



UOW Submission in response to the Department of Education, Skills and Employment's University Research Commercialisation Scheme Consultation Paper

April 2021

1. MISSION-DRIVEN RESEARCH

“First and foremost, a mission has to be bold and inspirational while having wide societal relevance...It must ...directly improve people’s daily lives, and it should appeal to the imagination.”

– p121, Mission Economy, by Mariana Mazzucato (2021) ISBN 978-0-241-43531-1

For cultural sensitivity reasons, **we recommend using Purpose-Driven Research or Grand Challenge Research** rather than Mission-driven research.

We recommend that Purpose-Driven Research goals or Grand Challenges are chosen that deliver positive societal and environmental impact as well as economic impact.

Purpose-driven research is a powerful mechanism to inspire and drive co-ordinated, impactful research engagement, knowledge exchange, translation and commercialisation. The purpose-setting process must be consultative so that all stakeholders - researchers, industry, NGOs, NFPs, and communities including especially Indigenous communities – feel a common ownership. Horizon Europe recently selected their five key areas: cancer, climate, oceans, future cities, and soil and food security (see <https://doi.org/10.1038/d41586-021-00834-1>). Horizon Europe Commissioner for Innovation, Research, Culture, Education and Youth, Mariya Gabriel noted that: *“To be successful, they (the goals) have to have the buy-in of the research and innovation community and wider society”*.

The Australian National Purposes/Grand Challenges should be visionary, inspirational, and vital to our future prosperity and sustainability. The UN Sustainable Development Goals (SDGs) provide a fitting starting point for determining our National Grand Challenges. This approach would also support Australia’s commitment to the UN SDGs.

2. STAGE-GATED SCHEME

We support a Stage-gated Scheme and recommend aligning Stage-gates with TRLs.

A stage-gated model in addition to a long-term commitment from Government for a Purpose-driven Research Scheme would provide certainty and confidence for academia and industry alike. An independent multi-disciplinary panel could oversee progression between stages.

Industry already co-invests in current schemes - most often in the end stages of technology readiness levels (TRLs). SMEs, which predominate in the Australian industry landscape, are limited in their capacity to contribute cash into early-stage projects which have long timeframes before income/impact. A stage-gate approach de-risks development of innovative ideas because it allows risk-taking and lesson-learning early on. Industry is likely to invest more as their confidence grows – ie when the idea/technology moves through the stage-gates.

For Challenge targets, Stage-gate 1 could align with TRLs 1-5 (fundamental research to proof of concept and then to component validation in a relevant environment). Projects for Stage-gate 1 could be short-listed from EoIs against 4-5 key principles (eg alignment with Purpose/Challenge including consideration of the business triple bottom line of profit, people, planet; team skill set; team diversity; in-kind commitment of partners). Short-listed applications could be evaluated through a pitch/Q&A session using the NABC (Need, Approach, Benefit, Costs/Competition) approach of the Stanford Research Institute. Projects would be deemed fundable by an independent panel of industry, research, and community experts. If the panel finds that there are more fundable projects than funding available, a lottery could be trialled to select from the list of fundable projects (<https://www.nature.com/articles/d41586-019-03572-7>).

Stage-gate 2 could align with TRL6 (near-commercial prototypes and scale up) to ensure innovations meet the need of the community, public sector, social enterprises and industry. Stage 2 funding would require reporting against the outcomes from Stage 1, and include a comprehensive proposal/business plan and pitch/Q&A. The independent panel should include suitably qualified experts to provide an assessment of industry engagement and potential for application/commercial/impact outcome, as well as NGOs/community groups to ensure that outcomes are aligned with societal needs and values.

Stage-gate 3 (TRL7-8) funding should be dependent on partner co-investment.

Measures of success should value the approach, achievements, experience, lessons learned/shared as much as moving from one stage-gate to the next. For Stage 1 these measures of success could include the number of: researcher/industry partnerships, PhD or academic placements in industry, and industry placements in academia. Stage 2 measures could include technological and economic milestones: feasibility demonstrated; market studies; working prototype; IP disclosures; patenting and licensing; number of startups/spinouts; end user clients taking a license/buying patent; products launched; capital raised; revenue; employees.

