HILT CRC

Australian Government
Department of Industry, Science and Resources

AusIndustry
Cooperative Research Centres Program

HDR PROJECT SUMMARY

SCALING UP THE CONTRIBUTION FROM FOREST RESIDUES TO THE CLEAN ENERGY TRANSITION

SUPERVISOR

Dr Julian Clifton

PROJECT PARTNER

Curtin University

PROJECT TYPE

PhD

DATE ADVERTISED

March 2026

HDR PROJECT DESCRIPTION AND MOTIVATION

The Australian Government's commitment to net-zero greenhouse gas emissions by 2050 necessitates large-scale decarbonisation of heavy industry, supported by rapid scaling up of renewable energy capacity to meet industry heat and power requirements. This underlines the importance of increasing output from all renewable energy sectors.

Woody biomass, including forest residues, represents the third-largest source of renewable energy behind solar photovoltaics (PV) and wind in Australia, accounting for around 15% of renewable energy consumption in 2023-24 (DCCEEW, 2025). With forestry operations generating over 6.5M tonnes of residues annually, there is scope to expand this contribution as part of the clean energy transition (Garvie et al., 2024).

Forest-based biofuels enable productive use of a wide range of forest residues, with attendant environmental benefits and socioeconomic opportunities (Leminih et al., 2024). However, forest residues are commonly the least favoured type of biofuel amongst the public, representing a significant barrier to expansion of this sector (Garvie et al., 2024). International research has indicated that opinions regarding the processing of forest residues reflect complex drivers including awareness of forest residue characteristics and uses; exposure to differing information sources; the type, location and scale of any proposed processing facilities; and views on the carbon neutrality and environmental sustainability of converting woody biomass to a source of energy (van Dijk et al., 2024; Dwivedi & Alavalapti, 2009). These opinions may be exacerbated by concerns over perceived links between forest residue processing and deforestation, particularly with regards to native forests (Leminih et al., 2024).

The PhD activities will complement the ongoing activities in the HILT project RP2.018 Demonstrating the sustainability and potential of biomass/waste-derived syngas for Australian heavy industries applications: addressing technical challenges.

PROJECT OBJECTIVES

This PhD research will: Identify the drivers, characteristics and diversity of public opinion in Australia regarding the use of forest residues for energy to support sector growth. This will be achieved through the following objectives:

1. Review the literature on public perceptions of forest residue processing for energy and other purposes and the social, economic and environmental implications of these activities
2. Carry out a nationwide representative survey of the Australian public to identify the drivers of opinions relating to processing of residues from native forests and plantations
3. Conduct a series of focus groups to identify policies for forest residue use that reflect public opinions and forest residue processing growth scenarios.

This will involve desk-based research and fieldwork including a wide range of stakeholders in areas of forestry activity in Australia. The outcomes will benefit HILT generally through facilitating the expansion of a key sector in the energy transition. They will also have additional relevance for specific HILT partners operating in regions where forest resources offer opportunities for energy use and regional development.

QUALIFICATIONS AND EXPERIENCE

The ideal candidate will have a Masters qualification in relevant areas such as renewable energy, energy policy or natural resource management.

To determine your eligibility for studying at Curtin, visit www.curtin.edu.au/study/applying/research.

Further enquiries: Dr Julian Clifton, Julian.Clifton@curtin.edu.au.

References

DCCEEW (2025). *Australian Energy Statistics - Update Report 2025*. www.energy.gov.au/publications/australian-energy-update-2025

van Dijk M, Goedegebure R, Nap J-P (2024). Public acceptance of biomass for bioenergy: the need for feedstock differentiation and communicating a waste utilization frame. *Renewable and Sustainable Energy Reviews* 202: 114670

Dwivedi P, Alavalapti JRR (2009). Stakeholders' perceptions on forest biomass-based bioenergy development in the southern US. *Energy Policy* 27: 1999-2007

Garvie LC, Lee, DJ, Kulišić, B (2024). Towards a bioeconomy: supplying forest residues for the Australian market. *Energies* 17: 397

Leminih BY, Stoeckl N, O'Reilly-Wapstra J, Volker P (2024). Managing forest residues for biodiversity, bioenergy, and smoke reduction: insights from a discrete choice experiment in Tasmania, Australia. *Energy Policy* 195: 114351

HILT CRC POSTGRADUATE PROGRAM

Are you interested in receiving training from world-leading researchers, whilst working with industry partners on real-world problems?

Join the HILT CRC postgraduate program for a research career in de-risking decarbonisation for heavy industry.

Through engagement with industry and universities we are committed to training the heavy industry workforce of the future through practical, demand driven research projects with world-leading teams and facilities.

We offer Higher Degrees by Research (HDR) through a PhD or Masters qualification for up to 3.5 years duration, providing you with the opportunity to acquire world-leading training in a field of growing demand

By joining our postgraduate research program, you will work on real industry problems and challenges with the potential for immediate high-impact practical results to decarbonise heavy industry.

When undertaking a research degree with us, you will also gain:

Expert knowledge –developing skills tailored to transitioning the steel, iron, alumina and cement industries to reduce heavy industry's carbon emissions.

Invaluable networking opportunities and professional development – benefit from opportunities to collaborate and network with multiple industries and research experts and teams via participating in the HILT CRC specialised webinars, yearly conferences, and master classes.

Career outcomes – linked with industry and government, you will gain hands on industry experience to help you develop the skills required to operate in a new low-carbon economy, become an expert in your field, and enhance your employability.

A platform for communicating your findings – your research findings may be presented at industry conferences, published, commercialised and in turn, create a positive impact on society.

Financial Support and Scholarships

We can provide full, co-funded or top-up scholarships to eligible postgraduate students (Higher Degree by Research students at both Master and PhD levels) across our three research programs at our partner universities. The distribution of funding is at the discretion of the principal (main) supervisor of the project and may be used for student stipend, costs associated with the research project or other expenditure related to the project.

Any student interested in undertaking a postgraduate scholarship is encouraged to review the Scholarship Guidelines and complete the HDR Scholarships Application Form. Details for how to apply for postgraduate scholarships are included in the guidelines.

How to Apply

All HILT CRC prospective postgraduate students are required to enrol in their degree through their host institution as per the normal university application process. Therefore, students need to meet the requirements stipulated by the host university to enrol (e.g. appropriate Honours or Masters degree).

Further Information

For more details about the postgraduate research opportunities and projects, and financial support with HILT CRC, contact us at hdr@hiltcrc.com.au