

Review of Peer Review: June 2023

Appendix A Literature

Search strategy

Evidence of the use and outcomes of each of the 38 interventions was identified and reviewed. Documents include academic literature, 'grey' literature, as well as primary sources, such as websites and grant manuals produced by funding organisations.

Search

A.1.

The documents were identified through 3 main routes, combining curation of known sources with an external search for additional documents:

1. UKRI shared material pertaining to the organisation's previous work on peer review with the project team. This included internal documents, PowerPoint presentations, published UKRI reports, and other relevant journal publications. UKRI also shared several documents listing external sources. 53 documents were shared with a total of 61 unique source references.
2. Another set of documents were identified through recommendations from external project advisers, experts within Technopolis, and interviewees. 41 unique documents were identified in this way, in addition to recommendations concerning specific programmes or funding organisations for which documentation was sought.
3. The project team then carried out an additional searches for each of the 38 interventions. Each search was carried out in Google Scholar (which captures academic literature but also has substantial coverage of grey literature, as well as working papers and other reports that may not be contained in other research information systems). The default search terms were "Grant peer review" combined with one or several terms related to the specific intervention using the Boolean operator "AND" and results were filtered to include only results from the last 10 years. For each search result, the top 25 results were scanned for relevance and the most relevant documents reviewed in full.

The coverage of these documents was somewhat uneven across the 38 interventions, with a larger number of sources on topics such as randomisation and EDI, and only few (if any) on other interventions.

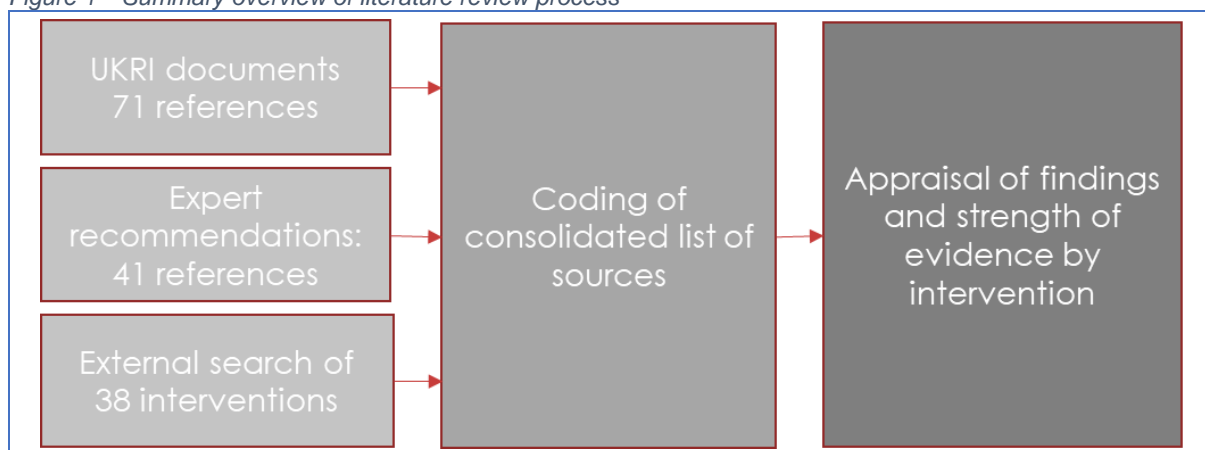
Finally, our full resulting literature list was reviewed by one external and one Technopolis-internal expert, to potentially identify any significant gaps, i.e. omissions of any important sources known to either of the experts.

Analysis

The search produced a consolidated list of 176 references.¹ Each was reviewed and coded according to the one or more interventions they cover, key findings and type of evidence. On this basis, the team appraised the findings and strength of evidence available for each of the 38 interventions.

¹ Not all reviewed documents were included in this list: Some recommended sources were not relevant to the scope of the study and some UKRI documents were confidential and reviewed for background only.

Figure 1 Summary overview of literature review process



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Survey details

We received 241 survey responses from UKRI staff members. For questions where we requested written responses (as opposed to simple point-and-click survey items), up to 61 respondents per question provided such information.

Our survey was distributed through UKRI's own communication channels rather than through personal targeted e-mail invitations from us directly. This means we cannot fully track responses and any self-selection biases. However, we asked a number of questions in the survey to gather personal identifiers (research council, gender, role-type, years of experience), which allows us to check whether we have a response pool that is representative of UKRI as a whole. We can note:

- Around 20% of respondents are from MRC, 6.7% from AHRC and we had just one response from Research England. All other parts of UKRI are represented with in 8-12% of our response pool
- 67% report that they are or have been involved in the design of funding opportunities and 83% report that they are or have been involved in the implementation of funding opportunities
- 63% state that they are female and 30% state that they are male
- Respondents represent a broad range of experience levels, with 33% reporting 0-4 years' experience in research funding, and 13% reporting more than 20 years

The table below lists the dates and channels through which the survey was distributed. We are confident that all staff have been made aware of the survey and would therefore have at least had a chance to participate.

Table 1 List of survey distribution activities

Tracking survey distribution	Date	Reach
Organisation-wide distribution		
News Article - Source	02-Feb	Can be viewed by all staff
The Cascade	W/c 6-Feb	Received by Grade G's and above to cascade to team members
Wednesday Webinar - presentation slot, link in the chat	08-Feb	All staff invited, about 1,500 in attendance
The Stream	14-Feb	All staff
Internal Groups		
PCT Forum/Culture network	03-Feb	Approx. 90 people
FPOG	02-Feb	~40 people, asked to cascade
Talent Strategic Leadership Group	02-Feb	A small group
Behaviours and Incentive Strategic Leadership Group	03-Feb	~10 people
GRECON	03-Feb	~24 people
PAG	06-Feb	A small group

B.1.

Survey script and raw data

Please select the Council you work for	Responses	
Answer Choices	6.67%	16
Arts and Humanities Research Council		

Biotechnology and Biological Sciences Research Council	11.25%	27
Economic and Social Research Council	12.08%	29
Engineering and Physical Sciences Research Council	11.25%	27
Innovate UK	9.58%	23
Medical Research Council	20.42%	49
Natural Environment Research Council	7.92%	19
Research England	0.42%	1
Science and Technology Facilities Council	9.58%	23
UKRI	10.83%	26
Other (please specify)	0.00%	0
	Answered	240
	Skipped	2

Which of the below best describe your role at UKRI? Tick all that apply.		
Answer Choices	Responses	
I am or have previously been involved in the design of funding opportunities	67.36%	161
I am or have been previously involved in implementing funding opportunities (e.g., publishing funding calls, advising applicants, grants administrators, peer review officers, panel secretariat, organising assessment processes, monitoring and evaluation etc.)	82.85%	198
None of the above. Please briefly describe your role:	6.28%	15
	Answered	239
	Skipped	3

How many years of experience in research funding (at UKRI or other public or private research and innovation funders) do you have?		
Answer Choices	Responses	
0-4 years	32.50%	78
5-9 years	26.25%	63
10-14 years	18.75%	45
15-19 years	9.17%	22
20 years or more	13.33%	32
	Answered	240
	Skipped	2

What is your gender?		
Answer Choices	Responses	
Female	62.76%	150
Male	30.96%	74
Non-binary	0.00%	0
Prefer not to say	5.86%	14
Prefer to self-describe:	0.42%	1
	Answered	239
	Skipped	3

