

Submission of Tasmania's Draft Climate Action Plan

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Introduction

Thank you for the opportunity to provide comment on Tasmania's Draft Climate Change Action Plan. We trust that we needn't restate the importance of this issue to Tasmania, to all of humanity, and to the many other lifeforms with which we share the planet.

Climate change is an issue that Sustainable Living Tasmania has been raising awareness about for most of our 44 year history, and we have supported thousands of Tasmanians to take practical actions to address it.

"We have many natural advantages which afford Tasmania the opportunity to be a genuine world leader in the response to climate change. This is an opportunity we must embrace."

The above quote from Tasmania's Draft Climate Change Action Plan is one that we at Sustainable Living Tasmania wholeheartedly agree with. However, in order to achieve it the Tasmanian Government must take

significantly more action than is outlined in the Draft Plan. Too many of the proposed actions involve 'reviewing', 'assessing', 'identifying', 'studying', and 'advancing the case for'; and not enough actual doing.

To lead means to go *before*. Too many proposed actions involve waiting for market conditions to be favourable and then for the market to lead. With so many externalities, waiting for markets is planning to fail. The Tasmanian Government has the power to affect market conditions and catalyse real action through regulation, investment, subsidies, fees, and so forth; and must exercise this power if it is to provide genuine leadership.

In this submission, we first look at what is required at the global level to secure a safe climate, and what Tasmania's contribution toward that goal could and should be. We then discuss and recommend practical actions for each sector of the economy.

Targets

International context

The UN Framework Convention on Climate Change summit in Paris agreed to the target of keeping global average temperatures "well below" 2 °C above pre-industrial levels, and to "pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels"¹.

Table 2.2 of the Synthesis Report of the Intergovernmental Panel on Climate Change's (IPCC) fifth assessment report (AR5) summaries global cumulative emissions consistent with limiting warming to less than stated temperature limits at different levels of probability, based on different lines of evidence². The table shows that, for a 66% chance of limiting warming to 2 °C, global cumulative CO₂ emissions from 1870 must be limited to 2,900 GtCO₂. Since 2,050 GtCO₂ were emitted up to 2015, this leaves 850 GtCO₂ remaining. To limit warming to 1.5 °C, global cumulative emissions remaining are just 200 GtCO₂.

It is important to remember that the Paris Agreement agreed to a target of *well below* 2 degrees C, so simply aiming for 2 degrees C would be to aim for failure. It is presented and discussed here for context only.

For any given 'carbon budget', there are numerous 'pathways' that could be taken to achieve it. Figure 1 illustrates two such pathways for each budget; one linearly reduces from today's rate of emissions (approximately 40GtCO₂/year) to zero; the other exponentially reduces from today's rate of emissions. Table 1 describes the key characteristics of these pathways.

¹ <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>

² http://ar5-syr.ipcc.ch/topic_futurechanges.php

Figure 1 Global emission pathways to limit warming to 1.5 °C and 2 °C

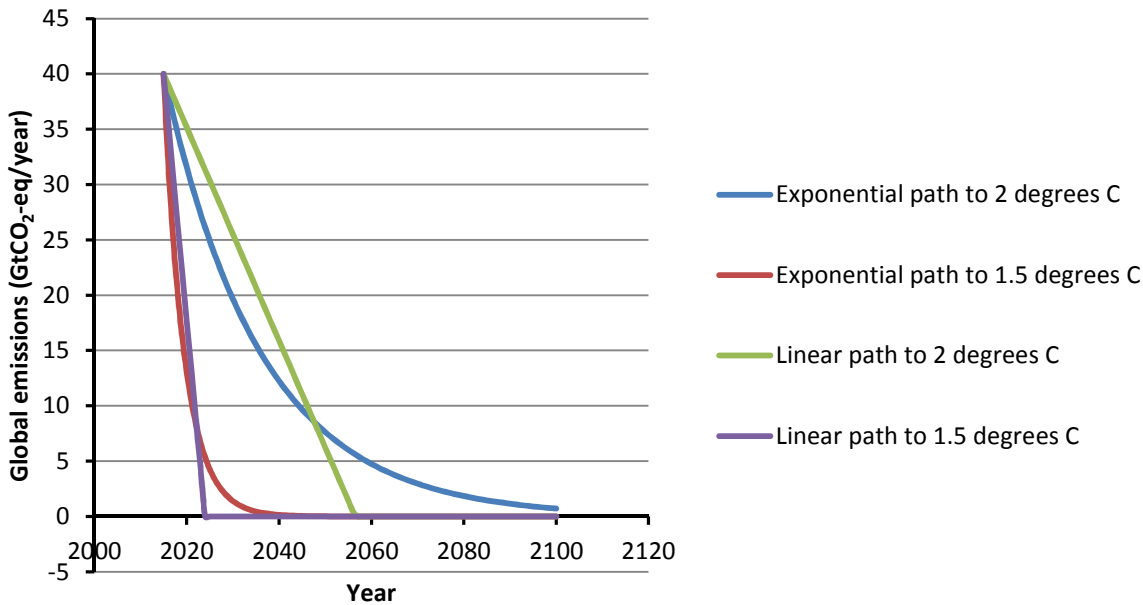


Table 1 Characteristics of global emissions pathways to limit warming to 1.5 °C and 2 °C

Warming limit	Linear pathway		Exponential pathway
	Rate of reduction required (GtCO ₂ /year/year)	Date zero net emissions reached (year)	Rate of reduction required (% p.a.)
1.5 degrees C	4.45	2024	20.0
2 degrees C	0.97	2057	4.6

Effort sharing

While international negotiations finally managed to agree to a sensible target in Paris, they have continued to fail dismally when it comes to agreeing how the effort to achieve this target will be shared between jurisdictions.

There are many different ways of sharing effort to achieve a given global budget, two of which are discussed below.

