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RECOMMENDATIONS ON RESEARCH ASSESSMENT PROCESSES

POSITION STATEMENT

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"Position Statement and Recommendations on Research Assessment Processes"

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POSITION STATEMENT AND RECOMMENDATIONS ON RESEARCH ASSESSMENT PROCESSES

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Foreword

The evaluation and review of research is a central activity of research performing organisations, scientific institutions, and research funding organisations.

The purposes of such assessments range from research career progression and the selection of project proposals for funding to the monitoring of ongoing research projects and the evaluation of finished ones. To that end, the method of peer review – also known as merit review – was developed and is now firmly established in the science system: peer researchers review projects and proposals to assess them according to pre-defined quality criteria. The merit review system is a key ingredient of science as a self-organising system, as quality assurance lies in the hands of researchers themselves.

In 2012, the Global Research Council established core high-level principles for a rigorous and transparent scientific merit review system. These principles were revised and updated in 2018.

While these high-level principles provide a worldwide agreement at a fundamental level, they give little guidance as to how a merit review system should be organised and implemented. Over decades, research organisations have fine-tuned their assessment methods and peer-review processes. The recommendations presented in this paper are based on a major fact-finding study, supplemented by an extensive consultation process. They represent current best practices implemented in Science Europe member organisations and can be considered the current gold standard in research assessment methods. They provide a framework upon which all research organisations can further develop and optimise their own processes.

At the same time, there is a need to consider how assessment processes should evolve in the future to ensure that they remain effective. Our recommendations provide a starting point from which broader reforms to such processes can be considered. In particular, it will be important in the future to ground assessment processes on a firmer evidence base, for instance by conducting empirical hypothesis-testing studies.

It is important to recognise that these recommend–ations are primarily about assessment processes and methods, and not so much about criteria. In recent times, the appropriateness of various criteria (such as journal metrics) has been questioned through initiatives such as the San Francisco Declaration on Research Assessment and the Leiden Manifesto on Research Metrics. This is a highly relevant debate, where a careful separation of assessment processes and criteria needs to be made.

Science Europe calls on research organisations to build on the momentum now established to consider how they can collectively drive and direct the more profound evolution of research assessment processes that is underway. It is through re-appraisal and knowledge sharing that a clear direction for further reforms to assessment processes can be resolved.

Marc Schiltz
President of Science Europe

Executive Summary

Research performing and research funding organisations dedicate substantial efforts and resources to assessments of research quality and researcher performance. The effectiveness, efficiency, and fairness of such processes needs to be regularly evaluated and monitored – particularly at a time when the research system is changing rapidly.

In 2019, Science Europe launched a study into the research assessment processes at research organisations. It concluded that assessment processes are well-developed, and that changes are made mostly in a minor and incremental fashion. Numerous common challenges to the system were identified and are further explored in this Position Statement and Recommendations (see Chapter 2). These common challenges include the need to continually address biases in assessment processes, considerations of the cost and efficiency of assessments in view of funding limitations, and how to address and recognise the burden placed on reviewers. These challenges indicate that concerted action from Science Europe Member Organisations and other research stakeholders is needed for the research system to continue to evolve effectively.

This Position Statement and Recommendations build on the results of the study, complemented by an extensive consultation among Science Europe Member Organisations and stakeholders from the research community, and presents the following recommendations in more detail:

- Research assessment processes must be clear and transparent at all stages, for all involved.
- Research organisations should continually monitor and regularly evaluate the robustness of their assessment processes, and share best practices to foster mutual learning.
- Research organisations should publicly demonstrate and continually evaluate how they address bias, discrimination, and unfair treatment in assessment processes. Updated guidelines and training should be available to all involved.
- Research organisations should streamline assessment processes to reduce the burden on reviewers and applicants. Standardisation and interoperability of such processes within and between organisations should be considered.
- Broader criteria for the selection of appropriate reviewers should be considered, emphasising the importance of international reviewers. Review activity should be appropriately recognised.
- Research assessments should focus on the substance and content of applications. Processes should aid reviewers in conducting qualitative assessments that consider a broad spectrum of research outputs and activities.
- Research organisations should consider implementing novel assessment techniques. Methodologies and outcomes of these should be shared to promote mutual learning.

The recommendations presented in this Position Statement provide a framework upon which research performing and research funding organisations can adapt their assessment processes and collaborate to reduce the increasing strains on the system and tackle the challenges faced. The recommendations also contribute to the task of future-proofing assessment processes for the broad changes to the research system that are underway. Potential improvements of assessment processes continually arise, and are increasingly facilitated by technological advances that can support the further adaptation of the system.

Science Europe supports its Member Organisations by enabling mutual learning and knowledge exchange. Coordination with other research stakeholders in important areas of research policy is equally important, for a common understanding of the challenges the research system is facing and to foster alignment of policies.

Introduction

Research assessment processes are viewed as an important quality-assurance gateway for the creation of new knowledge and innovation, and resulting societal and economic developments.

Research performing and research funding organisations play an important and collective role by developing and implementing assessment processes. The importance of these processes is reflected by the substantial efforts and resources that research organisations dedicate to the assessment of research quality. They use assessments to decide on the career progression of individual researchers, on the allocation of funding to research proposals, or to evaluate the performance of research institutes and universities. In an environment where the number of academic positions and availability of research funding are limited, but where there are many high-quality applicants and proposals, these assessments and their underlying processes are of critical importance.

