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RoRI Working Paper No.3

The changing role of funders in responsible research assessment:

progress, obstacles and the way ahead

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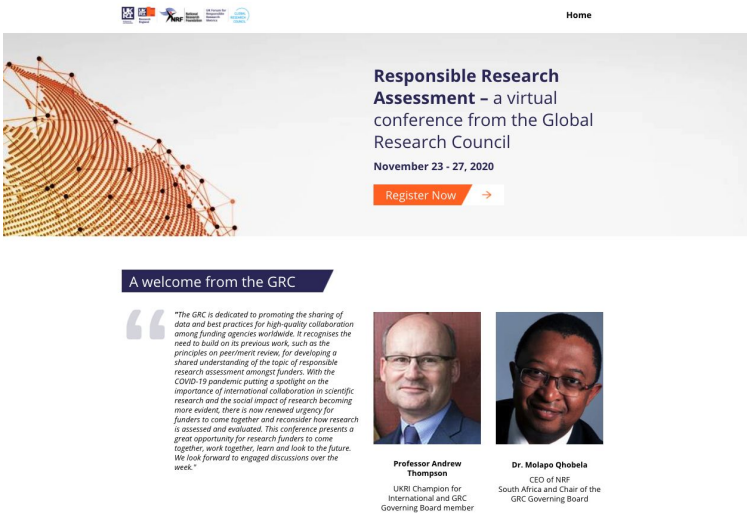
Summary: a moment of opportunity?



Homepage for the GRC virtual conference on Responsible Research Assessment, 23-27 November 2020—for which this paper is a supporting input.

The encouraging interim results of different vaccine trials reflect the remarkable speed, innovation and dedication that the research community has shown in its response to Covid-19. But the pandemic has also shone a spotlight on the inner workings of research, and in lots of ways—good and bad—has intensified scrutiny of how research is funded, practiced, disseminated and evaluated, and how research cultures can be made more open, inclusive and impactful.

The uncertain possibilities that flow from this moment follow a period in which concern has intensified over several long-standing problems, all linked to research assessment:

First, there is the **misapplication of narrow criteria and indicators of research quality or impact**, in ways that distort incentives, create unsustainable pressures on researchers, and exacerbate problems with research integrity and reproducibility.

Second, this narrowing of criteria and indicators has **reduced the diversity of research missions and purposes**, leading institutions and researchers to adopt similar strategic priorities, or to focus on lower-risk, incremental work.

Third, the **systemic biases against those who do not meet—or choose not to prioritise—narrow criteria and indicators** of quality or impact, or to conform to particular career pathways have reduced the diversity, vitality and representative legitimacy of the research community.

Finally, there has been a **diversion of policy and managerial attention towards things that can be measured**, at the expense of less tangible or quantifiable qualities, impacts, assets and values – a trend exacerbated by the rise of flawed university league tables.

As attention shifts from describing these problems, towards designing and implementing solutions, efforts are coalescing around the idea of **responsible research assessment (RRA)**. This is an umbrella term for approaches to assessment which incentivise, reflect and reward the plural characteristics of high-quality research, in support of diverse and inclusive research cultures.

This working paper explores what RRA is, and where it comes from, by outlining fifteen initiatives that have influenced the content, shape and direction of current RRA debates. It goes on to describe some of the responses that these have elicited, with a particular focus on the role and contribution of research funders, who have more freedom and agency to experiment and drive change than many of the other actors in research systems.

Section 2 presents the **findings of a new survey of RRA policies and practices in the participant organisations of the Global Research Council (GRC)**—most of which are national public funding agencies—with responses from 55 organisations worldwide. Their responses reflect a shift away from reliance on metrics towards more qualitative or mixed-methods modes of assessment. Alternative CV formats are now being piloted or implemented by almost 60% of respondents from all regions. To make research assessment more objective and fair, half of the respondents from all regions have introduced new assessment processes and systems.

Section 3 offers cause to be optimistic about the **progress we are seeing in RRA debates worldwide**, and the extent to which these are now being implemented. Yet the road ahead is also strewn with obstacles, which reinforce the need for careful and concrete steps.

Declarations and statements of principle have been an important part of this story. But the time for grand declarations has passed. They risk becoming substitutes for action unless institutional commitments are followed by the hard graft of reforming cultures, practices and processes. **RRA now needs to focus efforts on action and implementation—testing and identifying what works in building a healthy and productive research culture.**

The research community also needs an open, global forum where common values and important differences can be articulated and debated, and where good practices emerging from experimentation and evaluation can be shared. Given its global reach, **the GRC is well placed to help convene such a forum, and to ensure that voices from across the world are involved.**

This month's GRC virtual conference on RRA—hosted by UKRI in collaboration with the UK Forum for Responsible Research Metrics and the National Research Foundation (NRF) in South Africa—is a step towards this goal. In support of the virtual conference, this paper is intended as a primer and a conversation starter.

Whether you are an advocate, a critic or entirely agnostic about RRA, we hope you will join more than 500 participants in making the conference the start of a fresh chapter in these debates. We look forward to discussing, debating and refining—and most importantly, to embedding—the ideas contained here, as the RRA agenda becomes ever more global, and moves up a gear.

Acknowledgements

The authors would like to record their gratitude to the partners in this project—the Global Research Council, UK Research and Innovation, DORA, and National Research Foundation of South Africa—and to the members of the Advisory Group for the GRC virtual conference, who provided valuable guidance and input to this paper: Dr Catriona Firth (Chair); Dr Priya Bondre-Beil; Dr Lidia Borrell-Damiá; Michael Bright; Rachel Bruce; Professor Kaihua Chen; Dr Frances Downey; Dr Judith de Kroon; Dr Shawn McGuirk. Further helpful comments were received from members of the UK Forum for Responsible Research Metrics, including Professor Roger Kain, Professor Richard Catlow and Professor Derek Woollins. We also want to thank the secretariat team at UKRI—particularly Claire Fraser, Dr Kate Porter Goff and Dr Marie-Helene Nienaltowski—for their invaluable contributions and support throughout the process. Any errors or omissions remain our own.

1. Responsible research assessment (RRA): the state of play


WORLD VIEW A personal take on events

How will you judge me if not by impact factor?

Stop saying that publication metrics don't matter, and tell early-career researchers what does, says **John Tregoning**.

This 2018 Nature article by John Tregoning reflects the shifts now underway in research assessment systems, often accompanied by uncertainty about what will replace traditional measures and proxies.

1.1 What is RRA and why does it matter?

Over the past decade, debate has intensified across the international research community about how research is funded and practiced, and how research cultures can be made more open, inclusive and impactful. Public and private spending on research continues to grow—and is expected to exceed US$ 2.2 trillion globally in 2020[1]—but this investment now comes with heightened expectations and emphases on strategic, challenge or mission-oriented research[2]; open scholarship and data[3]; ethics, integrity and reproducibility[4]; interdisciplinarity, collaboration and team science[5]; and the need for greater diversity and inclusion[6].

These changes have been accompanied by more critical reflections on systems of research measurement and assessment, which have highlighted a set of connected problems:

- Misapplication of narrow criteria and indicators of research quality or impact, in ways that distort incentives, create unsustainable pressures on researchers, and exacerbate problems with research integrity and reproducibility;

[1] U.S. National Science Foundation & National Science Board (2020) *Research and Development: U.S. Trends and International Comparisons NSB-2020-3* January 15, 2020. https://ncses.nsf.gov/pubs/nsb20201/global-r-d
[2] See eg. GRC/NRF-SA/UKRI (2019) *Discussion paper on Mission-oriented Research.* Global Research Council, 2019. https://www.globalresearchcouncil.org/fileadmin//documents/Library/Discussion_Paper_Mission_Oriented_Research_for_the_2019_2020_RM.pdf; https://obamawhitehouse.archives.gov/administration/eop/ostp/grand-challenges; https://www.ukri.org/our-work/collaborating-internationally/global-challenges-research-fund/; https://ec.europa.eu/info/horizon-europe/missions-horizon-europe_en;
[3] Hook, D.W., Calvert, I. and Hahnel, M. (2019) *The Ascent of Open Access.* Digital Science, January 2019. https://digitalscience.figshare.com/articles/The_Ascent_of_Open_Access/7618751; The Royal Society (2012) *Science as an Open Enterprise*. June 2012. https://royalsociety.org/topics-policy/projects/science-public-enterprise/report/
[4] Munafo. M et al. (2017) A manifesto for reproducible science. *Nature Human Behaviour.* Vol 1, 0021 (2017) https://www.nature.com/articles/s41562-016-0021; Vitae (2020) Research integrity: a landscape study. June 2020 https://www.ukri.org/wp-content/uploads/2020/10/UKRI-020920-ResearchIntegrityLandscapeStudy.pdf
[5] eg Adams, J. (2013) The fourth age of research. *Nature* vol 497: 557–560 (30 May 2013); Bozeman, B and Youtie, J (2017) *The Strength in Numbers: The New Science of Team Science*. Princeton University Press.
[6] Global Research Council (2019) *Supporting women in research: Policies, Programmes and Initiatives Undertaken by Public Research Funding Agencies*; Wellcome (2020) *What Researchers Think About the Culture They Work In.* Wellcome Trust, January 2020. https://wellcome.org/reports/what-researchers-think-about-research-culture

- A reduction in diversity of research missions and purposes, as an emphasis on these narrow criteria and indicators leads institutions and researchers to adopt similar strategic priorities, or to focus on lower-risk, incremental work;
- Systemic biases against those who do not meet—or choose not to prioritise—narrow criteria and indicators of quality or impact, or to conform to particular career pathways;
- A diversion of policy and managerial attention towards things that can be measured, at the expense of less tangible or quantifiable qualities, impacts, assets and values – a trend exacerbated by the rise of flawed university league tables.

As attention shifts from describing these problems, towards designing and implementing solutions, efforts are coalescing around the idea of **responsible research assessment (RRA)**. This is an umbrella term for approaches to assessment which incentivise, reflect and reward the plural characteristics of high-quality research, in support of diverse and inclusive research cultures.

RRA draws on broader frameworks for responsible research and innovation (RRI)[7], and applies these to the development and application of evaluation, assessment and review processes. While RRI is commonly used as a broad scaffold for the governance of research, and notions of 'responsible metrics' can be applied at a micro level to indicators themselves, the idea of RRA encourages funders, research institutions, publishers and others to focus attention on the fundamental aspects—methodologies, systems and cultures—of research assessment. Crucially, it is a relational concept, in the sense that an important feature of any responsible assessment process is its sensitivity to local and particular contexts. So while principles, frameworks and examples can all have wider relevance and application, RRA ultimately has to be negotiated and agreed with the stakeholders who are involved in a given assessment process.

1.2 Fifteen movers and shapers

The current impetus for RRA builds on successive waves of scholarship and advocacy over many years. But there has been an intensification of engagement over the past decade, prompted in part by a series of initiatives, which have built on one another, cumulatively strengthening the body of theory, guidance and practice in this field.[8] Several of these arose in Europe or North America, but the chorus of voices in support of RRA is now increasingly global, and is being enriched by contributions from research organisations in Africa, Asia and Latin America.

[7] RRI can be defined as "taking care of the future through collective stewardship of science and innovation in the present". See e.g. Stilgoe, J., Owen, R. and Macnaghten, P. (2013). Developing a framework for responsible innovation. *Research Policy*. 42, 1568-1580.

[8] Several initiatives highlighted here will be outlined in more detail in pre-recorded material for the GRC virtual conference - see: https://web-eur.cvent.com/event/7ca86a3d-6e6f-4d11-98e9-f01fe69fdf46/summary

Here we highlight **fifteen initiatives** which have been influential in shaping conversations about RRA across the international research community.

DORA: The San Francisco Declaration on Research Assessment

https://sfdora.org/

Conversations at the Annual Meeting of the American Society for Cell Biology in 2012 about the misuse of the Journal Impact Factor in academic assessment and its negative influence on research culture led to the creation of the *San Francisco Declaration of Research Assessment (DORA)*. While the declaration is best known for being fiercely critical of misuse of the Journal Impact Factor for the purposes of academic evaluation, it contains positive recommendations for all relevant stakeholders, such as asking organizations to consider the value and impact of all outputs and outcomes of scholarly work.

As of November 2020, DORA has been signed by 2083 organisations and 16609 individuals. Organisational signatories include around 50 funders from 20 countries.[9]

With new funding in 2017, DORA transformed from a statement of intent to an active initiative campaigning for change with a small but established staff, steering committee, and an international advisory board. Armed with a new roadmap and a vision to advance practical and robust approaches to research assessment, DORA's efforts are now focused on raising awareness, disseminating good practices globally and across disciplines, and, most importantly, developing and promoting new tools to improve practices.

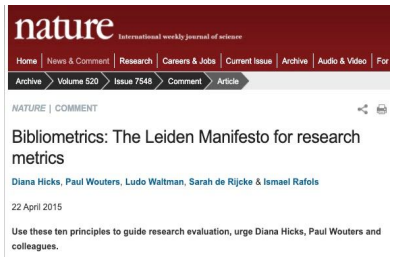
DORA has also collaborated with the Royal Society in the United Kingdom on the development of the **Résumé for Researchers,** a narrative CV format to facilitate the recognition of a range of research contributions.[10] It has run workshops and conferences to examine the practical steps that can be taken to drive the changes in institutional cultures and processes needed to reform research assessment.[11]

Currently, DORA is building a set of tools to help institutions experiment and improve their research assessment practices, including five design principles[12] to facilitate the development of new policies and a set of strategies to help institutions address the infrastructural implications of common biases in research assessment.[13]

[9] Listed here: https://sfdora.org/signers/
[10] https://royalsociety.org/topics-policy/projects/research-culture/tools-for-support/resume-for-researchers/
[11] https://elifesciences.org/articles/58654
[12] https://sfdora.org/wp-content/uploads/2020/05/DORA_IdeasForAction.pdf
[13] https://sfdora.org/wp-content/uploads/2020/09/DORA_UnintendendedCognitiveSystemBiases.pdf

The Leiden Manifesto for research metrics

http://www.leidenmanifesto.org/

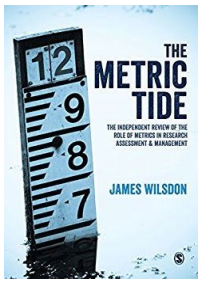


The Leiden Manifesto was co-authored by a group of scientometricians and science policy analysts, and published in April 2015.[14] it sets out ten principles for the use of quantitative indicators in research evaluation. It was born out of a growing realization in the scientometrics community of the need to offer clearer guidance to end-users of bibliometrics in research evaluation. A first draft of principles was presented at a conference in 2014, and from there developed over multiple iterations into the final version.