Are you aware of any of the following activities being used (past or present) in peer review assessment processes at UKRI?		
Answer Choices	Responses	
None of the above	0.99%	2
Assessment criteria definition: Adding new assessment criteria; may involve a tiered system for assessment criteria, for example, essential vs. desirable	78.82%	160
Demand management: individuals: Stipulating the number of projects that an individual can be involved in as PI and/or Co-I, for a particular Opportunity	64.53%	131
Demand management: individuals: Limiting the number of applications an individual can submit, if the quality of their previous applications has been of lower quality over a certain time period (e.g. only one proposal allowed for next 12 months if repeatedly unsuccessful in the previous 24 months)	47.29%	96
Demand management: institutions: Limiting the number of applications accepted from a single institution	69.46%	141
Demand management: institutions: Limiting the number of re-submissions accepted from a single institution	22.17%	45
Positive action: working with underrepresented groups: Providing additional support to groups that are unrepresented in UKRI's portfolio to encourage them to apply and support them as they do, with the view to increasing diversity	38.92%	79
Applicant behaviours: Designing application forms and processes with a view to encouraging positive behaviours among applicants (e.g. removing hierarchies of applicants to encourage team work and collaboration)	48.28%	98
Expression of interest: A short document providing the information of the organisation and applicant interested in applying. Used as tool to understand interest in the funding opportunity	86.70%	176
Outline applications: A short proposal containing the key information that is assessed to understand the project's merit and determine whether it has sufficient potential for the applicant to be invited to develop the application further	85.71%	174
Reducing application length/cutting sections: Shortening application forms (page/word length) to reduce burden. Requiring only project description and not track, or cutting other sections	62.56%	127
'Sandpits'/Matching events: In UKRI, this might look like an interactive workshop, structured to drive lateral thinking and radical approaches to address research challenges, with the aim of producing research proposals. At the end of the process grants are agreed	55.17%	112
2-stage application process: Not all the information required to make the final decision is included in the first submission	75.37%	153
Applicant anonymisation: Reviewers or panels members or both do not see the identity of the applicant/s	35.47%	72
Automated reviewer allocation: Using algorithms/ AI / text recognition to allocate reviewers to applications	17.24%	35
Dragon's den-style pitch: Applicants are invited to pitch their proposal in front of a panel, and panels have an opportunity to ask questions. This differs from an interview in that no other form of evidence (e.g. written proposals or external expert review) is used in the assessment	18.72%	38
External review only (no panel): Proposals are only assessed by external reviewers and review scores are simply combined to give the final score	28.57%	58
Group review: The same reviewer comments on multiple applications	43.84%	89
Number of reviewers 2-3 external reviews of applications is typical, but this number may be lowered to 1 or significantly increased	68.47%	139
Interviews: Lead applicant (or several application team members) may do a presentation (optional) and are then asked questions on their application by panel members, reviewers or funder representatives	82.76%	168
Internal assessment of reviews: Reviews are processed internally by funding organisation staff and are only passed to the external panel if of sufficient quality	59.11%	120
Assessment panels: Assessment panels use external reviews alongside their own expertise to assess the proposal	84.73%	172
Moderation panel: Moderation panels do not use their own expertise but can only use the reviews to inform their scores	58.13%	118
Panel only (no postal/external review): Proposals are only assessed by a panel of experts	76.85%	156
Peer allocation: The applicants are also the assessors, and review the proposals they are competing against to decide In UKRI, this may be known as "Pitch to Peers"	8.87%	18
Office decision: Applications go directly to the 'office' i.e. scheme manager/team /SRO/director, who can recommend funding or even decide to fund unilaterally. No peer and panel review involved.	37.44%	76
Standing panels: The same members year on year with some replacement due to retirement from the panel	63.55%	129
Portfolio panels: Assembled based on the proposals received and therefore will be comprised differently in each round of funding)	56.65%	115
Use of international assessors: Having quotas for assessors based in countries other than the funder's 'home' country. May extend to mandating all-international panels and/or reviewers	50.25%	102

Use of metrics: Use of metrics and bibliometrics as part of the evidence-base to inform decision-making	12.32%	25
Use of non-academic assessors (i.e. industry, policy & practice, patients, 'user' representatives): May extend to all-user panels and/or reviewers. May take the shape of consultation rather than direct decision-making. May or may not involve specific quotas	73.40%	149
Virtual panels: Convening panels online rather than in person	86.21%	175
Golden ticket/Joker[wildcard] Each panel members (or other decision-maker) is able to select one proposal (e.g. per call, per year, or similar) to guarantee funding, regardless of panel rankings or other decision-making processes	1.97%	4
Lottery [Partial randomisation]: Successful proposals are chosen at random. In most methodologies, randomisation is only partial. For example, proposals may be scored and sorted into bands, and only those on the border of being funded will be randomised.	15.76%	32
Scoring mechanisms: Including voting, weighting, variance-based scoring	60.59%	123
Sequential application of criteria (rather than simultaneous application of criteria)A proposal is scored for one set of criteria, ranked and a cut-off point determined. Then those above the cut-off point are assessed again for another set of criteria to determine the final funded this	15.27%	31
Use of quotas: After ranking, proposals are reviewed to ensure sufficient numbers in certain categories including positive action (quotas related to protected characteristics) or quotas related to place, themes, disciplines	26.11%	53
Bringing in reviewers from earlier careers & providing mentoring: Panels and reviewers tend to be very experienced researchers/innovators. Those early in their careers could be invited to review or be part of panels with additional training, bringing different perspectives and experiences. Previous calls' award winners may also be brought in as reviewers/panellists	41.38%	84
Embedding EDI in assessment: Training or support provided to make assessors aware of their unconscious biases and to encourage them to call each other out during the assessment process	73.40%	149
Expanding or reducing the amount/detail of feedback to unsuccessful applicants: Different levels of feedback may be provided on unsuccessful applications	60.10%	122
Funder representation on review panels: The funder is represented on the panel to guide discussion or provide briefing on programme aims. Their role is beyond a purely administrative function, they may even be in a chair-role or similar	48.28%	98
Improving quality of reviews: Through training/retaining good reviewers/recognition. May be done through peer review colleges	48.77%	99
Open review/rebuttal: Reviews are published and/or made available to the applicant before decisions are taken, so they can be viewed and responded to.	53.20%	108
Other activity/-ies to improve baseline peer review assessment process not listed above. We encourage you to report also small and incremental tweaks or experiments aiming to improve the assessment process. Please provide details on the rationale for the activity, a brief description of the activity and evidence on the effectiveness of the activity.	19.21%	39
	Answered	203
	Skipped	39

Please provide a brief description of the activity/-ies. Please provide details such as the title of the funding opportunity where the activity/-ies was introduced, funding opportunity objectives, a brief description of how the activity/-ies was introduced and how it differs from the baseline peer review process, and the challenges (if any) with introducing the activity/-ies. Please provide details on any other activities introduced to improve the baseline assessment process that were introduced to the same funding opportunity. Feel free to share anything you consider relevant:

Answered	61
Skipped	181
[Free-text responses]	

Please share your insights on the rationale for the activity/-ies. This relates to the reasons why the activity was introduced. Examples of rationale might be encouraging wider and more diverse participation in the funding opportunity, encouraging high potential, disruptive research proposals, reducing the peer review burden, the need to assess non-research/innovation criteria or a mix of the above (and other). Please explain what were the expected outcomes of the activity/-ies (e.g., greater diversity, reduced burden, etc.).Feel free to share anything you consider relevant:

Answered	54
Skipped	188
[Free-text responses]	

Please share your insights on the effectiveness of the activity/-ies. Please provide details on the evidence of the effectiveness; for example, has an evaluation of the activity/-ies or the funding opportunity been completed or is planned, and what other evidence on the effectiveness is available (e.g., staff observations, analysis of monitoring data, etc.). Please provide details on what the evidence on the effectiveness tells – did the activity/-ies achieve intended objectives, what worked well and less well, why and what are the lessons learned. Please also highlight any issues and weaknesses of the activity/-ies, unintended consequences, etc.Feel free to share anything you consider relevant:

Answered	50
Skipped	192
[Free-text responses]	

Please provide a brief description of the activity/-ies. Please provide details such as the title of the funding opportunity where the activity/-ies was introduced, funding opportunity objectives, a brief description of how the activity/-ies was introduced and how it differs from the baseline peer review process, and the challenges (if any) with introducing the activity/-ies. Please provide details on any other activities introduced to improve the baseline assessment process that were introduced to the same funding opportunity. Feel free to share anything you consider relevant:

Answered	35
Skipped	207
[Free-text responses]	

Please share your insights on the rationale for the activity/-ies. This relates to the reasons why the activity was introduced. Examples of rationale might be encouraging wider and more diverse participation in the funding opportunity, encouraging high potential, disruptive research proposals, reducing the peer review burden, the need to assess non-research/innovation criteria or a mix of the above (and other). Please explain what were the expected outcomes of the activity/-ies (e.g., greater diversity, reduced burden, etc.). Feel free to share anything you consider relevant:

Answered	31
Skipped	211
[Free-text responses]	

Please share your insights on the effectiveness of the activity/-ies. Please provide details on the evidence of the effectiveness; for example, has an evaluation of the activity/-ies or the funding opportunity been completed or is planned, and what other evidence on the effectiveness is available (e.g., staff observations, analysis of monitoring data, etc.). Please provide details on what the evidence on the effectiveness tells – did the activity/-ies achieve intended objectives, what worked well and less well, why and what are the lessons learned. Feel free to share anything you consider relevant:

Answered	26
Skipped	216
[Free-text responses]	

Please select an activity/-ies to improve the baseline peer review assessment process that you would like to be used more in the assessment process at UKRI.