It is essential for public research organisations to regularly consider how their assessment mechanisms cope with the requirements of a research system that continually evolves, and whether novel approaches can be used to improve them. Science Europe is well-placed to provide a forum for the proposal and exchange of novel approaches that is key to ensuring that its Member Organisations collectively remain on top of the evolution of the system. For this reason, the 'quality of science' has been a longstanding priority for Science Europe and its Member Organisations.

Context

In 2019, Science Europe launched a project to address this priority. The first phase consisted of a knowledge gathering exercise on the robustness of selection processes, performed by Technopolis Group and overseen by Science Europe (referred to herein as the '2019 Study', the report of which is available on the Science Europe website[1]). In follow-up phases of this activity, Science Europe will explore further aspects of research culture, as introduced in the 'Closing Remarks and Ways Forward' (page 24).

The extensive 2019 Study showed that research assessment processes of Science Europe Member Organisations are generally well-developed, but that the system increasingly must deal with a variety of strains. The current implementation of novel assessment techniques is commonly restricted to pilot programmes and linked to specific (rather than general) calls for funding and/or career progression schemes.

Method

This Position Statement and its recommendations do not only build on the 2019 Study, but also on an extensive consultation process among Science Europe Member Organisations and a workshop with expert representatives from different research communities and career stages as a validation exercise (for further information on the process followed in this activity, see 'Research Assessment

> *Although research organisations face numerous common challenges, adaptations to such challenges occur mostly in a minor and incremental manner. Substantial and concerted changes are needed to ensure that the research assessment system will continue to function appropriately in the future and will be able to keep pace with the rapidly changing research environment.*

1. Technopolis Group (2019) Science Europe Study of Research Assessment Practices: https://scieur.org/ra-report-2019

Processes Activity Methodology'[2]). In addition, outcomes of previous Science Europe activities on this topic have been taken into account during the development.[3,4,5,6,7] This activity represents the first of its kind for Science Europe, and fits with previous[8] and current initiatives[9] of other stakeholders, highlighting the importance of co-ordination for concerted action across all stakeholders on this key topic.

The majority of recommendations presented in the Position Statement relate to research assessment processes of common research funding allocation and career progression schemes. The underlying principles of these processes, such as the need for transparency, continuous re-appraisal, and evidence-based adaptation, are essential and will remain relevant independently of an evolving scientific environment. The focus on generic research assessment processes (versus specific research assessment processes, interdisciplinary research, for instance) was intentional to establish a thorough and comparable knowledge base of the current and developing assessment processes. As such, the recommendations should be viewed as a point-of-entry to a broader exploration of how research performing and research funding organisations can adapt their assessment processes to remain at the forefront of the changing scientific environment. This 'baseline' helps research stakeholders to better understand from where the evolution of the system started and in which direction it is currently moving. The Position Statement and Recommendations supports Science Europe Member Organisations in their individual and collective understanding of the directions for current and future change, and provides a platform for further knowledge exchange and mutual learning as research organisations define and implement novel approaches to assessment processes.

Wider relevance

This publication is both relevant and timely in a period of fast-paced change in the way research is conducted and disseminated, reflected most sharply by recent technological advances such as digitalisation, artificial intelligence, and the movement towards open science practices. An effective research system relies on an up-to-date assessment system that can identify and select the best researchers and projects in line with the objectives of the career progression and funding schemes offered.

The recommendations in this Position Statement provide a framework on which both Science Europe Member Organisations and other research organisations can appraise and continue to improve their assessment processes. They also aim to promote knowledge sharing and mutual learning between research organisations, which contributes to the effectiveness of national and international research systems as a whole. This is in alignment with the central priorities of the European Research Area[10], and reflects the core mission of Science Europe.

In recognition of the importance of promoting qualitative assessment of the wide variety of research outputs and activities that contribute to the role of research and researchers, the recommendations also support and complement other ongoing initiatives. Among these are the San Francisco Declaration on Research Assessment (DORA)[11], the Leiden Manifesto for Research Metrics[12], the principles developed by the Global Research Council[13], and the joint statement between Science Europe and the European University Association.[14]

2. Science Europe Research Assessment Processes, Methodology of the activity: https://scieur.org/ra-methodology
3. Science Europe (2015) Workshop Report on Career Pathways in Multidisciplinary Research: How to Assess the Contributions of Individual Members of Large Teams: https://scieur.org/careerpaths
4. Science Europe (2017) Practical Guide to Improving Gender Equality in Research Organisations: https://scieur.org/gender-guide
5. Science Europe (2017) Workshop Report on Advancing Research Integrity Practices and Policies: From Recommendation to Implementation: https://scieur.org/integrity-practices
6. Science Europe (2017) Position Statement on a New Vision for More Meaningful Research Impact Assessment: https://scieur.org/impact-pos
7. Science Europe (2018) Symposium Report on Interdisciplinarity: https://scieur.org/interdisc-symp
8. European Science Foundation (2011) European Peer Review Guide: http://archives.esf.org/fileadmin/Public_documents/Publications/European_Peer_Review_Guide_01.pdf
9. European University Association (2019) Research Assessment in the Transition to Open Science – 2019 Survey Results: https://eua.eu/downloads/publications/research%20assessment%20in%20the%20transition%20to%20open%20science.pdf
10. European Commission (2019) The European Research Area: https://ec.europa.eu/info/sites/info/files/research_and_innovation/knowledge_publications_tools_and_data/documents/ec_rtd_factsheet-era_2019.pdf
11. San Francisco Declaration on Research Assessment (DORA) website: https://sfdora.org/
12. Hicks et al. (2015) Bibliometrics: The Leiden Manifesto for Research Metrics: https://www.nature.com/news/bibliometrics-the-leiden-manifesto-for-research-metrics-1.17351
13. Global Research Council (2018) Statement of Principles on Peer/Merit Review: https://www.globalresearchcouncil.org/fileadmin//documents/GRC_Publications/Statement_of_Principles_on_Peer-Merit_Review_2018.pdf
14. Science Europe (2019) Joint Statement on Research Assessment: https://scieur.org/se-eua-assessment