In 2016, the Leiden Manifesto received the **Ziman award** of the European Association for the Study of Science and Technology (EASST) for collaborative promotion of public interaction with science and technology. Volunteers have translated the manifesto into 25 languages, including Chinese, Russian, Korean, Spanish, French, German, Brazilian Portuguese, Japanese, Swedish, Finnish, Persian, Slovak and Catalan.[15] Several universities - including Ghent, Loughborough, Bath and Indiana Bloomington - have since developed their own frameworks for application of research metrics that are explicitly based on *The Leiden Manifesto*.

The Metric Tide

https://re.ukri.org/sector-guidance/publications/metric-tide/



The Independent Review of the Role of Metrics in Research Assessment and Management, was set up in 2014 by the then Higher Education Funding Council for England (HEFCE). Chaired by James Wilsdon, with an interdisciplinary expert group drawn from across the research system, the group published its findings as *The Metric Tide* in July 2015. The primary impetus for the review was a desire by policymakers to explore whether metrics could play a greater role in the next cycle of the UK's Research Excellence Framework (REF). Its correlation analysis highlighted that in a wholly metrics-based REF, around 41,500 (22%) of the 191,000 outputs assessed in 2014 would have been excluded. But there was more at stake in this debate than the mechanics of a research assessment exercise. The group interpreted its remit broadly, and made recommendations to university leaders, funders, publishers and researchers designed to ensure that indicators and underlying data infrastructure could support the diverse qualities and impacts of higher education

[14] https://www.nature.com/news/bibliometrics-the-leiden-manifesto-for-research-metrics-1.17351
[15] These are available at http://www.leidenmanifesto.org/, together with a video version of the manifesto.

and research. It coined the term **responsible metrics**, and offered its own five-point distillation of the key principles in DORA and the Leiden Manifesto.[16]

In line with *The Metric Tide*, the UK government subsequently concluded that peer review should remain the primary method of research assessment in the next REF, supported by responsible uses of quantitative indicators. Another of its recommendations was for the creation of a **UK Forum for Responsible Research Metrics**, which was launched in 2016 (see 1.3 below)[17] A number of universities and research funders have also drawn on *The Metric Tide*—often in combination with DORA and Leiden Manifesto—in the development of their own policies.

Science in Transition

https://scienceintransition.nl/en

Science in Transition is a movement established in 2013 by researchers in the Netherlands, together with Jerome Ravetz, with the aim of tackling systemic problems in research and university culture, which it criticised for having become "a self-referential system where quality is measured mostly in bibliometric parameters and where societal relevance is undervalued." (Dijstelbloem et al., 2013) The movement aimed at systemic institutional change, by involving academic leadership at universities, especially Rectors, Deans, Royal Academies and prominent scholars, alongside public and private funders.

Following a workshop in Washington, DC, in January 2017, one of the founding members helped to define "six principles for assessing scientists for hiring, promotion and tenure".[18] The movement also triggered the establishment of **Young Science in Transition,** a thinktank of early career researchers stimulating Open Science practices and responsible research evaluation. This group developed a new PhD evaluation form to capture and reward a 'broader' range of scholarly activities[19], and together with the Utrecht graduate school of life sciences are implementing this for all PhD candidates.[20]

[16] The Metric Tide's 5 principles for responsible metrics are: robustness, humility, transparency, diversity and reflexivity.
[17] https://www.universitiesuk.ac.uk/policy-and-analysis/research-policy/open-science/Pages/forum-for-responsible-research-metrics.aspx
[18] Moher D, Naudet F, Cristea IA, Miedema F, Ioannidis JPA, Goodman SN (2018) Assessing scientists for hiring, promotion, and tenure. PLoS Biol 16(3): e2004089. https://doi.org/10.1371/journal.pbio.2004089
[19] https://www.natureindex.com/news-blog/how-young-researchers-can-re-shape-research-evaluation-universities
[20] https://scienceintransition.nl/en/nieuws/these-are-the-six-principles-for-assessing-scientists

Hong Kong Principles for Assessing Researchers

(https://www.wcrif.org/guidance/hong-kong-principles)

The Hong Kong Principles were formulated and endorsed at the 6th World Conference on Research Integrity in June 2019, and published in final form in *PLOS Biology* in July 2020.[21] They are designed to help research institutions that adopt them to minimise perverse incentives, and to recognise and reward trustworthy research. The principles also support the inclusion of behaviours that strengthen research integrity in frameworks for career appraisal and advancement. Five principles were formulated:

- assess responsible research practices;
- value complete reporting;
- reward the practice of open science;
- acknowledge a broad range of research activities;
- recognise other essential tasks like peer review and mentoring.

Institutions and individuals are invited to endorse the Hong Kong Principles on its website, and as of late-October 2020, 13 institutions and 137 individuals have done so.

HuMetricsHSS (Humane Metrics Initiative)

https://humetricshss.org/

HuMetricsHSS
HUMANE METRICS INITIATIVE

Established in 2016, HuMetricsHSS is an initiative to create and support values-enacted frameworks for understanding and evaluating all aspects of the scholarly life well-lived, and for promoting the nurturing of these values in scholarly practice. With support from the Andrew W. Mellon Foundation, HuMetricsHSS has developed humane indicators of excellence in academia, focused particularly on the humanities and social sciences (HSS).

[21] Moher D, Bouter L, Kleinert S, Glasziou P, Sham MH, Barbour V, et al. (2020) The Hong Kong Principles for assessing researchers: Fostering research integrity. PLoS Biol 18(7): e3000737. https://doi.org/10.1371/journal.pbio.3000737

INORMS Research Evaluation Working Group

https://inorms.net/activities/research-evaluation-working-group/

The International Network of Research Management Societies (INORMS) brings together research management societies and associations from across the world. Its Research Evaluation Working Group was established in 2018 to consider how best to ensure that research evaluation is meaningful and responsible. Outputs of its work include:

- **The SCOPE model**, which is intended to support senior managers in undertaking RRA.[22] The model has five stages: (1) START with what you value; (2) CONTEXT considerations; (3) OPTIONS for measuring; (4) PROBE deeply; and (5) EVALUATE your evaluation.
- The **Rating the Rankers** project, which has developed a set of four criteria for fair and responsible university rankings: fairness; good governance; transparency; and measuring what matters. It then assessed six of the main global rankings against these criteria, finding that few of them perform well.[23]

EC Open Science Policy Platform and Next Generation Metrics

https://ec.europa.eu/research/openscience/index.cfm?pg=open-science-policy-platform

In 2016, the European Commission set up an Open Science Policy Platform to develop guidelines on all aspects of open research, as part of its planning for the next EU framework programme, Horizon Europe. One of a number of expert groups created under the OSPP's auspices was tasked with addressing the responsible use of metrics. Members of this group included Paul Wouters (co-author of *The Leiden Manifesto* and *The Metric Tide*) and James Wilsdon (chair of *The Metric Tide*). Its report, *Next Generation Metrics*, was published in March 2017, and was well received by EU policymakers.[24] Its recommendations, and those of related groups on indicators and incentives, were included in the OSPP's final report, published in April 2020.[25]

[22] For more on the SCOPE model, see: https://thebibliomagician.wordpress.com/2019/12/11/introducing-scope-aprocess-for-evaluating-responsibly/

[23] https://arma.ac.uk/rethinking-the-rankings/

[24] Wilsdon et al. (2017) *Next Generation Metrics. Report of the European Commission Expert Group on Altmetrics.* European Commission http://ec.europa.eu/research/openscience/index.cfm?pg=altmetrics_eg

[25] EC OSPP (2020) *Progress on Open Science: Towards a Shared Research Knowledge System – Final Report of the Open Science Policy Platform.* European Commission. April 2020 https://ec.europa.eu/research/openscience/pdf/ec_rtd_ospp-final-report.pdf

Science Granting Councils Initiative

https://sgciafrica.org/en-za

The SGCI is a multi-funder Initiative supported by the Swedish International Development Cooperation Agency (Sida), the UK's Foreign, Commonwealth and Development Office (FCDO), Canada's International Development Research Centre (IDRC), South Africa's National Research Foundation (NRF) and the German Research Council (DFG). SGCI is organized into two phases (SGCI-1 from 2015 to 2020; and SGCI-2 from 2018 to 2025). Since its inception in 2015, the Initiative has been strengthening the capacities of Science Granting Councils (SGCs) in 15 sub-Saharan Africa (SSA) countries (Ethiopia, Kenya, Rwanda, Tanzania, Uganda, Burkina Faso, Côte d'Ivoire, Ghana, Senegal, Botswana, Malawi, Mozambique, Namibia, Zambia and Zimbabwe) in order to support research and evidence-based policies that will contribute to economic and social development.

Specifically, the Initiative is strengthening the ability of participating Councils to: (i) manage research; (ii) design and monitor research programmes, and to formulate and implement policies based on the use of robust science, technology and innovation indicators; (iii) support knowledge transfer to the private sector, and; (iv) establish partnerships among Councils and with other science system actors. Two cross-cutting dimensions commenced in SGCI-1—on research excellence[26] and gender equality and inclusivity[27]—have been added as core activities in SGCI-2.

Global Young Academy Working Group on Scientific Excellence

https://globalyoungacademy.net/activities/optimising-assessment-promoting-excellence/

With 200 members drawn from 86 countries, the Global Young Academy provides earlier career scientists with a voice and platform for engaging in debates about the future of science and its relationship to policy and society. Its Working Group on Scientific Excellence undertakes evidence-informed analysis and advocacy on issues of research measurement and evaluation, and in 2018 it published a report on *Publishing models, assessment and open science*[28], which included 15 recommendations for improving processes of research evaluation.

[26] Tijssen, R.J.W. and Kraemer-Mbula, E. (2017). "Perspectives on research excellence in the Global South: assessment, monitoring and evaluation in developing-country contexts". SGCI. https://sgciafrica.org/en-za/resources/Resources/SGCI%20Research%20Excellence%20Discussion%20Paper.pdf

[27] https://sgciafrica.org/en-za/news/Documents/Call%20for%20Proposals%20CTA%20Gender%20and%20Inclusivity4March2020.pdf

[28] Dominik, M. et al. (2018) Publishing models, assessment, and open science. Report and outcomes from a workshop held by the Global Young Academy. GYA, October 2018. https://globalyoungacademy.net/wp-content/uploads/2018/10/APOS-Report-29.10.2018.pdf

Helsinki Initiative on Multilingualism in Scholarly Communication

https://www.helsinki-initiative.org/en

Multilingualism is an important but often neglected dimension of diversity in research, helping to ensure that research remains locally relevant and accessible. Launched in 2019, the Helsinki Initiative and its linked ***'In all languages'*** campaign was developed by the Federation of Finnish Learned Societies (TSV), the Committee for Public Information (TJNK), the Finnish Association for Scholarly Publishing, Universities Norway (UHR), and the European Network for Research Evaluation in the Social Sciences and the Humanities (ENRESSH). Its three core recommendations are to:

- ***Support dissemination of research results for the full benefit of the society.*** Make sure researchers are recognised for disseminating research results beyond academia and for interacting with heritage, culture, and society. Make sure equal access to researched knowledge is provided in a variety of languages.
- ***Protect national infrastructures for publishing locally relevant research.*** Make sure not-for-profit journals and book publishers have sufficient resources and the support needed to maintain high standards of quality control and research integrity, and are safeguarded in their transition to OA.
- ***Promote language diversity in research assessment, evaluation, and funding systems.*** Make sure that in the process of expert-based evaluation, high quality research is valued regardless of the publishing language or publication channel and format.

FOLEC: Latin American Forum on Research Assessment

https://www.clacso.org/en/folec/

FOLEC Latin American Forum for Research Assessment CLACSO

The Latin American Forum for Research Assessment (FOLEC) is a regional space for debate and exchange on the meanings, policies and practices of research evaluation in the region, with the aim of strengthening the open, common and public domain of knowledge. From a plural viewpoint, it seeks to share experiences and find agreements to build and promote regional evaluation instruments and guidelines. In partnership with the Latin American Council of Social Sciences (CLACSO), FOLEC has published a series of reports and statements, aimed at developing regionally-specific guidelines for research assessment, and mobilising support for these among funders, research institutions and other stakeholders in Latin American research.[29]

[29] https://www.clacso.org/en/folec/clacso-ante-la-evaluacion/

Science Europe Position Statement on Research Assessment Processes

https://www.scienceeurope.org/

With 37 member organisations from 27 countries, Science Europe is the association for public funders of scientific research in Europe. Following a comprehensive study of current funder policies and practices[30], and a consultation process with members, in July 2020 Science Europe published a position statement and set of recommendations to guide evaluation and assessment processes. Intended to complement DORA and Leiden Manifesto, these recommendations include:

- Research assessment processes must be clear and transparent.
- Research organisations should 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.
- Research organisations should streamline assessment processes to reduce the burden on reviewers and applicants.
- Research assessments should focus on the substance and content of applications.
- Research organisations should consider implementing novel assessment techniques.

European University Association (EUA)

Roadmap on Research Assessment in the Transition to Open Science

https://eua.eu/resources/publications/316:eua-roadmap-on-research-assessment-in-the-transition-to-open-science.html

The EUA represents more than 800 universities and national rectors' conferences in 48 European countries. In 2018, it published a *Roadmap on Research Assessment in the Transition to Open Science*, which aimed to raise awareness and support the EUA membership with the development of responsible research assessment that takes into account Open Science practices. This was followed in 2019 by a briefing paper[31] which offers an overview of the key concepts, issues and actors involved in research assessment, with particular attention on practical examples of new and innovative practices being developed and implemented. These publications are part of EUA's ongoing efforts to support member institutions in developing RRA approaches that encompass quality, potential and impact.

