FFRRM's advice to the Research Excellence Framework (REF) 2021 panels

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Introduction

1. A key aim of the UK Forum for Responsible Research Metrics (FFRRM) has been to provide advice to the UK HE Funding Bodies and the REF panels on the REF 2021. At the May 2017 meeting of the FFRRM it was agreed that a working group should be established to:

    a. provide evidence-based advice on the responsible use of quantitative data in assessment of the environment in REF 2021 at unit of assessment and institution level;
    b. provide advice on the initial findings from a project seeking to develop standardised guidelines for the use of quantitative evidence for impact case studies at unit of assessment level.

2. The working group were asked by the FFRRM to make recommendations which are in line with the core concepts that underpin the responsible use of research metrics (as outlined in The Metric Tide report[1]) including robustness, humility, transparency, diversity and reflexivity.

3. Full Terms of Reference for the working group is available at Annex C.

4. The working group, chaired by Professor Roger Kain, were appointed in the summer of 2017 (membership list available at Annex B). The group was representative across the UOAs, and included metrics experts. They met three times between September 2017 and February 2018, and the FFRRM were consulted and updated on progress throughout (meetings in December 2017, February 2018, and June 2018). UK sector groups were also consulted during the development of the advice, including the Equality and Diversity Advisory Panel (EDAP), Interdisciplinary Advisory Panel (IDAP), and the chair of the UUK Open Access coordination group. For consistency the report refers to the FFRRM as a collective term for the working group and the FFRRM's input.

5. This report sets out the advice presented to the REF 2021 main panels in spring and summer of 2018 regarding the use of quantitative indicators in the research environment as well as the FFRRM's input on work to develop standardised guidance for quantitative measures in impact. After the second round of panel meetings, the FFRRM were updated on the direction of the discussion regarding the indicators in environment. The panels raised some concerns with the indicators presented, including:
    a. the potential unintended consequences, particularly due to the short list of indicators;
    b. concern that UK HEIs will see this as a list of mandatory requirements, regardless of the caveats in place;
    c. the extent to which HEIs would feel unable to draw on indicators that were not included in the agreed list, which may unduly constrain submissions;
    d. the difficulty for panels and institutions to define what 'excellence' looks like against some of the indicators, such as the unit's age profile.

[1] https://re.ukri.org/news-events-publications/publications/metric-tide/

6. The FFRRM provided further advice for the main panel chairs' consideration, particularly the need to balance concerns with the risk that panels receive non-comparable and varied indicators which may not address the feedback from REF 2014 panels.

7. On the basis of the FFRRM's work to develop advice for REF 2021, the FFRRM make the following recommendation:

   In the context of UK Research and Innovation, opportunities for data collection to be structured and coordinated across the various areas within the remit of UKRI should be explored, with due notice given to institutions about intended use in future REF exercises to improve data quality and availability.

Advice on the inclusion of indicators in REF 2021 environment

REF 2014 approach

8. The environment element of the REF assesses the strategy, infrastructure and support provided to the submitting unit's research. In REF 2014, this was assessed in terms of the 'vitality and sustainability' of the research environment demonstrated in the submission and carried an overall weighting of 15 per cent. REF 2021 will follow this broad approach. REF 2014 was governed by three principles, equity, equality and transparency (paragraphs 18a, b and c in Assessment framework and guidance on submissions[2]).

9. The REF 2014 panels formed an environment sub-profile by assessing information submitted in a narrative environment statement[3] (REF5), informed by environment data[4] (REF4a/b/c). Panels received a standard analysis of the quantitative data submitted in REF4a/b/c, in respect of each submission in that UOA, and an aggregated version was provided for all submissions in that UOA. The REF 2014 Panel Criteria and Working Methods[5] outlines how the panels would use the data in the assessment of research environment.

Post-REF 2014 evidence on the use of indicators in environment

10. *REF 2014 panel feedback.* Following REF 2014, feedback was gathered from the panels through focus group meetings.[6] Feedback was sought to identify where refinements may be

[2] http://www.ref.ac.uk/2014/pubs/2011-02/
[3] REF5 included detail on the unit's research strategy, people, income infrastructure and facilities, and collaboration and contribution to the discipline.
[4] REF4a/b/c submitted data included: research doctoral degrees awarded, research income, and research income-in-kind
[5] http://www.ref.ac.uk/2014/pubs/2012-01/
[6] http://www.hefce.ac.uk/rsrch/REFreview/feedback/

made in future REF exercises. REF 2014 panels raised concern about the extent to which the assessment of the template involved assessing quality of writing. There was support from most groups of REF 2014 panellists for increasing the use of quantitative indicators and decreasing that of narrative in environment. This was not without some concern about the nuanced judgements that the narrative elements better enabled panellists to make, and whether increased quantitative indicators would favour one particular sort of environment rather than the optimum for each individual institution. Advice from the focus groups included that in future assessment exercises, panels should be provided with contextualized data (for example by the size of the submitting unit, or the eligible staff pool) and the balance between the narrative and quantitative data in environment should be considered.

11. *The Metric Tide report.* The Metric Tide report (notably chapter 9) made recommendations on the use of metrics in REF environment and impact. The report concluded that there is scope for enhancing the use of quantitative data for the assessment of the research environment, but that these data need to be provided with sufficient context to enable their interpretation.

12. *The independent review of the REF (Stern Review).* The Stern Review[7], published in 2016, suggested that environment statements might be best suited to using metrics (e.g. the number of postgraduate students per academic; research income per academic; levels of citations for the unit's work). The review recommended that 'individual UOA environment statements are condensed, made complementary to the institutional level environment statement and include those key metrics on research intensity specific to the Unit of Assessment'. The review broadly recommended placing the minimum burden as possible on submitting institutions.