Answer Choices	Responses	
Assessment criteria definition: Adding new assessment criteria; may involve a tiered system for assessment criteria, for example, essential vs. desirable	39.78%	37
Demand management: individuals: Stipulating the number of projects that an individual can be involved in as PI and/or Co-I, for a particular Opportunity	27.96%	26
Demand management: individuals: Limiting the number of applications an individual can submit, if the quality of their previous applications has been of lower quality over a certain time period (e.g. only one proposal allowed for next 12 months if repeatedly unsuccessful in the previous 24 months)	19.35%	18
Demand management: institutions: Limiting the number of applications accepted from a single institution	23.66%	22
Demand management: institutions: Limiting the number of re-submissions accepted from a single institution	15.05%	14
Positive action: working with underrepresented groups: Providing additional support to groups that are unrepresented in UKRI's portfolio to encourage them to apply and support them as they do, with the view to increasing diversity	62.37%	58
Applicant behaviours: Designing application forms and processes with a view to encouraging positive behaviours among applicants (e.g. removing hierarchies of applicants to encourage team work and collaboration)	61.29%	57
Expression of interest: A short document providing the information of the organisation and applicant interested in applying. Used as tool to understand interest in the funding opportunity	33.33%	31
Outline applications: A short proposal containing the key information that is assessed to understand the project's merit and determine whether it has sufficient potential for the applicant to be invited to develop the application further	32.26%	30
Reducing application length/cutting sections: Shortening application forms (page/word length) to reduce burden. Requiring only project description and not track, or cutting other sections	27.96%	26

'Sandpits'/Matching events: In UKRI, this might look like an interactive workshop, structured to drive lateral thinking and radical approaches to address research challenges, with the aim of producing research proposals. At the end of the process grants are agreed	20.43%	19
2-stage application process: Not all the information required to make the final decision is included in the first submission	33.33%	31
Applicant anonymisation: Reviewers or panels members or both do not see the identity of the applicant/s	40.86%	38
Automated reviewer allocation: Using algorithms/ AI / text recognition to allocate reviewers to applications	21.51%	20
Dragon's den-style pitch: Applicants are invited to pitch their proposal in front of a panel, and panels have an opportunity to ask questions. This differs from an interview in that no other form of evidence (e.g. written proposals or external expert review) is used in the assessment	6.45%	6
External review only (no panel): Proposals are only assessed by external reviewers and review scores are simply combined to give the final score	3.23%	3
Group review: The same reviewer comments on multiple applications	22.58%	21
Number of reviewers 2-3 external reviews of applications is typical, but this number may be lowered to 1 or significantly increased	22.58%	21
Interviews: Lead applicant (or several application team members) may do a presentation (optional) and are then asked questions on their application by panel members, reviewers or funder representatives	21.51%	20
Internal assessment of reviews: Reviews are processed internally by funding organisation staff and are only passed to the external panel if of sufficient quality	15.05%	14
Assessment panels: Assessment panels use external reviews alongside their own expertise to assess the proposal	35.48%	33
Moderation panel: Moderation panels do not use their own expertise but can only use the reviews to inform their scores	13.98%	13
Panel only (no postal/external review): Proposals are only assessed by a panel of experts	19.35%	18
Peer allocation: The applicants are also the assessors, and review the proposals they are competing against to decide In UKRI, this may be known as "Pitch to Peers"	4.30%	4
Office decision: Applications go directly to the 'office' i.e. scheme manager/team /SRO/director, who can recommend funding or even decide to fund unilaterally. No peer and panel review involved.	11.83%	11
Standing panels: The same members year on year with some replacement due to retirement from the panel	18.28%	17
Portfolio panels: Assembled based on the proposals received and therefore will be comprised differently in each round of funding)	22.58%	21
Use of international assessors: Having quotas for assessors based in countries other than the funder's 'home' country. May extend to mandating all-international panels and/or reviewers	23.66%	22
Use of metrics: Use of metrics and bibliometrics as part of the evidence-base to inform decision-making	4.30%	4
Use of non-academic assessors (i.e. industry, policy & practice, patients, 'user' representatives): Use of non-academic assessors (i.e. industry, policy & practice, patients, 'user' representatives) May extend to all-user panels and/or reviewers. May take the shape of consultation rather than direct decision-making. May or may not involve specific quotas	44.09%	41
Virtual panels: Convening panels online rather than in person	27.96%	26
Golden ticket/Joker [Wildcard] Each panel members (or other decision-maker) is able to select one proposal (e.g. per call, per year, or similar) to guarantee funding, regardless of panel rankings or other decision-making processes	6.45%	6
Lottery: Successful proposals are chosen at random. In most methodologies, randomisation is only partial. For example, proposals may be scored and sorted into bands, and only those on the border of being funded will be randomised.	22.58%	21
Scoring mechanisms: Including voting, weighting, variance-based scoring	17.20%	16
Sequential application of criteria (rather than simultaneous application of criteria): A proposal is scored for one set of criteria, ranked and a cut-off point determined. Then those above the cut-off point are assessed again for another set of criteria to determine the final funded this	12.90%	12
Use of quotas: After ranking, proposals are reviewed to ensure sufficient numbers in certain categories including positive action (quotas related to protected characteristics) or quotas related to place, themes, disciplines	9.68%	9
Bringing in reviewers from earlier careers & providing mentoring: Panels and reviewers tend to be very experienced researchers/innovators. Those early in their careers could be invited to review or be part of panels with additional training, bringing different perspectives and experiences. Previous calls' award winners may also be brought in as reviewers/panellists	61.29%	57
Embedding EDI in assessment: Training or support provided to make assessors aware of their unconscious biases and to encourage them to call each other out during the assessment process	50.54%	47
Expanding or reducing the amount/detail of feedback to unsuccessful applicants: Different levels of feedback may be provided on unsuccessful applications	24.73%	23
Funder representation on review panels: The funder is represented on the panel to guide discussion or provide briefing on programme aims. Their role is beyond a purely administrative function, they may even be in a chair-role or similar	17.20%	16

Improving quality of reviews: Through training/retaining good reviewers/recognition. May be done through peer review colleges	49.46%	46
Open review/rebuttal: Reviews are published and/or made available to the applicant before decisions are taken, so they can be viewed and responded to.	26.88%	25
None of the above	2.15%	2
Other activity/-ies to improve baseline peer review assessment process not listed above. Please provide details on the rationale for the activity, a brief description of the activity and evidence on the effectiveness of the activity.	17.20%	16
	Answered	93
	Skipped	149

Why would you like to see increased use of this activity/-ies to improve peer review?	
Answered	56
Skipped	186
[Free-text responses]	

Please feel free to share any further thoughts or reflections you have on the peer review assessment process and activities to improve it.	
Answered	29
Skipped	213
[Free-text responses]	

As part of this study, we plan to conduct a small number of follow-up interviews. May we contact you via e-mail to discuss your answers to this survey? If yes, please provide your e-mail address.	
Answered	47
Skipped	195
[Free-text responses]	

Interview details

Interviewees

Table 2 List of interviewees

Appendix C

C.1.

Name	Organisation	Role	Interview date
UKRI staff (survey follow-up interviews)			
James Sundquist	UKRI, BBSRC	Senior Portfolio Manager	22/02/2023
Liam Blackwell	UKRI, EPSRC	Deputy Director for Cross Council Programmes	21/02/2023
Georgina Freeman	UKRI, STFC	Senior Programme Manager	27/02/2023
Stephen Meader	UKRI	Director, Future Leaders Fellowships	04/04/2023
Laura Bones	UKRI	Senior Programme Manager	02/03/2023
Other UK funders			
Sue Russel and Amy Bradburn	Cancer Research UK	Senior Policy & Governance Manager/Head of Grants Management	15/02/2023
Paul McDonald	Royal Society	Head of Grants	02/02/2023
Alyson Fox	Wellcome	Director of Research Funding	01/02/2023
Ken Emond	British Academy	Head of Research Awards	21/02/2023
Vicky Taylore	National Institutes of Health Research	Assistant Director for Applications and Funding	08/03/2023
International funders			
Ulrike Bischler	Volkswagen Foundation	Director of Grants	02/02/2023
Sylvia Jeney	Swiss National Science Foundation	Head of Open Research Data, previously Spark programme manager	08/02/2023
Kristin Oxley	Research Council Norway	Senior Adviser	03/02/2023
Kristin M. Kramer	National Institutes of Health	Director at the Office of Communications and Outreach, Center for Scientific Review	16/02/2023
Uwe von Ahsen	FWF	Head of Strategy Department	24/02/2023
Research and innovation policy experts			
James Wilsdon	Research on Research Institute	Director	13/02/2023
Adrian Barnett	Queensland University of Technology	Professor	20/02/2023
Jenny Gladstone	University of Oxford	Strategic Research Development Manager	14/02/2023

Gemma Derick	University of Bristol	Associate Professor	24/02/2023
Sector representatives			
Joanna Burton	Russel Group*	Policy Manager	14/02/2023
Nicola Eckersley-Waites	Confederation of British Industry	Head of Innovation	16/02/2023
Daniel Wake	Universities UK*	Policy manager	03/03/2023

Note: *organisations collected feedback on the study questions from their members and shared a summary of feedback. Russel Group representative summarised the feedback also in an interview.

