Context

There is a growing local and global demand for wood products and a predicted shortfall in timber for housing in Australia. Where the forestry plantation footprint needs to be expanded such measures will take decades to flow through to the timber market. In the meantime, growth in supply can best be managed by optimising our use of our resources. Until recently, opportunities to efficiently process small-diameter trees into high-value products were limited because of recovery. Consequently, significant areas of forests were regarded as low quality and underutilised. Spindleless lathe technology is a relatively modern technology to process small hardwood logs which opens opportunities to extract value from existing low-quality wood resource and small-diameter logs and supply significant volumes to processors cost-effectively.

The Gippsland region has had a long history of economic activity in wood products and processing based on public native forest and private plantation timber resources. Trees on farms and private native forests are potentially significant timber and veneer resources, but little is known about the quantity or quality of this resource or its potential for use in new types of veneered timber products such as laminated veneer lumber or LVL. Resource is also potentially available from ecological thinning on public land, council reserves, and land under Traditional Owner management. However, Southern Australian species have never been tested with spindleless veneer technology and the potential for the veneers to be used in engineered wood products (EWPs) like LVL is unknown.

Project Intentions

The collaborative R&D project funded by the National Institute for Forest Products Innovation (NIFPI) Gippsland Centre aims to develop new and improved EWPs from low grade and underutilised timber resources in Gippsland. More specifically, the research team will test the potential to process smaller, underutilised, and low-quality hardwood using spindleless lathe technology to produce LVL. The project represents an opportunity for the forest products sector in Gippsland to play a vital role in providing the building sector with a locally produced high-quality EWP to meet the timber demand and secure Gippsland's role in driving forestry research. Ultimately, such products will generate higher value for tree growers and processors, support the development of new industries, meet the shortfall in supply of processed timber products to meet local and national demand and provide new markets for private tree growers. The initiative will act as a catalyser in developing a sustainable timber manufacturing strategy to address the above-mentioned supply chain issues.

Two (2) MPhil opportunities to assess of the suitability of the Gippsland timber resource for LVL production and provide an improved environment for appropriate plantation and native forests development capable of absorbing underutilised timber and lower quality wood resource are attached to the project:

1.   Resource characterisation study

As part of the study, a variety of lower-quality timber resources from the Gippsland region from both private and public native, plantations and farms will be peeled at an industrial scale and evaluated. Trials to investigate the recovery and grade quality of peeled small-diameter logs will assist in proposing viable log processing options to generate veneer material to be used for manufacturing locally produced EWPs such as LVL. Working closely with the project partner in an industrial context, the selected candidate will characterise and optimise the processing parameters to determine the quality of the selected resources and address technical issues encountered with the equipment and different resources during the process. Through veneer properties assessment, fabrication and

testing of prototypes, and comparison with products commercially available in Australia, the candidate will then identify opportunities for using and/or introducing the obtained resources in structural product applications and provide indication of potential product(s) position(s) in the market.

2. Economic forestry study

Working closely with the project partners and stakeholders, the selected candidate will be responsible for underpinning and providing evidence of the feasibility and profitability of absorbing and processing small-diameter logs, underutilised timber, and lower quality wood resource from the Gippsland region to produce high-value engineered wood products and create economic opportunities for grower communities. The candidate will determine quantity and explore potential distribution of the available resources and identify sampling resources. Taking onto account the volumes, qualities, and costs associated with forest management and operation, the candidate will compare and evaluate the financial and technical feasibility to use and/or introduce the different selected resources in structural product applications and identify opportunities to help improve the wood value-chain profitability and silvicultural practices.

The Ideal Candidates (nature, skills, and background)

The successful candidates will work closely with a highly multidisciplinary team of researchers and stakeholders from the Gippsland region, Victoria, and Australia to facilitate knowledge exchange to strengthen the capacity of Gippsland and the private sectors in the transformation to a sustainable, circular bioeconomy by sharing technical knowledge, best practices, and innovations to mitigate climate change, prevent or reduce pollution, and to address other trade-offs.

Essential selection criteria

- A demonstrated ability to work in a team environment and to interact positively with students, academic and professional staff, project partners and stakeholders.
- Excellent written and verbal communication skills.
- Ability to work independently including development and accommodation of innovative ideas and approaches.
- Demonstrated excellent organisational skills to meet deadlines and bring projects to a timely completion.

Additional desirable criteria

- Demonstrated ability to design and conduct independent research.
- Specific expertise in one or more of the following areas: Wood Science, Engineering, Forestry, and/or Economics.
- An understanding of the planted wood value-chain.

The successful applicant must possess a full and valid driver's licence. The successful applicant may be required to travel to, or work from, other sites as required.

Working conditions

Stipend and fee offset scholarships

Full fee offset for up to two years.

Living allowance for up to 2 years.

Eligibility

To be eligible for the scholarship candidate must:

- be a domestic Victorian student - You're a domestic student if you're an Australian citizen or permanent resident, hold a permanent Australian humanitarian visa or are a New Zealand citizen.
- meet the graduate entry requirements for the University of Melbourne
- be able to commence their MPhil in 2022

More details on the terms and conditions of graduate research scholarships at the University of Melbourne can be found here.

Contact

Send a CV and cover letter explaining why you are interested in this PhD project and why you are a suitable candidate to Benoit Belleville at benoit.belleville@unimelb.edu.au

For further information or to discuss research ideas please reach out to Dr Benoit Belleville