13. *Consultation on the next REF.* The former HEFCE on behalf of the funding bodies published the consultation[8] on the second REF on 8 December 2016. The consultation ran for a period of 14 weeks, closing on 17 March 2017. Question 34a asked 'Do you agree with the proposal to improve the structure of the environment template and introduce more quantitative data into this aspect of the assessment'. The majority of those who expressed an opinion were in favour of the proposal to improve the structure of the environment template and introduce more quantitative data saying that it will improve comparability and promote a more objective assessment of environment. However, there were caveats outlined and some concerns raised including: burden, disciplinary and institutional differences, and the importance of context and benchmarking to interpret data. The analysis of the consultation was considered by the REF team, funding bodies and their respective Boards in the development of the REF initial decision document (REF 2017/01).[9] A summary document containing the analysis of the consultation responses was published by the REF team in September 2017.[10]

[7] https://www.gov.uk/government/publications/research-excellence-framework-review
[8] http://www.hefce.ac.uk/pubs/year/2016/201636/
[9] http://www.ref.ac.uk/publications/2017/initialdecisionsontheresearchexcellenceframework2021.html
[10] http://www.ref.ac.uk/publications/2017/consultationonthesecondresearchexcellenceframeworksummaryofresponses.html

14. Following consultation, REF 2017/01 confirmed that the UOA-level environment element will be assessed on the basis of a more structured template, including the use of more quantitative data to evidence narrative content. The initial decision document sets out that the REF team would work with the FFRRM in developing advice for the REF 2021 panels.

The FFRRM's advice

Principles for the inclusion of indicators in FFRRM advice

15. The FFRRM developed a set of principles to govern their advice to the REF main panels on the inclusion of specific indicators for REF 2021 environment. The group developed their guiding principles to address the concerns raised in the evidence base. The principles of the REF apply ('equity', 'equality' and 'transparency'), and the FFRRM principles sit within that. The data collected in REF 2014 to support the environment (REF 2014 4a/b/c) was out of scope of the FFRRM's work.

16. The FFRRM highlighted that the environment narrative has primacy. They recommended that institutions should be able to select from a range of indicators (which for this purpose we call a 'menu') to support and contextualise their narrative statements. The FFRRM recommended that the indicators are not mandatory for institutions, and should not be considered as a check-list, allowing submitting institutions to select what is appropriate evidence in their own context. The menu is not intended to be prescriptive, or exhaustive. The FFRRM do not want institutions to feel constrained by the indicators included in the list.

17. The FFRRM recommend that the term 'indicator' is used rather than 'metric'. This was recommended as a more appropriate way to describe quantitative measures which can be used to support claims of excellence (or indicate excellence).

18. The panels have discretion to add indicators to the menu, or remove them. The FFRRM requested that the main panels agree to use the set of principles to govern the inclusion of any additional indicators identified by the main panels for inclusion in the menu. This was agreed by the panels, and the principles are published on the REF 2021 website.[11]

FFRRM principles

1	Primacy of narrative	The narrative element of the environment statement can be supported by evidence from quantitative data. These data should not supplant the primacy of narrative and peer review in the assessment of REF 2021 environment.
2	Indicator menu	A menu of quantitative indicators should be in the guidance on submissions. Institutions will be able to select suitable evidence to support claims, which could include indicators from the menu. This menu is not prescriptive, or exhaustive and should be sensitive to unintended consequences.

[11] http://www.ref.ac.uk/guidance/

3	Equality and diversity	The menu of quantitative indicators will be considered with due regard to equality and diversity, both in the development of the menu and how the use of each indicator might be interpreted by panels.
4	Transparency and robustness	Each quantitative indicator in the menu should be based on robust data which is auditable.
5	Burden	Each quantitative indicator in the menu should reflect data which are already collected, where possible and appropriate.
6	Institutional/ disciplinary differences	The menu of quantitative indicators should be developed at a level which will reflect diversity of the sector, and to allow institutions to demonstrate excellence at discipline and institutional level.
7	Interdisciplinary research	The menu of quantitative indicators provided as guidance for the REF 2021 environment should not advantage or disadvantage IDR in the research environment.
8	Data contextualisation	Each quantitative indicator in the menu should be aligned in a manner which enables panels to interpret its meaning, ensuring panels can equitably assess provided evidence. Contextualisation will allow a suitable level of comparability between submissions.

Indicators for REF 2021 environment

Indicators that did not meet the guiding principles

19. The FFRRM considered an extensive list of indicators for inclusion in the menu. Annex A presents the list of indicators which were considered not to meet the guiding principles. This list was provided to REF panels to avoid the duplication of work. Many of the indicators did not meet the data transparency and robustness principle and the burden principle.

20. All indicators considered in the section 'Structures to support interdisciplinary research (IDR)' did not meet the principles on the basis of burden and data transparency and robustness. This approach was informed by extensive advice provided by the Interdisciplinary advisory panel (IDAP). The majority of open research indicators were also ruled out on data transparency/robustness and burden. The FFRRM consulted the UUK Open Access Coordination Group Chair and the UUK Open Access Monographs Group for advice on indicators in open research. The FFRRM noted that this is a rapidly developing area, and by the submission year for REF 2021 data sources have the potential to be more robust. A large number of the impact indicators did not meet on the basis of burden and data robustness and transparency.

21. A number of indicators were considered and ruled out on the basis of the principles, however, when they are considered within an institution's own context, some indicators have the potential to meet the FFRRM's principles.

Recommended indicators

22. This report includes the indicators which were presented to the REF 2021 panels for their consideration. The REF 2021 panels have produced advice and examples on the inclusion of quantitative indicators in the environment[12] which drew on the advice from the FFRRM as set out below.

23. The FFRRM did not intend to outline indicators to demonstrate what excellence looks like. The panel criteria will inform institutions on what evidence the panels are seeking.

24. In addition to all eight of the principles which has governed the FFRRM's work, they propose the following:
    a. Eligible and/or submitted staff: the FFRRM recommend that the option to present indicators by reference to both Category A submitted and/or Category A eligible staff is available. Submitted staff should include all staff with a significant responsibility for research, and we expect many institutions to submit 100% of their eligible staff. However, some institutions will not submit all eligible staff (where they do not have significant responsibility for research).
    b. Presentation of the indicators: it is recommended that submissions take a consistent approach to how they present the data, using either submitted or eligible staff. This will assist the panels in their interpretation of the indicators. In all cases, it should be clear which population is used.
    c. Census date: It is recommended that many of the indicators are presented at the REF 2021 census date (31 July 2020). Presenting indicators in the context of the Category A submitted staff profile was considered more robust than presenting data across the REF period.