[30] Technopolis (2019) Science Europe Study on Research Assessment Practices. December 2019. https://www.scienceeurope.org/our-resources/science-europe-study-on-research-assessment-practices/

[31] https://eua.eu/resources/publications/825:reflections-on-university-research-assessment-key-concepts,-issues-and-actors.html

Wellcome Trust's campaign to Reimagine Research
(https://wellcome.org/what-we-do/our-work/research-culture)

In February 2019, as part of its broader commitment to diversity and inclusion, and to building a healthier research culture, the Wellcome Trust launched a high-profile campaign to *Reimagine Research*. Sir Jeremy Farrar, Wellcome's Director, explained why: *"The relentless drive for research excellence has created a culture in modern science that cares exclusively about what is achieved and not about how it is achieved. As I speak to people at every stage of a scientific career, although I hear stories of wonderful support and mentorship, I'm also hearing more and more about…instances of destructive hyper-competition, toxic power dynamics and poor leadership behaviour – leading to a corresponding deterioration in researchers' wellbeing…I believe that we now also have an important role to play in changing and improving the prevailing research culture."*[32]

To date, campaign activities have included: a global survey of the experiences of more than 4000 researchers, which highlighted significant unease with assessment processes;[33] a series of town hall meetings with researchers in universities; and a global online *Reimagine Research Solutions Summit* in November 2020.[34] The campaign has already helped to shape Wellcome's new vision and strategy, which aims for "a richer understanding of the world, and better solutions to the urgent health challenges we all face" and is underpinned by "principles of equality, diversity and inclusion" and a "responsibility to help build a better research culture."[35]

1.3 A typology of responses

This brief tour of RRA initiatives is far from exhaustive but conveys the dynamism, creativity and commitment that characterise this agenda, and the visible momentum now building across the global research community towards shared goals —albeit with diverse regional, national and local emphases. How have the different actors in research systems responded to such initiatives, and to the wider RRA agenda? To generalise, we can perhaps distinguish five types of response:

- **Cosmetic appropriation**

Some organisations have signalled support for this agenda - for example, by signing up to DORA, endorsing the Leiden Manifesto, or adopting the language of responsible metrics - while not taking the vital next steps of applying and embedding these principles in their policies and

[32] https://wellcome.org/news/why-we-need-reimagine-how-we-do-research
[33] https://wellcome.org/reports/what-researchers-think-about-research-culture
[34] https://wellcome.org/what-we-do/our-work/research-culture/reimagine-research-solutions-summit
[35] https://wellcome.org/news/wellcomes-bold-ambitions-improve-health-through-our-new-strategy

processes. Often, this is a necessary first step on the path towards more meaningful commitments: for example, DORA welcomes signatures from institutions before RRA practices are fully implemented, as this can signal to internal and external audiences that the institution recognises the importance of RRA and is working on it. But DORA also recommends that alongside signing up, institutions articulate a clear plan to their community for taking these commitments forward. There are now many good examples of university policies on metrics and assessment that do just this.[36]

Others have responded to the RRA agenda in more superficial ways. For example, Times Higher Education (THE) has been criticised for its ranking methodologies, performing poorly against the INORMS criteria mentioned above. Its introduction in 2019 of University Impact Rankings, linked to the UN's Sustainable Development Goals, could have been used as an opportunity to overhaul its methodologies, broadening the range of indicators used to assess multiple and diverse dimensions of university performance.

But these impact rankings are at best a sticking plaster, which leave untouched multiple flaws in the headline league tables of THE and other providers, including crude and narrow proxies, the overweighting of opinion surveys and a statistically nonsensical precision in scoring. Brian Schmidt, Nobel laureate and vice-chancellor of the Australian National University, summed up these problems in a recent interview: *"Every time I spend a dollar on First Nations' research I go backwards [in the rankings]...Every time I...put something out of a prestigious journal [to make it] open access I go backwards...the rankings are so foundationally flawed that...I don't want to have screwed up my university chasing what is, quite frankly, this little mirage..."*[37]

- **Calibrating the machine**

In some contexts, the RRA agenda has been productively applied as the basis of incremental improvements to assessment systems. For example, in the UK, the recommendations of *The Metric Tide* were adopted and incorporated into the next cycle of the Research Excellence Framework (REF), and as the basis for guidance on the use of quantitative indicators across the exercise.[38] Similar improvements have been made to the next cycle of the Netherlands' research

[36] Lizzie Gadd of Loughborough University in the UK has compiled a list of these statements and policies: https://thebibliomagician.wordpress.com/statements-of-responsible-metrics-2/; University of Southampton is a good example: https://www.southampton.ac.uk/~assets/doc/calendar/Responsible%20Research%20Metrics%20Policy.pdf
[37] Brian Schmidt interview for 'Remaking HE: Building Back Better After Covid-19', 8 November 2020 https://youtu.be/YfR3Hv7dnJ0. Thanks to Cameron Neylon for highlighting this quote on Twitter.
[38] https://www.ref.ac.uk/guidance/additional-guidance/

evaluation scheme, the Standard Evaluation Protocol (SEP). The new protocol, which runs from 2021 to 2027, will "incorporate recent developments relating to the recognition and rewards of researchers (including DORA) as well as the concept of Open Science."[39]

- **Can openers**

In a number of national systems, global initiatives like DORA and the Leiden Manifesto, have been effectively used as 'can openers' to spark reflection and debate on why and how more responsible approaches to assessment could be adopted. The work of the Latin American Forum for Research Assessment (FOLEC), mentioned above, is one good example.

Elsewhere, the RRA agenda has been the prompt for national conferences and forums of various kinds, which have then resulted in more sustained responses.[40] (As another example, this picture shows how DORA and *The Metric Tide* have been used as discussion material at Kyoto University in Japan).

- **Advocacy coalitions**

Various alliances and coalitions for change have arisen in response to the wider RRA agenda, with the aim of developing and applying more detailed guidance in specific contexts. These may operate at a national level (such as the UK Forum for Responsible Research Metrics); a sectoral level such as ongoing work by the European Universities Association[41]); or at a disciplinary level (such as the HuMetricsHSS initiative, profiled above).

***Case study:* UK FORUM FOR RESPONSIBLE RESEARCH METRICS[42]**

The UK Forum aims to support the responsible use of research metrics across the research ecosystem in the UK. It is chaired by Professor Max Lu (President and Vice-Chancellor of the University of Surrey) and its membership is drawn from research funders (UK Research and Innovation, Wellcome Trust, and the Scottish Funding Council), university senior managers, leaders and administrators (including Vice and Deputy Vice-Chancellors, Universities UK, and the Association of Research Managers and Administrators), national

[39] The framework for the 2021-2027 Netherlands" Standard Evaluation Protocol is online here: https://www.vsnu.nl/en_GB/sep-eng.html
[40] Examples include Australia, Brazil, Colombia, Germany, Mexico, Panama, New Zealand and Switzerland.
[41] https://eua.eu/component/tags/tag/46-research-assessment.html
[42] https://www.universitiesuk.ac.uk/policy-and-analysis/research-policy/open-science/Pages/forum-for-responsible-research-metrics.aspx

academies (British Academy and the Royal Society), infrastructure experts (Jisc), and experts in research policy and data science.

The group was established in 2016 on the recommendation of *The Metric Tide* review. The UK Forum aims to advocate, lead, and where appropriate provide support in developing a positive research culture. It advises the UK HE Funding Bodies regarding the use of metrics in the Research Excellence Framework 2021, and makes recommendations for future national research assessment exercises; provides advice and guidance on improving the data infrastructure that supports research information management; and identifies and promotes communities of practice to facilitate discussion, offer guidance and establish evidence of what works in the use of metrics responsibly.

In 2018 the group hosted a conference about the UK's progress towards using metrics responsibly. Here it was apparent that the UK is engaged and wants to adapt policies and processes to ensure responsible uses of metrics. However, it was also clear that more needed to be done to embed existing principles to realise change. The Forum launched a report of the discussion at the UK conference at Euroscience Open Forum 2018 (ESOF) where two of the UK Forum members delivered a session about metrics and open research.

Recently, the UK Forum has been extending its international work to raise the profile of this agenda globally. The UK Forum is co-hosting the Global Research Council virtual conference on Responsible Research Assessment, during the week of the 23 November 2020.

- **Institutional culture change**

The most widespread response to the RRA agenda has been the development of institutional policies and processes, which seek to ground and embed broader principles in local practices.[43] Universities have been particularly active here, either at a pan-institutional level, or through specific initiatives by libraries, research offices or human resources departments. Funders, learned societies and publishers have also been active in developing institutional responses.

***Case study:* BERLIN INSTITUTE OF HEALTH[44]**

In 2017, as part of efforts to improve research and assessment practices, Berlin Institute of Health (BIH) set up the QUEST (Quality-Ethics-Open Science-Translation) Center and launched a programme of work that combined communication, new incentives and new tools to foster

[43] Hatch, A. and Curry, S. (2020) Research Culture: Changing how we evaluate research is difficult, but not impossible. eLife 2020;9:e58654

[44] The text of this case study is drawn from eLife 2020;9:e58654 and re-used under a CC-BY licence

institutional culture change.[45] A researcher applying for promotion at the Charité University Hospital, which is part of BIH, must now answer questions about their contributions to science, reproducibility, open science, and team science, while applications for intramural funding are assessed on QUEST criteria that refer to robust research practices (such as strategies to reduce the risk of bias, and transparent reporting of methods and results).

To help embed these practices, independent QUEST officers attend hiring commissions and funding reviewers are required to give structured written feedback. Although the impact of these changes is still being evaluated, lessons already learned include the importance of creating a positive narrative centered on improving the value of BIH research and of combining strong leadership and tangible support with bottom-up engagement by researchers, clinicians, technicians, administrators, and students across the institute.

1.4 The crucial role of funders in system change

"Funders and academic institutions do much to set the social and cultural context in which research occurs, and academia's reward and promotion systems shape the choices of scientists at all stages of their career." Malcolm R. Macleod et al.[46]

As with other aspects of research culture, the ultimate goal here is system change. This requires engagement, commitment and coordination by multiple actors in research systems, but research funders are a particularly crucial part of this, both because of the influence they can exert on other actors in research systems—requiring certain policies or practices to be adopted as a condition of funding—and because they often have more freedom to manoeuvre than others. As a recent report for the European Commission observes:

> *"The ranking imperative affects all levels of the research structure, and it tends to constrain change for nearly all actors. This is true of individual researchers, of research groups, of whole research institutions, and even of whole countries… Funding agencies also use rankings, sometimes abundantly. However, unlike the other actors, private funding charities are not ranked, and public, national, funders are ranked only indirectly, through their own country. As a result, funders in general enjoy more latitude than the other actors in scholarly communication and publishing."*[47]

[45] Strech, D. et al (2020) Improving the trustworthiness, usefulness and ethics of biomedical research through an innovative and comprehensive institutional initiative. *PLOS Biology* https://doi.org/10.1371/journal.pbio.3000576; Dirnagl, U. (2020) Institutions can retool to make research more rigorous. *Nature*, 14 October 2020. https://doi.org/10.1038/d41586-020-02905-1

[46] Macleod, M R (2014) Biomedical research: increasing value, reducing waste. *The Lancet*. January 8, 2014 http://dx.doi.org/10.1016/ S0140-6736(13)62329-6

[47] European Commission (2019) *Future of scholarly publishing and scholarly communication. Report of the Expert Group to the European Commission.* DOI: 10.2777/836532

For funders, there are multiple dimensions of RRA to consider, which we highlight below through a series of brief case studies. Many of these aspects and issues will be addressed directly through the sessions of the **GRC's virtual conference on RRA**.[48]

Case study:

RESPONSIBLE APPROACHES TO REVIEWER AND PANEL RECRUITMENT

ANR, the French National Research Agency

A diverse representation of researchers serving in decision-making roles is essential to improving equity in academia. ANR, the French National Research Agency, made a public commitment to support gender equality in higher education and research.[49] Because of this, close attention is paid to gender parity as the Scientific Panels are assembled for each thematic call. Geography and affiliations are also taken into consideration in the panel's formation.

The Scientific Panels are led by a chair that is selected by ANR following a call for applications. Because chairs are limited to a one-year term that is renewable twice, power gets to be shared across the academic community. Interestingly, ANR found that parity in Scientific Evaluation Panels is not sufficient to reduce gender bias, based on a literature review they conducted and an analysis of the grant submissions from their 2017 Generic Call for Proposals. As a result, ANR has set-up a "training and awareness process for committee chairpersons," which focuses on the question of gender in selection bias and parity within committees and consortia.

[48] For the latest agenda and registration information, please see: https://web-eur.cvent.com/event/7ca86a3d-6e6f-4d11-98e9-f01fe69fdf46/summary

[49] https://anr.fr/en/anrs-role-in-research/values-and-commitments/gender-aspects/

Case study:

RESPONSIBLE APPROACHES TO IMPACT MEASUREMENT AND EVALUATION

International Development Research Centre (Canada)

Since citations and other traditional indicators of success do not capture the impacts of applied and translational research on local communities, the International Development Research Centre (IDRC) in Canada developed a tool called **Research Quality Plus (RQ+)** to assess their research projects in a more holistic manner.[50] The RQ+ framework has three main components guiding the assessment: identify contextual factors, articulate dimensions of quality, and use rubrics and evidence. The review process itself is made-up of three steps: 1) characterizing the key contextual influences on the project, 2) identify the qualities of the research, and 3) synthesizing the ratings using customizable rubrics.

The use of clear rubrics at different stages in the evaluation process instills standards and structure, which enables fairer comparisons across a portfolio of very different projects. Mechanistically, the rubrics also inject positive friction into the process, forcing evaluators to slow down and think critically before making judgments. The first rubric is designed to characterize the key influences most likely to affect the quality of the research, such as maturity of the field, research capacity and strengthening, and risk in the data, research, and political environments. The second one is used to evaluate the quality of the research. In addition to rating research integrity, legitimacy, and importance, evaluators also consider how well it is positioned for use by the community.

RQ+ costs more than traditional approaches to assessment that rely on the opinions of evaluators, because it requires evaluators to collect and analyze data during the review process. For example, evaluators conduct qualitative interviews with actual or prospective research users to gauge how well it is positioned for use. However, IDRC believes the investment in RQ+ has paid off, by informing their funding strategy[51]

[50] https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/56528/IDL-56528.pdf?sequence=2&isAllowed=y

[51] Lebel, J and McLean, R (2018) A better measure of research from the global south. Nature Vol 559: 23-26, 4 July 2018 https://www.nature.com/articles/d41586-018-05581-4

Case study:

RESPONSIBLE APPROACHES TO CV FORMATS

Dutch Research Council (NWO); Swiss National Science Foundation (SNSF), Luxembourg National Research Fund (FNR), Science Foundation Ireland (SFI); and UK Research and Innovation (UKRI)

Traditional CVs contain information that is often misused as shortcuts to judge success, such as journal names (and sometimes even impact factors). Shortcuts like these reinforce the status quo, preventing the consideration of different research outputs or new types of evidence that can demonstrate real world impact. But they also can perpetuate the Matthew effect, where well-resourced individuals are likely to accumulate yet more status and resources. So now more than ever, funders are opting for a structured narrative to replace the traditional CV format.

The switch is designed to help researchers clearly communicate their most important research contributions, rather than relying on a publication list to convey the value of their work. Evaluators benefit from the use of structured narratives too, because the format facilitates the comparison of qualitative information and does not add unduly to their workload. However, the use of narratives may lead to gendered connotations and give rise to biases that organizations need to take into account during the evaluation process.

The **Swiss National Science Foundation** is testing a structured narrative CV format called **SciCV** to increase consistency in decision-making for its grant applications.[52] SciCV integrates with ORCID making it easy for researchers with an ORCID ID to populate and maintain. They are not the only funder reimagining the CV.