Interview tool

C.2.

Name	
Institution/organisation	
Role	
Interview date/time	
Interviewer	

Points to make before the start of the interview:

This interview is part of the Review of Peer Review Study commissioned by UKRI to Technopolis. The study will analyse evidence on the effectiveness of interventions in the peer review process. 'Interventions' refers to any form of deviation from the standard application assessment process used by research and innovation funders involving external peer review and panel review.

No attributable quotes will be used from these interviews. However, can we please note your name in the method annex to our final report? You have the right to withdraw your participation at any time.

Interview questions

- Please can you describe your role at your organisation?
- Could you please provide a brief description of your organisation's standard peer review assessment process?
- What (if any) problems have you identified with the standard peer review assessment process?

The following questions are not relevant to all interviewees. Please focus on the programmes and interventions that we know the funder has introduced and can reflect upon.

- Could you please briefly summarise what interventions to the standard peer review assessment process your organisation has introduced? 'Interventions' refers to any form of deviation from the standard application assessment process. Interventions can include various significant modifications and smaller process tweaks to the 'standard' peer review process for grant allocations. Examples could include:
 - **pre-call interventions** such as use of quotas, specific eligibility requirements
 - **interventions around application design** such as pre-applications, application time window variations

- **interventions around process design** such as the use of interviews, anonymised review, pitching
 - **interventions around decision-making** such as lottery, wildcard and
 - **interventions to support training and feedback** such as training of reviewers, applicant rebuttal and similar
- What was the rationale for the introduction of the intervention/s?
- Prompt for:
- encouraging wider and more diverse participation in the funding programme
 - encouraging riskier, disruptive research proposals
 - reducing the peer review burden
 - the need to assess non-academic criteria
 - a mix of the above
- Could you please briefly describe the implementation of the intervention/s? Prompt for:
 - What were the objectives of the funding scheme where the intervention/s was introduced?
 - A brief description of the intervention
 - What (if any) were the practical challenges when introducing the intervention?
 - Did the introduction of the intervention require additional resources and specific staff competence?
- What type of evidence do you have on the effectiveness of the intervention/s? Prompt for:
 - Strong evidence like controlled experiments
 - Light-touch evaluation
 - Anecdotal staff observations
- What does the evidence on the effectiveness of the intervention/s tell? Prompt for:
 - Did the intervention achieve the intended objectives and how exactly?
 - Are there any unintended consequences?
 - Are there any lessons for what type of programme the intervention/s works better?
- Have you implemented multiple interventions to one programme? For example, a two-stage application process and unconscious bias training.
 - If 'yes', do you have any observation and lessons learned on the effectiveness of combinations of interventions?
- Have any interventions we discussed become (or will become) a 'new normal' in your organisation's funding process?

- Overall, is there an appetite in your organisation, organisations that oversee your work and wider academic community to address problems around standard peer review and experiment with interventions around peer review?
- Do you have any other thoughts on your experience and wider observations on the interventions around peer review that we have not covered yet?

State of play at UKRI

Our study is intended to be of use to the widest possible audience of R&I funders, and so while we draw many examples from UKRI, we do not reflect in the main body on UKRI itself. However, as consultation of UKRI staff was a major part of our data collection, we are able to describe in more detail the views and hopes within UKRI. We present these findings below.

Appendix D We note at the outset that our study was in no way a review of practices at UKRI, let alone an evaluation of them. What is compiled below is a snapshot of views rather than of facts. They may provide some guidance on how UKRI might go about implementing interventions to peer review. Additionally, they present a sample case study of the current perceptions and attitudes within one funder – other funders may recognise themselves in some of these findings, or take them on board in their considerations of how best to evolve their processes.

Several UKRI staff consultees for this study pointed out that this study is perceived to be important as it will provide UKRI staff with a resource to inform their work. Some consulted UKRI staff members noted that too little sharing of experiences with implementation of the interventions is happening within the organisation. As a result, people often feel as though they are doing things for the first time when in fact they are not.

A total of 203 members of staff across seven research councils (AHRC, BBSRC, ESRC, EPSRC, MRC, NERC and STFC), Innovate UK and central UKRI responded to a survey question asking which of the 38 interventions to the peer review process they had heard of being used at UKRI. The responses showed organisation, intervention and intervention-type based variations.

Intervention-type awareness

Of the five intervention types, interventions in the 'application parameters' cluster are best known; on average, 69% of all respondents noted being aware of the interventions in this bracket being used (past or present) at UKRI. It is also the only bracket in which every intervention was known by at least a third of every part of UKRI.

The interventions at the decision-making stage appear to have the lowest profile at UKRI. The best-known intervention in the 'decision-making' cluster was scoring mechanisms, reported by 60% of all respondents to have been used at UKRI. The rest of the interventions in this bracket were considerably less well-known, with only 24% of respondents reporting familiarity of included interventions on average.

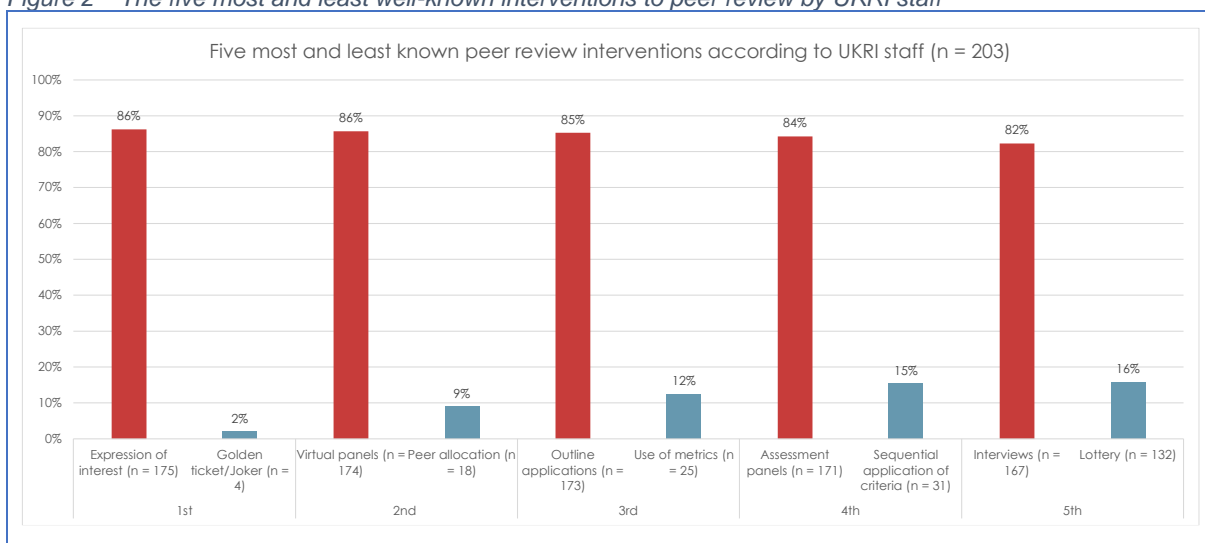
Intervention-level awareness

At a more granular level, the most widely known interventions are around elements in the application and process design stages. As shown in Figure 2, expressions of interest and outlines are reported to have been used at UKRI by 86% and 85% of respondents respectively. In the process design stage, virtual panels were familiar to 86% of respondents, followed by assessment panels (at 84%) and applicant interviews (at 82%). It is possible that virtual proceedings became considerably better known as a result of the restrictions related to the Covid-19 pandemic. Furthermore, these are interventions which can be considered to either provide more robust information (interviews, assessment panels, virtual panels) or expedite the process (outlines and Eols). It can be argued that they do not significantly alter the overall process (compared to interventions like partial randomisation or matching events for instance, where the decision-making or applicant behaviours change entirely). This, in turn, could suggest that the threshold to experiment with these interventions is relatively low.