[12] http://www.ref.ac.uk/guidance/

People, including ED&I indicators

25. Indicators in this section can support statements on staffing strategy and staffing development, including evidence of how institutions are supporting ED&I. REF 2014 indicators from 4a/b/c will be mandatory in REF 2021 (out of scope of FFRRM recommendations), including the number of doctoral degrees awarded.

Unit of assessment level indicators (table 1)

Indicator	**Indicator definition**	**Notes**
Staff contract level profile	% of [eligible staff FTE and/or submitted staff FTE] at [staff contract level[13]] at REF 2021 census date at UOA level Staff contract level HESA: **F1** professor; **I0** non-academic staff section manager, senior lecturer (pre 92), principal lecturer (post 92), reader, principal research fellow; **J0** Section/team leader (professional, technical, administrative), lecturer B (pre-92), Senior Lecturer (post 92), Senior Research Fellow; **K0** Senior Professional/Technical Staff, Lecturer A (pre-92), Lecturer (post-92), Research fellow, Researcher/senior research assistant, teaching fellow.	Data caveats: individuals might fall into more than one HESA 'levels' category, but are only returned to one of the categories. The data definitions are based on the HESA staff record data descriptions (footnote 1). These definitions encompass professional service and teaching staff.
Early career research staff profile	% of [submitted staff FTE defined as early career researchers] at REF 2021 census date at UOA level	Data caveats: the ECR field has previously been included in the HESA return only at the REF submission year as an exclusive field. Therefore, there was some concern about the robustness of the data given that institutions are not as familiar with this data return. However, early career research staff will be defined in the HESA return and REF documentation. The REF team are currently exploring future inclusion

[13] https://www.hesa.ac.uk/collection/c16025/a/levels

		with HESA, so its coverage across the eligible/submitted groups is not yet confirmed.
Doctoral degrees awarded	Number of [doctoral degrees awarded in AY2019/2020] per [eligible staff FTE and/or submitted staff FTE] at census date at UOA level	
Fellowships awarded	% of [eligible staff FTE and/or submitted staff FTE] with [competitive research fellowships*] at REF 2021 census date at UOA level *Competitive research fellowships to be listed (see notes)	Indicator caveats: some small institutions are unable to apply to some competitive fellowships. There is also a variation of importance of such fellowships by panel. The REF team have written to the following to provide a list of the competitive research fellowships requiring independence. The list will not be comprehensive, but is expected to cover the major fellowships awarded across the main panel areas. BBSRC, AHRC, MRC, NERC, EPSRC, ESRC, STFC, UKRI, British Heart Foundation, Cancer Research UK, Wellcome Trust, British Academy, Leverhulme Trust, Royal Academy of Engineering, Daphne Jackson Trust, NC3R, NIHR, Royal Society, and Royal Society of Edinburgh.
Staff on permanent contracts	% of [eligible staff FTE and/or submitted staff FTE] on [permanent (can be known as open-ended) contracts][14] at REF 2021 census date at UOA level	
Athena Swan	Achieved Athena Swan at [bronze, silver, gold] at UOA level in [year(s) of award]	Data caveats: institutions will likely map 'Athena Swan departments' to UOAs in their submissions.

[14] https://www.hesa.ac.uk/collection/c17025/a/terms

Investors in People	[Achieved] Investors in People Accreditation at UOA level in [year(s) of award]	
Comparable survey data	Data from national surveys such as PRES (which is benchmarked data) should be returned with the following for contextualisation: - UOA or institution level - survey question (narrative) - respondent type (narrative) - survey response rate (%) - survey date [YY] or [MM/YY] - time series of data points [YY, YY] or [MM/YY, MM/YY]	Indicator caveats: The FFRRM note that existing data collected in national surveys such as PRES are collected for a purpose outside of the REF. There were some concerns that including data sources such as PRES on this list has the potential to influence the survey purpose and by proxy the respondents. However, the FFRRM note that institutions are likely to report such data in their environment template, and that such data has the potential to meet the working group's principles if the data is properly contextualised. The FFRRM recommend that the main panels include guidance about how to present the use of national survey data in the environment template, such as PRES, rather than listing specific surveys.

Institution level indicators (table 2)

Early career research staff profile	% of [submitted staff FTE defined as early career researchers] at REF 2021 census date at institution level	Data caveats: the ECR field has previously been included in the HESA return only at the REF submission year as an exclusive field. Therefore, there was some concern about the robustness of the data given that institutions are not as familiar with this data return. However, early career research staff will be defined in the HESA return and REF documentation. The REF team are currently exploring future inclusion with HESA, so its coverage across the eligible/submitted groups is not yet confirmed.

Staff on permanent contracts	% of [eligible staff FTE and/or submitted staff FTE] on [permanent (can be known as open-ended) contracts][15] at REF 2021 census date at institution level	
Legal nationality profile of staff	% of [eligible staff FTE and/or submitted staff FTE] returned as [UK; EU; non-EU; unknown][16] at REF 2021 census date at institution level	
Disability profile of staff	% of [eligible staff FTE and/or submitted staff FTE] returned with [No known disability; disability declared; unknown][17] at REF 2021 census date at institution level	
Gender profile of staff	% of [eligible staff FTE and/or submitted staff FTE] returned as [male; female; other][18] at REF 2021 census date at institution level	
Ethnicity profile of staff	% of [eligible staff FTE and/or submitted staff FTE] returned as [white; black; Chinese; Asian; other/mixed; unknown] [19] at REF 2021 census date at institution level	
Age profile of staff	% of [eligible staff FTE and/or submitted staff FTE] returned as [less than 30; 30-39; 40-49; 50-59; 60-69; over 70][20] at REF 2021 census date at institution level	
Athena Swan	Achieved Athena Swan at [bronze, silver, gold] at institution level in [year(s) of award]	

[15] https://www.hesa.ac.uk/collection/c17025/a/terms
[16] https://www.hesa.ac.uk/collection/c17025/a/nation
[17] https://www.hesa.ac.uk/collection/c16025/a/disable
[18] https://www.hesa.ac.uk/collection/c17025/a/sexid
[19] https://www.hesa.ac.uk/collection/c16025/a/ethnic
[20] https://www.hesa.ac.uk/collection/c16025/a/birthdte

