NSW Circular

Rapid Review Research Funding

NSW Government Challenge

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BACKGROUND

The NSW Circular Taskforces bring together industry and research to help secure the social, economic and environmental benefits of transitioning to a circular economy. Cross-sector collaboration with industry, government, social enterprises, investors, and local communities will drive innovation and the development of new products, services, businesses and skills. NSW Circular has set out the value proposition for the state and its citizens (The circular economy opportunity in NSW) and has begun producing regular updates on sectors and trends.

NSW Circular is commissioning four Rapid Reviews, setting out the evidence - state of play, opportunities and next steps - on priority topics to advance the circular economy in NSW.

NSW GOVERNMENT TASKFORCE

The objectives of the NSW Government Taskforce are to:
1. Apply circular approaches to government operations
2. Embed circular economy in policies and programs
3. Promote circular economic opportunities in NSW
4. Bridge government policy to the rest of NSW Circular

Government members of the Taskforce include NSW Health, NSW Department of Primary Industries, NSW Department of Planning, Industry and Environment, Department of Communities and Justice, Transport for NSW, Greater Sydney Commission and Western Parkland City Authority.

RAPID REVIEW PROCESS

In 2021, an initial tranche of Rapid Reviews will focus on problem statements or challenges identified by four of NSW Circular's Taskforces: Precincts & Infrastructure; Finance & Investment; Government; and Industry.

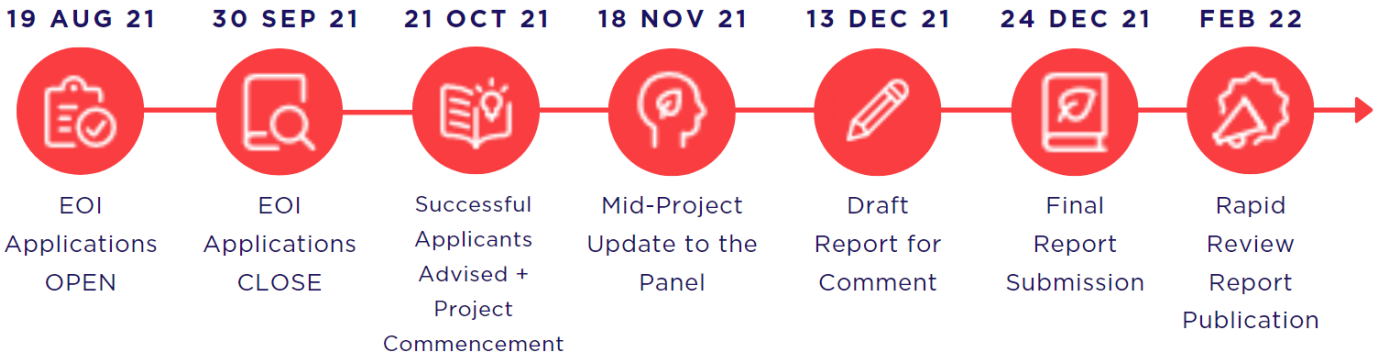
NSW Circular is dedicating $68K ($17K each) to four of its Taskforces to catalyse research that will assist in the delivery of the Taskforce's agreed Objectives. This research will be conducted by four research teams selected based on research proposals submitted through an EOI process. Our Rapid Review calls for EOIs from researchers and universities across NSW, in response to Challenge Statements determined by each of the four Taskforces. These EOIs will be reviewed by a Research Assessment Panel (the Panel), to determine the most suitable candidate to undertake the work.

The core Panel will consist of:

- Ms Jodie Bricout (Panel Chair, Member of the NSW Circular Board)
- Ms Lisa McLean (CEO, NSW Circular)
- Dr Donald Hector AM (nominee of The Royal Society of NSW)
- Dr Suzanne Pierce (Office of the NSW Chief Scientist & Engineer)
- Ms Susan Read (A/Director of Circular Economy Policy and Market Branch, DPIE & NSW Government Taskforce Representative)

TIMEFRAME

The four Rapid Review Challenge Statements are being released gradually during August 2021, and so each review will hold a unique project timeline, though with consistent time allowances for each component of the project. The timeline for the NSW Government Rapid Review is as follows:



SELECTION CRITERIA

To be eligible for the Rapid Review Research Funding research teams must be connected to a NSW university.

Proposals will be assessed on the following criteria:

1. Team Strength: Demonstrated knowledge and understanding of the problem/challenge to be addressed
2. Approach: Proposed approach to undertaking the review
3. Experience: Quality and experience of the team in undertaking reviews of this type and published works
4. Value: Time commitment and value for money
5. Collaboration: Weighting will be given to EOIs of equal merit which involve collaboration between two or more universities.