The Dutch Research Council (NWO) is implementing a narrative format to highlight diverse types of talent and focus on the quality of one's contributions. Preliminary results suggest the new format at NWO has led to an increased agreement between external evaluators and a more diverse group of researchers being chosen for funding.

Luxembourg National Research Fund (FNR) is also piloting the use of a narrative CV in the 2020 call of its talent attraction grant programmes, ATTRACT and PEARL. In this pilot phase, a traditional CV can still be submitted as an annex, but applicants are required to provide explanations on their main achievements, including in teaching, supervision, link to societal

[52] http://www.snf.ch/en/researchinFocus/newsroom/Pages/news-200131-scicv-snsf-tests-new-cv-format-in-biology-and-medicine.aspx

outreach and anything else that defines them as researchers, beyond publications. The review process will then focus and give more weight to these insights.

SNSF and NWO are among a consortium of funders behind the **CV Harmonisation Group (H-Group)**, a joint initiative between academic experts, researcher data infrastructure organizations (e.g. ORCID, DataCite) and representatives from 13 funders worldwide to develop harmonised CV templates.[53]

The **Résumé for Researchers,** a narrative format CV developed by the UK's Royal Society, is also being adapted for use by **Science Foundation Ireland and UKRI**.[54] The résumé is separated into four sections: generation of knowledge, development of individuals, contribution to the wider research community, and contribution to broader society. It also provides space for a personal statement and additions, where individuals can note career breaks or other activities that could influence career advancement.

Case study:
RESPONSIBLE APPROACHES TO INCENTIVIZING OPEN RESEARCH
Open Research Funders Group

The Open Research Funders Group (ORFG) released guidance for funders on how to incentivize the open sharing of research outputs.[55] This is intended to assist funders in encouraging researchers to maximize the impact of their work by openly sharing research outputs. To date, nine funders[56] have committed to taking measures to implement the blueprint, which identifies three goals to be successful: (1) Change the perception that publication in high-impact journals is the only metric that counts; (2) Provide demonstrable evidence that, while journal articles are important, we value and reward all types of research outputs; and (3) Ensure that indicators such as the venue of publication or journal impact factor are not used as surrogate measures of quality in researcher assessment.

The ORFG is actively working to embed the consideration of open scholarship practices in research assessment in collaboration with the National Academies of Science, Engineering, and Medicine Roundtable on Aligning Incentives for Open Science in the United States.[57] As

[53] Funders involved in the H Group include SNSF, ERC, UKRI and FAPESP.
[54] https://royalsociety.org/topics-policy/projects/research-culture/tools-for-support/resume-for-researchers/
[55] http://www.orfg.org/incentivization-blueprint
[56] See listed funders here: http://www.orfg.org/incentivization-blueprint
[57] https://www.nationalacademies.org/our-work/roundtable-on-aligning-incentives-for-open-science

part of Roundtable's work, they have developed signalling language for grant policies that requests, rather than demands, information about open scholarship practices, such as depositing data, protocols, and code in open repositories.

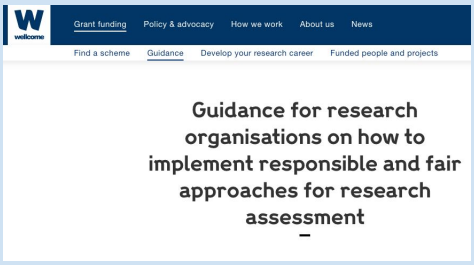
This type of language demonstrates that open scholarship is valued by the institution and incentivizes open practices. It encompasses retrospective activities, such as asking grant applicants how their work has been made openly available in the past, and prospective activities to understand how grant applicants plan to share their work in the future. Variations of these templates have also been created for grant reporting.

It is no surprise there is less bureaucracy to add a request into a policy than to add a requirement. Because the signalling language is phrased in the form of requests, organizations are more willing to consider its use. The "request" approach can be an interim step in the adoption of more formal policies. Sixteen funders have adopted or committed to adopt the suggested wording to date.

Case study:

RESPONSIBLE USE OF INFLUENCE ON INSTITUTIONAL POLICIES AND PRACTICE

Wellcome Trust



Using its influence as a major research funder in the UK and internationally, Wellcome is driving institutional change from the top down. From 2021, Wellcome's policies require organisations hosting Wellcome-funded researchers to publicly commit to assessing research outputs and contributions on the intrinsic merit of the work. This is one of the first attempts to implement a key tenet of Plan S, a European-funder led effort to drive the uptake of open access, which recognises the need to link reform of research assessment to innovations in publishing.

To help organizations comply, Wellcome developed detailed **guidance on how to implement responsible and fair approaches to research assessment**.[58] The central components of the guidance draw on DORA's core principles to be explicit about the criteria used to evaluate research productivity and to recognize the value of all relevant research outputs (for example publications, datasets and software), as well as other types of contributions, such as training early-career researchers and influencing policy and practice. Specifically, organizations must meet three criteria:

[58] https://www.nationalacademies.org/our-work/roundtable-on-aligning-incentives-for-open-science

- A clear and accessible statement of commitment to implementing the principles on their website
- A plan for implementing the principles, or a clear process in place for developing a plan (with a specified delivery date)
- A process for monitoring and reporting on progress in implementing the principles.

The policy has teeth: institutional compliance will be monitored as part of the regular audits Wellcome conducts of its grantees. How sharp these teeth are remains to be seen.

To ensure internal compliance, Wellcome asks members of its advisory board panels to focus on the content and quality of publications, in place of the number of publications or notions of journal prestige. Panel members are also required to consider a diverse range of research outputs. To encourage the recognition of different types of contributions, researchers are asked to list their research outputs instead of their publications. Legitimate delays in research productivity and personal factors are also taken into consideration.

Case study

RESPONSIBLE COMMITMENTS TO EQUALITY, DIVERSITY AND INCLUSION IN RESEARCH

Te Pūnaha Hihiko: Vision Mātauranga Capability Fund

Canada's Tri-Agency support for indigenous research & training

New Zealand's Ministry of Business, Innovation and Employment developed the **Vision Mātauranga Capability Fund** to invest in Mātauranga Māori (Māori knowledge) in building a better future.[59] The fund empowers Māori to take a community-based approach to see to it that traditionally recognized practices of kaitiakitanga (guardianship), mana motuhake (self-determination), mana whenua (authority) and mana whakahaere (management) continue. The fund has two stated goals:

- To strengthen capability, capacity, skills and networks between Māori and the science and innovation system; and
- To increase understanding of how research can contribute to the aspirations of Māori organisations and deliver benefit for New Zealand.

The fund focuses on relationship building between the Māori and others in the NZ research system, through two different schemes which aim to build links and better embed Māori priorities across the system.

[59] https://www.mbie.govt.nz/science-and-technology/science-and-innovation/funding-information-and-opportunities/investment-funds/vmcf/

Canada's Social Sciences and Humanities Research Council (SSHRC), Canadian Institutes of Health Research (CIHR) and Natural Sciences and Engineering Research Council (NSERC)—collectively referred to as **Tri-Agency funders**—included in their most recent strategic plan a strong commitment to support indigenous research and research training in Canada.[60] Measures outlined include revising eligibility guidelines and merit review criteria, and adhering to Indigenous standards for data management and ethics.

Case study

RESPONSIBLE APPROACHES TO THE EFFECTS OF COVID-19 ON RESEARCH

Concordat on Mitigating COVID-19 Pandemic Effects on Research (COMPEER)

Among the many challenges of the ongoing Covid-19 crisis are concerns over its uneven effects on different groups of people in the research system—particularly women, early career researchers and those with children or caring responsibilities, whose capacity to work as normal may have been seriously reduced. The relatively new **Concordat on Mitigating COVID-19 Pandemic Effects on Research (COMPEER)**[61] was proposed by a group of early career researchers in Quebec, Canada. It has only received a few hundred signatures to date, but these include the main regional research funder, Fonds de Recherche du Quebec. Related measures have been taken, or are under serious consideration, by funding agencies worldwide, as the duration and effects of the pandemic are prolonged. DORA has also published helpful guidance on how institutions should manage hiring, promotion and funding decisions during the pandemic.[62]

60 https://www.canada.ca/en/research-coordinating-committee/priorities/indigenous-research/strategic-plan-2019-2022.html

[61] https://signcompeer.org/

[62] https://sfdora.org/2020/04/06/dora-statement-on-hiring-promotion-and-funding-decisions-during-the-covid-19-pandemic/

Case study

RESPONSIBLE APPROACHES TO RESEARCH ASSESSMENT REFORM

Ministry of Science and Technology (MOST), Ministry of Education (MOE) and National Natural Science Foundation of China (NSFC)

As described in a recent paper by Lin Zhang and Gunnar Sivertsen,[63] the Chinese government recently embarked on a significant reform of its approach to research assessment. Zhang and Sivertsen describe the three pillars of the new approach as follows:

1. **Farewell to "SCI worship".** "*Indicators based on the Web of Science will no longer be applied directly in evaluation and funding at any level. An alternative citation index with Chinese characteristics and international influence will be established."*
2. **From metrics to peer review.** *"A new focus on novelty, scientific value, research integrity, innovation potential and societal outcomes will replace the "paper only" orientation in panel evaluations. Publications will be presented for review as a limited set of "representative work" with explicit relevance for the evaluation."* Publication volume and journal impact factors will no longer count any more.
3. **More priority to local relevance.** *"Publications in high-quality Chinese journals will be encouraged, and the development of such journals will be supported."*

As the most prestigious of China's funding agencies, the NSFC has been at the forefront of efforts to strengthen assessment systems. As Jinghai Li, President of NSFC, wrote recently: *"The pursuit of personal gain, rather than pure scientific excellence, is…now corroding scientific culture and values, jeopardising cooperation among individual scientists. To make matters worse, these tendencies are sometimes coupled with policy complications, such as assessments that give undue weight to a person's or institute's total number of publications and/or the impact factors of the journals in which they appear, while neglecting the quality of the papers. Such policies impose further incentives for people to hoard and potentially misuse data,…to an issue that deserves great global attention."*[64]

These shifts within the Chinese research system are complementary to global RRA efforts, and may have drawn some influence from DORA and other initiatives. But they are also a good example of the need to ground RRA in the particular context of a given system—"RRA with Chinese characteristics"—and given the huge scale and growing international influence of Chinese research, its approach to RRA has the potential to shift the dial on a global scale.

[63] Zhang, L., & Sivertsen, G. (2020). The New Research Assessment Reform in China and Its Implementation. Scholarly Assessment Reports, 2(1): 3. DOI: https://doi.org/10.29024/sar.15

[64] Jinhai Li (2020) To maximise its potential, science needs more than investment. Times Higher Education, 24 June 2020 https://www.timeshighereducation.com/opinion/maximise-its-potential-science-needs-more-investment

2. Findings of the Global Research Council RRA survey

EDITORIAL

Moving Toward Global Science

WE ARE EXPERIENCING A NEW ERA IN THE ADVANCEMENT OF SCIENCE. MORE NATIONS recognize that innovation, driven by science and engineering (S&E), is the fuel for economic growth, prosperity, and social well-being. Global annual investment in R&D has doubled since 1996 to $1.1 trillion. There is strong determination in countries large and small to be aggressively competitive in R&D growth, given the lure of innovation, the sway of geopolitical events, and tighter economic interdependence. Relative to their respective gross domestic products, China, India, Korea, Singapore, and Qatar are some of the nations that have substantially increased investments in S&E research and education, with a focus on the strategic development of their S&E workforce. Relative precollege student achieve-

Subra Suresh is director of the U.S. National Science Foundation.

In this 2011 editorial in Science, Dr Subra Suresh, then Director of the U.S. National Science Foundation outlined the ambition for a new Global Research Council "to promote the sharing of data and best practices for global collaboration."[65] The GRC was formally launched the following year.

2.1 Background and context

Established in 2012, the Global Research Council (GRC) is a virtual organisation, comprising the heads of national science and engineering funding agencies from around the world. Under the auspices of its Governing Board, it works to promote data-sharing and best practices and collaboration among funding agencies worldwide.

The GRC recognises that worldwide growth of public support for research has presented an opportunity for countries large and small to work in concert across national borders. Cooperation and collaboration can enhance the quality of science, avoid unnecessary duplication, provide economies of scale, and address issues that can only be solved by working together. Research funding agencies have a responsibility to meet these objectives on behalf of their research communities.

GRC participant organisations are mostly public research funding organisations. At present there are approximately 120 active participant organisations in the GRC. (No list of these is published as the GRC works though participation, rather than formal membership.) The purposes of the GRC are to (i) improve communication and cooperation among funding agencies; (ii) promote the sharing of data and best practices for high-quality research cooperation; (iii) provide a forum for regular meetings of the Heads of Research Councils; (iv) respond to opportunities and to address issues of common concern in the support of research and education; (v) be a resource for those institutions wishing to build a world-class research landscape; and (vi) explore mechanisms that support the global science enterprise and the worldwide research community.

Since its inception, the GRC at its various meetings has produced several "Statements of Principles" and other documents on funded research. In 2012 the Global Research Council (GRC) endorsed its first statement of principles on scientific merit review, or peer review, following a Global Summit on Merit Review hosted by the U.S. National Science Foundation. In 2018, the

[65] Suresh, S. (2011) Moving Toward Global Science. *Science* 333 (6044), 802. DOI: 10.1126/science.1210025

GRC revisited this topic and revised the Statement of Principles to ensure they remained relevant to the evolving strategic context of the global research enterprise. Other allied statements have addressed interdisciplinarity, gender and equality, research integrity and science diplomacy.[66]

2.2 Methodology and response rate

The November 2020 GRC virtual conference on responsible research assessment aims to take this earlier work forward by focusing attention on emerging priorities for RRA, and the role and response of the global funder community in meeting these. To establish a clear context and baseline for these discussions, the GRC circulated an online survey on RRA to its participant organisations.

The GRC survey builds on the 2019 survey by Science Europe of research assessment practices among its members, and was an opportunity to collect further information at a global level. The questionnaire was reviewed by an advisory group and suggestions and changes were discussed and agreed with UKRI and the virtual conference advisory group. The final version of the survey consisted of 23 mainly closed questions and was implemented as an online survey using Qualtrics. **The survey questions are presented in full in the Appendix of this paper.**

The survey was sent to 120 GRC participant organisations and was open from September 7th to October 4th 2020. As shown in Table 1 it was completed by **55 organisations**—an overall response rate of 46%. Respondents came from all world regions as indicated in Table 1. Due to a low number of organisations from *Middle-East/North Africa* this region was merged with the region *Sub-Saharan Africa* into the region called *Africa and Middle-East*.