Race Equality Charter	Achieved Race Equality Charter at [bronze, silver] at institution level in [year(s) of award]	
Stonewall Workplace Equality Index	[Participated] in Stonewall Workplace Equality Index at institution level in [year(s)]. *Optional* [rank in UK workplace index]	Indicator caveats: Stonewall ranks participants and publish a list of 100 organisations. All participants will receive a ranked position across all organisations who submitted, as well as a rank within 'education' organisations. It is proposed that including the institution's rank is an optional part of the indicator.
HR Excellence in Research Award	[Achieved] HR Excellence in Research Award at institutional level in [year(s) of award]	
Investors in People	[Achieved] Investors in People Accreditation at [UOA level and/or institution level] in [year(s) of award]	
Comparable survey data	Data from national surveys such as PRES (which is benchmarked data) should be returned with the following for contextualisation: - UOA or institution level - survey question (narrative) - respondent type (narrative) - survey response rate (%) - survey date [YY] or [MM/YY] - time series of data points [YY, YY] or [MM/YY, MM/YY]	Indicator caveats: The FFRRM note that existing data collected in national surveys such as PRES are collected for a purpose outside of the REF. There were some concerns that including data sources such as PRES on this list has the potential to influence the survey purpose and by proxy the respondents. However, the FFRRM note that institutions are likely to report such data in their environment template, and that such data has the potential to meet the working group's principles if the data is properly contextualised. The FFRRM recommend that the main panels include guidance about how to present the use of national survey data in the environment template, such as PRES, rather than listing specific surveys.

Income, infrastructure and facilities indicators

26. Indicators in this section can support statements on income strategy to demonstrate the unit's vitality and sustainability. REF 2014 indicators from REF 4a/b/c will be mandatory in REF 2021 (out of scope from working group recommendations), including research income, and research income in-kind.

Unit of assessment level indicators (table 3)

Indicator	Indicator definition	Narrative
Diversity of income sources	% of [overall research income AY 2019/2020] at UOA level by [**Column 1** BEIS Research Councils, The Royal Society, British Academy and The Royal Society of Edinburgh; **Columns 2 and 3** UK-based charities; **Columns 4, 5, 6, and 7** UK government, industry and other UK sources; **Columns 8, 9, 10 and 11** EU; **Columns 12, 13 and 14** Non-EU][21]	Indicator caveat: the income figures by source are collected in REF 4b which is mandatory – as noted above. This indicator allows institutions to present the distribution of funding as a percentage.

Open research indicator

27. The indicator in this section can support statements on the institution's activity to encourage the effective sharing and management of research data.

Unit of assessment level indicator (table 4)

Indicator	Indicator definition	Narrative
Open data	[Compliant] with the Concordat on Open Research Data at UOA level	Indicator caveats: although this is subjective, including this will mark the importance of open research data and institutions can explain in the narrative how they reach compliance.

Institution level indicator (table 5)

Indicator	Indicator definition	Narrative

[21] https://www.hesa.ac.uk/collection/c16031/table_5

Open data	[Compliant] with the Concordat on Open Research Data at institution level	Indicator caveats: although this is subjective, including this will mark the importance of open research data and institutions can explain in the narrative how they reach compliance.

Impact indicator

28. The indicator in this section can support statements on the unit and/or institution's approach to enabling impact.

Unit of assessment level indicator (table 6)

Knowledge Transfer Partnerships (KTP)	Number of knowledge transfer partnerships at REF 2021 census date at institution level at unit level	Indicator caveats: The FFRRM propose the inclusion of this, provided that the indicator is contextualised. The FFRRM were concerned about contextualising this indicator by submitted or eligible staff due to the nature of the staff profile working in KTPs. The REF team are working with colleagues in Research England to explore the best way to contextualise this indicator.

Institution level indicator (table 7)

Knowledge Transfer Partnerships (KTP)	Number of knowledge transfer partnerships at REF 2021 census date at institution level at unit level	Indicator caveats: The FFRRM propose the inclusion of this, provided that the indicator is contextualised. The FFRRM were concerned about contextualising this indicator by submitted or eligible staff due to the nature of the staff profile working in KTPs. The REF team are working with colleagues in Research England to explore the best way to contextualise this indicator.

Other indicators

29. Indicators in this section can support statements on areas of research culture which cut across sections in the environment template (such as open research, people, and research strategy).

Institution level indicator (table 8)

Indicator	**Indicator definition**	**Narrative**
Use of metrics in research evaluation	[Signed] the San Francisco Declaration on Research Assessment at institution level [year of signatory]	Indicator caveats: the panel criteria should reflect that this isn't the only way institutions can demonstrate excellence regarding the use of metrics for research assessment. Also, this would not be sufficient evidence alone, as noted above the narrative will provide context. The indicator below will reflect that institutions can demonstrate excellent practise in various ways.
Use of metrics in research evaluation	[Have] a policy on the use of research metrics for research assessment at institutional level	Indicator caveats: as above.
Research integrity	[Compliant] with the Concordat to support Research Integrity at institution level	Indicator caveats: compliance with the concordat to support research integrity is a condition of grant in English institutions. Institutions can explain in the narrative how they reach compliance.

30. The chair of the working group noted the significant work done in assessing the suitability of different data for assessing the research environment. The chair reflected that many of the indicators considered had not been found suitable, when considered against the group's principles. This was due to a variety of factors, including issues of robustness and implications of burden in appropriately collating for the REF. The group agreed a recommendation that, in the context of UKRI, opportunities for data collection to be structured and coordinated across the various areas within the remit of UKRI should be explored, with due notice given to institutions about intended use in future REF exercises to improve data quality and availability.

31. The FFRRM believe that the process and the principles developed provide a comprehensive assessment of a menu of indicators in REF 2021 environment. They expect that the menu will allow institutions to use these indicators as evidence, where they see fit, in a responsible way. It is hoped that as a result, institutions will consider how they present other indicators (beyond those listed) in a way that is contextualised, and demonstrates a level of data robustness (for example expressing indicators by FTE of staff/including survey response rates). This would aid the interpretation and assessment of the environment statements, and could be recommended in the guidance.

