



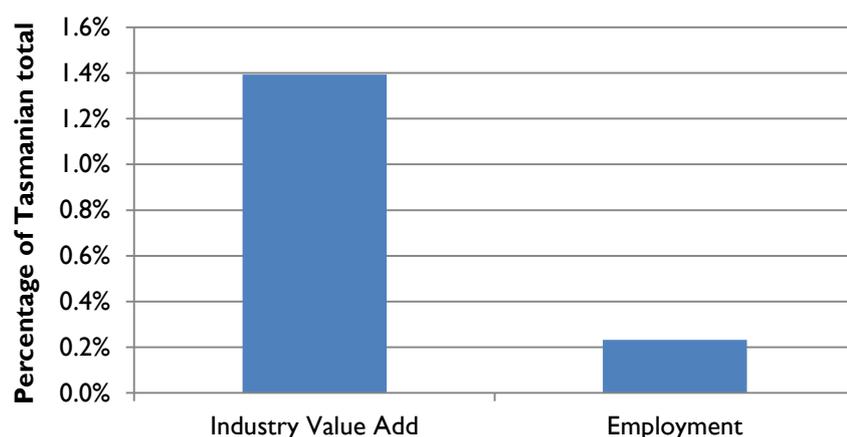
Renewable energy

The trade and investment sectors contained in the Economic Development Plan have been compiled from Australian and New Zealand Standard Industry Classification (ANZSIC) classes using a value chain approach. This means that industry classes from ANZSIC have been grouped together to provide estimates of the size of the particular trade and investment sectors.

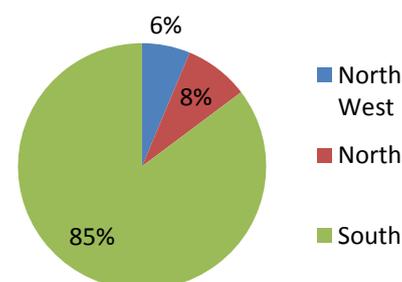
Coverage: the generation of electricity through renewable sources such as water and wind.

Key indicators

Renewable energy



Regional employment



The above statistics have been represented to the nearest whole number.

Key statistics at a glance

Indicator	Units	Period	Data	Change from five years ago	Per cent of Tasmania	Per cent of Australia
Industry value add ^(a)	\$M	2012-13	\$337	NA	1.4%	0.1%
Employment ^(b)	No.	2011	490	-34.8%	0.2%	0.0%
International exports ^(c)	\$M	NA	NA	NA	NA	NA
Incomes (average weekly) ^(d)	\$	2011	\$1 635	21.2%	185.3%	175.6%
Education ^(e)	No.	2011	332	NA	67.8%	68.1%
Employment (proportion full/part) ^(f)	Type	2011	Full-time	NA	87.5%	89.2%

Sources: Australian Bureau of Statistics (2012, 2013), Department of Economic Development, Tourism and the Arts (2013), Department of State Growth (2014), AEC Group

(a) Source AEC Group. Industry value add (IVA) is a component of the ABS estimate of Gross State Product and measures the total value of goods and services produced by the sector less the value of inputs. Estimated change in IVA from five years ago for a sector is heavily influenced by change at the highest 'ANZSIC Division 1' level of industry aggregation and is not reported.

(b) 2011 ABS Census. AEC Group considers this the most accurate estimate of employment at the detailed four digit ANZSIC level.

(c) Estimates of international exports using ABS data.

(d) 2011 ABS Census. This includes employment and non-employment related income (e.g. rents, dividends, interest, child support and government pensions and allowances). A percentage above 100 per cent of average weekly income suggests workers in this industry earn higher than the average wage.

(e) 2011 ABS Census. Education measured by the number of employees who have completed Year 12 (or equivalent studies). Percent of Tasmania/Australia shows the proportion of workers in this sector who have attained this level of education.

(f) 2011 ABS Census. Percent of Tasmania/Australia shows the proportion of workers employed in this manner.

Sector Summary

Tasmania has a natural competitive advantage in renewable energy, with proven hydro and wind resources and emerging biomass to bioenergy potential. Geothermal and ocean (wave and tidal) energy have longer term potential. Tasmania also has significant renewable-energy research capability, and industry and government knowledge.