Equal per capita share of remaining budget

The simplest, but certainly not the fairest or most pragmatic, way is to assign equal per capita shares of the remaining budget. Given Tasmania has a population of half a million out of a global population of seven billion, our share of the global budget would be 60.7 MtCO₂-eq for 2 °C, or 14.3 MtCO₂-eq for 1.5 °C. Properties of the linear and exponential pathways to achieve these budgets are shown in Table 2 below. Note that we assumed emissions at the starting year (2016) would be equal to that of the most recently published emissions for Tasmania (1.7 MtCO₂-eq in 2013).

Table 2 Characteristics of Tasmania's emissions pathways to limit warming to 1.5 °C and 2 °C, assuming equal per capita share of remaining carbon budget

Warming limit	Linear pathway		Exponential pathway
	Rate of reduction required (ktCO ₂ /year/year)	Date zero net emissions reached (year)	Rate of reduction required (% p.a.)
1.5 degrees C	105	2032	11.8
2 degrees C	24	2087	2.4

Equal per capita share of the remaining budget may seem fair at first; however it ignores the fact that some societies, including Tasmania, have become significantly wealthier than others by using far more than their fair share of emissions historically.

Further, as discussed below, Tasmania is able to make large reductions to our emissions now by regrowing forests that we previously logged. Sitting back and taking credit for this is not showing leadership; especially when it was the result not of choice, but of the unintended collapse of the native forest woodchip industry. We owe it to the world to regrow our forests as carbon sinks *and* to reduce our emissions from other sectors as rapidly as possible.

In addition to the moral problems outlined above, equal per capita share of the remaining budget has pragmatic problems. It would be far more difficult for some jurisdictions to remain within their budget than others, due to factors including but not limited to renewable resource and land availability, existing infrastructure, and financial capacity.

Effort shared according to ability

The fairest and most pragmatic way to share effort is for those who are able to reduce emissions relatively easily (e.g. wealthy societies that have not yet taken significant action to reduce their emissions) to do so more than those for which reducing emissions is more difficult (e.g. poor societies, or wealthy societies that have already taken significant action to reduce their emissions).

While this is the fairest and most pragmatic way, it is complicated to quantify societies' relative abilities to reduce emissions, and – with self-interest too often being prioritised over our global collective interests – it is extremely difficult to reach agreement on.

Leadership is required. If Tasmania is to be a “genuine world leader in the response to climate change” as the Draft Plan states, then we must commit to reducing our emissions as much and as quickly as we are able to.

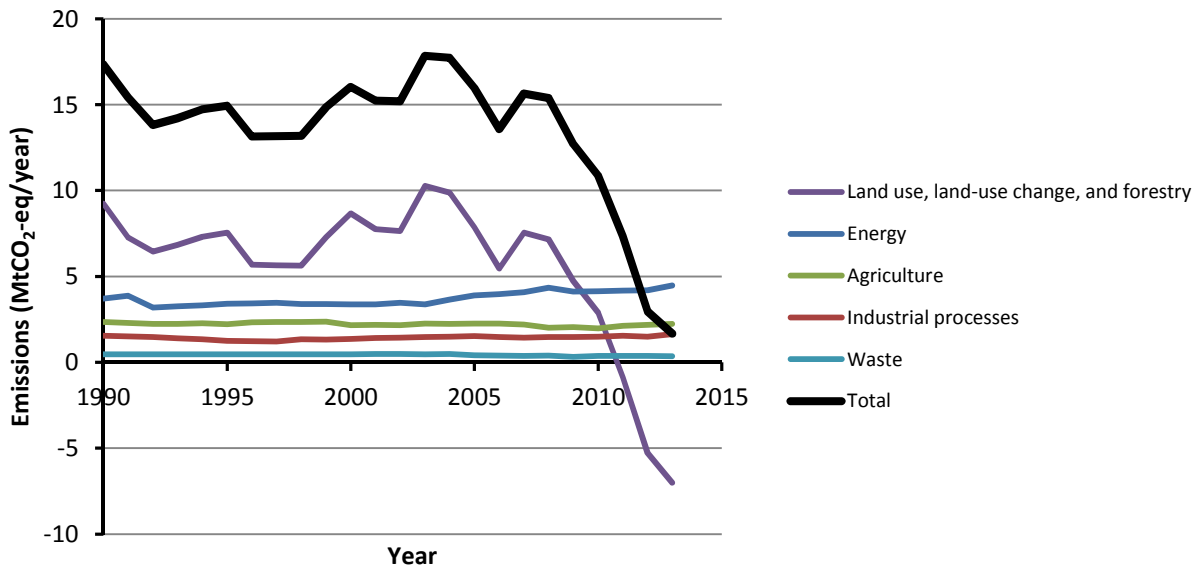
Tasmanian context

Emissions by sector

Tasmania has achieved a reduction in net emissions from 1990 to 2013 of 90%. However, a sectoral analysis (Figure 2) shows that the reduction has been almost entirely from the land use, land-use change, and forestry sector. Emissions from this sector have varied from a high of 10.3 MtCO₂-eq/year in 2003, to a minimum of -7.0

MtCO₂-eq/year in 2013. Emissions from all other sectors (energy, industrial processes, agriculture and waste) have been more or less stagnant or rising since 1990. Together, they increased by 7% from 1990 to 2013.

Figure 2 Tasmanian emissions by sector. Source: Australian Greenhouse Emissions Information Service



Forestry

Forestry has been by far the largest contributor to Tasmania’s emissions sequestration from the land use, land-use change, and forestry sector (97% in 2013). Given its enormous impact on Tasmania’s emissions, forestry being almost entirely excluded from the Draft Plan³ is absurd.

Below we discuss the range of possible future emissions from Tasmanian forests over the coming decades, and how they may be affected by forest management practices.

The Tasmanian Forest Carbon Study (May et al 2012), commissioned by the State Government through the Tasmanian Climate Change Office, is the most thorough analysis of forestry carbon in Tasmania performed to date. It modelled carbon in vegetation, debris and soil in native and plantation forests across public and private land. Many different scenarios of levels and types of forestry activity were modelled to estimate future emissions.