Advice on the standardised guidance for impact

32. RAND Europe presented interim findings at the FFRRM's working group meeting in February on work to standardise quantitative impact indicators. Information provided in REF 2014 impact case studies had included a wide range of different presentational styles for instance in citing financial information, or presenting numerical data about engagement or specific impacts. This meant that it had been difficult to meaningfully compare submissions of impact against each other, and the approach presented challenges when text mining the case studies after the REF 2014 exercise. RAND undertook a literature and data review of REF 2014, and on this basis have produced a draft of what is essentially a style guide to aid discoverability.

33. They focused on how numerical information is presented and written, where reporting on a range of measures, such as percentages and increase and decrease in financial or other values, and also measures, for instance engagement, citations in non-academic journals and Quality Adjusted Life Years (QALY's). Ensuring that there is a consistent approach to presentation (e.g. using consistent currency for financial impacts, other information set out in a particular format) this allows at least some level of comparability across a varied range of impacts across different disciplinary fields.

34. RAND requested feedback from the FFRRM regarding the overall concept and any suggestions for any missing areas, also asking if the suggestions felt achievable for institutions.

35. The FFRRM expressed that it should be clear to HEIs why the additional work to 'copy edit' case studies would be beneficial. They suggested that the guidance should note that the

approach is not mandatory for submitting institutions, but preferable. HEIs will have experience of similar methods, as journals often request standardised data.

36. The FFRRM raised some concerns over ensuring applicability across disciplinary spread. Another area of particular discussion was engagement online, and how the dissemination of research through twitter etc. is not in enough itself to demonstrate impact.

37. On the whole the FFRRM was broadly supportive of RAND's method (text mining and qualitative assessment of REF 2014 case studies) and approach, and they raised some areas for further consideration.

Annex A: Indicators that did not meet the FFRRM's principles

Open Research		
Draft indicator	**Level**	**Principle ruled out on**
Do new research staff receive an induction covering the units approach to open research? (Y/N)	UOA and HEI	Data contextualisation
Does the department provide funding, or in-house training, to develop the skills sets required to facilitate open data? (Y/N). Take up of open data training (%)	UOA and HEI	Data contextualisation. Data quality (robustness/transparency)
Can PhD students deposit their own outputs in their institution's repository (is their work eligible)? (Y/N)	UOA and HEI	Data quality (robustness/transparency)
Does the research organisation have ORCID in its institutional systems? (Y/N)	HEI	Data quality (robustness/transparency). Data contextualisation
How many submitted staff have ORCID identifiers? (%)	UOA	Burden
Where viable are the costs of open data routinely included in grant applications? (Y/N)	UOA	Data quality (robustness/transparency). Data contextualisation
How many submissions to REF 2021 at UOA level are research datasets/databases? (Y/N)	UOA and HEI	Data quality (robustness/transparency)
Does your institution have a research data management plan? (Y/N)	HEI	Data contextualisation. Burden
Does the department have an open access champion, or member of professional service staff, to help authors? (Y/N)	UOA	Data quality (robustness/transparency). Data contextualisation
How many unique users download OA outputs from the institutional repository? (unique user count)	HEI	Data quality (robustness/transparency). Data contextualisation
What proportion of total library spend is allocated to supporting OA? (% of total library budget spent on OA)	HEI	Data quality (robustness/transparency). Burden
To what extent are outputs available in the institutional repository with a licence which goes beyond the minimum REF policy requirement? (% of journal articles and conference proceedings with an ISSN at departmental level deposited with a more permissive licence than CC-BY-NC-ND)	HEI	Burden
What proportion of outputs are accessible within a shorter timeframe than the maxima embargo periods (12 and 24 months)? (% of journal articles and conference proceedings with an ISSN accessible in shorter timeframe).	HEI	Data quality (robustness/transparency). Burden
How many outputs outside of the scope of the REF OA policy have been made available as immediate open access excluding those with APCs paid by external funders (for example, APC paid by RCUK block grant)? (count by type of output)	UOA	Data quality (robustness/transparency). Burden
How many outputs outside of the scope of the OA policy have been made accessible via institutional repositories (green OA route)? (count of accessible and downloadable	UOA	Data quality (robustness/transparency). Burden

outputs NOT including journal articles or conference proceedings)		
How much institutional funding is available to pay APC costs for immediate open access (this should not include external funds such as RCUK block grant). (£)	UOA and HEI	Data quality (robustness/transparency) and burden
Structures to support interdisciplinary research		
Draft indicator	**Level**	**Principle ruled out on**
The number of outputs within the UOA submission flagged in the assessment as % of the total outputs submitted. (% flagged in submission system)	UOA and HEI	Data contextualisation
Opportunities to participate in central seed-corn funding activity. Institutional level (Y/N)	UOA	Data quality (robustness/transparency). Burden
Number of projects funded within the UOA by seed-corn funded activity. (count)	UOA and HEI	Data quality (robustness/transparency). Burden
Number of projects supported through seed-corn funding that include a member of staff submitted to the UOA. (count)	UOA	Data quality (robustness/transparency). Burden
Number of projects supported through seed-corn funding that include a member of staff submitted to the UOA that go on to further funding. (count)	UOA	Data quality (robustness/transparency). Burden
Number of projects supported through seed-corn funding that include a member of staff submitted to the UOA that develop teams that continue to collaborate. (count)	UOA	Data quality (robustness/transparency). Burden
Level of investment provided through seed-corn funding activity. (finance data)	HEI	Data quality (robustness/transparency). Burden
Number of projects supported via seed-corn project funding. (count)	HEI	Data quality (robustness/transparency). Burden
Number of projects supported through seed-corn funding that achieve further external funding (count)	HEI	Data quality (robustness/transparency). Burden
Number of partnerships established through seed-corn funding that go on to achieve external funding (count)	HEI	Data quality (robustness/transparency). Burden
Amount of funding/resource committed to the support of interdisciplinary research? (total £)	UOA	Data quality (robustness/transparency). Burden
Number staff with responsibility to support interdisciplinary research (professional/academic). (count)	UOA	Data quality (robustness/transparency). Burden
Number of interdisciplinary research leaders or principal investigators (count)	UOA	Data quality (robustness/transparency). Burden
Amount of funding institutions provide to support the creation, running and support of interdisciplinary infrastructure (e.g. centres, institutes, professional services central support). (financial data)	HEI	Data quality (robustness/transparency). Burden
Number of IDR centres, institutes and networks supported by the institution. (count)	HEI	Data quality (robustness/transparency). Burden

