

Responsible assessment faces the acid test

The University of Liverpool is planning lay-offs using controversial measures. How should the movement for responsible research respond?

A leading UK university has become mired in a public dispute over how it is assessing researchers' performance. The evolving situation at the University of Liverpool is being watched closely by concerned academics around the world – and is raising questions about whether more needs to be done to ensure that universities assess their researchers equitably. At the end of last month, the leaders of some of the world's foremost responsible-research initiatives – the Hong Kong Principles, the INORMS Research Evaluation Group, the Leiden Manifesto and the Metric Tide – wrote a strongly worded letter arguing that the University of Liverpool's proposals remain “squarely out of line with accepted practice”.

Liverpool wants to cut 32 posts from its Faculty of Health and Life Sciences. To keep their jobs, academics above the grade of lecturer need to demonstrate research income comparable with the average in their discipline for the 24-member Russell Group of research-intensive universities, to which Liverpool belongs. Candidates must also show a “substantial contribution” to two out of four additional categories – “world-leading” publications, commercial or consulting income, teaching, and research impact.

Many scientists are angry. Liverpool's criteria for assessing its academics do not represent the reality of how research is done. They do not include contributions to peer review, PhD supervision, mentoring or collaborations. Instead, the university is putting weight on criteria that mirror those used in rankings and measurements of research performance – notably the UK's Research Excellence Framework (REF).

When ranked according to the most recent REF results, from 2014, Liverpool's position in some categories – for example, the clinical sciences – is below that of a number of other research-intensive universities, including the ‘Golden Triangle’ universities in Cambridge, Oxford and London.

If Liverpool chooses to replace what it sees as underperforming academics with those who have more substantial research profiles, it is likely to attain a higher REF score. That would come with more government research funding – but it would also come at a cost to careers. Moreover, there are aspects of the process that are clearly unfair. The university has said that deans, heads of departments and researchers who sit on external committees – for example, REF peer-review panels – will not be assessed for possible

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redundancy. In response to the threat of redundancies, researchers took industrial action during May, June and July.

One influential initiative is choosing to negotiate privately with the university. This is the organization behind the San Francisco Declaration on Research Assessment (DORA), an international voluntary agreement through which research organizations vow to conduct research assessment responsibly.

DORA's signatories pledge not to use metrics such as the Journal Impact Factor to evaluate researchers, and to be transparent in the criteria used to make decisions on matters such as hiring and promotion. Liverpool is one of some 2,200 organizations that have signed the declaration. DORA is in talks with the university, but choosing not to reveal further details. A statement on DORA's website says that it expects signatories to abide by their pledges, while also reiterating that it is not a regulatory body.

DORA's approach – to resolve disputes constructively but without publicity – has had some effect. Liverpool initially included the field-weighted citation metric on its criteria for redundancies, but dropped that after consultation with DORA. However, there are conflicting views of whether this puts Liverpool in the clear. The university told *Nature* its amended criteria are “in keeping with the principles of DORA”. In response, a DORA spokesperson said there are “ongoing concerns”. Such mixed messages show the limitations of quiet diplomacy. DORA and the university should at least agree on their public communications.

Evolving DORA

If a university insists on a system of assessing its academics that seems both unfair and unrepresentative of how research is done, it begs the question: does the research community need a body, or a mechanism, with the remit and resources to monitor the declaration and act more like a watchdog? Has the Liverpool episode tested the limits of the ‘critical friendship’ approach?

These are important questions because, if Liverpool does not further change its position as a result of the dialogue with DORA, others who have signed DORA might think that they can take similar action. DORA might be able to take the edge off unfair practices, but its leadership and management comprise a small team – just 1.2 full-time-equivalent staff and 29 volunteers. In its current form, it is no match for the resources that universities bring when challenged.

To monitor the more than 2,000 organizations signed up to DORA would require a very different institution, and that, in turn, would pose new challenges. The costs and logistics of setting up such a body could run into seven-figure sums. Such funds would require the involvement of governments or philanthropists, and would pose other risks – for example, to academic freedom.