No harvesting or land conversion

The Tasmanian Forest Carbon Study estimated minimum and maximum total carbon stocks in vegetation, debris and soil for all Tasmanian public and private native forests from 2010 to 2200 in the absence of timber harvesting and land conversion. Effectively, this gives a range for the lower limit of forestry emissions (unless large-scale conversion of cleared land to forests is practised). We mathematically differentiated the carbon stocks to give emissions per annum and plotted the result in Figure 3.

³ Fuel reduction burns and exploring energy for biomass are the only two actions outlined in the plan that pertain to forestry management practices.

Emissions start at between -15 and -6 Mt CO₂-eq/year and decay exponentially toward zero as forests mature.

Business-as-usual

The Tasmanian Forest Carbon Study included a “Study Baseline” (business-as-usual) case. Through estimating cumulative changes in carbon pools in vegetation, debris and soil from 2010 to 2050 for the Study Baseline, the study concluded “Tasmania’s forests are expected to be net carbon sinks for the period, sequestering a total of 111-194 Mt CO₂-eq (equivalent to 2.8-4.7 Mt CO₂-eq/year).”

Note that the 2.8-4.7 Mt CO₂-eq/year range is an average over the 40-year period. The actual emissions sequestered would start higher (3.3-5.8 Mt CO₂-eq/year) and decay exponentially toward zero over decades.

The lower end of the range for the business-as-usual case is almost identical to the upper end of the range for the ‘no timber harvesting and land conversion’ case. The range of values is plotted in Figure 3.

Higher emissions practices

The scenarios modelled in the Tasmanian Forest Carbon Study that result in the highest emissions were:

Native forests: Reducing rotation length in regrowth forests from 80 years to 60 years

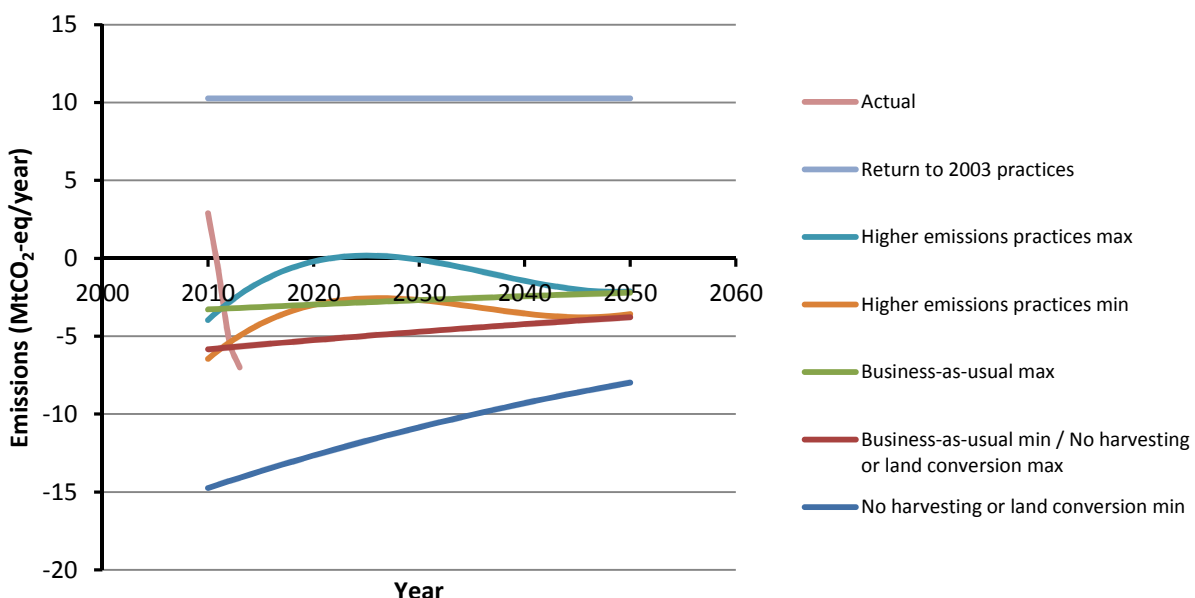
Plantation forests: Not replanting 25% of existing pulpwood plantations after their first harvest

Combined, these scenarios result in an average increase in emissions over business-as-usual of 1.3–1.6 Mt CO₂-eq/year between 2010 and 2050. The range of values is plotted in Figure 3.

Return to 2003 practices

Tasmania’s forestry emissions could theoretically return to the 2003 maximum of 10.3 MtCO₂-eq/year (or possibly even higher). This has been added to Figure 2 to approximate the upper limit to Tasmania’s forestry emissions.

Figure 3 Actual and projected emissions from forests under various forestry management practices



Recommendation 1: Include forestry in climate change plans

As demonstrated above, emissions from forestry could range anywhere from -15 to +10 MtCO₂-eq/year depending on forestry management practices. This range dwarves emissions from all other sectors, and so has the potential to 'make or break' Tasmania's emissions budget. As such, forestry management planning must be integrated into a broader plan to manage Tasmania's overall emissions, including targets.

Discussion and recommendations

Recommendation 2: Set annual targets

History has shown that a single target several election cycles off in the future has little to no bearing on policy or outcomes. Short-term targets at regular intervals are necessary to create accountability and catalyse action. We recommend annual targets.

Recommendation 3: Set sectoral targets with plans to achieve them

Sectoral targets and plans must be put in place to ensure economy-wide goals are achieved. A target with no plan to achieve it is practically useless.

An early step was taken by the Tasmanian Government with the Tasmanian Wedges Report⁴. The report modelled Tasmania's emissions and identified and quantified potential emissions savings in each sector. That should have been the basis from which to devise more detailed sectoral plans with specific targets, actions, timeframes and resourcing to achieve them. However, since the report was published in 2009 only a small proportion of the actions identified in the report have been acted upon in on an ad hoc basis, and detailed sectoral targets and plans are notably absent.

