

Project description

Project summary

The main purpose of the first year, as part of the Sustainable Community and Waste (SCaW) Hub's Research Plan 1 (RP1), for the cross hub waste coordination research is to establish the evidence base for the waste impact management mission with participating government, industry and community partners. The objective of mission research is to create knowledge products to support the National Waste Policy Action Plan 2019, establishing new manufacturing opportunities in the recycling and clean energy domain, to enable regional and community level economic opportunities, and the transition to a circular economy. This project, as part of RP1 will lay the foundations by engaging in stocktaking, gap analysis and codesign with key stakeholders and knowledge users.

Project description

Waste is both a problem and an opportunity in Australia. Waste lost to landfill and leaking to the environment causes unwanted environmental, economic and social impacts. However, waste is a resource and engaging in better waste management and resource recovery has the potential to create jobs and increase economic output, reduce environmental damage and improve the liveability, amenity and economic competitiveness of urban and regional communities.

This is a foundation project and not focused on undertaking research but is needed to establish the knowledge base for the waste impact management mission and to be prepared in subsequent years (and research plans) to inform the specific local and regional priorities of the National Waste Policy 2018 and the National Waste Policy Action Plan 2019. This project for RP1 is focussing on:

- codesigning and identifying objectives, priorities and pathways for developing metrics and data
- identifying and codesigning demonstration projects with partners
- identifying the principles and approaches for socio-economic analysis.

This focus on codesign will enable participation of key stakeholders from government (at all levels), industry, industry peak bodies, and communities and allow to tailor the research to the need of users of the knowledge products that are resulting from waste impact mission research.

The aim is to establish a focus on circular economy and sustainable materials management with contributions from the broader stakeholders for the Hub. This focus on a comprehensive understanding of material to waste flows and its functional relationship with the economy will also inform the other Hubs who will benefit from understanding how spatially expressed environmental impacts are related to economic drivers and environmental pressures.

The four main objectives of this foundation project for year 1 and the research codesign process are listed below and will guide the directions of Research Plans 2 and 3.

Objective 1: Metrics, data and indicators to develop a comprehensive understanding of Australia's material and waste flows from a whole of supply chain perspective developing a baseline and ongoing recycling measures indicators for the Australian economy

To create the foundations for Australia's metrics for waste management, resource recovery and circular economy, a review of international best practice will be undertaken, and priorities and analytical approach will be developed in partnership with science leaders, industry representatives and government agencies that are engaged in environmental reporting. The project will collaborate with the metrics working group of the Australian Circular Economy Hub and engage with Commonwealth

and State initiatives for harmonising metrics and data approaches. The project will specifically interact with DAWE Environment Protection Division (EPD) to establish synergies with the Waste Data Visualization platform that is under development.

The approach to metrics will go beyond current waste accounting to establish a baseline for sustainable materials management and circularity in Australia, identifying the scale of core issues, priorities and challenges. This will include for example, the quantification of stockpiles of end-of-life materials and of secondary materials content in imported and domestic products. This will allow targets to be established to assess the efficacy and effectiveness of current policy settings and to identify future policy needs.

Objective 2: Codesign of at least three demonstration projects aligned to the grant opportunities documents published on the Community grant website.

They include:

- innovative methods for reuse of materials, including proof of concept demonstration
- options for improved construction and demolition waste management
- improved material sorting and re-processing
- options for the management and quantification of waste stockpiles.

To enable the contribution of the waste impact management mission to develop demonstration projects for priority areas identified by government stakeholders, the project will review available and next horizon technologies and assess implementation capability by industry and councils in a codesign process. This will allow the Hub to identify the economically viable and environmentally beneficial opportunities, showcase them in demonstration projects and to evaluate opportunities for scaling-up. As a starting point, the project will focus on areas for demonstration projects that have been identified in the NESP 2 call for the SCaW Hub and will seek alignment with the National Waste Policy Action Plan 2019 but be able to pivot based on DAWE research user needs and priorities.

The identification of codesign partners for demonstration projects will be enabled by a series of initial information sessions with key partners of the SCaW Hub and further developed in the codesign phase of RP1. Demonstration projects will benefit from the significant technology and engineering knowledge of the Hub consortium. The effort in year 1 will result in a plan for implementation for research plans 2 and 3. The project aims to leverage the recycling and clean energy priorities of the Modern Manufacturing Initiative and to work with the Australian Packaging Covenant Organisation and the Waste Management and Resource Recovery Association as core implementation partners.

Objective 3: Identify the approach for socio-economic analysis to facilitate a circular economy transition, incentivising waste reduction and increasing the use of secondary materials in manufacturing and construction. The socio-economic analysis developed will assist with waste reduction and will inform the increased use of recycled materials.

To create the foundation for socio-economic and behavioural analysis, including the institutional and governance context across jurisdictions in Australia the project will engage in a series of qualitative interviews. It will also undertake a literature review to establish a conceptual framework and research methodologies to be employed during research plans 2 and 3. We acknowledge that transitioning to a circular economy (CE) will require novel business models and economic frameworks that are fit for purpose. Laying the foundations for socio-economic and behavioural analysis in RP1 will enable a conceptual framework and support the decision for appropriate research methodologies that can be used across the Hub.

The project will also explore the literature for options for transition management, enabled through changes in the economic and legal arrangements, and in practices and behaviours of businesses and consumers. The initial research will include stakeholder engagement and codesign with different actors in the broader community with a special focus on the specific problems and the potential contribution of Indigenous peoples and remote communities.

Objective 4: Identifying linkages, synergies and collaboration with the other three missions in the overall NESP program, creating an understanding of the ecosystem and climate benefits of sustainable materials management.