Approaches used to assess and select proposals and researchers

Transparency of research assessment processes

Concerns for transparency in research assessment processes are highly relevant in the context of emerging debates surrounding the use of quantitative markers in assessments, the open science agenda, and more recently a general discourse surrounding research culture.[15]

The 2019 Study identified a clear tendency by research organisations to increase transparency in assessment processes. Transparency is considered both at procedural and post-assessment level.

Making assessment guidelines and scoresheets publicly available was one commonly reported way to improve pre-assessment procedural transparency. However, some organisations noted that criteria for assessments were kept necessarily broad and flexible to accommodate different criteria in different disciplines. Such flexibility is important to reflect the diversity of research, but should not lead to unnecessary ambiguity in the assessment criteria used. Reviewers may add ex-post assessment transparency to the process by providing informative reviews.

Providing feedback to applicants based on reviewer reports was one mechanism mentioned in the 2019 Study to increase transparency towards applicants. It was deemed particularly important for unsuccessful candidates to improve future applications.

Clear definitions of any broad criteria used in assessments ('quality' and 'excellence', for example) is an important aspect in improving the transparency of such processes as a whole. In this regard, the 2019 Study showed that although determining quality is a central premise of assessments, most responding organisations do not have a formal definition of quality.

The 'quality' and/or 'excellence' of research is inter-subjective, context-specific (it may vary according to career stage and institutional setting) and can change over time. Although there may be a generalised consensus as to what currently constitutes these terms in research, the 2019 Study showed that the requirements of researchers, and the desired outputs and outcomes of research change over time. As such, without appropriate qualification of their meanings, their use reduces the transparency processes for reviewers and applicants alike, who must attribute their own meaning to the criteria. This may be particularly problematic where reviewers contribute to – or researchers apply to – schemes from different organisations who have different priorities attributed to them.

2019 STUDY

- 62% of respondents reported no formal definition of quality.
- Only 13% of respondents from large organisations defined quality, as opposed to 38% from medium-sized organisations, and 53% from small organisations.
- Some organisations reported that their criteria for assessment were used to define quality, others reported that the definition of quality was defined by the reviewers performing the assessments.
- Of the organisations that reported using the term 'excellence' in their assessment criteria, none provided a formal, single, definition of the term.

It remains a constant challenge for the research system to identify the most promising research/researchers and differentiate them from others. Nevertheless, requesting 'excellence' from researchers and proposals, as a catch-word without qualification, may lead to a variety of unintended consequences. At an individual level, demanding 'excellence' can exacerbate systemic biases, promote individualism rather than 'team science', lead to a reduction in research integrity, and may not account well for the methodological nature of research. However, some organisations identify non-formalised concepts of 'quality' and 'excellence' in criteria as important mechanisms for differentiating the top tier of applications in any applicant pool.

15. Wellcome (2020): https://wellcome.ac.uk/sites/default/files/what-researchers-think-about-the-culture-they-work-in.pdf

Recommendations

1.1. Organisations should publish accessible and user-friendly guides to all the processes that they follow when performing assessments.

- These guides should be made public and include descriptions of the criteria (and scoresheets, where applicable) used to make assessments.
- Organisations should monitor and evaluate the efficacy of the guidance they provide, and consider different and innovative means of displaying and disseminating such information (video or interactive webpages, for instance) to ensure that all relevant parties can be appropriately informed.

1.2. Organisations should provide precise definitions of what constitutes a conflict of interest, and ensure that everyone involved in assessment processes is suitably informed to be able to identify them.

- Applicants may be given the opportunity to suggest and justify the exclusion of certain experts from the assessment of their applications, but responsibility for conflict-of-interest identification should be held at organisation level.

1.3. Organisations should consider the inclusion of a 'right-to-reply' mechanism in assessment processes to improve the quality of assessments.

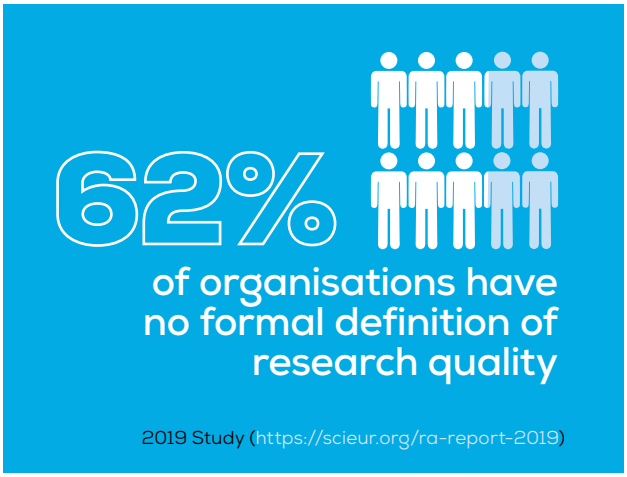
- Organisations that reported, in the 2019 Study, the implementation of a rebuttal process all expressed positive experiences with it.