In line with the intervention-type level awareness at UKRI, three of the five least known interventions came from the decision-making cluster. Instances selecting awards via wildcards or randomisation were reported by 2% and 16% of respondents respectively. In addition, sequential assessment criteria were reportedly familiar to 15% of respondents. Similar levels of familiarity were reported on the use of metrics

and peer allocation of reviews in the process-design bracket. 12% of respondents reported knowledge of use of metrics, and 9% of peer allocation.

Figure 2 The five most and least well-known interventions to peer review by UKRI staff



Source: Technopolis survey. Wording of survey question: “Are you aware of any of the following activities being used (past or present) in peer review assessment processes at UKRI?”

For many interventions, staff in one part of UKRI show far more awareness of them than in others, which likely indicates use or applicability of the intervention in one particular Research Council (or in a small number of them). Interventions with particular fluctuation in familiarity between councils included moderation panels and standing panels, individual demand management (based on previous performance) and early career reviewers. These are likely the instances where experience-sharing across the organisation will be of the greatest benefit. It is also notable that there were differences between Research Councils in the overall level of awareness of different interventions as shown in Figure 3. This may demonstrate general differences in the readiness to experiment with various interventions, but also in the accumulated knowledge.

There were 39 responses to the open ‘other interventions’ survey question which contained elements from a wide range of the 38 interventions. These occurred in specific combinations which had not been included (e.g., tweaking eligibility to enable early career researchers to apply as PIs), or in ways which were more specific in nature to (e.g., lived experience experts as reviewers rather than non-academic reviewers). The following points emerge from this, though we note that many are merely slight modifications from our original set of 38 interventions:

- Five respondents mentioned systematic training of, or guidance for reviewers or panels for embedded EDI or elevated quality of assessment
- Five respondents mentioned designing the application forms to capture demonstrations of EDI (e.g., via tweaking eligibility to include early career researchers), good practices or emphasis on critical issues to the call. A small subset of this was particularly aimed at removing information about applicant track
- Three respondents mentioned the right to reply. This is perhaps understood separately from open reviews / rebuttals, as emphasising written dialogue between applicants and reviewers
- Three respondents mentioned lived experience experts as either reviewers or panel members
- Four respondents mentioned ways to expedite the panel process or reduce workload per individual panellists. This would be done by triaging or banding applications to focus panel time, or by pre-

excluding applications before panel stage where they fail to receive a sufficient number of high scores

Figure 3 Survey results: awareness of interventions being used at UKRI

	AHRC	BBSRC	ESRC	EPSRC	IUK	MRC	NERC	STFC	UKRI	Total
	12	26	23	26	18	43	13	18	21	
Assessment criteria	58%	88%	91%	92%	67%	72%	77%	78%	71%	78%
Demand management: individuals1	58%	81%	70%	92%	44%	58%	62%	39%	67%	64%
Demand management: individuals2	8%	50%	22%	92%	28%	44%	38%	56%	62%	47%
Demand management: institutions1	42%	73%	78%	92%	44%	58%	62%	72%	90%	69%
Demand management: institutions2	0%	15%	26%	27%	28%	16%	31%	11%	38%	22%
Positive action	25%	38%	17%	50%	39%	37%	38%	39%	62%	38%
Applicant behaviours	50%	62%	43%	62%	17%	51%	54%	33%	48%	48%
Expression of interest	92%	100%	91%	96%	67%	79%	92%	89%	81%	86%
Outline applications	58%	92%	91%	96%	44%	93%	92%	89%	86%	85%
Reducing application length	33%	73%	70%	77%	33%	58%	77%	56%	71%	62%
'Sandpits'/Matching events	33%	65%	52%	92%	33%	56%	46%	33%	53%	55%
2-stage application process	50%	77%	96%	85%	67%	72%	85%	56%	76%	75%
Applicant anonymisation	17%	31%	48%	88%	22%	21%	23%	28%	29%	35%
Automated reviewer allocation	8%	12%	17%	19%	22%	14%	23%	17%	24%	17%
Dragon's den-style pitch	8%	12%	22%	54%	28%	5%	0%	22%	19%	19%
External review only	25%	27%	30%	35%	61%	9%	23%	33%	33%	29%
Group review	17%	27%	65%	65%	33%	42%	23%	67%	38%	43%
Number of reviewers	75%	88%	70%	62%	39%	70%	62%	67%	76%	68%
Interviews	58%	92%	91%	96%	67%	81%	85%	72%	81%	82%
Internal assessment of reviews	50%	54%	65%	92%	61%	44%	85%	44%	48%	59%
Assessment panels	92%	88%	100%	85%	44%	86%	100%	78%	86%	84%
Moderation panel	92%	50%	43%	92%	50%	30%	92%	39%	76%	58%
Panel only	75%	96%	91%	88%	28%	67%	92%	78%	71%	76%
Peer allocation	0%	0%	30%	4%	6%	5%	0%	11%	19%	9%
Office decision	25%	46%	26%	77%	17%	19%	46%	33%	48%	37%
Standing panels	25%	62%	83%	62%	22%	77%	54%	83%	67%	63%
Portfolio panels	42%	69%	61%	77%	44%	49%	54%	50%	62%	57%
International assessors	42%	54%	43%	69%	28%	56%	31%	50%	57%	50%
Use of metrics	0%	12%	9%	12%	11%	16%	0%	22%	19%	12%
Non-academic assessors	58%	92%	96%	81%	67%	65%	62%	44%	81%	73%
Virtual panels	83%	92%	87%	96%	61%	88%	92%	89%	76%	86%
Golden ticket/Joker	17%	0%	4%	0%	0%	2%	0%	0%	0%	2%
Randomisation	17%	23%	9%	15%	6%	7%	38%	28%	14%	16%
Scoring mechanisms	50%	58%	52%	77%	44%	70%	62%	67%	48%	60%
Sequential application of criteria	0%	15%	4%	23%	11%	14%	23%	28%	14%	15%
Use of quotas	17%	15%	26%	42%	28%	23%	31%	17%	29%	26%
Early career reviewers	33%	38%	39%	85%	11%	28%	38%	39%	52%	41%
Embedding EDI in assessment	67%	77%	70%	88%	50%	77%	77%	72%	67%	73%
Expanding or reducing feedback	67%	62%	43%	77%	44%	77%	54%	56%	43%	60%
Funder representation on panels	67%	58%	57%	50%	44%	40%	46%	56%	29%	48%
Training	58%	23%	65%	73%	33%	40%	62%	28%	67%	49%
Open review/rebuttal	42%	58%	70%	62%	17%	51%	54%	67%	52%	53%
Other activity/-ies	17%	23%	22%	19%	17%	16%	8%	33%	19%	19%
None of the above	0%	0%	0%	4%	0%	0%	0%	6%	0%	1%

n=200. Wording of survey question: "Are you aware of any of the following activities being used (past or present) in peer review assessment processes at UKRI?" Note that the wording of some interventions was altered to better reflect standard terminology within UKRI. As the remainder of our research covers non-UKRI and international sources, we opt for more mainstream terminology in the rest of our study. *Demand management for individuals and institutions was broken down further into sub-categories and is now defined as follows: Demand management: individuals 1: Stipulating the number of projects that an individual can be involved in as PI and/or Co-I, for a particular Opportunity; Demand management: individuals 2: Limiting the number of applications an individual can submit, if their previous applications has been of lower quality over a certain time period (e.g. only one proposal allowed for next 12 months if repeatedly unsuccessful in the previous 24 months); Demand management: institutions 1: Limiting the number of applications accepted from a single institution; Demand management: institutions 2: Limiting the number of re-submissions accepted from a single institution

We also put a forward-looking question to UKRI staff, asking them to indicate which of the interventions to improve the baseline peer review assessment process they would like to be used more in the assessment processes at UKRI. We received 92 responses. The overall levels of approval (as measured by the wish to see interventions more) were somewhat lower than when asked what interventions respondents were already aware of being used at UKRI. This may be explained to some degree by the lower response rate with the same number of organisations making the impact of single responses (or

lack thereof) larger. That said, it may also demonstrate a more conservative approach to interventions or their future increase.

Intervention-type level

Enthusiasm appears highest for interventions in the ‘application design and parameters’ (38% average) and ‘training and feedback’ (37%) clusters. Across all intervention types, ‘application design and parameters’ was the only bracket where all interventions received some degree of support for increased future use from all research councils.

Similarly to the level of awareness, the least supported bracket for increased use concerned changes to decision-making with the mean rating at 15%, and where each intervention received no support from at least one research council.