Levels of external funding awarded to interdisciplinary research projects. (financial data)	UOA and HEI	Data quality (robustness/transparency). Burden
Availability of training/ability to access training that supports collaboration. (Y/N) (count)	UOA and HEI	Data quality (robustness/transparency)
Staff (levels) working within IDR teams	UOA and HEI	Data quality (robustness/transparency)
Students (levels) registered to IDR degrees	UOA and HEI	Data quality (robustness/transparency)
Take up of training (%)	UOA and HEI	Data quality (robustness/transparency)
Number of interdisciplinary programmes. (count)	UOA and HEI	Burden
Number of interdisciplinary modules. (count)	UOA and HEI	Burden
Number of students engaging in interdisciplinary programmes. (count)	UOA and HEI	Burden
Number of students engaging in interdisciplinary modules. (count)	UOA and HEI	Burden
Number of cross faculty/organisation posts. (count)	UOA and HEI	Burden
Number of interdisciplinary studentships. (count)	UOA and HEI	Burden
Financial value of interdisciplinary studentships. (financial)	UOA and HEI	Burden
Funding source for interdisciplinary studentships. (count against type)	UOA and HEI	Burden
People, including ED&I		
Draft indicator	**Level**	**Principle ruled out on**
Proportions of academic members of staff holding PhDs or professional doctorates. (%)	UOA and HEI	Data contextualisation and burden
Percentage of staff who were PGRs at the same institution. (%)	UOA and HEI	Burden
Percentage of competitively awarded studentships out of the PGR population. (%)	UOA	Data quality (robustness/transparency)
Percentage change of ECRs in relation to the overall staff population between exercises. (%)	UOA and HEI	Data quality (robustness/transparency)
Percentage of staff returning from outside the HEI. (%)	UOA and HEI	Burden
Percentage of staff on shared appointments. (%)	UOA	Burden
What percentage of staff who request part-time or flexible working patterns are granted this? (%)	HEI	Data quality (robustness/transparency). Burden
% of staff with protected characteristics who have access to a support network. (%)	HEI	Data quality (robustness/transparency). Data contextualisation
Average institutional gender pay gap (mean and median averages).	HEI	The FFRRM recommend that the institutional level pilot considers this indicator
Proportion of male to female staff in each Unit	UOA	The FFRRM recommend that the institutional level pilot considers this indicator
Percentage of staff that are able to take sabbaticals. (%)	UOA	Data quality (robustness/transparency)
Total number of sabbatical months taken per FTE. (%)	UOA	Data quality (robustness/transparency)

Percentage of the total units ECR population in the REF 2021 time period who have been promoted to more senior positions. (%)	UOA	Data quality (robustness/transparency) and burden
Percentage of staff who have positions as editors of journals. (%)	UOA	Data quality (robustness/transparency). Burden, Data contextualisation
Working towards Athena Swan Bronze. (Y/N)	UOA and HEI	Data quality (robustness/transparency)
Working towards Athena Swan Silver. (Y/N)	UOA and HEI	Data quality (robustness/transparency)
Working towards Athena Swan Gold. (Y/N)	UOA and HEI	Data quality (robustness/transparency)
Working towards Race Equality Charter Bronze. (Y/N)	HEI	Data quality (robustness/transparency)
Working towards Race Equality Charter Silver. (Y/N)	HEI	Data quality (robustness/transparency)
Stonewall Diversity Champion. (Y/N)	HEI	Data contextualisation
Comply with the Concordat to Support the Career Development of Researchers. (Y/N)	HEI	Data contextualisation. Data quality (robustness/transparency)
Disability Confident scheme (Gov.uk scheme). (Level 1: Disability Confident Committed, Level 2: Disability Confident Employer, Level 3: Disability Confident Leader)	HEI	Data contextualisation. Data quality (robustness/transparency)
Mindful Employer Charter	HEI	Data contextualisation. Data quality (robustness/transparency)
IOP Project Juno	UOA	Might be added by panels.
Total department funding for PGRs (including internal grants, scholarships or awards). (£)	UOA	Data quality (robustness/transparency). Burden
How many students get a postdoctoral research contract within 6 months of graduation? (DHLE TYPEQUAL (01 higher degree mainly by research) with Postdoctoral research contract label yes.)	HEI	Data quality (robustness/transparency). Burden
Planned percentage increase in PhD studentships. (% of planned institutional increase between REF 2021 and following REF)	UOA	Data quality (robustness/transparency). Data contextualisation
Number of supervisory hours set aside per PGR student. (count)	UOA	Data quality (robustness/transparency). Burden
Is a package of training available for PhD supervisors? (Y/N)	UOA	Data quality (robustness/transparency). Burden. Data contextualisation.
Is there an internal budget available for PhD students to attend conferences and appropriate training, and how much is there per student? Total budget per PhD students (£)	UOA	Data quality (robustness/transparency). Burden. Data contextualisation.
% of PhD students attend employability training. (%)	UOA	Data quality (robustness/transparency).
Percentage reduction in teaching for ECRs compared to the rest of research active staff. (% reduction)	UOA	Data quality (robustness/transparency). Burden