	N	**%**
Africa and Middle-East *(Sub-Saharan Africa, North Africa & Middle East)*	10	18.2
Asia-Pacific	14	25.5
Americas	10	18.2
Europe	21	38.2
Total	*55*	*100*

Table 1: Respondents by geographical region

[66] https://www.globalresearchcouncil.org/about/

2.3 Headline findings

Endorsement of existing Frameworks on Responsible Research Assessment

In section 1.2 a number of prominent initiatives and interventions were described. In the survey respondents were asked to indicate which of the most well-known frameworks related to responsible research assessment they endorsed. As shown in Figure 1, 32 out of 55 respondents (58%) endorsed the GRC statement of principles on peer/merit review. According to 20 respondents, the GRC endorsement informed the organisation's approach on the assessment of research proposals. As one of the respondents explained: *'it was helpful in establishing the approaches to interdisciplinarity, gender parity and impact assessment'*. DORA and Science Europe recommendations were endorsed by one third of the respondents, mainly from Europe and the Americas. Interestingly, half of the respondents also developed their own frameworks related to responsible research assessment. The Leiden Manifesto and Hong Kong Principles were less frequently endorsed by GRC survey respondents compared to other frameworks.

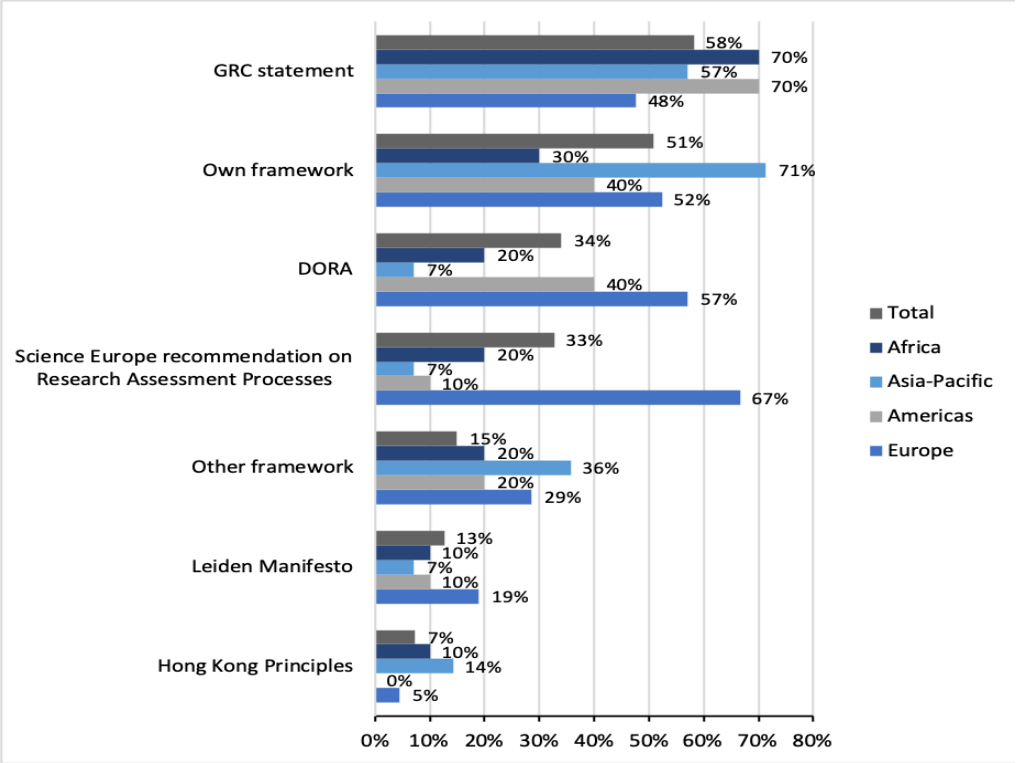


Figure 1: Endorsement existing frameworks on responsible research assessment

Implementation of Systems Research Assessment

Among GRC participant organisations that responded to this survey, the most popular method of assessing full research proposals was external panel review (43 organisations), followed by external single-blind review (38 organisations).[67] Ranking of research proposals according to quantitative criteria was used in 50-60% of GRC respondents from Africa, Asia-Pacific and Americas; however, in European GRC's this system was less popular (19%). Most organisations (85%) provided written guidelines to individuals involved in the assessment of proposals. Examples of topics that were covered are: conflicts of interest; roles of external reviewers and panellists; tools, metrics and criteria used; and proceedings of the panel meetings.

Adjustments to the Process of Research Assessment to ensure diversity

The most common strategies to tackle potential bias or observed discrimination regarding sex, race and seniority is to raise awareness by covering these topics in the guidelines for research assessment. Regional differences were observed, as only half of the GRC participants from Asia-Pacific reported this strategy compared to 80%-95% of the respondents from the other world regions. Some GRC participants (though fewer than half the respondents) also encouraged their applicants and funded researchers to openly discuss topics like equality, diversity and inclusion in their work environment. Also some organisations (23) offered training to reviewers and panel members to show the importance of ensuring impartiality. Other approaches used by respondents are: the selection of diverse reviewer profiles, the introduction of quotas and the implementation of priority policy (see Figure 2). In addition, GRC participant organisations explicitly mentioned the gender dimension both in the proposed research (23 organisations) and in the research team of applicants (18 organisations) as elements that reviewers and panelists need to consider when assessing proposals.

30 out 41 (73%) responding organisations stated that they adapted their research assessment systems and processes for different research disciplines and fields, or where different research outputs are intended. No significant differences among world regions were found. Mechanisms that were used to ensure an approximately equal success ratio between different fields of research are shown in Figure 2, and include: selection of reviewers with diverse disciplinary profiles (23 organisations); introduction of quotas to balance the selection of applicants from underrepresented (sub)fields (seven organisations); giving priority to the selection of proposals from applicants with underrepresented disciplinary profiles when the quality of their proposal and research outputs is as high as that of other proposals (three organisations).

[67] Two common modes of peer review are used. In single-blind peer review, the authors or applicants do not know who the reviewers are, but the reviewers do know who the authors or applicants are. In double-blind peer review, neither side know each other's identities.

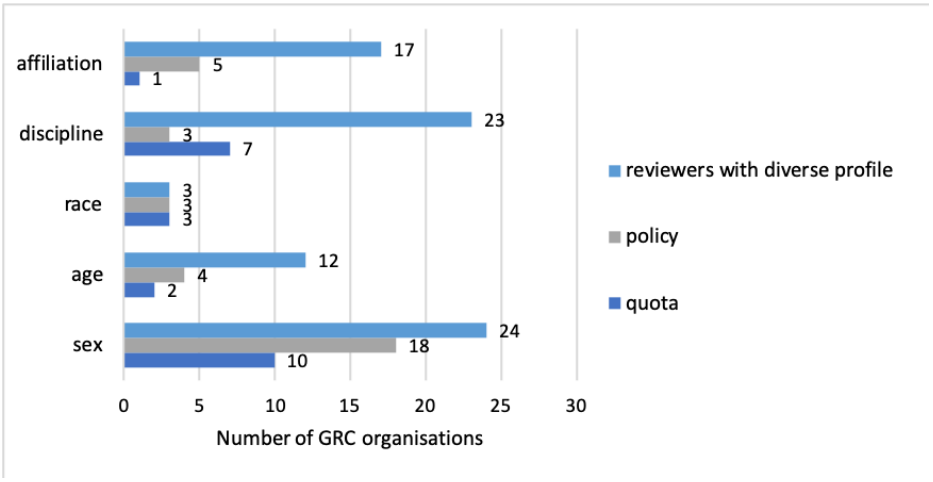


Figure 2: Adjustments to the process of research evaluation (n=41; missing n=16).

Research Assessment Indicators and Developments

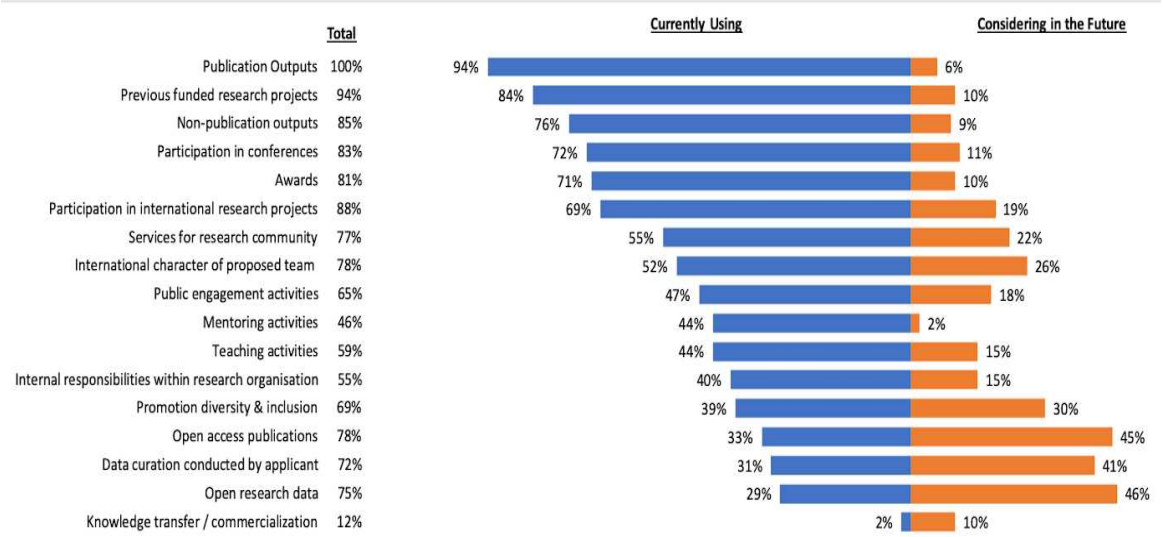


Figure 3: Research assessment indicators (to be) used by GRC participating organisations who responded to the survey (n=50, missing n=5)

As shown in Figure 3 nearly all GRC respondents (47 out of 50, 94%) assessed the publication outputs of their applicants. Both author and journal level approaches and tools were used by reviewers to measure research productivity in the assessment of research proposals. Approximately half of the responded organisations indicated that their reviewers use quantitative indicators such as the number of highly cited publications, number of publications in high-ranking

journals, the number of citations and the H index to measure research productivity. Alt(ernative) metrics were used by reviewers in 1 out of 3 respondents.

At the journal level, Journal Impact Factor and journal reputation were most often mentioned indicators; only a few GRC participant organisations reported that their reviewers use h5 (index and median), SCImago Journal Rank, Eigenfactor, Citescore and SNIP (see Table 2). In addition, 30 out of 40 participant organisations responded that external reviewers qualitatively assess the research output of applicants. Another four organisations reported that they did not use qualitative assessment yet but were considering doing so in the near future.

Table 2: Defining a few bibliometric concepts and indices

Concept or index	**Definition**
h-Index	Developed by Jorge Hirsch in 2005, the H-Index is a notional indicator of researcher productivity and influence, calculated on the basis of the number of papers (h) that have been cited at least h times. The index is intended to improve upon simpler measures such as the total number of citations or publications.
h5-index	Sometimes used as a proxy for journal influence, the h5-index and h5-median of a publication are calculated on the basis that h articles in that publication were cited at least h times each in the last five complete calendar years.
SCImago Journal Rank https://www.scimagojr.com/)	The SCImago Journal Rank (SJR) indicator is a measure of the scientific influence of journals that accounts for both the number of citations received by a journal and the importance or prestige of the journals where the citations come from. A journal's SJR reflects the average number of weighted citations received during a selected year per output published in that journal during the previous three years.
Eigenfactor http://www.eigenfactor.org/	The Eigenfactor score is a rating of the total importance of a scientific journal. Journals are rated according to the number of incoming citations, with citations from highly ranked journals weighted to make a larger contribution than those from poorly ranked journals. All else equal, journals generating higher impact to the field have larger Eigenfactor scores.The Eigenfactor approach is thought to be more robust than the journal impact factor. (see)
Citescore https://www.scopus.com/sources	Developed by Elsevier, CiteScore is a metric that calculates the citations of all the documents of a specific year in all the papers published in the previous 3 years. That number is divided by the number of papers indexed in Scopus published in those same years

Source-normalized Impact per Paper https://www.journalindicators.com/	Source-normalized Impact per Paper (SNIP) is a field normalised assessment of journal impact. SNIP scores are the ratio of a source's average citation count and 'citation potential'. Citation potential is measured as the number of citations that a journal would be expected to receive for its subject field. Essentially, the longer the reference list of a citing publication, the lower the value of a citation originating from that publication. SNIP therefore allows for direct comparison between fields of research with different publication and citation practices.

35 out of 46 (76%) GRC survey respondents currently assess non-publication outputs. Four organisations reported that they will consider including non-publication outputs in the future in the assessment of applicants. As shown in Figure 4 software/codes/algorithms and datasets produced and developed by the applicants were the most frequently mentioned examples of non-publication outputs.

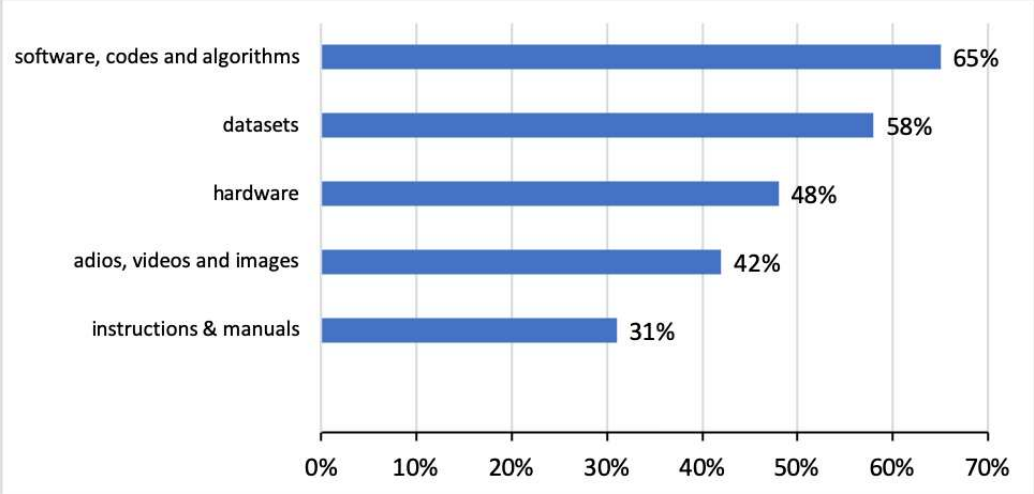


Figure 4: Percentage of respondents that assess non-publication research outputs and outcomes

Open access publications, data curations and open research data are the three most common measures being considered by GRC respondents to be included in their future evaluation practices. 20-23 (41%-46%) GRC participant organisations who responded to the survey indicated that they are considering adopting these indicators in the near future. Most respondents encourage and promote open access and open science among applicants and their funded researchers.