1.4. Organisations should transparently define the meaning of any general terms they use to describe levels of research attainment/achievement and should be cautious if using such terms ('excellence', for example) in isolation as a specific criterion within assessment processes.[16]

- Definitions will 1) help reviewers to understand the targets of specific assessment schemes, and 2) aid applicants in understanding the relevance of different schemes to them.
- Organisations should be clear in highlighting where different schemes within their organisation use different criteria to determine quality (i.e. discipline-specific or career-stage-specific criteria).

1.5. Organisations should publish the general results for all assessment processes. Further, all applicants should be given an assessment report with the result of their application, regardless of whether they were successful or not.

- For open calls, year-on-year comparative selection rates by research field or discipline and gender may be a useful metric for comparing assessment schemes, for example.
- Assessment reports can be helpful for both successful and unsuccessful candidates in future applications and can also help to justify the time and effort put into application processes. Such reports should be informative, but must not unnecessarily overburden research organisations. Reports could be scaled to size of the scheme applied for, for instance.



16. This recommendation supports recommendations 2 and 4 of the San Francisco Declaration on Research Assessment (DORA).

Evaluating and monitoring the robustness of research assessment processes

The 2019 Study showed that organisations understand the need to test the robustness of their assessment processes.

2019 STUDY

- In the context of the 2019 Study, 'robustness' is understood as the capacity of selection processes to reliably and fairly assess the quality of proposals/researchers, in line with the objectives of the evaluation, and to select them for funding/career progression schemes
- In total, 72% of responding organisations have evaluated the robustness of their assessment processes, with 41% evaluating them at regular intervals. 28% of surveyed organisations, however, have never evaluated their assessment processes.

Importantly, the nature of such evaluations differs widely, from simple results monitoring to more complex ex-post evaluations of scientific outcomes of completed projects. According to the 2019 Study, most reported evaluations focus on the scientific outcomes of assessments rather than the process itself.

The following recommendations focus only on the evaluation of assessment processes themselves, and not on the evaluation of scientific outcomes of selected researchers, proposals, or institutes.

A 'robust' assessment system can help ensure that the best applicants can be identified, and consequently the best research can be funded and performed. Robust assessment processes are also important in light of the need for quality assurance in the allocation of public funding.

It is recognised that some aspects of evaluating and monitoring the robustness of research assessment processes may fall under the remit of human resources (HR) professionals. The prominence of such services may vary greatly between different types of research organisation. The inclusion of HR professionals with specific expertise in assessment/selection processes may be advantageous with regard to the implementation of the following recommendations.

Robustness of assessment processes has been evaluated in:

72%

OF CASES

It is done so regularly in:

41%

OF CASES

Never assessed in:

28%

OF CASES

2019 Study (https://scieur.org/ra-report-2019)

Recommendations

1.6. All organisations should conduct evaluations of the robustness of their assessment processes.

- The use and monitoring of key performance indicators by assessment scheme may aid evaluations.
- Organisations should consider also involving applicant and reviewer feedback in such process evaluations.

1.7. Organisations should re-evaluate their processes at fixed intervals, whenever broad reforms to assessments are implemented, or when problems are identified.

1.8. Organisations should consider the benefits of sharing knowledge with other organisations about the performance of their assessment processes and good practices identified to foster mutual learning.

- Sharing lessons learnt and good practices between research organisations can allow for better benchmarking of results and promote faster improvement of the assessment processes of the community as a whole.

Challenges faced during assessment processes

Discrimination, bias, and unfair treatment in research assessment practices

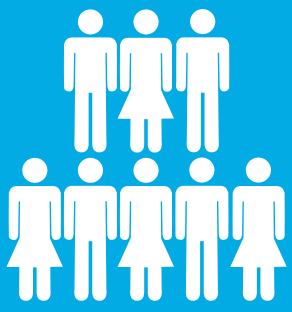
The 2019 Study highlighted that a key concern for organisations performing research assessment is the elimination of potential discrimination and (unconscious) bias. Most responding organisations have put in place mechanisms or processes aimed at producing fair research assessment processes and outcomes.

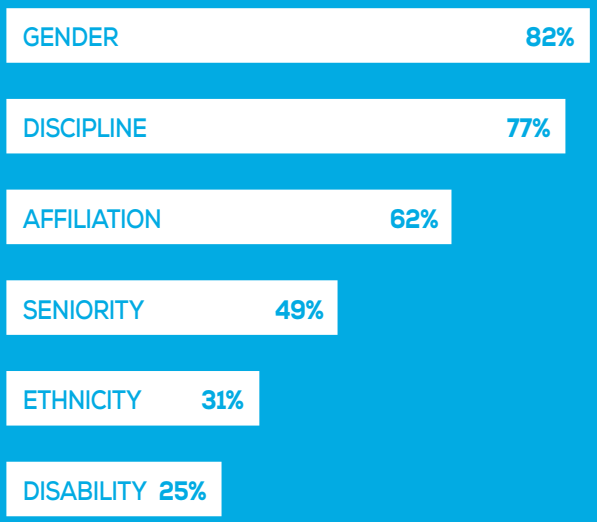
It is important to note that the 2019 Study intentionally focused on social, rather than scientific, biases and discrimination, which fall outside of the remit of the process-oriented recommendations in this position statement.

