



QUEENSLAND
JOBS FUND

QUEENSLAND BIOFUTURES

10-Year Roadmap and Action Plan
2016-2026

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Queensland
Government

Acknowledgement of Country

The Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) acknowledges the Country and people of Queensland's First Nations. We pay our respect to Elders past, present and emerging.

We acknowledge the continuous living culture of First Nations Queenslanders – their diverse languages, customs and traditions, knowledges and systems. We acknowledge the deep relationship, connection and responsibility to land, sea, sky and Country as an integral element of First Nations identity and culture.

This Country is sacred. Everything on the land has meaning and all people are one with it. We acknowledge First Nations peoples' sacred connection as central to culture and being.

We acknowledge the stories, traditions and living cultures of First Nations peoples and commit to shaping our state's future together. DSDILGP recognises the contribution of First Nations peoples and communities to the State of Queensland and how this continues to enrich our society more broadly.

Department of State Development, Infrastructure, Local Government and Planning

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Queensland Biofutures

10-Year Roadmap and Action Plan

The Queensland Government launched the State's first Biofutures Roadmap and Action Plan in 2016 to help establish Queensland as a world-leading and sustainable region for the Biofutures industry. Since that time, our government has undertaken significant work to grow the Biofutures industry and to elevate the State's profile as a leading Biofutures investment destination.

The Biofutures sector is booming and we're working to ensure Queensland is leading the way nationally. This ten-year roadmap is part of the \$3.34 billion Queensland Jobs Fund and demonstrates the Queensland Government's commitment to growing the Biofutures industry.

Queensland has attracted Oceania Biofuels to Gladstone to establish Australia's first commercial sustainable aviation fuel biorefinery. The \$500 million facility, is a significant step in growing the emerging biofutures industry and strengthens our work towards creating a sustainable biomanufacturing and bioenergy sector for Queensland, fuelling our economic future and contributing to our decarbonisation targets.

As global demand for cleaner fuels grows, Queensland is seizing the opportunity to secure jobs. We are partnering with sectors like aviation, maritime and heavy vehicles to help them decarbonise and transition to more sustainable fuel sources, demonstrating Queensland is a leading destination for clean investment.

Queensland has delivered Australia's first sustainable aviation fuel, first containerised shipping and renewable diesel trials and we're continuing to build our local biofuel market by working with the aviation,

construction, maritime and transport sectors.

Now more than ever, consumers, governments, shareholders, corporations and their supply chains are looking for solutions to reduce carbon footprints and ensure they can participate in decarbonised markets.

Biofutures is the sector of today, for tomorrow. It brings together old and new industry by finding solutions for traditional industry challenges, and creating opportunities around energy, waste and emissions.

This refreshed Action Plan is part of the Queensland Government's broader approach to industry development. It builds on achievements and recognises changing global influences and industry advances have created new challenges while opening up new opportunities for market diversification.

We're working to improve Queensland's economic future by creating a globally focused, diverse economy that delivers high-value, knowledge-based jobs. We want our traditional and emerging industry sectors to be smart, connected and efficient, with broader supply chain benefits right across the state.

The growing global demand for clean technology to power our way of life, provides an opportunity to create

more jobs here in Queensland and grow our economy. Complemented by the development of local, reliable sources of green hydrogen through the Queensland Hydrogen Industry Strategy, Australians will benefit from increasing supplies of reliable, affordable and renewable energy.

With the impacts of the COVID-19 pandemic still being felt across the globe, new opportunities for many industries, including Biofutures, are opening up. Queensland has risen to the challenge of addressing supply chain vulnerabilities and is making great progress toward re-shoring manufacturing and pioneering new ways of using products like bioethanol and sugarcane bagasse in the manufacturing process. The time to pivot and innovate is now.



The Honourable Steven Miles MP
Deputy Premier

Minister for State Development, Infrastructure, Local Government and Planning and Minister Assisting the Premier on Olympics Infrastructure



Queensland Biofutures 10-Year Roadmap and Action Plan

VISION

Queensland to be an Asia-Pacific hub in biomanufacturing and biorefining, enabling global efforts to decarbonise and build diverse local industrial capabilities.

Queensland strengths

-  Abundant land and feedstocks with a favourable tropical and subtropical climate
-  An efficient, mature and modern agricultural industry
-  Strong manufacturing base
-  World-class expertise in research and development
-  Reliable and efficient transport infrastructure servicing global markets
-  Gateway to the Asia-Pacific
-  Recognised national leader in bioenergy policies and focus

Industry challenges

-  Alignment and evolution of cross-jurisdictional government policies and regulation
-  Investment hesitation due to competing technologies and markets
-  Price disparity compared to conventional technologies
-  Competition with incumbents for access to and conversion of existing infrastructure
-  Cost effective feedstock aggregation

Strategy 1

Create and maintain an attractive environment for industry

- › Provide strong state government leadership and vision through:
 - Lead inter-agency collaboration to build Queensland's bioeconomy with a focus on policy enabling bioenergy solutions for aviation, maritime and heavy vehicles and machinery.
 - Engaging with the Commonwealth Government and peak bodies to advocate for consistent policy and regulatory frameworks that enable industry to grow and respond to global trends.
 - Encourage and support local leadership and regional networks to facilitate Biofutures opportunities throughout Queensland.
- › Support formation and expansion of markets for bioenergy, biomanufacturing and bioproducts by:
 - Leveraging Queensland Government procurement practices to create market demand for bioproducts.
 - Partnering with industry to undertake trials and pilots to unlock supply chain opportunities, promoting consumer and industry confidence and supporting a circular economy.