Towards Responsible Research Assessment: Changes in Research Assessment

Survey respondents were asked to indicate whether they have implemented changes in the way research proposals are assessed. As shown in Figure 5, for most respondents (38 out of 44; 86%), focusing assessment on the research content of publications is either a long-standing practice, a recent change or a planned change. For most respondents a shift towards more qualitative assessments and less reliance on publications and metrics was observed. Broadening the range of quantitative tools used to assess research was also an important change. Three-quarters of respondents (76%) reduced or are planning to reduce the use of journal- based metrics. Fifteen respondents (43%) have already eliminated the use of journal metrics in the evaluation practices, and a further five (14%) are planning to do so. Reducing or eliminating the use of journal metrics was most often reported by respondents from Europe and the Americas.

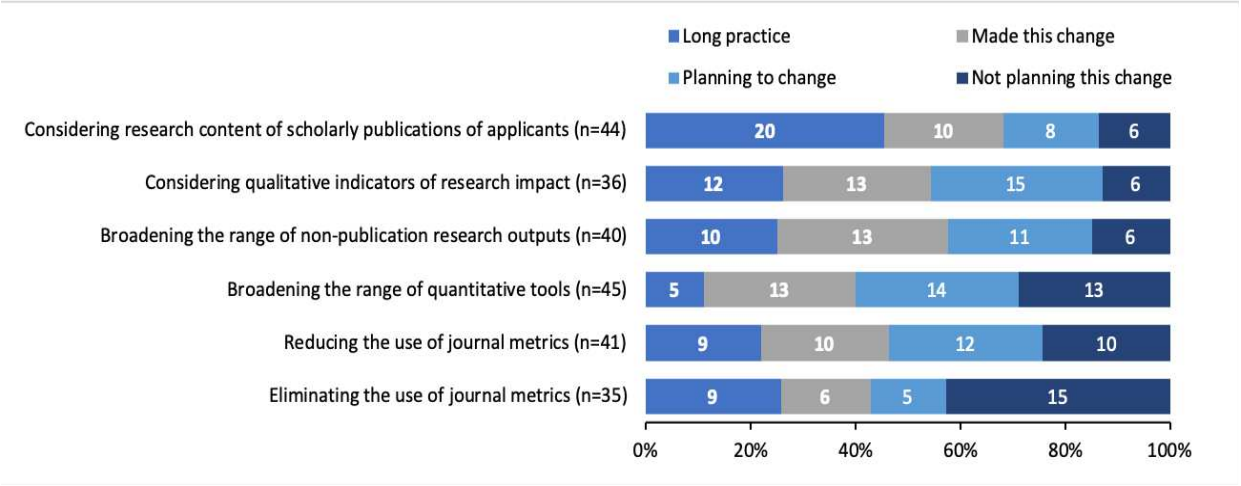


Figure 5: Changes in the way research proposals are assessed

Experimentation with new CV formats for applicants

The survey showed that a growing number of funding agencies are experimenting with novel or alternative CV formats methods and tools (see Figure 6). Six survey respondents from Europe and 2 from the Americas are experimenting with a narrative CV format of applicants; of these, three organisations have already implemented the narrative CV at full scale. According to respondents who implemented new CV formats in their organisation, first results are pointing to slightly positive impacts on decision making processes. Other new CV formats were piloted by four and implemented by five GRC respondents, although no respondents from Asia-Pacific have yet experimented with new formats. One-third of respondents are considering testing a new CV format (with or without narrative) in the near future.

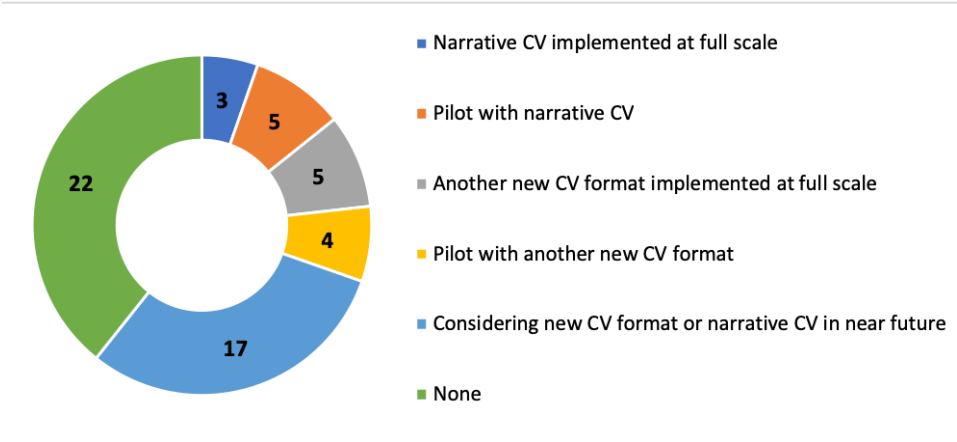


Figure 6: Number of respondents that experimented with new CV formats of applicants (n=52, missing n=3)

Experimentation with new assessment systems and funding allocation methods

New assessment systems and funding allocation methods were introduced by half of the respondents to make the research assessment more objective and to enhance the fairness of the process. Double-blind peer review systems (where neither reviewers nor applicants know the other's identity) have been conducted by twelve GRC participating organisations from all regions who responded to the survey. Eight respondents from various regions reported the use of open reviews, where the identities of both the author and the reviewers are revealed and/or review reports are made openly available online. A funding allocation method where funding is allocated through an intensive, interactive event hosted by a funder, in which groups of researchers from different disciplines collaborate in 'Sandpits' to develop research proposals have been introduced by ten respondents, of which six are from Europe.[68]

Experimentation with radically different methods and tools such as lotteries and self-organising funding allocation is rare (see Figure 7). An experiment with lotteries, described as a system in which high quality applications are identified by peer review and funding decisions are made on the basis of a computer-generated lottery, has been conducted by three European respondents in small funding programmes. Two GRC participant organisations who responded to the survey experimented with a self-organizing funding allocation, in which every research proposal starts with the same allocation of funding every year but must allocate a portion to other proposals.[69]

[68] See e.g. https://epsrc.ukri.org/funding/applicationprocess/routes/network/ideas/whatisasandpit/
[69] See e.g. Bollen, J. (2018) Who would you share your funding with? *Nature* 560, 143 (2018) https://doi.org/10.1038/d41586-018-05887-3

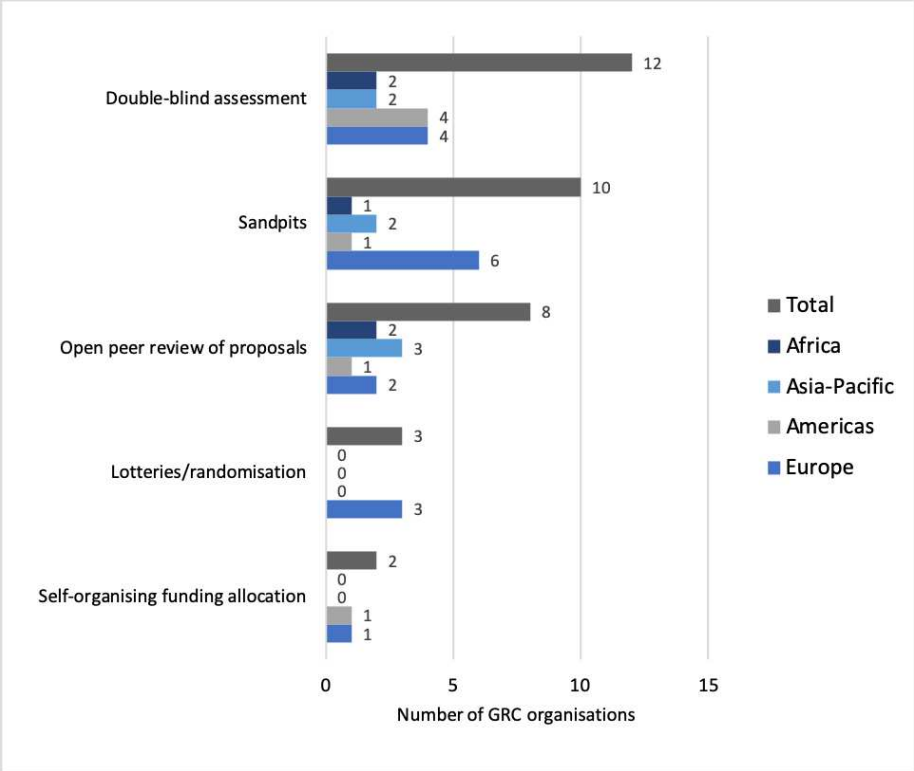


Figure 7: Number of respondents that experimented with new assessment and funding allocation methods

Internal evaluation of selection processes of research proposals

Internal evaluations testing the robustness of the research assessments, to determine whether the selection processes used by research funding organisations do indeed identify the best proposals in a fair and transparent manner, have been conducted at least once by 84% of the surveyed GRC participant organisations. Outcomes of these internal evaluations are not only communicated internally, but also to the government (66%) and society in general (41%).

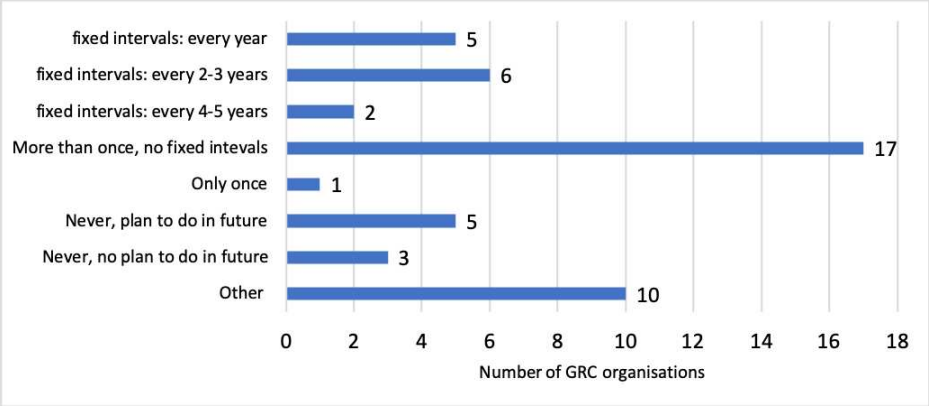


Table 3: Frequency of internal evaluations to test the robustness of research assessments

2.4 Discussion of findings

Across survey responses, we see a clear shift away from reliance on metrics towards more qualitative or mixed-methods modes of assessment. Alternative CV formats are now being piloted or implemented by almost 60% of respondents from all regions, except for Asia-Pacific. To make research assessment more objective and fair, half of the respondents from all regions have introduced new assessment processes and systems. Experiments with radically different funding allocation methods remain rare, and when they are used, this is mainly by European funders.

The survey highlights three areas for further exploration:

- Not all GRC participant organisations that responded to the survey endorsed the GRC statement on peer/merit review. A follow up study, exploring in greater depth (e.g. through interviews) the reasons and motivations for funding agencies endorsing this and other frameworks would be of considerable value.

- Equality, diversity and inclusion (EDI) are important elements of the GRC agenda on RRA. Results show that 39% of respondents currently include activities to promote EDI in the evaluation of applicants and their proposals. Further analysis of the experiences of these respondents, and the drivers,barriers and good practices they have encountered, could inform and guide others (30%, according to the survey) considering such a step in future.

- Finally, it would be valuable to look in greater depth at how internal evaluations of assessment procedures and systems are used by GRC participant organisations. A follow-up question, which would better be explored through interviews, is the extent to which the outcomes of such evaluations drive any changes in responsible research assessment, and if so, which changes.

3. Progress, obstacles and the way ahead

"Truly, evaluators can help do good things. They can increase the sensitivity of practitioners and decision makers to the effects and side effects in society of what they do…They can connect what is otherwise disconnected in hypocritical organizations (such as goals and activities, promises, and deeds)." Peter Dahler-Larsen[70]

In the midst of system change, it can be hard to recognise how fast progress is being achieved through multiple incremental improvements.

3.1 Reasons for optimism

The ever-growing slew of initiatives listed in section 1.2 is indicative of lively and progressive engagement with RRA which, as the GRC survey shows, is already impacting funder practices, initially in Europe and North America, and now across the world. Although many of these developments are still at an early—and sometimes experimental—stage, the momentum for reform of research assessment and evaluation continues to build.

At the same time there is a growing awareness of the overlaps and intersections between RRA and other dimensions of research culture where significant challenges remain. The initial focus of RRA debates on metrics and measurement has expanded to encompass questions of how to create a healthy work culture for researchers, how to promote research integrity, how to move from closed to open scholarship, and how to embed the principles of equality, diversity and inclusion across the research community. We see this more holistic approach emerging, for

[70] Dahler-Larsen, P. (2012). *The Evaluation Society.* Stanford University Press.

example in UKRI's mission statement and commitment to a healthy research culture[71] and in the Deutsche Forschungsgemeinschaft's (DFG) recent guidelines for good scientific practice.[72]

Such statements are obviously aspirational. Whether they have their intended impact will depend on how much the ideals they express are used meaningfully to inform processes and practices of research evaluation. But there is good cause to be upbeat about the prospects for change. For one thing, these strategic and policy changes are taking place as part of a wider debate about who and what research is for, and how it should be conducted, that is increasingly animating and involving researchers themselves, from diverse disciplines and settings.

The energy and passion now found in these debates is reflected, for example, in exchanges between Dan Sarewitz and his respondents in *The New Atlantis*[73]; or in tussles that have erupted over whether Plan S, a funder-led drive towards open access models of academic publishing, can overcome the fears of many researchers that this will restrict their use of publishing venues seen as traditional markers of success.[74]

These debates have been given a new impetus by the ongoing Covid-19 pandemic, which has obliged researchers to consider more urgently how we should evaluate research progress. For example, a recent commentary from a group of epidemiologists who are modelling the spread of infection states the problem baldly in its title: *"The COVID-19 response illustrates that traditional academic reward structures and metrics do not reflect crucial contributions to modern science."*[75] The authors lament the fact that activities such as data sharing, documenting and depositing code, and work to disseminate findings to the broadest possible audiences—more vital than ever during a global public health crisis—are overlooked by traditional academic metrics.

The rapid rise in the use of preprints to report research on Covid-19, though it raises some questions about quality control, is further testament of a shift in perceptions about what is important. Our normal methods of scholarly communication, which are regularly retarded by the chase for journal prestige, have been revealed to work *against* the public interest in finding treatments and vaccines to combat Covid-19. The appetite for change is growing.