Recommendation 4: Set a target of zero emissions by 2050 for non-land-use sectors

Organisations such as the University of Melbourne's Energy Research Institute, the University of Technology Sydney's Institute for Sustainable Futures, and Beyond Zero Emissions (BZE) have shown how Australia can achieve zero emissions in significantly shorter time frames, as short as 10 years; so 34 years (from now until 2050) is entirely practical and achievable for Tasmania.

Recommendation 5: Set a target of zero net emissions by 2035

Recommendation 6: Set a target of negative emissions from 2036 to 2100

Given the huge potential for forestry to continue sequestering carbon, these targets are entirely practical and achievable. In fact, as shown in Figure 3, they are achievable using the most recent figure for emissions from the land use, land-use change, and forestry sector (-7 MtCO₂-eq/year in 2013), exponentially decaying over time at the rates presented in the Forest Carbon Study.

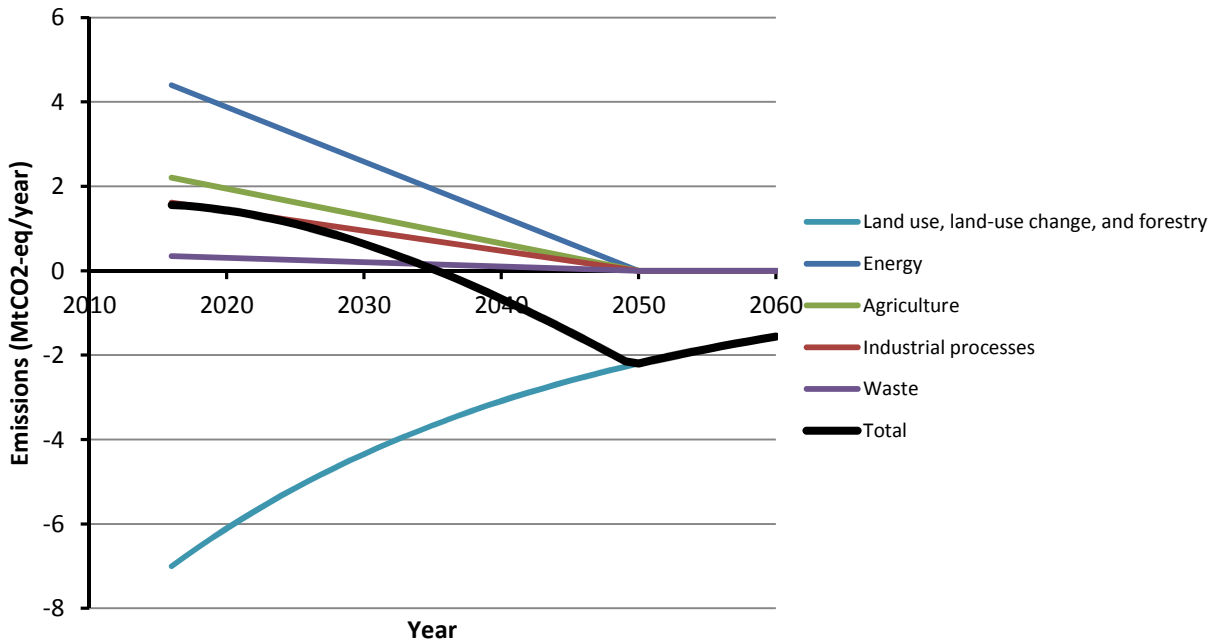
Note that this goal would not mean the end of the forestry industry. As demonstrated above, Tasmanian forests can continue to be worked while sequestering significant amounts of carbon. What is necessary is for the rate of deforestation to be significantly less than the rate of reforestation. Once other sectors are decarbonised, forestry can continue indefinitely at a sustainable rate, where carbon in and out of the forests is truly balanced.

4

http://www.dpac.tas.gov.au/divisions/climatechange/climate_change_in_tasmania/tasmanias_emissions/resources/tasmanian_wedges_project_report

Pathways for the sectoral and overall targets described above are illustrated in Figure 4 below.

Figure 4 Recommended target emission pathways by sector



Practical actions by sectors

Stationary energy

For many years now, Tasmania has, on average, not generated enough electricity to meet demand. Tasmania has leaned on Basslink as a crutch to make up the shortfall and most recently that crutch has broken leaving us with an energy security crisis. The gap between generation and demand must be closed through the combination of reducing demand through energy efficiency, and increasing generation by installing new generation capacity.

The emergency measures of reinstating gas turbines, installing diesel generators, and rationing electricity consumption from heavy industries, while necessary for energy security in the short-term, are disastrous for the economy, employment, Tasmania’s brand and our contribution to climate change mitigation in the medium-term. Other measures must be put in place as quickly as possible to rectify this.

While we acknowledge that the Draft Plan was written before the energy crisis came to bear, it is clear that the actions outlined in it are grossly insufficient. The Government must be far more proactive in improving energy efficiency and increasing renewable generation.

Generation

One renewable energy expert in Tasmania, Jack Gilding, has suggested Tasmania needs 1544 GWh/year of additional renewable energy capacity to meet the shortfall and rebuild hydro dam storage to secure levels over

5 years. While this figure may be able to be reduced with a concerted effort on energy efficiency and by taking longer to rebuild dam levels, however it is clear that a significant amount of new generation is essential.

A second Basslink interconnector: history repeating?

The existing Basslink interconnector was originally envisaged as a means for Tasmania to profit by selling clean energy to the mainland at a premium during peak demand times, with energy security being a secondary benefit. It turned out that by the time Basslink was commissioned an energy security crisis was emerging, due largely to reductions in long-term hydro capacity from reduced rainfall. In order to solve this crisis, Tasmania became a net importer of emissions-intensive electricity from the mainland.

Despite the gap between generation and demand, Basslink did not sufficiently catalyse investment in new renewable generation – although we acknowledge other factors were at play; especially drawn-out uncertainty regarding the Renewable Energy Target and carbon pricing.