Intervention-level

Across the Research Councils, interventions promoting affirmative actions were generally most sought-after. Working with underrepresented groups² was selected by at least half of respondents from every represented organisation, and by as many as 86% of AHRC and 75% of UKRI representatives. It also had the highest overall approval level of 62%.

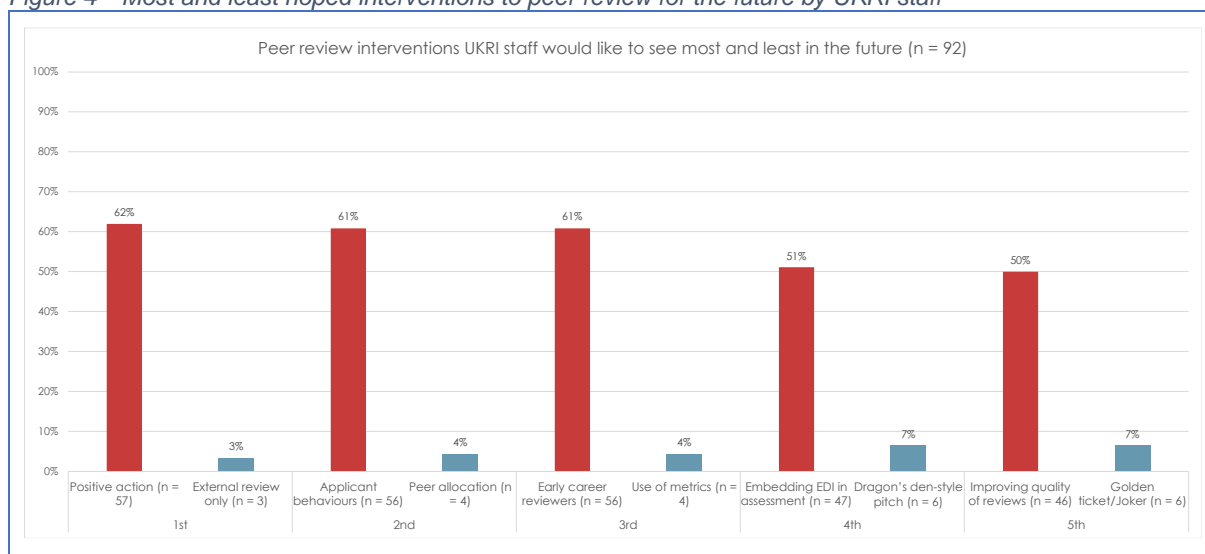
Other generally well-received interventions included designing application forms and processes with a view to encourage positive behaviours (particularly supported by representatives of UKRI, MRC and EPSRC; 75%, 73% and 70% of respondents respectively), bringing in early career researchers as reviewers (61% overall approval level), embedding EDI in the assessment (51% overall approval level) and review training (50% overall approval level).

Less thematic alignment was identified among the collectively least sought-after interventions. External review only, peer allocation, use of metrics, dragon’s dens and wildcards, each were hoped for by less than 10% of the overall respondent population. However, four of the five least hoped for interventions are in the ‘process design’ cluster and one ‘decision-making’.

Compared to the most well-received interventions, several of the five least supported ones propose a considerable shift in the way their respective process stages are carried out. Dragon’s den style pitches rely primarily on oral presentation of proposed ideas instead of written proposals, peer allocation shifts some part of the assessment responsibility to applicants, and wildcards place a considerable selection power with individual selectors.

² In our original survey of UKRI staff, we used the term ‘Positive action – working with underrepresented groups’. The term ‘positive action’ is not in use in the report, as it is too broad (and has multiple definitions) to be treated as a single intervention.

Figure 4 Most and least hoped interventions to peer review for the future by UKRI staff



Technopolis survey

The representatives from UKRI (i.e. not attached to any particular Research Council) and NERC appeared positive about the largest number of interventions with at least 50% of UKRI and NERC representatives naming 10 interventions which they would like to see more.

There was also a notable degree of variance between research councils in terms of supported interventions. For instance, working with underrepresented groups was the only intervention which at least 50% of each Research Council rated as something they would like to see increased. Conversely, the use of non-academic assessors was selected by 71% of one research council (AHRC) and 14% of another (STFC). A similarly high level of inter-council variance was identified with applicant anonymisation (75% at most at Innovate UK, 33% at least at STFC). As with the responses to general awareness, these elements indicate differences in perceived suitability between research councils.

Finally, there were 16 answers to the open 'other' question. Again, as with the same question about awareness, there were answers which may have fit an existing intervention but included further detail, and answers which combined elements from different interventions. Some answers also recommended caution rather than a particular intervention per se.

- Four respondents recommended the inclusion of various non-academic populations which, at times, also aligned with the 'working with underrepresented groups' intervention. These populations were lived experience experts (e.g., patients), public engagement specialists, non-academics in academic settings (e.g., technical specialists) and non-clinical end-users (typically from industry)
- Four respondents recommended ways to enable a more robust understanding of applications. Two of the respondents recommended opportunities for discussions for panels ahead of the official panel meeting (e.g., online discussion boards). One respondent recommended co-reviewing, especially for interdisciplinary applications to ensure that the proposed ideas are rounded, while the fourth hoped for review prompts to assess EDI-related outcomes. Training was also mentioned by several of the four.
- Two respondents approached applicant track from different perspectives; one hoped for visibility of past research to ensure that selections are not made based on application-writing skills, while another recommended caution with the use of metrics in responsible research funding

Figure 5 Survey results: Appetite for interventions / increased use of interventions at UKRI

	AHRC	BBSRC	ESRC	EPSRC	IUK	MRC	NERC	STFC	UKRI	Total
	7	13	9	10	4	22	5	14	8	
Assessment criteria	29%	54%	56%	20%	50%	27%	80%	43%	38%	40%
Demand management: individuals1	0%	31%	0%	30%	25%	27%	40%	50%	38%	28%
Demand management: individuals2	0%	15%	0%	30%	25%	27%	20%	29%	13%	20%
Demand management: institutions1	14%	23%	11%	20%	50%	23%	40%	14%	50%	24%
Demand management: institutions2	0%	23%	0%	0%	25%	18%	20%	14%	38%	15%
Positive action	86%	62%	56%	60%	50%	59%	60%	57%	75%	62%
Applicant behaviours	57%	46%	56%	70%	50%	73%	60%	50%	75%	61%
Expression of interest	43%	54%	22%	20%	25%	27%	60%	29%	38%	34%
Outline applications	14%	54%	11%	10%	25%	45%	40%	36%	25%	33%
Reducing application length	14%	31%	33%	10%	25%	27%	40%	21%	50%	27%
'Sandpits'/Matching events	29%	38%	0%	10%	50%	23%	0%	14%	25%	21%
2-stage application process	14%	38%	44%	10%	25%	45%	60%	29%	25%	34%
Applicant anonymisation	43%	46%	33%	50%	75%	41%	60%	14%	38%	40%
Automated reviewer allocation	0%	38%	11%	30%	0%	32%	0%	21%	13%	22%
Dragon's den-style pitch	14%	0%	22%	0%	0%	5%	20%	0%	13%	7%
External review only	0%	8%	0%	0%	25%	0%	0%	7%	0%	3%
Group review	0%	15%	22%	40%	25%	32%	20%	21%	13%	23%
Number of reviewers	29%	15%	33%	0%	25%	32%	40%	21%	13%	23%
Interviews	0%	23%	0%	0%	25%	41%	20%	21%	38%	22%
Internal assessment of reviews	0%	23%	11%	0%	0%	27%	0%	21%	13%	15%
Assessment panels	29%	38%	33%	0%	50%	45%	60%	29%	50%	36%
Moderation panel	14%	8%	11%	10%	25%	5%	0%	14%	63%	14%
Panel only	14%	31%	22%	0%	0%	23%	20%	14%	38%	20%
Peer allocation	14%	0%	0%	0%	0%	5%	0%	7%	13%	4%
Office decision	14%	15%	0%	0%	0%	18%	20%	7%	25%	12%
Standing panels	0%	15%	22%	0%	0%	36%	20%	21%	13%	18%
Portfolio panels	14%	38%	22%	30%	25%	14%	0%	21%	38%	23%
International assessors	43%	38%	11%	10%	0%	32%	20%	0%	50%	24%
Use of metrics	14%	8%	0%	0%	25%	0%	0%	7%	0%	4%
Non-academic assessors	71%	46%	44%	30%	25%	59%	40%	14%	63%	45%
Virtual panels	43%	46%	22%	20%	25%	23%	20%	21%	38%	28%
Golden ticket/Joker	0%	15%	0%	20%	25%	0%	20%	0%	0%	7%
Randomisation	14%	46%	0%	30%	0%	18%	20%	21%	38%	23%
Scoring mechanisms	14%	8%	0%	20%	50%	23%	20%	14%	13%	16%
Sequential application of criteria	14%	15%	0%	0%	25%	14%	20%	14%	25%	13%
Use of quotas	29%	23%	11%	10%	0%	0%	20%	0%	13%	10%
Early career reviewers	57%	62%	67%	50%	25%	68%	80%	57%	63%	61%
Embedding EDI in assessment	71%	54%	44%	40%	25%	50%	60%	50%	63%	51%
Expanding or reducing feedback	14%	31%	11%	10%	50%	27%	60%	21%	25%	25%
Funder representation on panels	29%	8%	0%	30%	25%	27%	0%	14%	13%	17%
Training	57%	38%	33%	30%	75%	68%	20%	57%	50%	50%
Open review/rebuttal	0%	31%	22%	20%	0%	41%	40%	29%	25%	27%
Other activity/-ies	29%	15%	22%	0%	25%	5%	20%	36%	25%	17%

