



Background information for media:

Biorefineries – the future of Australia’s manufacturing industry

Biorefining is the process of producing commercial replacements for chemicals, plastics and fuels from biomass, using technologies such as fermentation and thermochemical treatment.

Biomass is any material derived from plants that uses sunlight to grow. Australia’s agricultural sector produces a variety of crops including sugarcane, grains cotton, and forestry products and the biomass residues of these processes including bagasse, trash, stover, and other green wastes.

The biorefinery industry is viewed as a key global growth sector and is already developing internationally in North America, Europe, Malaysia and Brazil.

Global markets for bio-based products are expected to continue growing strongly to US\$160 billion by 2020.

The movement to sustainable chemicals and plastics manufacture through biorefining has already been supported by major chemical and technology-based companies throughout the world.

Australia’s competitive advantage

Australia already has many building blocks required for successful development of a biorefinery industry including:

- a climate conducive to the production of large quantities of biomass
- a strong agricultural sector and appropriate infrastructure
- an international reputation for research in areas such as industrial biotechnology and process engineering
- established manufacturing industries such as brewing, forestry and sugar milling
- a stable government.

QUT’s role in the development of a biorefinery industry

QUT is taking the lead as the catalyst for the development of a new biorefinery industry, which would serve as the cornerstone for sustainable manufacturing in Australia.

QUT is well known as the ‘university for the real world’ and has a strong affinity with projects such as this which have high relevance to the community and the potential to effect real change in the world.

It is a leader in research and development into advanced biorefineries and innovative technology to convert waste biomass into greener replacements for chemicals, resins, plastics, and fuels.

To provide the industry with further impetus, QUT commissioned a study by Deloitte Access Economics and Corelli Consulting, culminating in a report titled the *Economic Impact of a Future Tropical Biorefinery Industry in Queensland*.

The objectives of the study were to demonstrate the economic potential for this industry opportunity in Queensland, and more broadly across Australia (and in particular Northern Australia) and detail how it can benefit the manufacturing, agricultural and other sectors.

Corelli Consulting provided the technical background on industrial biotechnology and potential bioproducts, and Deloitte Access Economics provided the analysis of potential economic impacts of a future tropical biorefinery industry.

Key findings of the study commissioned by QUT

Key findings include:

- The commercial production of replacements for chemicals, plastics and fuels from biomass using technologies such as fermentation and thermochemical treatment is now established globally, with annual production of hundreds of thousands of tonnes.
- Preliminary assessment suggests there is an opportunity to profitably convert this waste into products of value such as chemicals, plastics and fuels – a global market estimated at US\$160 billion by 2020.
- Queensland has a comparative advantage in biorefining, including the climate and agriculture to ensure a large supply of biomass.
- In Queensland, a scenario consisting of seven potential projects was identified that could contribute \$1.8 billion annually and create 6,640 FTE jobs over the next two decades. However, further work is required into due diligence and a full feasibility study of the future potential and viability of biorefineries.
- Biorefineries are likely to be a viable source of economic growth and diversification. Their outputs can be used as inputs to domestic industries, as well as generating export earnings. In addition, biorefinery industries can significantly value-add to agricultural outputs, diversifying farmers' revenue base.
- The analysis assumed biorefineries operated without government subsidisation. While production is potentially viable without ongoing subsidies, some government facilitation would assist in industry establishment.
- For commercial investors, the analysis supports the case for investing in the next phase of detailed design, engineering, construction cost estimation and due diligence.

Next steps

Industry, investors, research and development organisations, and governments can all play a role in the development of this new industry. Success will depend on cross-sector collaboration and partnership.

QUT has developed a blueprint for the Australian biorefinery industry which focuses on key areas including creating business opportunities, developing and attracting the best technologies and people, developing biorefinery hubs, and supporting commercial developments.

Further information about the biorefinery study commissioned by QUT – *Economic Impact of a Future Tropical Biorefinery Industry in Queensland* is available at <http://www.ctcb.qut.edu.au/biorefinery>

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