Back to the future: In light of the energy crisis, considering a second interconnector feels like history repeating. With the gap between generation and demand continuing, a second connector would likely be leaned upon by Tasmania for energy security. Energy security would be greatly improved due to the multiple redundancy of two cables, but net imports of emissions-intensive electricity from the mainland would only increase.

Recommendation 7: Invest in bridging the gap between generation and demand before looking at a second interconnector

A second interconnector would come with a hefty price tag. Surely this money would be better spent on improving energy efficiency and increasing generation in Tasmania. For example, our ‘back-of-the-envelope’ calculations suggest spending the same amount on wind farms would well and truly secure Tasmania’s energy supply. Once the gap between generation and demand is bridged the case for a second interconnector may be sound, but bridging the gap should be the first priority.

Medium and Large Scale Renewable Energy

The Draft Plan includes the action “maximise the potential for a market-led growth in renewable energy generation in Tasmania”. This seems more a goal than an action, and the actions required to achieve it are not specified. Perhaps we are reading too much into it, but the term “market-led” seems to indicate that the Tasmanian Government is not willing to invest (or at least not significantly) in new renewable generation. Given the current energy crisis, this approach is insufficient.

Recommendation: Implement a reverse-auction scheme for medium-to-large scale renewable generation

The Tasmanian Government should look to its counterparts in other states and territories to see what they have done that has worked. ACT’s reverse auction scheme has been particularly effective. The Tasmanian Government should implement a similar scheme to effectively and rapidly bridge the gap between electricity generation and demand, taking into account potential changes to demand from energy efficiency, electric vehicles, and population changes; and from growth in embedded generation.

Embedded renewable generation

Embedded renewable generation can make a significant contribution toward bridging the gap. Indeed, it had been up until the Tasmanian Government slashed the feed-in tariff by around 80%. Small-scale renewable generation includes rooftop solar and wind turbines owned by households and businesses, as well as community-owned renewable energy projects.

Recommendation 8: Increase the feed-in tariff to half the standard usage tariff

Embedded generation can again make a significant contribution by increasing the feed-in tariff to reflect the value it provides toward Tasmania's energy security. The current standard tariff 31 rate is 25.2c/kWh. We recommend setting the feed-in tariff at half this rate: 12.6c/kWh.

Recommendation 9: Expand maximum installed capacity for feed-in tariff to 100kW

This is required to enable larger-scale embedded generation projects to proceed.

Recommendation 10: Direct energy GBEs to assist with community renewable energy projects

This may include looking at where distributed generation would be of greatest benefit to the electricity grid, assisting to navigate bureaucratic processes, and fast-tracking approvals.

Energy efficiency

“While our energy generation is predominantly renewable, it is not exclusively so. Therefore increasing energy efficiency can have environmental benefits as well as cost benefits.”

Behavioural change in energy use and the adoption of energy efficient technology are powerful tools in tackling Tasmania's energy security and contribution to climate change.

Recommendation 11: Legislate for an energy efficiency scheme

Energy efficiency schemes have been highly successful in driving energy efficiency improvements across residential and commercial sectors in other states and territories. These include the Victorian Energy Efficiency Target, New South Wales Energy Savings Scheme, South Australia Retailer Energy Efficiency Scheme, and the Australian Capital Territory Energy Efficiency Improvement Scheme. The Tasmanian Government should avoid 'reinventing the wheel' and simply adopt one of these schemes.

Recommendation 12: Facilitate large-scale roll-out of heat pumps and insulation

We note the action in the Draft Plan to extend the Save Home Energy program to install heat pumps to 100 Housing Tasmania properties and ceiling insulation to 50 Housing Tasmania properties. In light of the energy security crisis, we recommend facilitating a roll-out of heat pumps and ceiling insulation at a much larger scale.

The Government need not foot the entire bill. Sustainable Living Tasmania recently conducted a community bulk buy of heat pumps, installing more than 100 over the past few months at house owners' own expense. By pooling purchasing power we were able to secure excellent pricing and, in combination with subsidies for low income earners through the NILS Energy Saver Scheme, were able to make them very affordable for most Tasmanians. Through this process we developed community engagement strategies, educational materials and

administrative systems, and learned a great deal along the way. We would be happy to work with the Government to devise a program to deliver this approach at a larger scale.

Recommendation 13: Complete the roll-out of the Energy Champions program for Housing Tasmania properties

Sustainable Living Tasmania has developed an in-home education and upgrade service over many years, delivering them to more than 4,000 households in the past 4 years alone. We have collected billing data that proves our service delivers results and have enabled us to fine-tune it to optimise for cost-effectiveness.

Over 2 years the Energy Champions project: educated 3,300 Housing Tasmania households, changed 24,000 lights, draught-proofed 4,700 doors, changed 2,000 showerheads, and much more.

Reductions in energy use averaging 3.2kWh/day (10% off the average bill) have been verified by comparing billing data for 12 months before and after we delivered the service. Households are saving an average of \$260 per year on their energy bills. This gives a financial payback period of just 3 years – much shorter than any other energy intervention, including heat pumps, insulation, or solar panels.

In addition to the energy savings, showerhead replacements are saving an estimated 117,000 kL annually, which is saving the Tasmanian Government approximately \$100,000 per year on water bills.

The program also assisted households to combat mould and condensation issues through targeted advice, to reduce financial stress, and to stimulate the economy through spending in other areas. It received overwhelmingly positive feedback from participating households. For example:

- “It’s the best thing Housing ever did for us”
- “We’re not worrying about the next \$10 for electricity. I can see my way clear to put money aside for something new and nice for the kids”
- “The draught proofing on the front and rear doors is great, I can walk past the door and no cold air comes in anymore!”
- “Hi, I have just had Rebecca and Gillian out to access my unit; and they were so very helpful. Their tips were great; and I will use their advice. Thanks a lot. P.S. I was in the middle of a crisis when they came; and they were so understanding”
- “The energy helpers were pleasant. The best thing was the advice on condensation in winter and mould removal”

	Progress to date	Remaining (estimates)
Service offered to	5,953	4,000
Not contactable by phone or declined to participate	2,630	1,767
Service delivered to	3,306	2,233

We recommend delivering the program to the remaining households over the next 3 years.