We recommend the UK Knowledge Exchange Framework dashboard (<https://kef.ac.uk/dashboard>) that measures: public and community engagement; research partnerships; working with business; working with the public and third sector (NGO/NFP); skills, enterprise and entrepreneurship; local growth and regeneration; IP and commercialisation.

3. INCENTIVES FOR PARTICIPATION

Significant funding and in-kind resources are key incentives for participation.

Key drivers motivating university participation would include:

- Ambitious objectives to inspire collaborative effort that maximizes impact;
- Realistic timeframes and funding to achieve impact;
- Consideration of university “sunk” costs (eg. to develop innovative technologies) as co-investment;
- Academic recognition and promotion framework that rewards knowledge exchange and translation;
- Support for research across STEMM (science, technology, engineering, maths and medicine) and SHAPE (Social sciences, humanities, and the arts for people and the economy). See <https://media.nature.com/original/magazine-assets/d41586-021-00731-7/d41586-021-00731-7.pdf>

What is needed to motivate businesses, universities or private investors to invest in the Scheme:

- Minimal bureaucracy, high visibility/prestigious Scheme, rapid decision-making, and pre-arranged outcome announcement dates;
- Mutually agreed fair terms, so that risk and reward are shared;
- Co-funding formulas that encourage participation, especially by SMEs;
- Pool of entrepreneurs/mentors to advise/mentor early stage translational researchers.

Requirements for partners to participate could include:

- Appropriate infrastructure and expertise to tackle the Purpose/Challenge;
- A strong track record in translating ideas into products/impact;
- An Australian ABN for business participation;
- Team equity and diversity, to ensure Challenges are addressed by a diversity of voices/views;
- A professional development framework that grows the next generation of entrepreneurial leaders.

4. INDUSTRY-UNIVERSITY COLLABORATION

Long term Government commitment is essential if this scheme is to succeed. SME collaborations could be facilitated by additional tax incentives. Government could also consider a prestigious new industry-academia fellowship scheme for academics to be embedded in industry, or industry leaders to be embedded in research organisations.

PhD students are a key component of the research ecosystem, including industry-university collaborative research. Industry PhD Programs already exist, and mechanisms such as APR-Intern (placing individual PhD students in industry) and ARC Industrial Transformation Training Centres (ITTC, placing cohorts of PhDs in industry) are successful but oversubscribed (eg. The success rate for ITTC applications in 2020 was 16.1%). Additional funding for these schemes or for 12 month PhD work-integrated learning placements would improve collaboration outcomes and develop innovation and entrepreneurship skills for our best and brightest.

To best support industry-university partnerships, don't "fund and forget" between Stage-gates. Ongoing support must be provided – for example to establish a broad network of relevant expertise (IP protection, regulatory advice, financial, business planning, pitching, valuation, market strategy, dispute resolution). Government could also facilitate industry engagement by supporting participant:

- entrepreneurship and innovation training;
- coaching and mentoring programs; and
- stakeholder engagement and management.

A standardised agreement, IP ownership framework, and governance framework could be put in place to speed up the process of establishing partnerships.

5. GOVERNANCE ARRANGEMENTS

Stakeholders should include representatives from university, community, and industry (including NFPs and NGOs) as well as international leaders. **Equity and diversity should be a guiding principle.**

Governance and decision-making would be best managed through a national organisation at arms-length from government, but with a specific remit to support Australia's interests through Purpose-driven research, with annual reporting requirements. At the delivery level, a regionally organised structure could facilitate and advise (rather than monitor). Project teams across the nation could be encouraged to develop a community of practise (workshops, networking and peer support).

Risk will be minimised by stage-gated release of funding, and provision of professional development and mentoring support. Governance and reporting should scale to match funding; as projects move through Stage 1 to 2 more detailed governance frameworks and reporting should be implemented.

FURTHER INFORMATION

UOW welcomes the opportunity to elaborate upon, or further clarify, the matters raised within this submission. Please do not hesitate to contact UOW Director Government Relations Mr Canio Fierravanti via phone (02) 42215931 or via email caniof@uow.edu.au