In collaboration with mission leads from the other three NESP hubs and guided by DAWE, the mission research will contribute to identifying the cross-hub contribution from the SCaW Hub. This will be guided by a conceptual framework that explores entry points for research questions of each hub organised by the DPSIR (drivers, pressures, state, impact and response) conceptual framework and will facilitate linkages between research priority areas of the SCaW Hub and those of other hubs.

The engagement with other hubs is organised by the mission leader team and starts with a mapping and prioritisation activity in year 1. We also will seek alignment with other hubs at the level of the mission itself, and the level of research priorities enabling a nested structure of thematic interactions that all contribute to an overall agenda of NESP phase two.

The way in which this objective will be organised will depend on the next stage of planning with other hubs and DAWE and can at this point not be specified. We do expect that we will be able to deliver spatially explicit information about the environmental implications of material use, waste management and resource recovery in terms of pollution and toxicity and ecosystems change caused by the way we manage materials and waste. Two obvious links that will be further explored include marine pollution (in collaboration with the Marine and Coastal Hub) and urban heat islands and the related climate adaptation challenges (in collaboration with the Climate Systems Hub). A special topic can be the waste management challenges that are resulting from environmental and climate hazards such as floods, fires, and strong winds.

Objective 5: Development of a mission strategy

The SCaW Hub will coordinate and develop a high-level strategy for the waste impact management mission. This Mission Strategy will be a short document (maximum 5 pages) outlining the strategic focus of the mission and how it will be implemented. The Strategy will present a clearly defined program logic along with a stakeholder analysis. The Strategy will present a vision for the waste impact management mission, establish outcomes expected from the mission, list mission outputs, provide a description of research users for the mission and present an overview of how this research will assist them. The Strategy will provide an overview of expected links with and contributions from the other three NESP phase two hubs, missions and other organisations and include a monitoring and evaluation approach.

Pathway to impact

This section describes how the project will inform decision-making and on-ground action, and the outputs that will be delivered to research users throughout the life of the project.

Outcomes			
<p>The codesign process and review of the knowledge base described in this research plan will be used to identify research needs that will be addressed to create impact through Research Plan 2 and beyond. As such, the pathway to impact for research plan 1 is largely limited to the codesign process, rather than direct impacts on policy, management or the environment. It will nevertheless explore, plan and develop critical stakeholder relationships for achieving impact in the four identified objectives.</p>			
Research-user	Engagement and communication	Impact on management action	Outputs
<p>DAWE Waste Policy Team, DISER Recycling and Clean Energy Team</p> <p>Planet Ark Australian Circular Economy Hub</p> <p>Australian Packaging Covenant Organisation</p> <p>Waste Management and Resource Recovery Association Australia (WMRR)</p> <p>State Government Agencies – QLD Department of Environment and Sciences, Green Industries South Australia, ACT No Waste, NSW Circular, Sustainability Victoria</p> <p>Industry Partners</p>	<p>The needs of research users be identified through the codesign process.</p> <p>Research user partners will be involved through codesign workshops, focus groups, interviews, and surveys.</p> <p>They will help identify the format of knowledge products to foster their use in policymaking, planning and management.</p> <p>Where appropriate, research plans that involved research users in the co-production of knowledge through the life of the research project will be designed.</p> <p>The codesigned research plan will be developed with extensive consultation and feedback from all potential research users.</p> <p>Research findings generated through RP1 (e.g., synthesis of knowledge and tools) will be communicated in ways that are accessible to research users including reports, policy advice, presentations. The format of these will be determined after consultation with research users and hub knowledge brokers.</p>	<p>The policies, programs and plans that will be impacted will be identified through the codesign process. It is expected that these will be focussed on the National Waste Policy (2018) and National Waste Policy Action Plan (2019) but will include policy and programs at all levels of government, giving recognition to the important role of local government in the waste management system.</p>	<p>The main output of this project will be project plans for Research Plan 2.</p> <p>The following outputs support the codesign process:</p> <ul style="list-style-type: none"> - Objective 1 deliverable: A knowledge base for the opportunity in circular economy in Australia based on the analysis of volumes, values and impact of material flows and waste, the current baseline and in establishing an ambitious but achievable target for the next decade to 2030. - Objective 2 deliverable: Identification and codesign of 3-4 demonstration projects aligned with the priorities of the waste impact management mission and establishing partnership agreements with industry to implement. - Objective 3 deliverable: A conceptual framework and methodological apparatus for socio-economic analysis to inform transition management and behaviour and practice change. - Objective 4 deliverable: an architecture for cross-hub engagement and delivery models of knowledge products across the four hubs
Additional outputs			
N/A			

Indigenous consultation and engagement

Materials and waste management, resource recovery and circular economy have important linkages with Indigenous priorities and will engage with Indigenous communities, businesses, research users, and researchers who are vital to a successful SCaW Hub. This will allow:

- identification and utilisation of Indigenous knowledge and practices
- exploration of, and ability to address specific issues prevalent in Indigenous communities and businesses and identification of economic and employment opportunities in a regional and urban context
- engagement of Indigenous researchers to create opportunities for co-authorship, capacity building and training.

Indigenous research aspirations will be identified by working with our Indigenous partners (TRACA, FRDC Indigenous advisory group) and in partnership with our Hub's Indigenous facilitators to create research approaches that benefit from Indigenous knowledge and practices and contribute to issues relevant to Indigenous communities and businesses.

Engagement with and involvement of Indigenous communities, business and researchers will be guided by the Hub's Indigenous Partnership Strategy and will allow for the integration of traditional knowledge and Indigenous interests in the Hub research.