Continuing the Energy Champions project is supported across the community service sector, as evidenced by budget submissions from TasCOSS, Tasmanian Association of Community Houses, and Shelter Tasmania.

Recommendation 14: Expand the Energy Champions program to all tenure types

A significant challenge in past residential energy efficiency programs has been recruitment of participants due to narrow selection criteria that have varied from program to program:

- Power Savings for Tenants was for private renters only.
- Energy Champions was for Housing Tasmania tenants only.
- Stay Warm Save Money was for private renters and owners only.

This has made recruitment of participants more complicated and costly. Willing participants needed to be turned away due to not meeting the criteria around tenure type. The programs came to abrupt ends just as word-of-mouth has gathered momentum as the most cost effective recruitment strategy.

There were also significant start-up and wind-down costs associated with each program.

Running a single residential energy efficiency program open to all tenure types would overcome these challenges and achieve far more cost effective results.

Recommendation 15: Extend support to aged-care facilities and other business types to receive detailed energy audits

In 2015, Sustainable Living Tasmania delivered on a contract with the Tasmanian Government to perform detailed energy audits for 9 aged-care facilities. We identified significant energy, emissions and cost savings for each facility. This program should be extended to all remaining aged-care facilities across Tasmania (approximately 70). The program should also be expanded to other business types on a rolling basis. To reduce costs, the audits could be partially subsidised rather than completely paid for by the Government.

Transport

A large percentage of our carbon emissions are derived by our cultural reliance on fossil fuel powered transport (45% of emissions from the energy sector in 2013). Policy and development that aim both to reduce our transport needs and to meet them with lower emissions intensity are needed to address this. There are many options at the Tasmanian Government's disposal, including land-use planning, active transport, public transport, and reducing the emissions intensity of motor vehicles. Only the full complement of these measures will achieve sustained results.

To effectively reduce the number of cars on our roads, active and public transport need to be attractive to a level that they maintain position as the preferred methods of transport after initial decongestion benefits are seen. After adopting new methods of transport, many users will continue using them even as traffic congestion is reduced, sighting recovered free time and monetary benefits. For some however, unless the use of personal vehicles becomes unappealing through increased financial penalties such as parking rates and congestion tolls, a reversion to old methods is expected.

Meeting Hobart's transport needs

As the authors of this section are Hobart-based, we provide specific examples for Greater Hobart; however the same principles can be applied to all population centres.

While Hobart has many natural advantages, when it comes to transport our geography presents significant challenges. The Derwent River divides the city and squeezes it around the foothills of Kunanyi.

Urban sprawl of moderate-to-high socioeconomic areas has increased the percentage of city workers on the south western and eastern shores. Road transport from both areas into the CBD is heavily constrained by the Tasman Bridge and the Southern Outlet / Macquarie Street intersection. These areas are currently poorly serviced by ageing and infrequent public transport services that are still delayed by these same road network issues. These difficulties and no viable public transport alternatives encourage these residents to continue to choose high emission personal transport over public transport.

The Brooker Highway has also become congested during peak times. While road works currently underway may temporarily relieve congestion, this will only encourage more people to drive personal vehicles, returning us to the same problem. Only the combination of transit-oriented development, active transport and public transport is likely to achieve long-term success.

Urban sprawl and congestion has significant economic, social and environmental costs including lost productivity, social exclusion, fuel insecurity, health problems, increased carbon emissions and reduced liveability.

Recommendation 16: Make transit-oriented development central to land-use planning

Transit-oriented development around public transport hubs can help alleviate urban sprawl and congestion. It is a well-established approach globally, but has not been adopted in any meaningful way in Tasmania to date.

Active transport

Active transport reduces emissions and comes with significant co-benefits, especially to health. We welcome improvements made in recent years to cycling infrastructure; however it is still patchy and disconnected, meaning cyclists are required to share roads with cars and heavier vehicles for some part of most journeys. Only a small percentage of the population are confident enough to do this, so it is a significant barrier to broadening the uptake of cycling.

Recommendation 17: Support active transport and improve infrastructure for it

Actions may include:

- Creating an integrated network of cycling paths and lanes.
- Consistent placement and sufficient design of bicycle lanes.
- Highlight bicycle lanes through intersections to raise awareness.
- Support cyclists by improving wayfinding systems allowing easy navigation of safe bicycle routes.
- Improve the safety of bicycle travel through the CBD through broader implementation of low speed vehicle zones.
- Introduce dedicated head start traffic signals for cyclists and include broad and visible bicycle zones to ensure cyclists are fully visible to motorists at managed intersections.
- Address the Tasman Bridge being a major deterrent to cycling for the majority of eastern shore residents. Key factors are exposure to wind, traffic and infrastructure. Dedicated two-way protected paths for bicycle/pedestrian travel would positively encourage eastern shore residents to take up active transport.

- Strengthening the link with growing southern communities by providing a safer pedestrian/cycle network through the southern suburbs of Hobart.
- Developing safe public end-of-trip facilities throughout the city and mandate inclusion of end-of-trip facilities in all new major developments. End-of-trip facilities should include change-rooms, toilets, personal lockers and bicycle parking.
- Investigating further the feasibility of changing non-arterial one-way traffic streets into two-way. This improves the safety of cyclists and opens up more efficient vehicle routing.
- Ensure all new public transport fleet allow for the integration of bicycles.
- Encourage active transport through education; including motorist awareness, safety, learn-to-ride, cyclist behaviour, health, and sustainability benefits.
- Support major town and city centres to implement public bicycle hire schemes such as Melbourne Bike Share.

Public transport

A diversified approach to public transport services will encourage user uptake, freeing up our roads and reducing our transport emissions significantly. The outlined below would provide Hobart residents with three real public transport alternatives, diverting users away from the current inner city road network.

