

A Queensland zero net emissions economy: Transport

The global transition to a low carbon economy will drive demand for transport that uses alternative energy sources. The transport industry has a unique position, as the 'backbone' of the economy, to influence the supply chains of many sectors. The sector can respond to climate-related opportunities and risks through adoption of clean energy and embedding resilience into infrastructure.

Megatrends are influencing the infrastructure and operations of the Queensland transport sector. Technological disruption such as advances in electric and hydrogen-fuelled vehicles, autonomous or semi-autonomous capabilities, and the sharing economy presents both opportunities and challenges. However, these will improve relative efficiency and reduce greenhouse gas emissions in the long term. The physical risks of climate change, such as more extreme weather events, may impact the stability of transport infrastructure and networks. At a global level, these megatrends are shaping transport operations and future financial markets.

Global capital and government policies are enabling the uptake of low carbon transport options, such as electric vehicles, biofuels, hydrogen fuel, and more fuel-efficient vehicles. Supportive transport infrastructure is required for a low carbon economy, including electric vehicle highways, refuelling stations, and resilient airports, ports, roads and railways. Action by the transport industry to support a low carbon economy will support the construction, energy and manufacturing sectors. The transport industry can gain economic competitive advantage through using financial instruments such as grants, green bonds, and venture capital to build resilient infrastructure and progress low carbon transport options.

Megatrends

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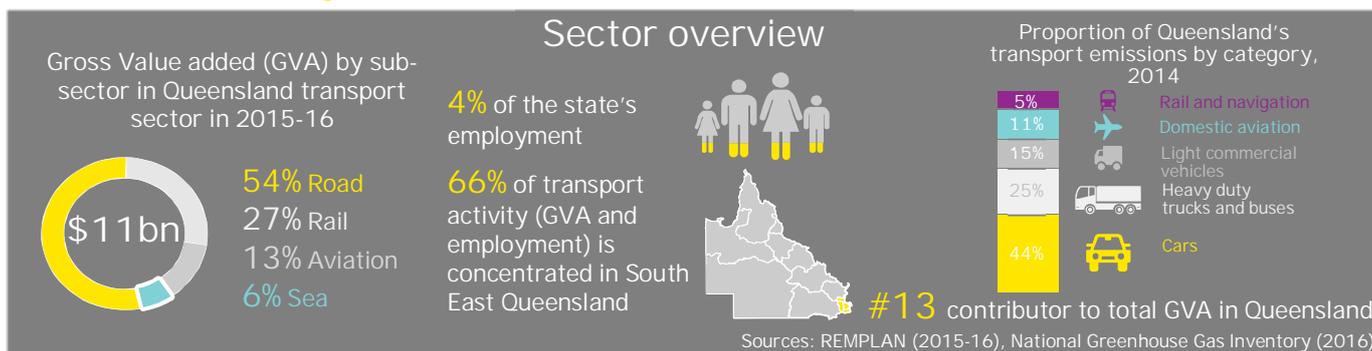
Reduction in transport emissions through low carbon alternatives, including biofuels, hydrogen and EVs
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Growing importance of wellbeing and healthy transport modes, including active transport
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Connectivity and smart technology enabling more efficient transport modes and resilient transport infrastructure

"The transition to a low carbon economy is underway and moving quickly. The weight of money, pushed by commercial imperatives such as investment, innovation and reputational factors, is increasingly driving that shift, rather than scientists or policymakers."
Geoff Summerhayes (APRA)

The Queensland transport sector underpins activity in all other sectors of the economy, providing the supply chain for industries to access markets, and to move products and people to the right location at the right time. A reliable, efficient transport sector is therefore critical to the Queensland economy. The transport sector has already faced significant disruption by new technologies and the share economy. The transport sector can work with other industry sectors such as construction to ensure resilient transport infrastructure which can withstand increasingly severe weather events.



The EY analysis shows that the transition to zero net emissions presents significant opportunities for the transport sector. There are investment opportunities to realise these benefits and to effectively manage risks in the transition.

Risks in a zero net emissions economy

- ▶ Extreme weather events pose physical risks to transport infrastructure.
- ▶ Low carbon transport technological advancements may cause disruption to transport networks and supply chains, if appropriate planning does not take place.