Strategy 2

Support specific industry development initiatives

- › Provide focused project facilitation support and mobilise government resources to help navigate and streamline project proposals and approvals.
- › Leverage programs to attract investment ready projects that strengthen supply chains and create high-value jobs.
- › Identify suitable locations for biomanufacturing facilities to increase Queensland's attractiveness as an investment destination.
- › Engage with and improve partnerships between proponents, government and investors, to improve access to capital to progress commercial developments.
- › Support work into an assessment of the feasibility of a bio-incubator and development of biohubs to accelerate the development and commercialisation of related processes and technology.
- › Harness the potential of Biofutures across industries by connecting companies to create new supply chains and improve resilience.

Strategy 3

Identify and promote opportunities for investment in Queensland

- › Position Queensland as an attractive Biofutures destination by enhancing visibility and promoting Queensland as world leading Biofutures hub.
- › Collaborate and partner with agencies, industry and research partners to support growth through information sharing and fostering connections between the emerging Biofutures sector and Queensland's traditional areas of strength.
- › Make available tools that can be used to support development of supply chains from feedstock to offtake to finance for bioenergy, biomanufacturing and bioproduct investment opportunities.
- › Leverage the expertise, deep knowledge and strategic networks of our Biofutures Industry Envoy and Biofutures Strategic Advisor to enhance Queensland's reputation as an investment destination.
- › Investigate, leverage and promote Biofutures solutions that can support delivery of a sustainable and climate positive large-scale projects such as the Brisbane 2032 Olympics and Paralympics Games.

Develop an economic evidence base profile of the Queensland Biofutures sector to inform economic impact analysis and the consideration of appropriate industry assistance.

Investigate future skill needs for the Biofutures sector and develop a tailored skills plan that will strengthen existing skills and attract and train a workforce for this growing industry.

Maintain a Biofutures Industry Advisory Group to provide specialist, local leadership and guidance that will help overcome the challenges and create opportunities for the industry to grow.

Queensland Government is committed to reframing the relationship with Aboriginal and Torres Strait Islander peoples through greater inclusion, cultural competency, respect, enhanced relationships and increasing economic participation in the Queensland economy.

Growing Queensland's **Biofuture**



Powering transport with local sugarcane

Two buses built on the Gold Coast are headed for Mackay to begin a 12-month bioethanol fuel trial as part of the government's commitment to using more sustainable and renewable fuel sources to power Queensland's public transport system in the future.

Scania Australia, BusTech, Mackay Transit Coaches and the Queensland Government collaborated to deliver the two state-of-the-art bioethanol-fuelled buses to provide public transport services throughout the Mackay region. The E95 bioethanol fuelling the buses is manufactured in Sarina by Wilmar Bioethanol from locally grown sugarcane.

As global decarbonisation efforts and demand for cleaner fuels grows, Queensland is seizing the opportunity to secure more jobs in more industries. Transitioning our bus network to more sustainable, low and zero emission fuel sources will help us meet our emissions reduction targets and demonstrate Queensland is a leading destination for clean energy investment.

Mackay biorefinery pilot plant ready for take-off

US-based company Mercurius has finalised commissioning of its pilot plant that will use its patented REACH™ technology to produce valuable renewable chemicals, diesel and jet fuel from sugarcane waste.

The plant is located at the Queensland University of Technology's Biocommodities Facility in Mackay. Representatives from QUT are working alongside Mercurius to examine the technology and valuable by-products to enhance commercialisation opportunities in Queensland.

The REACH™ process avoids the need for the use of pure sugars, high operating temperatures and high pressures, resulting in a faster conversion rate and lower cost of production than current processes. The technology converts a range of biomass feedstocks into

price-competitive, renewable 'drop-in' fuels that can be tailored for use in jet and diesel engines. The technology can also produce renewable chemicals for bio-based industrial plastics such as bottles, textiles, food packaging, carpets, electronic materials and automotive applications.

If the pilot plant operations are successful, Mercurius will plan for a demonstration facility to be based in regional Queensland which would scale up production, leading to high-value jobs and regional growth opportunities.

Biofuel shipping trial is the wave of the future

The Queensland Government has partnered with international shipping and logistics operator ANL to deliver Australia's first containerised shipping biofuel trial.

Using locally produced biofuel, the trial demonstrates how the maritime sector can make immediate and significant reductions to emissions.

Preliminary data shows potential emissions reductions of 17% as well as reductions in air and marine pollutants.

The project was a collaborative effort across the supply chain, with ANL working with Woolworths Group, the Port of Brisbane, BP Marine, and local suppliers EcoTech Biodiesel.

Decarbonising shipping supply chains not only contributes to Queensland's

target of zero net emissions by 2050, it has the potential to put Queensland on the map as a leading biofuel refuelling station in the Indo-Pacific.



Beef industry generating power with waste

Kilcoy Global Foods, one of the five largest beef producers in Australia, has demonstrated how the sector can adopt bioenergy solutions to decarbonise and improve sustainability.

Kilcoy Global Foods is using anaerobic digestors to treat waste and produce biogas onsite to generate cleaner and renewable power and hot water for the meat processing facility. The plant

supplies 80% of the company's power needs and all its hot water.

Supported through the Waste to Biofutures program, the project is saving the company money while reducing its impact on the environment.

Projects like this demonstrate how the Queensland Government is supporting the beef industry to invest in new technology and plan for a more sustainable, low-carbon economy.