2019 STUDY

- The most often scrutinised potential biases were gender (82%) and discipline (77%). Other biases related to specific types of assessment, such as affiliation (62%) or seniority (49%) were also widely listed.
- However, ethnicity and disability were only scrutinised by 31% and 25% of responding organisations, respectively. Diversity of reviewer groups involved in assessment processes is also considered by most organisations (68%), with 32% of organisations reporting the more active approach of prioritising the selection of candidates from underrepresented profiles.

Some forms of bias are scrutinised more often than others:





2019 Study (https://scieur.org/ra-report-2019)

Recommendations

2.1. Organisations should provide clear guidance to everybody involved and publicly demonstrate how they address bias, discrimination, and other forms of unfair treatment in their assessment processes.

- Guidelines should be made publicly available for potential applicants to view and should include definitions (in line with the state of the art) of what constitutes bias, discrimination, and unfair treatment to avoid ambiguity. Organisations should monitor and evaluate the efficacy of this guidance.
- Training should be considered for all persons (including staff, reviewers, and panel/board members) regularly involved in assessment processes.
- It may be beneficial to present such guidance in panel/board meetings, expert gatherings, scheme kick-off meetings, and so on.

2.2. Organisations should regularly and continually re-appraise and update their anti-bias/anti-discrimination processes against the results of their assessment programmes.

- Organisations should consider looking beyond their own organisation also, and re-appraise their processes against relevant academic literature and best practices from other research organisations.
- Attention should be paid to the detection of any potential unfair treatment: procedural re-appraisals should not simply be focused on known potential biases.

2.3. In addition to the relevant qualifications, organisations should actively strive to include diverse profiles in their reviewer pools, panels, and boards.

- Research organisations should proactively lead by example when forming reviewer pools, panels, and boards. They should consider moving beyond only reflecting the composition of the applicant community, and also take deeper systemic biases in the research system into consideration.
- Actively targeting under-represented profiles in key schemes may be considered, but actions should go beyond simple number balancing to address deeper systemic biases.

2.4. Organisations should ensure that everybody involved in assessment processes are trained and equipped to detect, monitor, and act on potential biases, discrimination, or unfair treatment in real time.

- A single authority (person or department) should be responsible for the appropriate training of all relevant participants in assessment processes.
- Support should be given to panel/board chairpersons who play a key role in combating bias, discrimination, or unfair treatment.
- Organisations should provide clear guidance on how bias, discrimination, or unfair treatment should be acted upon (such as by overruling biased reviews, requesting additional reviews, and so on).

Cost and efficiency of research assessment processes, and applicant investment of time and effort

Research assessment is a costly and time-consuming process, particularly for processes that rely on qualitative evaluations.

With tightening research budgets and the increasing size of applicant pools experienced by many research organisations, the 2019 Study highlighted that there is a drive to improve efficiency and reduce costs of assessment processes whilst not sacrificing robustness, quality, or fairness.

For complex processes such as research assessment, accurate (or even approximate) operative costing can be very difficult. For a true understanding of the costs of such evaluation models, administrative as well as reviewer and panel/board member costs should be analysed, and applicant costs may also need to be considered.

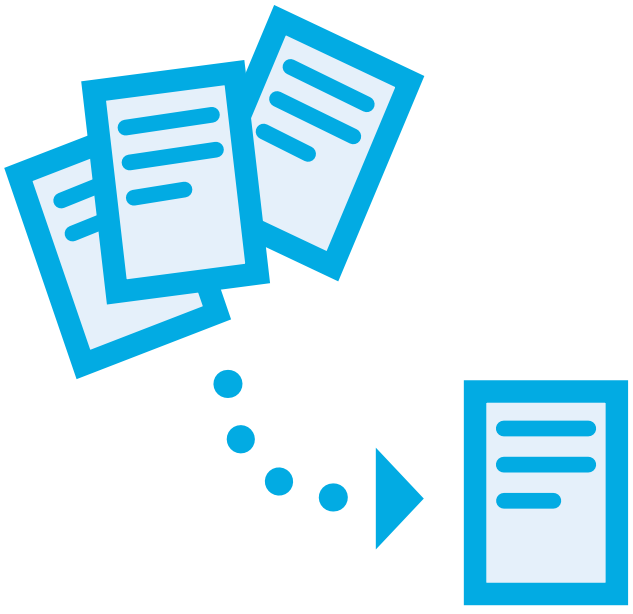
The time and effort dedicated, by applicants, to developing biographies and/or proposals must be recognised by assessors and research organisations. At a time when competition for funding and career progression is high, organisations should consider the time and effort requested fr om potential applicants in their application processes, particularly with reference to the projected success rates.

By asking too much of potential candidates for limited prospective reward or for a low chance of success, applicants may choose to put their efforts elsewhere and organisations may lose out on potential talent. Equally, by asking too little of candidates it may become difficult to separate high-quality proposals from the applicant pool, which in turn may reduce the outcome success of the programme.