3.2 The catalytic role of principles and frameworks

The various frameworks for promoting change in research assessment that have arisen in recent years have done so sporadically and in a fragmentary fashion. This is to be expected of an

[71] https://www.ukri.org/about-us/what-we-do/#contents-list;
https://www.ukri.org/our-work/supporting-healthy-research-and-innovation-culture/
[72] https://www.dfg.de/en/research_funding/principles_dfg_funding/good_scientific_practice/index.html
[73] https://www.thenewatlantis.com/publications/saving-science;
https://www.thenewatlantis.com/publications/must-science-be-useful
[74] See https://www.coalition-s.org/rationale-for-the-revisions/
[75] Kucharski AJ, Funk S, Eggo RM (2020) The COVID-19 response illustrates that traditional academic reward structures and metrics do not reflect crucial contributions to modern science. *PLoS Biol* 18(10): e3000913.
https://doi.org/10.1371/journal.pbio.3000913

international community that is itself diverse and divided by nationality and academic discipline, without formal leadership structures.

The rich menu of initiatives outlined in section 1.2 has inspired many innovations that are worth pursuing. As discussed above, a more holistic view of common concerns is beginning to coalesce, albeit with different perspectives on some of the suggested remedies. There has been a tendency for voices from Europe and North America (where most of these initiatives emerged), to dominate the policy discussion, but these conversations must now become more global.

The time is right to weave together some of these strands into a more cohesive shared vision of what RRA should look like. Most importantly, we should figure out how to put principles into practice.

Declarations and statements are critical. Ideals are an essential prerequisite to action. But, as discussed in section 1.3, declarations also risk becoming substitutes for action unless institutional or organisational commitment is followed by the hard graft of reforming cultures, practices and processes. We now have ample declarations and statements on RRA. The focus needs to move to **action and implementation—**testing, identifying and sharing what works in building a healthy and productive research culture.

Various experiments in reforming research assessment have been attempted, or are underway, but most of these have been initiated in the last two or three years. None of them have yet been fully evaluated.[76] It seems likely that not all will succeed. Initiatives that work well in one part of the world or in one discipline, may not work in others; some ideas may even have unintended negative effects. We must be prepared to learn the lessons and launch new experiments. While progress is unlikely to be smooth, it will occur more quickly with a commitment to international coordination and exchange.

3.3 Barriers and blockages

Funders and researchers have responded rapidly to the urgent demands of the Covid-19 pandemic, by fast-tracking decision-making on funding and short-circuiting normal modes of academic publishing, where the duty to share results in a timely fashion is compromised by an incentive structure that is focused on journal metrics and prestige. The research community at large has shown the world that, when the need arises, it can more than rise to the challenge.[77]

[76] See, for example, https://www.nature.com/articles/d41586-020-02905-1 and discussion within https://elifesciences.org/articles/58654#s4. Also the UK's *Real-Time REF Review,* which is ongoing: https://re.ukri.org/sector-guidance/publications/real-time-ref-review/

[77] See e.g. Rijs C and Fenter F (2020) The Academic Response to COVID-19. Front. Public Health 8:621563. doi: 10.3389/fpubh.2020.621563

The question for the post-pandemic environment is why long-standing challenges, such as climate change, antibiotic resistance, and food security, have not stimulated the same urgency in moves to fix research cultures and practices. Now that Covid-19 has given unprecedented profile and visibility to the inner workings of various aspects of the science and research system, it is unclear whether policymakers, funders, wider publics and researchers themselves will tolerate a return to the old ways of working when the crisis subsides.

The immediate aftermath of the pandemic will be a crucial period for these debates. We must not lose the opportunity to embed and lock in many of the innovations that we have seen over the course of 2020

Ultimately, the purpose of RRA is to improve research, in cultures, in practices and in products. A key aim should therefore be to influence researcher behaviour, even if this takes us into complex and contentious territory. What drives the behaviour of researchers? Many are driven by curiosity and wonder, but also by a desire to bring evidence and scholarship to bear on the challenges facing our societies. These noble goals are what draw many people into a research career.

Typically, such goals are then modulated by extrinsic motivators rooted in the need for career advancement. This involves seeking jobs and promotions, which have come to depend primarily on sustained success in the interlinked and highly metricised activities of academic publishing and obtaining grant funds. These narrow indicators in turn feed into university league tables, which have grown over the past fifteen years to become unaccountable arbiters of what a research university should look like, loading further pressures onto researchers and institutions[78] As a result, careers in research have too often become unhealthily competitive[79].

Worse still, the markers of success and the incentives that shape behaviour have become decoupled from measures of quality that have meaning in the world beyond the academy, as discussed by many authors and by the initiatives listed in 1.2. On a global scale, Ismael Rafols and colleagues have drawn attention to the problematic nature of an excessive focus of bibliometrics, which have a centre of gravity in the natural sciences in developed countries[80]. This pulls heavily on the attention of policy makers around the world but diminishes the value placed on regional interests, disciplines and languages that are not represented in the dominant databases (Scopus and Web of Science (WoS)), and is a barrier to the participation of marginalised communities. For example, Columbian journals are less likely to be included in the WoS than Spanish journals of

[78] Hazelkorn, E. (2007). The impact of league tables and ranking systems on higher education decision making. Higher Education Management and Policy, 19(2).
[79] https://wellcome.org/news/why-we-need-reimagine-how-we-do-research
[80] https://blogs.lse.ac.uk/impactofsocialsciences/2016/03/01/a-call-for-inclusive-indicators-we-need-better-metrics-to-explore-research-activities-in-peripheral-topics-and-developing-countries/

equal scientific standing; rice research—not a major preoccupation in Europe or North America—is much less well represented in Scopus or WoS than in the CAB Abstract database, which specialises in agricultural research.[81]

A growing recognition of the problems with extrinsic motivators has been an important stimulus for initiatives advocating for RRA. But has it done much to shape the approach of governments to research evaluation?

Governments—and their funding agencies—are significant players in shaping incentives for the researchers and institutions that they fund. Quite properly they are concerned that investments in research and innovation should meet the needs of their people, though history teaches us that it is difficult—and often not even desirable— for them to direct too much research toward specific goals or policy aims. In practice, a mixed portfolio of curiosity-driven and applied research appears to be a sensible and balanced approach.[82] For some problems, the roads to the necessary solution are well marked; for example, although Covid-19 is a novel virus, efforts to tackle the pandemic build on a vast body of pre-existing knowledge about SARS coronaviruses, immunology and vaccine technology. For other problems, such as the complex impacts and interdependencies of climate change, the way ahead is murkier. It seems likely that vital discoveries and insights will emerge from work whose impacts cannot be predicted in advance, so a commitment to discovery-led research remains vital.

This balanced approach to research funding is reflected in evaluation efforts which add criteria and measures of real world impact to traditional indicators of academic productivity and quality. But these have so far largely failed to tackle the systemic issues discussed above, which will require us to *"transform the concept of excellence from an elitist view, defined at a distance from society, to a more community-oriented, inclusive view which encourages engagement."*[83] The question now is whether governments and funders are prepared to be more radical in embracing such systemic change.

This will require a more open discourse about cultures and values, that includes both the producers and consumers of research outputs. It will involve more explicit recognition of a wider range of outputs and activities in research evaluation (e.g. data-sharing, rigour, mentorship, open scholarship practices, real-world impact, public engagement, commitment to inclusion). Opening up the range of contributions that are recognised as valuable will also be an important step towards detoxifying the hyper-competitive culture which, by fixating on stunted measures and

[81] Ciarli, T. and Rafols, I. (2018) The relation between research priorities and societal demands: The case of rice. Research Policy 48(4). DOI: 10.1016/j.respol.2018.10.027
[82] Jones, RAL and Wilsdon, J (2018) The Biomedical Bubble: Why UK research and innovation needs a greater diversity of priorities, politics, places and people. Nesta. https://www.nesta.org.uk/report/biomedical-bubble/
[83] https://blogs.lse.ac.uk/latamcaribbean/2017/11/28/journal-based-research-assessments-marginalise-regions-like-latin-america-and-the-issues-most-relevant-to-them/

proxies for success, is eroding the sustainability of research systems, degrading researcher mental health and wellbeing, and maintaining barriers that exclude women and other under-represented groups[84].

Part of this change can and must be led by funders—as they are the one stakeholder not ensnared in the metrics and rankings that have trapped researchers, universities and journals[85]. But to succeed, it is vital that all other stakeholders are involved. This is the approach adopted in the Netherlands, where a collective of funders, universities, medical centers, and academies has undertaken a nation-wide overhaul of its recognition and reward system to revitalise the health, productivity and societal relevance of its research base[86]. As far as we are aware, no other nation or national funder has embarked on such a wide-ranging programme of reform, though questions of research purpose and culture have recently risen to the fore in the strategy documents of other funders, including the Swiss National Science Foundation, Germany's DFG, China's National Natural Science Foundation (NSFC), UK Research and Innovation, and the Wellcome Trust.

We should not underestimate the difficulties of these undertakings; nor should we be daunted. We can perhaps take encouragement from the rise of open access over the past two decades. Twenty years ago, the idea of making research available free on the internet was commonly viewed as the hopeless idealism of a radical vanguard; today open research practices are well on the way to becoming the new normal.

The road ahead is undoubtedly strewn with obstacles, which again reinforces the need for firm and concrete steps. We recommend that the GRC not set itself the task of producing another declaration. There are plenty of these to draw from, and the value of such statements degrades over time, as they become frozen in history. Rather, what is needed is an open, global forum where common values and important differences can be debated and articulated, and where good practices emerging from experimentation and evaluation can be shared. This will enable the concept of RRA to evolve and improve. Given its global reach, the GRC is well placed to play a role in convening and facilitating such a forum, ensuring that voices from across the research world are involved.

[84] For example, see: https://journals.sagepub.com/doi/abs/10.1177/1350508411414293; https://www.nature.com/articles/palcomms2016105

[85] https://op.europa.eu/en/publication-detail/-/publication/464477b3-2559-11e9-8d04-01aa75ed71a1

[86] https://www.vsnu.nl/files/documenten/Domeinen/Onderzoek/Position%20paper%20Room%20for%20everyone's%20talent.pdf

3.4 Questions for funders to consider

The GRC virtual conference on RRA will explore the specific roles which funders play in research assessment – setting the criteria, establishing the review processes, and directly and indirectly influencing behaviours of funded organisations and individuals. Understanding the funders' role in the ecosystem at a global level poses an opportunity for funders to play a key role in developing a supportive and inclusive research culture. The GRC conference on RRA will explore the actions needed to make these changes on a global scale.

Questions for funders and other participants to consider include:

- How can we align policies and practices - and what role can funders play in influencing others?
- Can we identify and establish clearer standards, for example of elements in a healthy research culture?
- How can we strengthen experimentation and evaluation e.g. with funding and review methods?
- What are emerging models and good practices in responsible, open and real-time assessment processes?
- How can funders help to share and build capacity for RRA, particularly with partners in the global South?
- Is there more that can be done to strengthen RRA infrastructure (organisations, standards etc)?

3.5 The future role of the Global Research Council

It is hoped that the virtual conference being hosted in November 2020 under the auspices of the GRC will be the catalyst for a broader discussion which will assist the GRC in developing its position on RRA, ideally for agreement at the GRC's 9th Annual Meeting in May 2021. One potential mechanism available to the GRC would be the development of a statement – ideally a call to action – on RRA to be endorsed by GRC participants as part of the 9th Annual Meeting.

As we have discussed, there are already many statements and sets of principles for RRA. The GRC does not need to invent its own, but it does have unique convening power in bringing funders together on a global scale to discuss their role in implementing and embedding RRA in their own practices, and in the practices of those that they fund and support. A GRC call to action on this topic would provide a basis on which participants could agree and build. It would also build on previous GRC work, including on peer/merit review, and could inform subsequent activities, such as the development of action plans, or establishment of a working group.

Top ten websites and resources

There are no shortage of helpful resources available on different aspects of RRA, many of which are referenced in this paper. If you are new to this agenda, or keen to learn more, below are our 'top ten' suggested websites and open access materials to get you started!

- **DORA:** https://sfdora.org/ —including resources *Rethinking Research Assessment: Ideas for Action* & *Rethinking Research Assessment: Unintended Cognitive and System Biases*)
- **Leiden Manifesto:** http://www.leidenmanifesto.org/
- **Science Europe work on research assessment:** https://www.scienceeurope.org/our-priorities/research-assessment/
- **European Commission Open Science Policy Platform:** https://ec.europa.eu/research/openscience/index.cfm?pg=open-science-policy-platform
- including reports on **Indicators** and **Next Generation Metrics** https://ec.europa.eu/research/openscience/index.cfm?pg=altmetrics_eg
- **Global Research Council:** https://www.globalresearchcouncil.org/
- **Science Granting Councils Initiative:** https://sgciafrica.org/en-za
- **The Metric Tide** https://re.ukri.org/sector-guidance/publications/metric-tide/ and **UK Forum for Responsible Research Metrics** https://www.universitiesuk.ac.uk/policy-and-analysis/research-policy/open-science/Pages/forum-for-responsible-research-metrics.aspx
- **Latin American Forum for Research Assessment (FOLEC):** https://www.clacso.org/en/folec/
- **IDRC Research Quality Pius (RQ+):** https://www.idrc.ca/en/research-in-action/research-quality-plus
- **Wellcome's Reimagine Research campaign:** https://wellcome.org/what-we-do/our-work/research-culture

Appendix: Full text of the GRC Responsible Research Assessment Survey[87]

Question 1: In which Global Research Council (GRC) region is your organisation located?

- o Sub-Saharan Africa
- o Asia-pacific
- o Americas
- o Europe
- o Middle East/North Africa

Question 2: What is the name of your organisation?

_____

_____

Question 3: Does your organisation have a definition of responsible research assessment?

