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## ERA EI Public Consultation

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## Introduction

To the ERA EI Advisory Committee,

Thank you for the opportunity to provide feedback on the Excellence in Research Australian (ERA) and Engagement and Impact (EI) metrics.

Science & Technology Australia (STA) supports the continuation of the ERA and EI metrics. These systems assist to highlight to Australians both the quality and impact of Australia's research.

After 10 years of ERA and EI metrics, it is timely to assess whether these measures are effective and remain fit for purpose. STA has several suggestions to reduce the regulatory burden of these programs, improve transparency and strengthen the overall utility for the sector of these measures.

These suggestions include:

- Combining the ERA and EI metrics;
- Extending reporting times to 5 years;
- Adjusting how ERA is measured; and
- Using the Impact and Engagement case studies to highlight the success of Australia's research.

## Combining the ERA and EI metrics

The ERA sets out to measure research quality, while the EI measures research impact and engagement. This has essentially created two different measures on research - and a false divide between the quality of research and its impact or benefit to our community.

### What the ERA and EI have in common

Apart from the increased regulatory burden of running two research assessment exercises, the ERA and EI have some aspects in common. This helps to make the case to combine the measures. Both highlight the importance of Australia's research sector in different ways.

While one allows for a greater focus on the publishing of research (particularly in STEM fields), the other showcases how that research is making an impact in our society and economy. Between them, the measures highlight the importance of the entire research lifecycle and the effectiveness of Australia's research across the board.

### Where do the ERA and EI differ?

The ERA seeks to measure quality; the EI, impact. This distinction, as outlined above, is arbitrary, as one cannot truly be measured without the other. This difference would instead make them more effective as a joint endeavour. Combining them into a single process would create a holistic view of the impact Australia's research has both inside the research sector and in the world.

The ERA tends to be held in a higher level of esteem by researchers. This is in part because the ERA has been in place for longer - but also because EI is seen to be less about research quality than it is in practice. Some institutions will be producing work that is of transformative importance to their local community and economy, but this may not be reflected with a 5 in ERA because of the small size of their research faculty and more limited opportunities to publish that research.

The method used to calculate the ERA differs depending on the field of research. For example, pure mathematics is almost entirely calculated based on citations while applied mathematics is measured on outputs that are more closely aligned with impact and engagement measures. The EI measure, while covering the entire research life-cycle, does favour applied research. In mathematics, for example, the majority of impact assessments were under the Expanding Knowledge Socio-Economic Code. By keeping the EI and ERA measures separate, an unnecessary false divide is created in how we measure pure research and applied research.

### STA's Recommendation

Both the ERA and the EI are time consuming and costly processes.<sup>1</sup> This is true for researchers, universities, and the ARC. Rather than attempting to gather information for both metrics separately, both should become part of a single process to reduce this burden.

Universities (and potentially the Government) use the ERA and EI to assess the capacity and effectiveness of Australian research. STA considers the entire research lifecycle to be important - and it is our view that the ERA and EI should be combined to reflect this outlook. Such a shift would enable the quality of research to be intrinsically linked to the research's engagement with and impact on the broader community.

## Extending reporting to every 5 years

The work required to participate in the ERA and EI data gathering exercises is extensive. It has a very large financial and time cost for researchers, universities, and the ARC. Some of this time and money would be better spent on undertaking more of the research it sets out to measure.

To reduce the size of this reporting burden, STA recommends that ERA and EI reporting take place every 5 years rather than every 3 years.

STA is aware that for institutions that are seeking to make rapid strides to scale up their research capability in a new field and see those investments and results reflected in their research rankings, some additional flexibility may be desirable.

Hence, while STA recommends the ERA reporting move to a 5-year timeline, the ARC could astutely also provide universities a voluntary opportunity to do an out-of-sequence submission at the 2.5-year mark. This would offer flexibility, but the optional nature of this opportunity would remove the reporting burden for most institutions and research fields.