Since the Tamar Valley gas-fired power station is now only run on a 'campaign basis', and the remainder of Tasmania's electricity is hydro-generated (renewable), Tasmania is at times generating nearly 100 per cent of its electricity needs from renewables each year. The state contributes around 50 per cent of the nation's renewable electricity from an installed energy-generation capacity of approximately 2.42 GW. Looking to the future, Tasmania has the potential to make a substantial contribution to the national Renewable Energy Target (RET) of producing 20 per cent of Australia's electricity output from renewable sources by 2020.

Renewable energy projects planned or already in operation include:

- existing hydro assets increasing output, and new generation from small and mini-hydros associated with the new Tasmanian Irrigation schemes being developed
- the continued operation of Hydro Tasmania's Studland Bay and Bluff Point wind farms (140MW installed capacity)
- a 168MW wind farm at Musselroe that was fully commissioned in late 2013
- plans for wind projects on King Island, Central and North West Tasmania of up to 740MW of installed capacity, in conjunction with consideration of a second mainland interconnector
- substantial research and innovation programs underway in other commercial-scale generation technologies, including marine, geothermal and bio-energy technologies.

Renewable energy generated in Tasmania can be fed into the mainland Australia electricity grid via the Basslink undersea cable, which was completed in 2006.

The Tasmanian Renewable Energy Industry Development Board in the period 2009-2011 developed a strategy document that became a key source of advice to the Tasmanian government in this policy area. Initial priorities for the sector, as informed by that strategy document, are outlined in this Sector Summary.

The Board's advice was also used to inform the Electricity Supply Industry Review, which reported in December 2011. The review was charged with providing guidance to parliament on the current position and future development of Tasmania's electricity industry. The key recommendations of the review were to 1) improve transparency of the wholesale electricity market, 2) to merge the transmission and distribution networks, 3) to sell the Tamar Valley Gas Power Station, and 4) to proceed with full retail contestability in the retail market. The first three of these have been implemented and work is continuing on the fourth.

Following the election of the Commonwealth Government in September 2013, the previous administration's Clean Energy Future plan is being significantly rationalised. The policy areas covering renewable energy, including climate change, carbon pricing and greenhouse gas mitigation measures are still highly fluid and subject to intense debate and scrutiny. The impact of these policy shifts on the future of Tasmania's role as a major participant in the renewable energy sector is yet to be determined.

Constraints and Opportunities

Constraints

- The Commonwealth Government is legislating to remove the carbon-pricing mechanism and introduce a 'Direct Action' policy, which is likely to lessen incentives for developers of utility-scale renewable energy projects. Significant uncertainties in the legislative program remain, with the role of the Senate in supporting these changes becoming of increasing importance.
- The Commonwealth Government is reviewing the Renewable Energy Target (RET) program. Renewable Energy Certificates generated under the RET provide subsidies to renewable energy generators. The objective of this program is to meet a national target that 20 per cent of Australia's electricity be sourced from renewables by 2020. It is possible that the RET program will be modified significantly, thus making it more difficult for new renewable energy projects to proceed.
- Since the introduction of carbon pricing in July 2012, total demand for electricity in Australia has declined primarily due to the off-shoring of Australian manufacturers and increased energy efficiencies.
- The loss of one or more Tasmanian Major Industries, through closure or relocation, would impact significantly on the state's aggregate energy demand. This would result in a substantial surplus of excess generating capacity. A response to this could be a major lift in exports of electricity over the Basslink Interconnector.
- The installed base of domestic photo-voltaic (PV) arrays now exceeds one million houses across Australia. This aggregate generating capacity is impacting on the development of new large-scale base-load generation and at the same time putting network infrastructure under stress. The intermittent nature of PV and wind generation can cause significant voltage and frequency variations across the network.
- Regulatory and policy framework hurdles, particularly National Electricity Market rules and regulations.
- Relatively-high capital costs associated with investment in large-scale renewable energy and an associated difficulty obtaining finance, particularly with policy uncertainties surrounding the Renewable Energy Target.
- Complexity of planning and approval processes.
- Remoteness of some renewable energy resources and intermittency of wind and solar power.
- The characteristics and age of generation, transmission and related infrastructure.
- Network connection and commercial matters involving electricity service providers.
- Limited size of the Tasmanian electricity market.
- Recent history of high electricity prices, with rising costs due to network upgrades.
- Transmission losses to Victoria, due to the length of Basslink interconnector, results in an increased delivered cost of the electricity compared to mainland generators.