DELIVERABLES

- A verbal presentation mid-project to confirm progress and report any findings of note
- A draft report in electronic format six weeks from project initiation
- A final report eight weeks from project initiation
- The Review Team must be available to present their research findings to the relevant NSW Circular Taskforce

NOTE: Researchers will be encouraged to publish in international journals, conference proceedings, or other media.

NSW GOVERNMENT CHALLENGE STATEMENT

CHALLENGE DESCRIPTION

How to measure the emissions implications of a circular economy in NSW

The NSW Waste and Sustainable Materials Strategy 2041 (the Strategy) sets out the NSW Government's approach to making the transition to a circular economy over the next 20 years.

The NSW Government is investing $356 million in programs and initiatives to tackle plastic waste, support infrastructure investment, reduce our carbon emissions through more sustainable material use and protect the community from waste pollution.
One of the commitments in the Strategy is to "Develop a new measure of the emissions performance of our waste and materials management. This will help us to track our performance across the lifecycle of materials."

To help develop this new measure, we need to understand potential methodologies that could be used, their applicability and requirements (such as data and tools), their relative benefits and limitations, and their use elsewhere by other jurisdictions and/or organisations.

A literature review of relevant methodologies, with recommendations for development of the measure, would inform how the Strategy's commitment could be implemented. This knowledge can also be applied by Local Government, who are already actioning the circular economy and seeking an evidence-based to support their strategies and decisions. The output can also be useful to other Government agencies that are embedding or planning to embed sustainability principles in aspects such as project design and delivery, asset management or procurement.

ALIGNMENT AND PRIORITY

The role of the Taskforce is to drive circular economy outcomes, including policy outcomes, create awareness of what is possible and influence change.

This work will help develop a measure that sits at the intersection of materials management and carbon reduction, allowing future decisions around programs, policies and funding expenditure to be undertaken with reference to both materials and emissions outcomes.

The work also aligns with our Taskforce's commitment to assisting NSW Circular in developing and maintaining data sets that will measure and remove barriers to a circular economy and ensure that data is open and available.

CURRENT KNOWLEDGE

The assessment of greenhouse gas emissions from activities, materials or regions relies on the application of life cycle assessment (LCA) methodologies. For example, embodied carbon and embodied energy are LCA metrics.

LCA has been proposed as a framework to measure the success of circular economy practices and policies due to its ability to track material flows and convert them into environmental impact information. This goes well beyond the impacts of waste management and covers the supply chain and embodied carbon of the systems where recovered materials are used, such as the built environment.

In a circular economy context, LCA is able to capture the impact of the flow-on effects of an activity. For example, the impact of using less virgin material because more of that material is being supplied into the market from the recovery sector. This differs from emissions monitoring frameworks such as the National Greenhouse and Energy Reporting (NGER) Scheme, which focus on more proximal emission sources.

LCA is currently used as an approach to measure the implications to greenhouse gas emissions of circular economy and waste management initiatives at the regional scale. Essentially, this generates a “before and after” scenario analysis where the “after” is the emissions level of a region or its economic sectors as a result of circular economy policies. This has typically been done using environmentally-extended input-output analysis or hybrid LCA.

However, LCA is best established at a smaller scale, such as applied to specific materials, waste streams or waste management technologies. At this level, the most common attributional or consequential LCA applies. Direct emissions from waste management are typically estimated with standard greenhouse gas emissions accounting methods.

There are also emerging indicators based on life cycle thinking to measure circularity, such as the Ellen MacArthur Foundation’s Material Circularity Indicator. These operate at the material or company level and typically give a circularity score, rather than data on emissions or energy. Varying in scope, these approaches also vary in the type of questions they address, the level of refinement of the results and, hence, in the insights and applications that can be extracted from the analysis.

Current best practice indicates that the Strategy commitment cited above will be met with the use of LCA or another framework based on life cycle thinking. However, there isn’t a consensus on the best methodology to:

- Measure circularity with a view to rank or score different initiatives related with materials management, both at the material, systems or regional scale;
- Measure the life cycle impacts of materials flowing through a circular system;
- Measure the effect on state- and sector-wide greenhouse gas emissions resulting from the enactment of different circular economy policies.

IMPACT

The desired outcomes of this work will:

- Inform how the NSW Government could measure and track the emissions implications of the Waste and Sustainable Materials Strategy 2041 according to the commitment set out in the Strategy.
- Set the basis for the development of the analytical model to measure the emissions performance of NSW's waste and materials management, including the embodied carbon impact in other sectors.
- Upskill the Taskforce in the topic of circularity and emissions metrics.
- Produce documentation that can be shared with stakeholders in NSW and other jurisdictions to inform best practice.

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