n=92. Wording of survey question: "Please select an activity/-ies to improve the baseline peer review assessment process that you would like to be used more in the assessment process at UKRI." Note that the wording of some interventions was altered to better reflect standard terminology within UKRI. As the remainder of our research covers non-UKRI and international sources, we opt for more mainstream terminology in the rest of our study. *Demand management for individuals and institutions was broken down further into sub-categories and is now defined as follows: Demand management: individuals 1: Stipulating the number of projects that an individual can be involved in as PI and/or Co-I, for a particular Opportunity; Demand management: individuals 2: Limiting the number of applications an individual can submit, if their previous applications has been of lower quality over a certain time period (e.g. only one proposal allowed for next 12 months if repeatedly unsuccessful in the previous 24 months); Demand management: institutions 1: Limiting the number of applications accepted from a single institution; Demand management: institutions 2: Limiting the number of re-submissions accepted from a single institution

Sharing of good practices

We find that the use of interventions varies across UKRI councils, and there might be parts of the organisation that have more to share. Some examples of the potential for wider sharing across the organisation are EPSRC's use of demand management, the recent introduction of discussion boards at BBSRC, and lessons from the first use of randomisation at NERC. Based on our consultation, we conclude that these interventions (with some exceptions of demand management) are not used yet by other councils. Our survey reveals that UKRI staff would most like to see wider use of interventions around working with underrepresented groups. The survey demonstrates various interventions in this area across councils; many are minor tweaks.

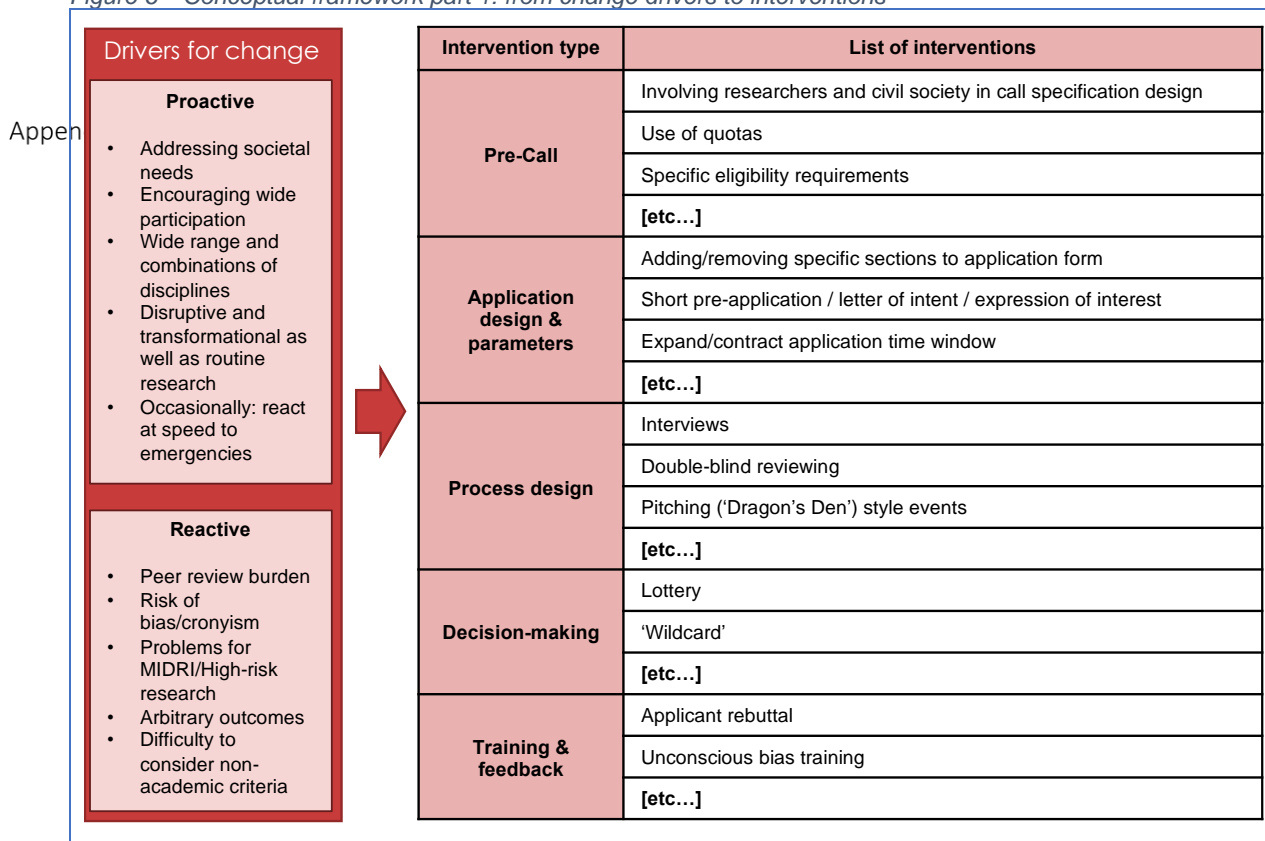
Our consultation reveals that for some interventions, wider knowledge sharing is a must to ensure a well-functioning review process. For example, councils have different demand management approaches, and no UKRI-wide system exists. Our consultations indicate that currently there may be a risk of applicants playing the system by re-submitting applications to other councils. Thus, an organisation-wide approach or oversight of demand management might be necessary.

Furthermore, increasing calls for cross-council programmes are made, and closer coordination across the councils is generally called for by individuals who submitted views to our study. The operation of cross-council programmes over the past years since the establishment of UKRI has revealed some lessons for the assessment processes in these programmes. For example, our consultation with UKRI staff reveals that programmes that fund cross-council areas and use panel members from different councils with different experiences and previous guidelines can be problematic if the differences are properly accounted for. The panel members might rely on their previous experiences and not the procedures of the cross-council panel. The applications from certain disciplines can be disadvantaged because certain panel members treat the panel differently than others. Therefore staff running cross-council investments should understand the differences between the councils and their review processes to provide a proper briefing to the panel members at cross-council panels and mitigate any problems arising because of different previous experiences of panel members.

The above demonstrates a need for sharing good practices across the organisation. Several survey respondents also expressed a need for this and a willingness to engage. In practical terms, this can take various forms, and the outputs of this study can serve as a starting point to organising a further collection of organisational intelligence and exchange of experience. One option might be to focus on specific interventions, such as those rated as most relevant in the survey. UKRI (and other funders) would benefit from having an organised list of tested interventions or a toolkit with options indicating when the specific options could be appropriate (for what funding objectives). That is essentially the end product of this study. The tool would be most valuable if regularly updated as the study demonstrates that while UKRI might not have yet implemented very radical interventions, significant effort is regularly invested in improving the assessment process.