Opportunities

- The existing electricity supply is primarily based on renewable resources, such as hydro infrastructure, and there is broad resource capability advantage, including wind, biomass energy, geothermal and marine resources.
- Some renewable resources are relatively close to the existing electricity network infrastructure.

Constraints and Opportunities

- The current Bass Strait electricity link has further capacity to accommodate growth in renewable electricity generated for export.
- A very large wind power project, which would produce energy for Victoria, is planned for King Island. However, the project is yet to obtain social licence and the project is unlikely to be feasible if the Renewable Energy Target program is downgraded or terminated.
- Significant small to mid-scale embedded and distributed generation for rural enterprises and communities.
- Leverage the research and innovation capabilities and resources available through the University of Tasmania and other Tasmanian-based research institutions, and their national and global links.
- Deploying intellectual property developed from research and innovation projects (such as Hydro Tasmania's King Island renewables integration project).
- Increase the deployment of renewable energy enabled by a potentially 'smarter' electricity grid, where generation and load requirements and network usage is closely optimised, through techniques such as demand-side management.
- There may be a modest increase in demand for renewable electricity from electric vehicles.

Potential changes in the Commonwealth Government's approach to carbon pricing and the scaling back of financing incentives for renewable energy will impact on the growth of this sector in Tasmania. It will be difficult for the Tasmanian Government to act alone in providing incentives for renewable energy uptake.

In the short to medium term, commercially-viable renewable-energy development will generally favour the more 'proven/mature' renewable energy technologies at the lower end of the cost scale, including hydro and wind.

In the longer term, a second electricity interconnector may become viable and electricity generation technology may mature to a level of reliability, at a price that enables the conversion of ocean, geothermal and bio-energy resources into safe, secure and commercially-viable quantities of renewable power.

Tasmania also has the potential to sell intellectual property developed from knowledge and innovation projects. Early opportunities include the application of learning from the King Island Renewable Energy Integration Project to power generation solutions for remote communities in Australia and overseas.

Strategy Summary

Discussion of Tasmanian Government strategies

In 2013, the Tasmanian Government evaluated the potential of biomass resources as a source of renewable energy. The first project examined was the production of ethanol from wood residues, but this was shown to not currently be commercially viable. The study has since examined the merits of the production of wood pellets from sawmill residues. Pellets are widely used in Europe as a source of fuel for district heating, where hot water is piped around a closely-settled township. The feasibility of heating municipal swimming pools using sophisticated European wood-fired boilers is being investigated. Heating pools using electricity has become a heavy burden on council finances. The merits of heating hospitals and nursing homes with wood-energy in regional areas is also being examined.

Strategy Summary

Other forms of bio-energy, such as the production of biogas from anaerobic digesters that treat waste from industries such as fish processors, also have potential in Tasmania. At a number of its water and sewerage treatment plants, TasWater is increasingly capturing biogas from its facilities, generating electricity for its own use and exporting into the grid. It is expected that such niche applications of renewable energy will be more widely adopted.

If the carbon-pricing mechanism were abolished, the previous positive outlook for renewable energy in Australia would be moderated. The national policy agenda, and the uncertainty over the RET program is likely to make the financing of utility-scale renewable energy developments more difficult to achieve.

In Tasmania, facilitation will be given to small, to mid-scale embedded renewable generation. This is likely to remain an attractive opportunity for businesses that can offset their electricity bills by generating power 'behind the meter'. Nichols Poultry's wind generation is the exemplar project using this approach.

Examples of the Tasmanian Government's strategies for the industry:

- Work with regulators and electricity businesses to deliver greater clarity, transparency and fairness in the contractual arrangements between embedded generators and electricity network and retail businesses.
- Facilitate development of distributed and embedded generation projects including wind, mini-hydro and biomass technologies in particular.

Promoting Renewable Energy Research, Development and Demonstration:

- Hydro Tasmania's \$40.9 million, three-year program of renewable energy development and innovation projects on King Island was completed in 2013. The project is successfully delivering on its objectives.
- Continue to pursue options for funding Hydro Tasmania's proposed \$2 million King Island Renewable Energy Centre of Excellence.
- Continue efforts to secure public or private funding for Hydro Tasmania's proposal for up to \$12 million of renewable energy projects and related power system technologies on Flinders Island.
- Renewable energy based on Tasmania's endowment of residues from the agriculture and forestry industries.
- Attract investment in projects that use or derive value from our renewable energy sources.