What percentage of ECRs have co-authored with more established staff within the department? (%)	UOA	Data quality (robustness/transparency). Burden
Number of allocated professional development days per year for ECRs compared with other staff. (% change)	UOA	Data quality (robustness/transparency). Burden
Careers in Research online survey (CROS). Indicators such as 'Q23 to what extent do you agree that you are encouraged to engage in personal and career development?' (% strongly agree)	HEI	See note on survey data in table 1&2 above.
Principal Investigators and Research Leaders survey (PIRLS). Indicators such as 'Q17 I am appropriately awarded for my contributions to the institution'. (% strongly agree)	HEI	See note on survey data in table 1&2 above.
Is training available on issues of research integrity? (Y/N)	HEI	Data contextualisation. Data quality (robustness/transparency)
Is there a contact for individuals to go to in the institution about research integrity, and is this information published on the website? (Y/N)	HEI	Data contextualisation. Data quality (robustness/transparency)
Is there a clear procedure for whistleblowing within the institution? (Y/N)	HEI	Data contextualisation. Data quality (robustness/transparency)
Annual statement on research integrity - recommend asking if this was completed for 2019 (with URL) (Y/N)	HEI	Data contextualisation
Impact		
Draft indicator	**Level**	**Principle ruled out on**
Number of secondments to non-academic organisations/companies. (% total FTE)	UOA and HEI	Data quality (robustness/transparency)
Number of collaborative PhD studentships	UOA and HEI	Data quality (robustness/transparency). Burden
Has the institution signed up to the RCUK Concordat for Engaging the Public with Research? (Y/N)	HEI	Data quality (robustness/transparency). Data contextualisation.
Number of patents/proof of concepts within the submitting unit. (count)	UOA and HEI	Data contextualisation. Data quality (robustness/transparency)
Number of licencing agreements within the submitting unit. (count)	UOA and HEI	Data contextualisation. Data quality (robustness/transparency)
Number of spin-out companies within the submitting unit. (count)	UOA and HEI	Data contextualisation. Data quality (robustness/transparency)
Number of externally funded impact projects. (% of all impact projects)	UOA and HEI	Data quality (robustness/transparency)
Financial value of external funding for impact/public engagement with research/knowledge exchange (e.g. Wellcome). (£ as a % of total research income)	UOA	Data quality (robustness/transparency)
Does the unit have an RCUK Impact Accelerator Account? (Y/N)	UOA	Data contextualisation. Data quality (robustness/transparency)
Financial value of income through RCUK Impact Accelerator Accounts (where available). (£ as a % of total research income)	UOA	Data contextualisation

Opportunities to participate in central impact funding activity. (Y/N)	UOA and HEI	Data contextualisation. Data quality (robustness/transparency)
Number of projects funded within the submitting unit by internal impact funding. (total £ by total research income)	UOA and HEI	Burden. Data quality (robustness/transparency)
Number of projects supported through internal impact funding that include a member of staff submitted to the unit. (total £ funded by total research income)	UOA	Burden. Data quality (robustness/transparency)
Number of projects supported via impact project funding. (count of projects) (total £ funded by total research income)	HEI	Burden. Data quality (robustness/transparency)
Amount of funding/resource committed to the support of impact activity at UOA level. (% of total research income)	UOA and HEI	Burden. Data quality (robustness/transparency)
Total Collaborative Income. (£)	UOA	Data quality (robustness/transparency)
Number staff with responsibility to support impact activities (professional/academic). (count) (FTE support staff per FTE of research staff)	UOA	Burden. Data quality (robustness/transparency)
Is impact activity recognised within the submitting unit's workload model (where relevant)? (Y/N)	UOA and HEI	Data contextualisation. Data quality (robustness/transparency)
Does impact activity form part of the unit's progression criteria? (Y/N)	UOA and HEI	Data contextualisation. Data quality. (robustness/transparency)
Income		
Draft indicator	**Level**	**Principle ruled out on**
Change, from last period in total income in period. (% change)	UOA and HEI	Data contextualisation (reporting procedure has changed)
% change in number of grant applications; success rate; value of bids. (% breakdown)	HEI	Data quality (robustness and transparency). Burden
Value of income not reported in HESA. (% of total research income)	UOA	Data quality (robustness and transparency). Burden
Value of institutional funding awarded. (£)	UOA	Data quality (robustness and transparency). Data contextualisation
Value of individual key grants awarded. (£)	UOA	Data quality (robustness and transparency). Data contextualisation
% change in number of grant applications; success rate; value of bids. (% change)	UOA	Burden. Data quality (robustness and transparency)
Value of fellowships / studentships awarded. (£)	UOA	Burden. Data contextualisation
Value of facilities donated / invested. (total investment/total research income)	UOA and HEI	Data quality (robustness and transparency). Data contextualisation
Spend on facilities in period. (total investment/total research income)	UOA and HEI	Data quality (robustness and transparency). Data contextualisation
Number / size of facilities in context of unit size (e.g. size of collections). (Count)	UOA	Data quality (robustness and transparency). Data contextualisation

Value of / time given to access shared facilities. (£)	UOA	Data quality (robustness and transparency). Data contextualisation
FTE of support staff/FTE of research staff	UOA	Data quality (robustness and transparency). Data contextualisation. Burden
Value of capital funding awards in the period. (£)	UOA and HEI	Data quality (robustness and transparency). Data contextualisation. Burden
Value of institutional investment in infrastructure. (£)	UOA and HEI	Data quality (robustness and transparency). Data contextualisation
Library spend per FTE. (£)	UOA and HEI	Data quality (robustness and transparency). Data contextualisation
Size of space for unit (including available for PGRs). (m2)	UOA and HEI	Data quality (robustness and transparency). Data contextualisation
Institutional resource available for research support (e.g. conference attendance). (£)	UOA	Data quality (robustness and transparency). Data contextualisation
Total investment in R infrastructure. (% change in period)	HEI	Data quality (robustness and transparency). Data contextualisation. Burden
Total funds / resource available for research support. (£)	HEI	Data quality (robustness and transparency). Data contextualisation. Burden
Total library spend, value of e-collections investment. (£)	HEI	Data quality (robustness and transparency). Data contextualisation. Burden