Conceptual framework

Figure 6 Conceptual framework part 1: from change drivers to interventions



At its core, our conceptual framework has a tabular approach. For each intervention, we will synthesise evidence from our three strands of data collection – literature review, interviews and survey – and provide information for each in the following categories:

- Definition(s): what exactly does the intervention involve? Are there relevant differences in how different funders practise the intervention?
- Why to do it: what is the envisaged benefit of the intervention? What problems/issues is it supposed to solve? What, therefore, might be measures of its success?
- Why not to do it: does the intervention have any weaknesses or drawbacks? Are these especially problematic under certain circumstances (i.e. for particular scheme types)?
- Evidence verdict and strength of evidence: is there evidence to show that this intervention has (or has not) worked? What is the strength of the evidence (e.g. controlled experiments, light-touch evaluation, anecdotal)? Besides a written verdict, we will add a ranking of evidence strength on a scale to provide an at-a-glance view on which interventions have been well explored by funders and academics, and which ones are still at experimental stage (meaning future schemes looking to use them ought to consider a pilot/trial first)
- Schemes and sources: list of sources used for each intervention for reference

Populating the table below is the core task of this study. It will form the basis of our reporting, and also for the infographic to be developed at the end of this study. We note that the format of the table below is for illustrative purposes only. The quantity of information yielded will, at least at initial analysis stages, far outstrip the capacity of the format shown below. We do however aim to also arrive at a simplified summary version that can be presented in such tabular form, to act as a basis for an infographic.

Figure 7 Conceptual framework part 2: evidence matrix

Intervention type	Possible interventions	Definition(s)	Why do this? (desired objectives/ outcomes)	Why not do this? (potential hazards)	Evidence verdict (has it been shown to work/not work? Strength of evidence?)	Schemes and sources
Pre-Call						
	[etc...]					
Application design & parameters						
	[etc...]					
Process design						
	[etc...]					
Decision-making						
	[etc...]					
Training & feedback						

This core evidence table will be populated with synthesised information, i.e. combinations and summaries of evidence from multiple sources and (usually) from multiple existing funding schemes. As an intermediate step, each individual piece of evidence will be assessed. Here we have two fundamental approaches, depending on the specific piece of evidence in question.

- **Evidence by intervention:** this will likely be the less common but more straightforward approach. Some items in our literature review will focus specifically on one intervention (e.g. an academic study involving controlled experiments to analyse that specific intervention). A small number of interviewees may also be experts on one specific intervention type and be able to make robust claims on its pros and cons. These cases can unproblematically be assigned to the relevant intervention in our evidence table
- **Evidence by programme:** Often, evidence sources will not treat a specific intervention across many programmes. Instead, there will be evaluations of specific programmes that used an intervention, or interviewees/survey respondents who designed or supervised such programmes. Evidence in these cases will not always be sufficient to fully determine the effect of one specific intervention in the assessment process. This is especially the case for programmes where multiple interventions have been implemented. For example, a programme may involve anonymised reviewing, a two-stage application submission and unconscious bias training for reviewers. Unless an evaluation specifically looked at each of these elements individually, it will not be possible to fully attribute any observed outcomes to one specific intervention. There are gradations here of course and we will consider the strength of each piece of evidence on its own merit. Nevertheless, it is important to acknowledge that in many pieces of evidence, the effect of one specific intervention may not always be possible. Looking across a range of evidence pieces from several programmes using the same intervention, strength of evidence will of course increase

Figure 8 Data collection framework part 1: Evidence by intervention

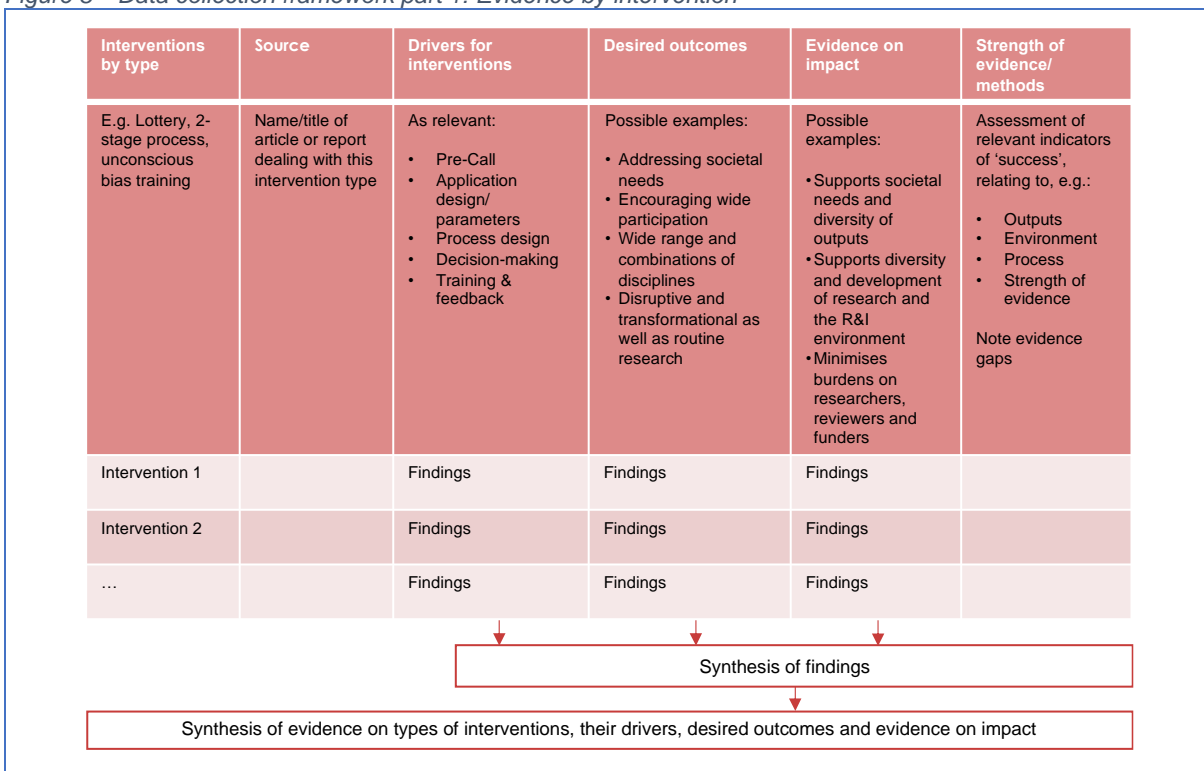
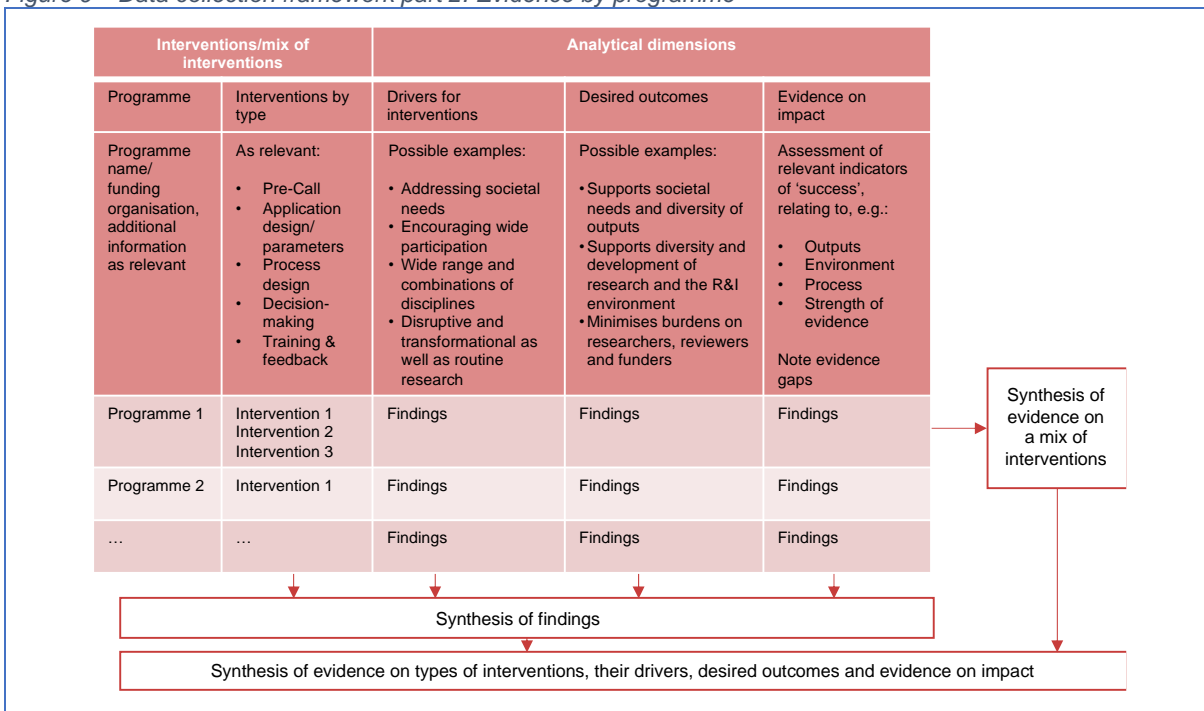


Figure 9 Data collection framework part 2: Evidence by programme



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