## Auditing research outputs to compare with global outputs

### How we measure ERA

One of the most common concerns raised with STA in our consultation for this submission was the effectiveness of the way the ERA is measured. This prompts questions on whether we are seeing a genuine rise in research quality - or whether research institutions are becoming more adept at selecting what research is submitted to the ERA for assessment.

STA has previously heard concerns from the Australian Mathematical Society about how the ERA is measured, and whether the methodology results in more '5's than may be strictly accurate. This concern was also highlighted by Professor Marnie Hughes-Warrington, who has pointed out that measuring citations for some fields of research and peer-review for others, creates two distinctly different ERA's.<sup>2</sup>

For fields of research that are pure research (such as pure mathematics), it might be entirely valid to only consider citations as a measure of excellence. But this focus then also drives behaviour so that discoveries in pure mathematics that may warrant more than the publication of a journal article (for example the patenting of new machine learning algorithms) might not be identified by the ERA metric. Research is never undertaken in a silo and ERA measures should always consider this when calculating silo-ed metrics of quality.

### What is “world-standard”?

The ERA was designed not so much to compare research within Australia - but to compare our research on a global scale with how it compares to the “world-standard”. What is not clear, however, is precisely how the “world-standard” is being measured. This is a significant problem in the transparency of this process and greatly reduces the effectiveness of the ERA as a measure of research excellence.

If world-standard is being measured based on all the countries that produce any research, then it is not surprising that so much of our research is considered “above world-standard”. Measuring “world-standard” through the use of university rankings would also be problematic, as the different league tables regularly change their methodology and do not always measure research quality effectively.<sup>3</sup> As is common with many measures, it might be worth comparing performance to OECD standards.

STA suggests there is potential to use an auditing system to randomly check and ensure Australia’s research is truly above world standard. By randomly auditing a small proportion of research using a team of experts to read and truly rank its quality, a real indication could be gleaned into how Australian research quality is changing compared to the rest of the world. This would, in many ways, reflect how production quality is measured in industrial processes.

### Measuring research staff numbers

A final concern is how universities are counting staff in this process. Many researchers will have cross-appointments between institutions, which helps foster research collaboration, but it also raises the question of how to count their research in the ERA and EI process.

To improve the transparency and fairness of this process, the ARC should consider a closer examination of where staff are being counted. For example, it might become a requirement that staff only be counted for an institution when they spend more than 50% of their research time at that institution. We emphasise this should be >50% of a researcher’s working time fraction, so as not to disadvantage or discourage part-time employment.

## Improving the usefulness of the ERA and EI

STA considers both the ERA and the EI to be important measures of Australian research quality and impact.

While the EI measures are relatively new and we are yet to see the full benefits of this metric, there are areas in which STA believes the results of the EI could be better used. While the 2018-19 Engagement and Impact report provides the bare bones information required by this measure, there is no indication that this work is securing visibility and memorability beyond the research community.<sup>4</sup>

The Engagement and Impact metric could not only be used to measure how effective our institutions are at engaging industry and the public with research - but also to highlight how research achieves

major advances in the lives of Australians, our communities and economy. STA would like the EI measure to use the information provided by the research institutions to present a more public-friendly version of this report, including case studies. Alternatively, the ARC or research institutions should partner with Australian science communications experts to tell the stories of this engaging and impactful research. STA would be pleased to work with the ARC and Government to bring our expertise to this goal.

For both the EI and the ERA metrics, STA also suggests the ARC make the available data more accessible for researchers and policymakers. Providing interactive web-based reports is one way to provide data in a way that others can use to analyse the data more closely and highlight findings. Providing a PDF of the entire national report as well as data cubes with the available information would also be helpful. It would enable researchers and policymakers to better use this information for decision making and gain a deeper understanding of the trends in this data.

## References

1. Larkins, E. Research at Australian Universities Is Excellence Really Excellent. (2019).
2. Hughes-Warrington, M. Marnie Hughes-Warrington on why we don't need two ERAs. (2020).
3. McKenna, S. University rankings don't measure what matters. (2020).
4. Australian Research Council. *Engagement and Impact Assessment 2018-19 National Report*. (2018).