2019 STUDY

The 2019 Study showed a number of instances where responding organisations had adapted their assessment processes in order to reduce the burden on applicants.

- Multi-stage evaluation processes are implemented by some organisations to reduce the effort of preparing the application for prospective candidates.
- Some organisations report efforts to standardise aspects of their application processes to make them more user-friendly, and to facilitate future submissions.



Multi-stage application processes and standardisation can reduce the burden for applicants

2019 Study (https://scieur.org/ra-report-2019)

Recommendations

2.5. Organisations should appropriately streamline their reviewing processes to reduce internal costs, improve efficiency, and minimise the time and burden placed on reviewers.

- The use of technology should be considered to help reduce costs and improve efficiency. Certain panels or boards could meet via video-conferencing, for instance.

2.6. Organisations who undertake an evaluation of the costs of their research assessment processes should endeavour to share their methodologies to assist others in doing the same.

- Such information exchange can help in the development of better assessment processes for all, and help to improve the future comparability of cost evaluation studies.

2.7. Organisations should consider the time and effort burden expected of applicants in all application processes.

- The expected burden should be balanced in accordance with the projected success rate of the scheme in question.
- Two-stage application processes should be considered for schemes that require high-effort during application.

2.8. Organisations that offer many funding or career progression options, should clearly, publicly, and succinctly present information to aid programme selection by potential applicants.

- Organisations may consider ways to clearly display their scheme portfolios on their websites, via a dedicated 'opportunity finder' webpage/portal, for instance.
- Online forms may help guide applicants towards suitable schemes via simple questions, such as 'How many years of research experience do you have?', to separate early-career from experienced researchers.

2.9. Application portals/forms should be standardised as much as possible within an organisation and be interoperable across similar assessment processes.

- It may be beneficial to link such work to existing initiatives to standardise common aspects of researcher CVs, utilising Researcher ID services such as ORCID,[17] for example.
- Organisations should also consider collaborating with one another in moving towards more harmonised application portals/forms. Efforts are already being made in this regard with (international) lead agency procedures (LAPs).
- Standardisation of application processes for research purposes may also help to improve operational efficiency of the assessment processes themselves.

17. https://orcid.org/

Broadening of the reviewer pool

'Reviewer fatigue' was a common concern raised by organisations that took part in the 2019 Study. Such concerns are symptomatic of a deeper issue regarding the profile of persons deemed appropriate to conduct assessments of researchers and proposals.

2019 STUDY

- Reviewers are generally selected based on their knowledge of the research discipline relevant to the assessment. The potential reviewer pool is further reduced by subject-specificity, multi-/inter-/trans-disciplinarity, required level of seniority (full professors are often required), and submission language.

'Reviewer fatigue' arises when experts in a field are repeatedly requested to review research, both in their own country, and internationally. This adds to the list of 'services to research' that is demanded of researchers, which also includes peer review of publications, editorial positions, and mentoring. This challenge is further exacerbated by a concentration of such reviewing requests targeting the most high-profile research nations and institutions.

Many research organisations offer a small monetary remuneration for reviews, but these are mostly compensatory or a gesture of thanks, rather than true payment. Further, organisations note that monetary remuneration is not perceived as the primary interest of many reviewers. They also deem it extremely important to limit the scope of any payments so as not to create a market for reviews. In doing so, it is important to encourage recognition of the efforts such 'services to research' in other ways.

The potential reviewer pool may be limited by subject-specificity, multi-/inter-/trans-disciplinarity, and seniority requirements

2019 Study (https://scieur.org/ra-report-2019)

Recommendations

2.10. Organisations should consider ways to broaden the criteria that govern the selection of reviewers for all assessment processes.

- The broadening of criteria to allow a larger pool of experts to participate may help to alleviate the strain on current reviewer pools.

2.11. Organisations should collectively work to ensure that peer review activities are given an appropriate weight in the CVs of researchers and contribute towards their career profiles.

- Because of the central importance of peer-review to the research system, non-monetary rewards should be considered for reviewers. Certificates for reviewing that are recognised by the reviewer's home or prospective organisation may be a first step towards more comprehensive recognition of such activities.
- Recognitions of reviews linked to researcher ID services may help to standardise recognition between national systems.

2.12. Organisations should use international as well as national reviewers in assessment schemes, where possible.

- International reviewers can provide an international reference point to the content of the applications they review, improving the quality of the assessment made.
- Many small nations already report the exclusively use international reviewers as a way to avoid domestic conflicts of interest within a small research system.
- National reviewers may be an important consideration for assessments that include national and/or cultural perspectives. For these specific cases, national reviewers should be incorporated in a balanced manner.

Current developments in the assessment of proposals and researchers

Qualitative assessments

The 2019 Study highlights that most participating organisations rely, at least in part, on qualitative assessments of candidates or proposals, as opposed to the direct assessment of quantitative tools such as journal-based metrics. Further, organisations that implement qualitative techniques consider them very important in their assessment processes.

2019 STUDY

- 81% of surveyed organisations use qualitative assessment, and when asked to judge its importance, most of those organisations (81%) deemed it a 'very important' approach.
- The study shows that a variety of methods is used to incorporate and promote qualitative evaluation in assessment processes, including 1) mixing qualitative reviews with quantitative tools, 2) translating qualitative evaluation into scoring (for ranking purposes), and 3) the exclusive use of qualitative evaluation in assessment schemes.

