistently argued that research assessment (and hence QR) should be based on research quality. The Scottish Funding Council’s Knowledge Transfer Grant (KTG) provides a separate and distinct stream of funding based on Knowledge Transfer activities. The University would be concerned if an over-emphasis on user value or the quality of applied research in the research assessment process led to a reduction in curiosity-driven research in favour of user-driven research. Blue-skies research cannot be seen as a ‘luxury’ as it is essential in order to create the innovations and technologies of the future. Under the new framework, the University of Glasgow supports the growth of Scotland’s KTG scheme to a level that gives greater
encouragement to academic staff and managers to engage more strongly in user driven research activities, without the utility of such activities being measured via research assessment arrangements.

8. Expert Panels

Question 5: Are our proposals for the role of expert panels workable within the framework? Are there other key issues on which we might take their advice?

The proposed role and remit of expert panels must be clearly defined. If the assessment exercise is to be carried out regularly, there will need to be standing expert panels who will be involved in a substantial volume of work. This would also place a burden on their employing institutions.

Many expert panels will have to be very large to ensure that there is adequate expertise across a very large range of disciplines, both STEM and non-STEM. As a result of this, they might only be able to oversee the exercise in a very general way.

We envisage expert panels having a role to play in the following activities:

- Carrying out peer review in those areas not suited to bibliometric analysis.
- Advising on the most appropriate balance of metrics for STEM and non-STEM subjects (in terms of citations, research income, student numbers etc) and the weightings to be applied, taking into account expert advice relative to specific subject areas. We hope this would be done in an efficient manner which does not amount to the creation of a two-tier panel system.
- Advising on how specific subject areas should be assessed, particularly subjects in outlying areas or subjects which span individual disciplines (for example geography which contains elements of both natural and social sciences).
- Moderating assessment outcomes, where appropriate, to ensure that final gradings are robust and credible and to minimise the impact of negative citations or inappropriate behaviours.

9. Burdens on the Sector

Question 6: Are there significant implications for the burden on the sector of implementing our new framework that we have not identified? What more can we do to minimise the burden as we introduce the new arrangements?

The pilot of bibliometric indicators during 2008 should give a better indication of the burden that the proposed framework is likely to place upon institutions. We would make the following, specific observations:

Selection of staff: Although the new assessment framework is intended to reduce the administrative burden, requiring institutions to select staff would place a significant burden on them, particularly if the framework is to work on a one to three year cycle. We reiterate that our proposals on attribution of output citations is consistent with the elimination of selection.

Data checking: It will be necessary for institutions to closely check data to ensure that all relevant publications have been credited to them. We envisage that a significant amount of time and resources will be required to improve the curation and management of institutional publications data in general.
10. Equal Opportunities

Question 7: Do you consider that the proposals in this document are likely to have any negative impact on equal opportunities? What issues will we need to pay particular attention to?

It will be essential to ensure that the new framework does not disadvantage those researchers whose personal circumstances have had a significantly adverse effect on their research productivity. This includes early stage researchers, those affected by long term illness or disability, maternity/paternity leave, part time working, or other comparable domestic or personal circumstances.

Consideration might be given to incorporating some form of 'sustainability' measure into the assessment process such as the proportion of ECR staff employed by the institution.

Where bibliometric indicators are to be used (and the focus will be on the totality of outputs and not their attribution to individuals), we believe that the impact on equality will be minimised by rejecting selection, attributing outputs to the institution at which they were authored and incorporating a 'sustainability' measure in the metrics basket.

11. Other Comments

Question 8: Do you have any other comments about our proposals, which are not covered by the above questions?

Use of HESA data: The University of Glasgow supports the plan to make more use of HESA data, reviewing HESA cost centres where appropriate. This would work more effectively in a process that does not involve staff selection, given that institutional HESA totals will be used.

Disaggregated profiles: For the purposes of research management, it would be useful for profiles to be made available to institutions at a level disaggregated from main subject groupings.

Determination of a volume measure: In a system where bibliometric indicators are to be used and there is no selection of staff, a mechanism will be needed to determine the staff volume, which we assume will still form part of a funding algorithm. One option would be to take account of staff in post at the HEI on the census date who have contributed to citations, irrespective of the institutions who have gained credit for the quality of those outputs.