Recommendation 18: Increase funding to Metro Tasmania to purchase cleaner buses

According to Metro Tasmania's annual reports, it has received \$3.25 million per year since 2010 from the Tasmanian Government "to improve its passenger bus fleet and assist with its long term capital replacement program". Given this has not been indexed to inflation, funding was reduced in real terms by 12% from 2010 to 2015. Funding should be increased to enable significant improvements to the emissions-intensity of Metro's fleet in the near-term (~0-5 years).

The life cycle costs of electric buses are very nearly competitive with conventional diesel or gas buses, and are dropping rapidly. A plan - with specific time frames and committed funding - should be put in place to transition the Metro fleet to electric buses in the medium-term (~10 years).

Recommendation 19: Utilise Hobart's northern suburbs rail corridor

The recently disused rail corridor through Hobart's northern suburbs is a golden opportunity to implement transit-oriented development, significantly decrease emissions from transport, reduce traffic congestion, improve liveability, and improve tourist access to MONA. It already has popular support from the general public, Hobart and Glenorchy councils and the Australian Government. It is time for the Tasmanian Government to get on board.

Active transport routes and public transport services that enable people to readily access the corridor from surrounding suburbs must be implemented.

Disused commercial land around the rail corridor should be rezoned to allow for residential densification.

Recommendation 20: Utilise the Derwent River by implementing a ferry service

Leveraging the natural advantage of the Derwent River, its proximity to Hobart's residential areas and prominence in our CBD, the development of a ferry service should be given serious consideration.

Electric vehicles

A greater presence of electric vehicles will reduce emissions, reinforce Tasmania's attractive brand as a clean tech leader in Australia, increase energy security, reduce pollution in our cities, increase energy demand for our clean tech utilities, and provide tourism growth opportunities. The greatest benefit of all will be reducing the massive amount of money that leaves Tasmania every day to pay for fuel imports.

However, the uptake of electric vehicles is a 'chicken-egg' problem – the market will not grow without sufficient charging infrastructure, and charging infrastructure will not be installed until the market grows. Like it or not, governments, including the Tasmanian Government, are needed to catalyse the transition to electric vehicles.

Recommendation 21: Play a lead role in the transition to electric vehicles

Specific actions the Tasmanian Government may take include subsidies for electric vehicles (e.g. through vehicle registration), discounted electricity tariff for electric vehicle charging, installing charging infrastructure (in partnership with councils and/or the private sector), mandating charging infrastructure in carparks, and fleet purchasing incentives/facilitation.

Fleet purchasing could involve Government pooling their purchasing power with other large vehicle fleet owners to secure good pricing, maintenance, and after-sales support.

Recommendation 22 Implement an electric vehicle tourism initiative to kick-start charging infrastructure

One idea that we have floated with the Government before is for a 'Great Tasmanian Renewable Road Trip'. The concept is for tourists to hire electric vehicles from car hire companies (or bring their own on the Spirit of Tasmania ferries) and travel along a route visiting key tourism attractions equipped with electric vehicle fast charge stations. Such stations can typically charge a vehicle to near full capacity in less than hour – enough time for people to explore the tourist attraction.

This approach can share the costs and benefits across many stakeholders including car hire companies, tourism operators, and local governments through increased customers/visitors. Funding from the Australian Government (e.g. through Infrastructure Australia or the Clean Energy Finance Corporation) could also be sought. The Tasmanian Government's role would be to facilitate the development of the initiative, and provide some funding.

The approach fits perfectly with Tasmania's brand, and may be able to break the 'chicken-egg' problem with electric vehicle uptake by focussing on tourists as an early adopter.

Agriculture

Sustainable agriculture is an economically, but most importantly, environmentally sustainable avenue for the Government as it approaches the pressing issue of climate change. We offer a number of proposals that support sustainable agriculture, which will maximise our economic potential within this sector whilst also maximising positive impacts on the environment and ultimately the climate.



Sustainable agriculture

Climate Change and Tasmanian Agriculture

Agriculture is now widely accepted as one of the serious culprits in climate change, and Tasmanian Agriculture is no exception. Agriculture in 2011 Tasmania contributed to 27% of the State's net greenhouse gas emissions⁵. Conventional agricultural practices, such as the use of fossil fuel based fertilisers and soil tillage, make significant contributions to greenhouse gas emissions⁶.

The Draft Plan outlines some of the threats climate change poses to agriculture in Tasmania, principally the predicted extreme temperature changes which are likely to result in drought and water shortages. It also points out that compared to the rest of Australia, the predicted effect of climate change on agriculture are likely to be less severe and goes one step further, highlighting potential opportunities climate change may offer Tasmanian agriculture.

Although The Climate Change Draft Action Plan recognised the threat of climate change to agriculture it does not outline any clear steps to ensure Tasmanian agricultural practices reduce their current contribution to climate change. The Tasmanian State Government's *AgriVision 2050* plan does outline numerous opportunities and a number of schemes⁷ for the future of Tasmanian agriculture, however it too fails to connect agriculture's impact on climate change and offers no schemes in reducing this impact other than offering valuable scientific information about dealing with climate change⁸.

Regardless of whether climate change will positively or negatively impact some industries in Tasmania, the fact remains that agriculture is a key producer of greenhouse emissions and therefore large contributor to climate change. We propose that in order for Tasmania to capitalise on any natural advantages, we carefully analyse the current agricultural system and invest energy and resources into sustainable agriculture.

Why support sustainable agriculture in Tasmania?

Environmental Benefits

The negative environmental impacts of conventional, large-scale agriculture is well documented, with issues ranging from land degradation, chemical runoff, and high ozone depleting gas emissions etc. ⁹. Alternate, more sustainable, agricultural systems exist which, if implemented correctly in Tasmania, would result in reduced greenhouse gas emissions. Not only can these systems reduce help combat climate change they also have an array of other environmental benefits.