The perceived importance of qualitative assessment may be linked to a reduction in reliance, by many research organisations, on journal-based metrics for the assessment of candidates, proposals, or institutes. However, a challenge cited by some organisations is difficulty in providing appropriate guidance and implementing measures to reduce the use of quantitative metrics in review processes. Further, in accordance with Chapter 2, it should be recognised that further emphasising qualitative assessments from reviewers may increase the effort burden placed on them.

- Reducing reliance on quantitative metrics may be partly driven by community-level actions and declarations such as the San Francisco Declaration on Research Assessment (DORA), to which 55% of surveyed organisations are signatories.
- However, declaration signing does not in itself produce change, and the study highlights that some organisations that reduce or eliminate journal-based metrics (such as journal impact factor) still assess where research is published, for example by creating approved/reputed journal lists for cross-checking. Other organisations reported working towards full declaration compliance prior to signing.

Accompanying any shift towards a greater reliance on qualitative assessments (and a reduction in the use of established author- and journal-level metrics), there should also be an improved recognition in assessment processes of the broadening range of important research outputs, outcomes, and activities. There should be a continued focus on the content and substance of these outputs, outcomes, or roles, rather than any metrics used to describe them.

Recommendations

3.1. Organisations should ensure that their assessment processes are focused on the substance and content of applications, rather than the venues or metrics that the work is associated with.[18]

- Assessment processes (and the reviews conducted by any reviewer or panel/ board member) should do justice to the work that underlies the applications that are under assessment.

3.2. Organisations should adapt their application and review systems to aid reviewers in conducting qualitative assessments.

- Clear guidance and/or training should be given to reviewers so that they understand the rationale for reducing reliance on quantitative tools. This approach can contribute to the cultural change that is required to fully address this topic. The efficacy of the guidance/ training provided should be monitored and evaluated.
- Such actions may increase the time and effort required to conduct reviews. It thus links to the previous section regarding 'reviewer fatigue' and specifically recommendation 2.12 on the need to appropriately recognise reviewer efforts.
- Narrative-style CVs and research output descriptions (where candidates narrate their relevant experience) may help in the movement away from reliance on quantitative tools.

3.3. Organisations should consider broadening the spectrum of research outputs and activities that are considered during the assessment of candidates, research proposals, and/or research institutes.[19]

- Procedural changes that allow for the consideration of a broader spectrum of research outputs and activities should not unduly complicate processes, and should not reduce the transparency of the assessments conducted.

81%

of organisations use qualitative assessments

2019 Study (https://scieur.org/ra-report-2019)

18. This recommendation supports recommendations 2 and 4 of the San Francisco Declaration on Research Assessment (DORA).
19. This recommendation supports recommendations 3 and 5 of the San Francisco Declaration on Research Assessment (DORA).

Developments and novel approaches to research assessment processes

The 2019 Study suggested that most organisations reflect upon and refine, where necessary, aspects of their research assessment processes. They either do so at fixed intervals, or when deemed appropriate.

As research assessment is a core process of research funding and research performing organisations, the reported rarity of experimentation with novel, alternative, or radically different methods may be linked to the risk and cost involved in changing processes.

- There were only five reports of organisations implementing novel or innovative techniques (lotteries and sandpits) in the context of 'generic' schemes that they run. Other organisations reported open reviewing and double-blind assessment as novel, with such techniques being considered standard processes by others.
- Where novel assessment techniques are implemented, it is usually done on a small scale (in pilot programmes, for instance) or in a specific setting rather than at an organisation-wide level.

Many organisations report adapting the criteria that they use to assess candidates or proposals.

2019 STUDY

- 'Open Science practices' were considered by 32% of surveyed organisations, with 55% considering using them in the future.
- More generally, 36% of surveyed organisations had recently broadened the spectrum of non-publication research outputs (datasets, software, hardware, and so on) considered for assessment, with a further 13% planning to make this change.

Although not addressed by the 2019 Study, the need to consider research integrity within the criteria of assessment processes was highlighted during the consultation phase. It may prove an important inclusion in assessment criteria, particularly in relation to any move towards the broader inclusion of 'open science practices', as mentioned above. (See also previous Science Europe work on Research Integrity[20,21]).

The 2019 Study showed that 'academic significance' outweighed 'non-academic significance' in organisations' understandings of quality, but this may again be partially due to the framing of the study.

- For the generic scheme requested, 69% of responding organisations require reviewers to assess 'potential economic and societal impact', 59% require 'potential knowledge or technology transfer and commercialisation', and 55% require 'potential contribution to public policies'.
- During the detailed interviews undertaken, many organisations described that specific focused funding schemes (i.e. mission-oriented) were either already running or being created to address technological, economic, and societal challenges.

The 2019 Study report suggests that research assessment processes addressing societal, technological, or economic challenges may require greater adaptation (or risk-taking) when compared to more standard research assessment schemes, and new challenges may arise for organisations that implement such schemes.

20. Science Europe (2016) Survey Report 'Research Integrity Practices in Science Europe Member Organisations': https://scieur.org/integrityreport
21. Science Europe (2017) Workshop Report on Advancing Research Integrity Practices and Policies: From Recommendation to Implementation: https://scieur.org/integrity-practices

Recommendations

3.4. In line with systematic re-appraisals of assessment processes (recommendation 1.7), organisations should consider opportunities to implement innovative or novel assessment techniques.

