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Australian Academy of Science Submission to the Department of Education, Skills and Employment consultation on the National Priorities and Industry Linkage Fund

The Australian Academy of Science (the Academy) welcomes the opportunity to comment on the National Priorities and Industry Linkage Fund (NPILF) consultation draft. The Academy remains concerned about the decrease in total resourcing for STEM undergraduate subjects/units under the Job Ready Graduates Package. The NPILF, it has been argued, will fill the breach in providing structural incentives for universities to increase participation in STEM, but also offer a level of support for work-integrated learning (WIL) industry and research collaboration.

In the design of the NPILF, the Academy recommends that the following issues be considered:

- The inadequate level of support or incentives to encourage industry participation in WIL activities;
- WIL should include research integrated learning (RIL), on the basis that new jobs and industries are enabled by R&D;
- Priority industries for placements should be determined, with thought to the distinction between WIL placements and placements required for accreditation;
- The inclusion of schemes to encourage industry and academia collaboration.

Science will solve it, but not alone

There is broad agreement that scientific knowledge and skills are vital to Australia's future because they underpin so many current, emerging and future jobs. Recent analysis has shown that the demand for a job requiring STEM skills is growing significantly faster than other occupations.²

Given that NPILF will operate, at least between 2021 and 2024, as a block grant dependent upon the size of a university's student cohort, there appears to be poor financial leverage to incentivise institutions to meet these objectives. The Academy is concerned that this by itself will be insufficient incentive for universities to do more than retrofit existing activities to meet the reporting requirements of the Australian Government. There is an opportunity for DESE to revitalise individual mission-based compacts and funding agreements, so that they require more investment in STEM, in undergraduate education, Higher Degree by Research (HDR) courses and research.

A good education leads to good jobs

Higher education is a crucial driver of employment and income. The primary policy focus must remain on providing equal access to higher education and ensuring that the knowledge delivered is of the highest standard.

Australia should strive to produce science, technology, engineering and mathematics (STEM) graduates that are not only ready to fill jobs, but also understand how to create jobs. This requires good communication and social interaction skills, in addition to STEM training *per se*. Ensuring that the next generation of Australian researchers is adequately trained with expertise crucial to our national interest, and with access to the infrastructure needed to conduct research, will safeguard Australia's economic future.

Graduates need to be prepared not only for the jobs of the present but must also possess the flexibility of mind, resilience and ability to adapt their skills or learn new skills so that they are prepared for the jobs of the future. Increasing uptake in WIL programs has been cited as a core goal of the NPILF. If WIL programs

are to succeed in shaping graduates ready for the future workforce, cross-disciplinary and multi-disciplinary placements should be prioritised.

Capitalising on existing programs

It will be essential to ensure that the introduction of new metrics and reporting measures do not duplicate existing efforts. Potential overlap with the existing Excellence in Research for Australia and Engagement and Impact measures should be taken into account.

The program is suggested to provide financial incentives for university-industry linkages. However, there does not appear to be similar incentives for industry to take on student placements. The process of taking on students can be time-consuming and labour-intensive, particularly for small organisations. There will also need to be regulation of the businesses that offer placements to ensure they are delivering meaningful and relevant experiences for the students, rather than merely assigning students tasks that would otherwise be completed by paid employees.

Existing programs that facilitate WIL placements should be assigned a leading role in the implementation of this funding, such as the Australian Postgraduate Research Intern (APR.Intern). The APR.Intern program offers paid PhD internships in practical environments and a rebate to businesses that host the interns. Programs such as APR.Intern have built relationships with industry over the years and offer businesses access to students from universities across Australia. The implementation of the NPILF at the institution level mustn't duplicate the investment in APR.Intern, but rather build on this capacity to deliver HDR industry experience at scale.

Engagement between industry and academia

The skills within the research sector are readily transferrable to a range of industries and occupations beyond academia, including business, government, community, and not-for-profit sectors. Schemes that would encourage knowledge exchange in science and technology between industry and academia should be supported through NPILF.

An international example of best practice for this is the [Industry Fellowships](#) offered by the Royal Society as part of their [Science and Industry Programme](#). The Fellowships encourage industry to invest in collaborative projects with academia and support the mobility of research between the sectors.

Potential benefits of a program like this in Australia could include:

- allowing a timely development of new techniques by researchers and their up-scaling for industrial application.
- allowing industry personnel to work within academic institutions, thereby making their organisation internationally innovative and competitive.
- increased attraction of higher degree students to working on industry-relevant problems, thereby addressing the supply of skilled workforce issues
- allowing industry representatives to undertake research and to author publications that they might not be able to do in the industrial environment

The Academy is happy to assist with scoping and implementing an Industry Fellowships program in Australia, if required.

To discuss or clarify any aspect of this submission, or to arrange further consultations with the Academy and its Fellowship, please contact Dr Hayley Teasdale at hayley.teasdale@science.org.au or 0432 822 191.

References

1. Smith, A. & Anderson, J. AI, Robotics, and the Future of Jobs . Pew Res. Cent. (2014).
2. STEM jobs growing almost twice as fast as other jobs.
<https://www.employment.gov.au/newsroom/stem-jobs-growing-almost-twice-fast-other-jobs> (2020).