Opportunities in a zero net emissions economy

- ▶ Implementation of incentives and policies can support rapid uptake of electric vehicles or alternative fuels in Queensland.
- ▶ Technology provides opportunities for improved transport network efficiencies.

Ernst & Young (EY) was engaged by the Department of Environment and Science (DES) to undertake a qualitative climate change risk and opportunity assessment for 8 sectors and 13 regions of the Queensland economy, under both a low carbon (2°C) and a business as usual scenario out to 2050. The assessment used the framework developed by the Task Force on Climate-related Financial Disclosures, which demarcates physical and transitional risk, as well as categories of opportunities and their implications.

The current Queensland context

Light and heavy transport

- ▶ More than 80% of total transport emissions are attributed to road transport, including cars (44%), buses and heavy vehicles (25%) and light commercial vehicles (15%).
- ▶ The Queensland Biofuel Mandate promotes E10 fuel consumption.

Aviation

- ▶ The Brisbane and Gold Coast Airports are the main GVA contributors (85%) of air transport across the state.
- ▶ Domestic flights account for a tenth of total transport emissions in Queensland.
- ▶ The aviation sub-sector is instrumental for the Queensland Bio-futures 10-Year Roadmap and Action Plan.

Rail transport

- ▶ Key railway regions in Queensland include Brisbane, Central Queensland and Mackay. This supports key ports in these locations, of which is key for exports such as metals, minerals and livestock.
- ▶ 3% of Queensland's transport emissions came from rail in 2014.

Queensland in a zero net economy

Light and heavy transport

- ▶ Infrastructure changes may be required due to a shift towards electric and autonomous vehicles.

Aviation

- ▶ Consumer preference is predicted to increase demand for lower carbon alternatives.
- ▶ Climate change and extreme weather events affect coastal infrastructure including airports.

Rail transport

- ▶ There may be an uptake of rail transport usage as a lower carbon alternative, including electrified rail and interstate rail infrastructure.
- ▶ Extreme weather events will affect rail infrastructure.

How can Queensland position itself for the transition?

Attract investment

Facilitate growth

Government

To attract investment in the transport sector, the Queensland government can:

- ▶ Invest in advancing alternative energy sources for light and heavy road transport and aviation including biofuels, electricity, and hydrogen.
- ▶ Explore co-investment opportunities for infrastructure development with other industry sectors such as energy, construction and manufacturing.
- ▶ Invest in efficiency of transport and digital mobility, including infrastructure for electric vehicles and rail, rapid bus transit, and 'smart' automatic train/traffic controls.
- ▶ Enable efficient connections between rail transport and road transport at key transport hubs including ports and inland rail.

To facilitate growth of the transport sector, the Queensland government can:

- ▶ Engage with public and private stakeholders from different industry sectors to set out transition strategies and policies including interdepartmental agreements and public-private partnerships (PPP).
- ▶ Proactively plan and regulate for expected technological disruption in the transport sector, such as the impact of electric vehicle uptake on fuel excise and infrastructure.
- ▶ Undertake an assessment of the viability of competing alternative fuel technologies.

Industry

To attract investment in the transport sector, the Industry can:

- ▶ Develop a reputation as a global leader in the transport sector through innovation, supporting a skilled workforce and automation.
- ▶ Explore opportunities to use alternative energy sources, including biofuels, hydrogen and electricity from renewables.
- ▶ Seek domestic or international funding for infrastructure through different financial instruments such as grants, green bonds and venture capital. Potential investors may include state and federal government, development banks and institutional investors.

To facilitate growth of the transport sector, the industry can:

- ▶ Explore options to upgrade vehicle fleets to be more fuel efficient, or have a greater proportion of electric vehicles
- ▶ Participate in domestic and international emerging markets. This may include generation of carbon offsets through biofuels, low-carbon transport infrastructure and energy efficient alternatives.

Proactive strategies and engagement will enable the Queensland transport sector to remain resilient and sustainable in the face of climate change. The sector has a significant opportunity to contribute to a future zero net emissions economy through low carbon transport technologies.