- The implementation of novel assessment techniques should be evidence-based, or strategy-/hypothesis-driven. The status and a rationale for pilots should be described in a clear communication plan for all potential participants (internal staff, reviewers, panel/board members, and applicants).
- Evaluation of both the procedural and scientific outcomes of a novel scheme should be considered during the design phase. This will help to advance further evidence-based adaptation.
- Organisations who implement novel schemes should ensure that they are time-limited, as pilots, and may consider including a commitment to deploy such schemes if evaluated and deemed successful.

3.5. Organisations who pilot innovative or novel assessments techniques should document the implementation of the methodologies used and outcomes observed to help other organisations in doing similar, to promote mutual learning.

- Specific inter-organisational networks or events could be established to showcase success stories, good practices, and lessons learnt to other research organisations.
- The designation of innovative or novel assessment techniques should be limited to schemes that differ significantly from normal processes employed by an organisation, and not used to describe minor or incremental adaptations to existing programmes.

3.6. Organisations should consider involving other stakeholders (potential industry partners, for instance) in the design and development of innovative and novel assessment schemes.

- The inclusion of key stakeholders in the design and development of novel assessment schemes may help with their acceptance during implementation. This may also provide an opportunity to learn from the good practices established by other sectors.

3.7. Organisations that implement 'challenge-oriented' programmes should consider specific adaptations to assessment processes that may help improve assessment quality in this setting.

- Organisations that have already implemented 'challenge-oriented' assessment schemes should share their success stories, good practices, and lessons learnt with other research organisations to foster mutual learning in this emerging area.
- Specific adaptations to assessment processes for 'challenge-oriented' schemes may include considering different panel/board compositions and assessment criteria, for instance.

Some information on the implementation of novel assessment processes was not captured during the 2019 Study due to its focus on 'generic' (thus comparable) schemes. During the consultation phase, several Science Europe Member Organisations reported the implementation of novel assessment processes. It was noted, however, that in many cases, implementation was not sufficiently documented, evaluated, or publicised, to the detriment of evidence-based adaptation, and mutual learning between research organisations.
The recommendations presented in this section reflect the breadth of findings from the 2019 Study and subsequent consultation process. More profound changes to the way that assessments are implemented were not captured in this phase of Science Europe's activities. Further work is needed on this topic (see 'Closing Remarks and Ways Forward', page 24).

Closing Remarks and Ways Forward

The 2019 Study showed the complexity of research assessment processes and diversity of approaches taken by research organisations. Despite this, research organisations share many of the same best practices in the way they strive to effectively select researchers, research proposals, and evaluate research institutes according to the aims of the assessment schemes implemented. However, the system is increasingly under strain and research organisations encounter many challenges in maintaining effective assessment processes. When these strains are considered alongside the fast-paced shifts in the way research is performed and disseminated, it is clear that concerted and significant changes are needed.

The 2019 Study showed that many of the current adaptations made to face the challenges associated with research assessment processes are minor and incremental, and the more profound adaptations described are not well-documented, and not usually implemented beyond pilot schemes at present. The 2019 Study provided an invaluable snapshot of the state of assessment processes. The recommendations presented in this Position Statement aim to provide a framework upon which research performing and research funding organisations can adapt their assessment processes and collaborate to tackle the challenges identified. They also contribute to the task of future-proofing assessment processes with regard to ongoing changes to the research system, most notably the uptake of open-science practices and the influence of technological advances, such as artificial intelligence.

Many aspects of the current research assessment system are bound by the established methods by which research, researchers, and research institutes are recognised, incentivised, and rewarded for the work they conduct and disseminate. The recommendations also aim to encourage research organisations to review their assessment processes as a first step towards more broad reforms to the research system.

Next steps

Science Europe plans to continue its work under the priority area of 'Quality of Science'. Building on the evidence base established by the 2019 Study and the current recommendations, Science Europe will look into ways to drive and proactively facilitate the further changes that are needed to the way that the research system functions. The activity culminating in this Position Statement and Recommendations has highlighted the need for a deeper examination of appropriate ways to recognise, reward, and incentivise the increasing variety of research activities that are performed and contributions that are made. This reflection may be especially relevant when considering the ongoing discourse surrounding open science practices and 'team science' recognition. The recommendations presented highlight the importance of qualitative assessments of research and researchers. Further work is needed, however, to develop and implement processes which promote qualitative assessments that are facilitated by effective quantitative tools, thus contributing to a fairer and more efficient assessment system. From a more general perspective, it is important to ensure that the research system fosters a healthy research culture, from which it can continue to effectively contribute to all aspects of society.

Science Europe encourages its Member Organisations and other research organisations to use the recommendations in this Position Statement to review and reflect on their research assessment processes. Enabled by advances in information and computing technologies, new avenues for the improvement of assessment processes continually arise. Science Europe will support its Member Organisations through proactive activities such as the exploration of novel approaches to guide changes to the research system. Science Europe will also continue to support reflective processes involving the exchange of practices and mutual learning. It remains important to link this initiative to other equally important areas of research activity and policy, which may include: the purposes of scientific knowledge discovery, ethics and integrity in the conduct of research, open science practices, considerations for inter-/trans-disciplinary research, and the evolution of the scholarly output and publication system.

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