- o Yes. Please elaborate
- o No
- o Do not know

Question 4: Does your organisation endorse existing frameworks related to responsible research assessment? *Please select all that apply (multiple answers possible)*

- o San Francisco Declaration on Research Assessment (DORA; https://sfdora.org)
- o Leiden Manifesto for research metrics (http://www.leidenmanifesto.org)
- o Hong Kong principles (https://www.wcrif.org/guidance/hong-kong-principles)
- o GRC statement of principles on peer/merit review (https://www.globalresearchcouncil.org/fileadmin/documents/GRC_Publications/Statement_of_Principles_on_Peer-Merit_Review_2018.pdf)
- o Science Europe recommendations on Research Assessment Processes (https://www.scienceeurope.org/our-priorities/research-assessment/)

[87] Circulated to GRC participant organisations from September-October 2020

- o Framework developed by our own organisation
- o Other framework or initiative. Please specify_____

Question 5a: What system(s) does your organisation currently implement for the assessment of research proposals? *Please select all that apply (multiple answers possible)*

- o Double-blind peer reviews conducted by external experts (i.e. the external reviewers do not know the identity of authors of the proposal, and vice versa)
- o Double-blind reviews conducted internally by your organisation (i.e. the internal reviewers do not know the identity of the authors of the proposal, and vice versa)
- o Single-blind peer reviews conducted by external experts (i.e. the external reviewers know the identity of the authors of the proposal, but the authors do not know who the reviewers are)
- o Single-blind reviews conducted internally by your organisation (i.e. the internal reviewers know the identity of the authors of the proposal, but the authors do not know who the reviewers are)
- o Open reviews conducted by external experts (i.e. the identity of the reviewers and panel members/composition is known by all applicants)
- o Open reviews conducted internally by staff of your organisation (i.e. the identity of the staff members of your organisation who review the applications is known by all applicants)
- o Panel reviews of external experts (i.e. external experts discuss and review the individual evaluations to fix a ranked list (or Yes/No ranking) of proposals to be funded or rejected)
- o Panel reviews of internal experts (i.e. staff members of your organisation discuss and review the individual evaluations to fix a ranked list (or Yes/No ranking) of proposals to be funded or rejected)
- o Ranking selection according to a set of quantitative criteria
- o Other, please specify

Question 5b*: Has the GRC statement of principles on peer/merit review[88] informed your approach on the assessment of research proposals?

- o Definitely yes
- o Probably yes
- o Might or might not
- o Probably not
- o Definitely not

[88] https://www.globalresearchcouncil.org/fileadmin/documents/GRC_Publications/Statement_of_Principles_on_Peer-Merit_Review_2018.pdf

Question 5c: Please elaborate on what ways the GRC statement of principles on peer/merit review informed your approach on the assessment of research proposals

[free text] _____

_____

Question 6: Which of the following statements about the assessment of proposals apply to your organisation? *Please select all that apply (multiple answers possible)*

- o All units/departments in your organisation follow the same processes to assess research proposals under the same schemes
- o Your organisation adapts its research assessment systems for different research fields, or where different research outputs are intended
- o Your organisation offers training to individuals involved in the assessment of research proposals
- o Your organisation provides written guidelines to individuals (e.g. external reviewers, panellists, etc.) involved in the assessment of research proposals
- o Reviewers/panel members are explicitly informed of tools and criteria that should not be used in the assessment
- o Reviewers/panel members are asked to fill a standardised form designed to address the formal requirements of the assessment

Question 7: Could you give more detailed information and examples about the ways in which research assessment is adapted?

[free text] _____

_____

Question 8: What do training/guidelines for the chosen research assessment cover? *Please select all that apply (multiple answers possible)*

- o Definition, identification and processing of conflicts of interest
- o Roles of reviewers/panel members
- o Tools, metrics and criteria used in research assessment
- o Consideration of written reviews by external reviewers/panel members
- o Proceeding of the panel meetings
- o Importance of ensuring impartiality with respect to gender, ethnicity and seniority
- o Other, please specify

Question 9: Which of the following aspects of an applicant's track record does your organisation assess when evaluating research proposals? *Please tell us for each option whether your organisation considers it now, has done in the past or plans to do so in future.*

Please also tell us how important each aspect is in your overall assessment of track record, but only for aspects that you are currently using or have used in the past, please leave blank otherwise.

	Currently using	Used in past	Never used but considering using in the future	Never used and not consideri ng using in the future	Very impor-tant	Modera -tely important	Less importan t
Publication outputs of the applicant/s	o	o	o	o	o	o	o
Non-publication outputs of the applicant/s (e.g. datasets, software)	o	o	o	o	o	o	o
Previous funded research projects of the applicant/s	o	o	o	o	o	o	o
Awards of the applicant/s	o	o	o	o	o	o	o
Open access publications of the applicant/s	o	o	o	o	o	o	o
Open research data of the applicant/s	o	o	o	o	o	o	o
Teaching activities of the applicant/s	o	o	o	o	o	o	o
Mentoring activities of the applicant/s	o	o	o	o	o	o	o
Mentoring by the applicant/s	o	o	o	o	o	o	o

Internal responsibilities within the applicant/s research organization (e.g. head of department)	o	o	o	o	o	o	o
Data curation conducted by the applicant/s	o	o	o	o	o	o	o
Applicants' participation in international research projects	o	o	o	o	o	o	o
Applicants' knowledge transfer/commercialization (i.e. patents, clinical trials, spin-offs)	o	o	o	o	o	o	o
Applicants' participation in conferences	o	o	o	o	o	o	o
Applicants' services for the research community (i.e. organization of conferences, peer review services, editorship of journals)	o	o	o	o	o	o	o
Applicants' services for the research community (i.e. organization of conferences, peer review services, editorship of journals)	o	o	o	o	o	o	o
Public engagement activities of the applicant/s	o	o	o	o	o	o	o
International character of the team of applicants	o	o	o	o	o	o	o
Activities of the applicant/s to promote diversity and inclusions	o	o	o	o	o	o	o

Question 10: What type of published outputs from the applicant(s) are assessed when evaluating research proposals? *Please select all that apply (multiple answers possible)*

- o All scholarly publications
- o All peer-reviewed scholarly publications
- o Non-peer-reviewed publications
- o Most recent publications
- o Thematically related publications
- o Highly cited publications
- o Publications recommended by the applicant/s
- o Open access publications
- o Preprints
- o Do not know
- o Other. Please specify

Question 11: What non-publication research outputs and outcomes are assessed when evaluating research proposals? *Please select all that apply (multiple answers possible)*

- o Datasets
- o Software, codes and algorithms
- o Hardware
- o Audios, videos and images
- o Instructions and manuals
- o None
- o Do not know
- o Other. Please specify

Question 12: What author-level approaches/tools are used by the reviewers to measure research productivity in the assessment of research proposals? *Please tell us for each option whether your organisation uses it now, used it in the past or plans doing so in future. Please also tell us how important each approach/tool is in the overall assessment.*

	Currently using	Used in past	Never used but considering using in the future	Never used and not considering using it in the future	Very important	Moderately important	Less important
Cumulative number of citations	o	o	o	o	o	o	o
H-index	o	o	o	o	o	o	o
Number of highly cited publications	o	o	o	o	o	o	o
Number of publications in high-ranking journals	o	o	o	o	o	o	o
Alternative metrics (e.g. altmetrics)	o	o	o	o	o	o	o
Qualitative assessment of the content of authored publication/research output	o	o	o	o	o	o	o
Other. Please specify	o	o	o	o	o	o	o

Question 13: What journal-level approaches/tools are used by reviewers to measure research productivity in the assessment of research proposals at your organisation? *Please tell us for each option whether your organisation uses it now, used it in the past or plans doing so in future. Please also tell us how important each approach/tool is in the overall assessment.*

	Currently using	Used in past	Never used but considering using in the future	Never used and not considering using in the future	Very important	Moderately important	Less important
Journal reputation	o	o	o	o	o	o	o
H-5 index	o	o	o	o	o	o	o
H5-median	o	o	o	o	o	o	o
Journal impact factor	o	o	o	o	o	o	o
Source Normalised Impact per Paper (SNIP)	o	o	o	o	o	o	o
Eigenfactor	o	o	o	o	o	o	o
SCimage Journal Rank (SJR)	o	o	o	o	o	o	o
Citescore	o	o	o	o	o	o	o
Other. Please specify	o	o	o	o	o	o	o

Question 14: Please indicate whether your organisation considers making any of the following changes to the way research proposals are assessed

	This has been a long-standing practice of our organisation	Our organisation has made this change	Our organisation is planning to make this change	Our organisation has not made any this change and is not planning to do so in the future	Not applicable
Reducing the use of journal-based metrics	o	o	o	o	o
Eliminating the use of journal-based metrics	o	o	o	o	o
Broadening the range of non-publication research outputs that reviewer/panel members are required to assess, such as software, hardware, data, etc.	o	o	o	o	o
Broadening the range of quantitative tools that are used to assess research impact	o	o	o	o	o
Considering qualitative indicators of research impact, such as influence on policy and practice	o	o	o	o	o
Considering the research content of the scholarly publications of the applicants	o	o	o	o	o
Being explicit about the criteria used in the assessment of research proposals	o	o	o	o	o

Question 15a: Has your organisation experimented with a new CV format of applicants? *Please select all that apply (multiple answers possible).* An example of a narrative CV: https://www.nwo.nl/en/news-and-events/news/2019/12/nwo-introduces-narrative-cv-format-in-the-2020-vici-round.html

- o Yes, a pilot with a narrative CV
- o Yes, a narrative CV which is implemented at full scale
- o Yes, a pilot with another new CV format
- o Yes, another new CV format is implemented at full scale
- o Not yet, but considering a new CV format and/or narrative CV in near future
- o No

Question 15b: What was the rationale for trailing or implementing this new approach?

[free text]_____

_____

Question 15c: What is your experience with this new CV format?

[free text]_____

_____

Question 15d: To what extent does the new CV format increase:

	Much better	Somewhat better	About the same	Somewhat worse	Much worse
Efficiency of decision making	o	o	o	o	o
Inclusivity of decision making	o	o	o	o	o
Objectivity of decision making	o	o	o	o	o

Question 15e: Please elaborate on your answers to the previous question

[free text]_____

_____

Question 16: Has your organisation implemented or experimented with the following assessment or funding allocation methods? *Please respond for any funding program that your organisation offers, including pilot schemes.* Please select all that apply (multiple answers possible)

- o Sandpits *(funding allocation method where funding is allocated through an intensive, interactive event hosted by a funder, in which groups of researchers from different disciplines collaborate to develop research proposals)*
- o Lotteries/Randomisation *(system in which high quality applications are identified by peer review and funding decisions are made on the basis of a computer-generated lottery)*
- o Self-Organising Funding Allocation *(funding mechanism in which every research proposal starts with the same allocation of funding every year but must allocate a portion to other proposals)*
- o Double-blind assessment of proposals *(the reviewers do not know the identity of authors of the proposal, and vice versa)*
- o Single-blind assessment of proposals *(the reviewers know the identity of the authors of the proposal, but the authors do not know who the reviewers are)*
- o Open peer review of proposals *(identities of both the author and the reviewers are known and/or review reports are online openly available)*
- o Other. Please specify
- o We have not experimented or implemented alternative assessment methods

Question 17: What was your experience with the alternative methods in conducting research assessment and funding allocation?

[free text]_____

_____

Question 18: What elements does your organisation require reviewers / panel members to consider when assessing research proposals? *Please tell us for each option whether your organisation requires it now, required it in the past or plans doing so in future. Please also tell us how important each aspect is in the overall assessment.*

	Currently required	Required in past	Never required but consider-ing using in the future	Never required and not consider-lng using in the future	Very important	Moderately important	Less important
Soundness of the proposed methodology	o	o	o	o	o	o	o
Feasibility of the proposed research	o	o	o	o	o	o	o
Resource allocation in line with objectives	o	o	o	o	o	o	o
Feasibility of the proposed research in relation to the expertise and the prior experience of the applicant(s)	o	o	o	o	o	o	o
Complementarity and balance of expertise of the researchers involved in the proposal	o	o	o	o	o	o	o
Dissemination plan of proposed research	o	o	o	o	o	o	o
Novelty of the research question	o	o	o	o	o	o	o
Potential economic and societal impact of the research results	o	o	o	o	o	o	o
Potential transfer/commercializat ion of knowledge	o	o	o	o	o	o	o

(patents, clinical trials, spin-offs)							
Potential contribution of the proposed research to public policies	o	o	o	o	o	o	o
Potential contribution of the proposed research to Sustainable Development Goals (SDG), grant challenges, or other mission-based initiatives	o	o	o	o	o	o	o
Ethical considerations (e.g. the proposed research should be ethically acceptable)	o	o	o	o	o	o	o
Gender dimension in proposed research	o	o	o	o	o	o	o
Gender dimension in research team of applicant(s)	o	o	o	o	o	o	o
Equality dimension in research team of applicants(s). If yes, please specify dimension(s) considered	o	o	o	o	o	o	o
Other. Please specify	o	o	o	o	o	o	o

Question 19: To what extent does your organisation actively encourage and promote the following among applicants and funded researchers during 2019-2020? And looking back over the last 2 years how would you say that in 2020 your organisation promotes these areas?

	Very much	Somewhat	Not at all	More actively	About the same	Less actively
Ethics and integrity	o	o	o	o	o	o
Public engagement and participation of societal actors	o	o	o	o	o	o
Open access and open science	o	o	o	o	o	o
Equality, diversity and inclusion	o	o	o	o	o	o
Interdisciplinarity	o	o	o	o	o	o
Discourage short term (<2 years) contracts for early career researchers	o	o	o	o	o	o

Question 20: For each area you have ticked in the previous question, please briefly describe how your organisation incentivises or mandates responsible behaviour of applicants and funded researchers.

[free text]_____

_____

Question 21: Has your organisation implemented any of the following adjustments to their processes to select research proposals in order to tackle any potential bias or observed discrimination? If yes, which considerations are included? *Please select all that apply (multiple answers possible).*

	Considerations							
	Sex	Disability	Age	Race	Religion	Discipline	Seniority	Affiliation
Introduction of quotas to balance the selection of applicants with a certain profile	o	o	o	o	o	o	o	o
Introduction of policy to give priority to the selection of proposals from applicants with underrepresented profiles when the quality of their proposal and research outputs is as high as that of the other proposals	o	o	o	o	o	o	o	o
Introduction of quotas to balance the selection of applicants with a certain profile	o	o	o	o	o	o	o	o
Introduction of quotas to balance the selection of applicants with a certain profile	o	o	o	o	o	o	o	o
Introduction of double-blind reviews (the reviewers do not know the identity of the applicants, and vice versa)	o	o	o	o	o	o	o	o
Selection of groups of reviewers with diverse profile	o	o	o	o	o	o	o	o
Other adjustment(s). Please specify	o	o	o	o	o	o	o	o

The final two questions of this survey are to understand how research funding organisations ensure that their selection processes indeed identify the best proposals in a fair and transparent matter. Robustness is understood as the capacity of selection processes to, in line with the objective of the evaluation, reliability and fairly assess the quality of proposals and to select them for funding.

Question 22: How often does your organisation perform evaluations of its selection processes of research proposals with the view to testing their robustness?

- o At fixed intervals: every year
- o At fixed intervals: every 2-3 years
- o At fixed intervals: every 4-5 years
- o At fixed intervals: more than 5 years
- o Has done this more than once, but not at fixed intervals
- o Has done this once only, and there is no rule to do so at fixed intervals
- o Has never done this, but plan to do so in the future
- o Has never done this, and does not plan to do so in the future
- o Other. Please specify

Question 23: Who are the intended audiences of these evaluations? *(multiple answers possible)*

- o Internal
- o Government
- o Society
- o Other
- o N/A

Thanks for your response