Annex B: FFRRM REF environment working group membership

Name	Title	Affiliation
Professor Roger Kain (Chair)	Professor of Humanities and Vice-President (Research and HE Policy), The British Academy	School of Advanced Study, University of London
Professor Dame Athene Donald (observer)	Master of Churchill College Cambridge, and chair of IDAP	University of Cambridge
Dr Barbara Pittam	Director of Academic Services	Institute of Cancer Research
Professor Dianne Berry	Dean of Postgraduate Research Studies, and Professor of Psychology, and chair of EDAP	University of Reading
Hannah Cramer	Data Policy & Governance Analyst	HESA
Dr Helen Reddy	Director of Research Strategy, Policy & Support	St Andrews
Dr Ian Viney	Director of Strategic Evaluation and Impact	Medical Research Council
Professor John Senior	Pro Vice-Chancellor (Research and International)	University of Hertfordshire
Dr Lotte Boon	Head, Research Systems and Information Management Team	University of Oxford
Professor Maria Delgado	Director of Research	Royal Central School of Speech and Drama
Professor Mike Thelwall	Professor of Information Science	University of Wolverhampton
Professor Pal Ahluwalia	Pro Vice-Chancellor Research and Innovation	University of Portsmouth
Professor Stephen Curry	Professor of Structural Biology	Imperial College London
Professor Ole Petersen	Director of the Cardiff University - Academia Europaea Knowledge Hub	Cardiff University

Annex C: REF environment working group terms of reference

Background

1. In July 2015, the Independent Review of the Role of Metrics in Research Assessment and Management ('The Wilsdon Review') published its final report, The Metric Tide. The report recommends that there is scope for increased use of quantitative data in the next REF in assessing the research environment, but that there is a need for this to be provided with sufficient context to enable their interpretation.

2. In support of the metric agenda, The Forum for Responsible Research Metrics was established. The Forum's terms of reference[22] states that the FFRRM should have a role in supporting the development of quantitative data for assessment in the next REF.

3. Lord Stern's independent review of the REF[23], published in 2016, suggested that environment statements might be suited to using quantitative data, for example: the number of postgraduate students per academic; research income per academic; levels of citations for the unit's work. The review recommended that 'individual Unit of Assessment environment statements are condensed, made complementary to the institutional level environment statement, and include those key quantitative data on research intensity specific to the Unit of Assessment'.

4. The former HEFCE, on the behalf of the funding bodies, published a consultation[24] on the second REF (REF 2021) on 8 December 2016. The consultation ran for a period of 14 weeks, closing on 17 March 2017. The former HEFCE received over 380 responses to the consultation. The sector were asked to consider the proposal to improve the structure of the environment template, whether REF should introduce more quantitative data into this aspect of the assessment, and whether data held by institutions would provide panels with a valuable insight into the research environment. The consultation also sought sector views on the development of guidance for the use and standard of quantitative data as evidence for impact.

5. The FFRRM met on the 9 May 2017. They considered the use of quantitative data in REF 2021 environment and recommended that a working group should be formed to provide further advice on this matter. The working group will provide advice to the FFRRM, which will make recommendations to the REF team, REF panel chairs and the UK funding bodies.

[22] http://www.universitiesuk.ac.uk/policy-and-analysis/Pages/forum-for-responsible-research-metrics.aspx
[23] https://www.gov.uk/government/publications/research-excellence-framework-review
[24] http://www.hefce.ac.uk/rsrch/refconsultation/

Aims of the working group

6. To provide evidence-based advice on the responsible use of quantitative data in assessment of the environment in REF 2021 at UOA and institution level.

7. To provide advice on the initial findings (which will be presented to the group in February) from a project seeking to develop standardised guidelines for the use of quantitative evidence for impact case studies at the UOA level.

Terms of reference

8. The environment working group has been established to provide advice to the REF team, REF panel chairs and the UK funding bodies on the development and inclusion of suitable quantitative data in the environment element. This will be the primary focus of the working group; however, the group will also be asked to provide some advice on initial findings from a project to develop standardised guidelines for the use of quantitative evidence for impact.

9. The environment working group will be expected to make recommendations on the use of indicators in environment which are in line with the core concepts that underpin responsible use of research metrics including:

    i. Robustness: basing metrics on the best possible data in terms of accuracy and scope;
    ii. Humility: recognising that quantitative evaluation should support - but not supplant – qualitative, expert assessment;
    iii. Transparency: keeping data collection and analytical processes open and transparent, so that those being evaluated can test and verify the results;
    iv. Diversity: accounting for variation by field, and using a range of indicators to reflect and support plurality of research and researcher career paths across the system;
    v. Reflexivity: recognising and anticipating the systemic and potential effects of indicators, and updating them in response.

10. The working group will deliver the following objectives:
    a. To consider the existing evidence base on the use of quantitative data in the assessment of environment. On the basis of the evidence, provide advice on a set of principles for the inclusion of any quantitative data in this element of REF 2021 at both UOA and institution level. This should include consideration of:
        i. Minimising burden on submitting institutions.
        ii. Promoting equality and diversity.
    b. Working with other stakeholders, as appropriate, the working group will gather and identify further evidence on the use of quantitative data in the assessment of environment in REF 2021 at both UOA and institution level, in accordance with the principles developed.
    c. Form recommendations, and provide advice to the REF team on the use of quantitative data in REF 2021 environment at UOA and institution level using the evidence noted above. This will include advice on the main panel assessment criteria.

d. Provide advice and insight on the initial findings from a project which will develop standardised guidelines for the use of quantitative evidence for impact case studies at the UOA level. This should also include considerations around equality and diversity.

11. The chair of the working group will be expected to report to the FFRRM on the working group's advice. The working group should aim to report substantial progress regarding the use of quantitative data in environment at the February 2018 meeting of the FFRRM. Further work on the indicators and advice on the standardised guidelines for impact will follow in early 2018.

Working methods

12. The working group will include approximately 15 individuals, with expertise in the research environment (either from professional services or academic leadership, offering both UOA and institution-level perspectives). The working group will have representation from the REF advisory panels including IDAP[25] and EDAP[26]. The group should also have expertise in the development of impact case studies at a UOA level.

13. The working group will meet as follows:
    a. Two meetings in 2017; to discuss the suitable quantitative data and their use in the REF environment.
    b. One further meeting in 2018 to:
        i. Refine the proposed indicators for use in REF 2021 environment
        ii. Provide advice on the development of suitable main panel criteria on the use of indicators in the assessment of environment
        iii. Provide advice on the development of any standardised guidelines for the use of quantitative evidence for impact.

14. The panel will be subject to confidentiality and will be required to declare any conflicts of interest.

[25] http://www.ref.ac.uk/about/idrap/
[26] http://www.ref.ac.uk/about/edap/