A compliance-style organization isn't the only potential model, however. Another option is an approach that is used to recognize gender equality in universities. The Athena SWAN charter started in the United Kingdom and has since been adopted in several countries. Universities submit a self-assessment on their policies on inclusion and

equality in hiring, promoting and retaining female staff. The assessments are judged independently, and institutions are awarded one of three grades: bronze, silver or (very rarely) gold. The initiative is funded by the institutions themselves, which pay into a common pool – as they would a membership fee. Each award lasts for a limited time, recently increased from four years to five, which ensures that institutions cannot rest on their laurels if they have achieved recognition once. Athena SWAN is not without its problems, but its underpinning principles could help universities to practise responsible research assessment.

DORA's team is working tirelessly to persuade more institutions to sign the declaration, as well as trying to resolve the University of Liverpool situation. But in the wake of this episode, a rethink might be needed. And it must not be for a small team to do alone. Everyone who values responsible research – including *Nature's* publisher, Springer Nature, a signatory to DORA – has a stake in ensuring that its principles are implemented.

Sustainability is now a priority for vulnerable nations

A UNESCO study reveals how low- and middle-income countries are pivoting research towards the Sustainable Development Goals.

With the United Nations Sustainable Development Goals, world leaders pledged to end poverty and hunger, protect biodiversity and the climate, and get all children into schools by 2030. How have researchers and funders responded? Has there been a shift in research priorities?

The UN's Paris-based science and education agency has answers to these and other questions in the latest *UNESCO Science Report*, published last month (see go.nature.com/3zlojva). UNESCO says the 700-page report is a first attempt at understanding the impact of the Sustainable Development Goals (SDGs) on research priorities. The findings are a mixed picture.

Using the Scopus database, UNESCO mapped publications from almost 200 countries between 2011 and 2019 on 56 research topics relevant to the SDGs. For the most part, the high-income countries that account for 64% of the world's research spending – including Japan, South Korea, the United States and many European countries – showed relatively little change in the number of publications produced concerning the SDGs, and a declining share of global research.

But it's a different story for low- and middle-income

countries, which have begun to shift their research priorities towards the goals.

For example, the share of publications on photovoltaics – which could address the SDG on boosting renewable energy – from low-income and lower-middle-income countries more than trebled, going from 6.2% to 22% of the world total in the study period. The share of papers on biofuels and biomass nearly trebled, from 8.5% to 23%.

Low-income countries more than doubled their share of research publications on crops that are more resilient to climate change, from 5% of the total to 11%. And researchers from sub-Saharan Africa contributed 361 out of 885 publications on smallholder farming in 2019 – more than the European Union's 294. Ecuador, Ethiopia, Indonesia, Iraq, Russia and Vietnam all increased their output on most topics, albeit from low starting points in some cases.

Much of the growth is powered by China. According to UNESCO, China's researchers now publish around half of the world's output on battery efficiency, 43% on hydrogen energy and 41% on carbon pricing. Their research on carbon capture and storage increased from 1,300 publications between 2012 and 2015 to 2,049 in 2016–19. By contrast, high-income nations – including France, Germany and the United States – showed declining shares during the same period, and some showed declining numbers. One exception is research into floating marine plastics. The field, which barely existed a decade ago, recorded 853 publications in 2019, mostly from high-income nations. But, overall, wealthier nations reported falls in their share of publishing across 54 out of the 56 fields assessed.

It's disappointing to see so little progress from the richer countries. But it is something of a pattern. UNESCO's researchers calculated that, between 2000 and 2013, wealthy nations spent less than US\$25 billion on international development assistance in environmental areas such as climate change and biodiversity – about one-fifth of the \$130 billion given for assistance in industry and innovation.

At the same time, it's heartening to see scientific output being slowly revived in many low-income countries – some of which were engines of scholarship in times past. But UNESCO also finds that funding trends in these countries have become harder to track. Some 98 countries reported funding data in 2015, but this fell to 68 in 2018. Some 28% of high-income and 78% of low- and middle-income countries are not reporting their science-funding data – and that is both problematic and troubling. The ability to correlate funding data with publishing information would provide a richer picture of the gains, and identify areas that would benefit from more resources. Countries need to comply with UNESCO's requests for information, partly because they are obliged to track these data for the SDGs.

Even before the pandemic, the world was not on track to reach most of the Sustainable Development Goals. With less than a decade to go before the 2030 deadline to end poverty and protect the environment, the UNESCO report aptly says that the world is “running out of time”. The report needs to be read closely in every world capital. It's still not too late for everyone to pivot science to sustainability.



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