Small-scale sustainable agriculture models include organic-based systems, biodynamic systems, and permaculture systems. Rather than relying on chemical fertilisers, pesticides and herbicides (which emit greenhouse gases and pollute soils and waterways) they utilise specific techniques that maintain soil fertility,

⁵ http://www.dpac.tas.gov.au/_data/assets/pdf_file/0006/198276/GreenhouseGasAccounts_2010-11.PDF

⁶ <http://www.climate.org/topics/agriculture.html>

⁷ Such as; Irrigation scheme, less red tape etc. See

<https://www.tas.liberal.org.au/sites/default/files/policy/Cultivating%20prosperity%20in%20agriculture.pdf>

⁸ This is reactive rather than preventive, and whilst dealing with climate change issues it doesn't necessarily seek to modify practices for further climate degradation

⁹

<http://www.sciencedirect.com/science/article/pii/S1439179109001388%20Persistent%20negative%20effects%20of%20pesticides%20on%20biodiversity%20and%20biological%20control%20potential%20on%20European%20farmland>

control soil erosion, manage waste and reuse, and control pests and weeds. Some of these techniques include; composting, crop rotation and bio-intensive pest management, all of which can be utilised by all scales of agriculture. Furthermore, small-scale intensive farming using some or all of these systems can drastically improve soil and water of a surrounding environment. Small-scale farming by nature is less environmentally destructive, less reliant on fossil fuels, nurtures higher levels of biodiversity, greater food security and requires more employment per acre than large farms.

Economic Benefits

Tasmanian producers, both small and large, have been pivotal to the Tasmanian image, lifestyle and economy. In 2011 the farming economy made up 18% of the gross state product and provided up to one job in six across the state¹⁰. Following the decline of the forestry industry, agriculture, agribusiness and agritourism have become as important economic drivers for Tasmania as ever.

Tasmania has achieved high quality, “clean and green” branding regarding its agricultural produce, as highlighted in the Draft Plan. International food trends have driven a consumer desire for environmentally, ethically and organically grown foods. The boom in farmers markets and increase in demand of locally grown, ethical foods are some examples of these food trends. New forms of commercial access, which support small-scale local farming have also sprung up in Tasmania, notably Fork to Fork¹¹ – Sprout Tasmania’s online farmers market, and the Huon Producers Network e-commerce website¹².

Providing different avenues of support to sustainable systems will not only qualify our green branding, but could also promote growth in an economically and environmentally viable way.

Discussions and Recommendations

Recommendation 23: Provide resources to Tasmanian businesses and NGOs that support, inform and facilitate sustainable agriculture

There are numerous community and privately run farms, collectives or small not for profit organisations that provide support and access to sustainable farming practices in Tasmania.

Forms of support, such as monetary, exposure or even official recognition will strengthen the availability and support local information streams of sustainable agriculture for others either already in the agricultural industry, or looking to join the growing industry. Some of these include: Hobart City Farm, Sprout¹³, Good Life Permaculture, The Agrarian Kitchen and The Huon Producers Network.

Sharing of resources such as the TAFE Trade Training centres would greatly help the practical operations and outreach of these groups whilst utilising previously allocated government resources.

¹⁰ Agriculture Industry Skills Plan, Farmers and Graziers Association & Skills Tasmania p.ii

¹¹ <http://forktofork.org.au>

¹² <http://huonproducers.com.au/emarket/>

¹³ Sprout also offers a mentor program which directly coaches and nurtures individuals with existing ideas through their initial stages of beginning a farm or agribusiness. However, they must be small scale and using sustainable principles. Direct support of this program would be directly nurturing the future of Tasmanian agriculture.

Recommendation 24: Modify existing or introduce new agricultural schemes

There are numerous schemes in place for the Tasmanian agricultural sector¹⁴, however a number of modifications could support current or future environmentally considered agricultural pursuits.

- The current irrigation scheme is limited to large primary producers. Either including more small-scale producers or offering a similar, but smaller-scale scheme would be an immense incentive or boon to future or current sustainable farms/agribusinesses.
- Modifying the current AgriGrowth Loan scheme to enforce farming prerequisites, which protect the environment through sustainable farming techniques. It could also be modified to persons looking to break into farming or agribusiness and not just existing businesses. Thus promoting further growth of an accelerating industry.
- Monetary incentives towards sustainable equipment¹⁵ used in sustainable agriculture, much like the previous Solar Rebates in place within Australia.
- Finally, more support for existing and future farms, which operate sustainably. The Draft Plan and *AgriVision 2050* document outlines offering climate change research conducted by the government to farmers, this research could be expanded to include not just reactive information but information on how they can improve their operation to make it more sustainable.

Emissions abatement from conventional agriculture

While we have focussed on small-scale sustainable agriculture above, we acknowledge that the transition away from industrial agricultural practices would be gradual. As such, it is important that the emissions-intensity of industrial agriculture is also addressed. We currently do not have the expertise to provide specific recommendations in this area, save studying the Land Use: Agriculture and Forestry discussion paper¹⁶ published by Beyond Zero Emissions and the University of Melbourne's Melbourne Sustainable Society Institute. The discussion paper contains a wealth of information on potential abatement opportunities.

Waste

Waste and climate change may seem like separate issues, but they are actually very closely linked, and not just because of by-product methane emissions. Waste is a clear indicator of how much of the world's natural resources we're using, which have significant 'embodied emissions' in them. Being Scope 3 emissions, these are not reportable emissions under the Kyoto Protocol – they are instead reported in the country where the resources/products were produced. However, we at Sustainable Living Tasmania believe that consumers must share the responsibility with producers for the impacts of the materials and products they consume and waste. The cheaper the resources, the more we use them and the more we feel we can afford to waste. Not only is climate change a clear symptom of our over-consumption, it is also a result of our extreme levels of resource use.

To make our fair and equitable contribution towards mitigating emissions, it is imperative that, in Tasmania, we begin to reduce waste, both by reducing consumption, but also by viewing unwanted materials as valuable resources instead of landfill wastes.

¹⁴ Such as the AgroGrowth Loan scheme, which is HECS style loan, which is only offered to existing farms or agribusinesses and ranges from \$30,000 to \$1,000,000.

¹⁵ e.g. <http://cema-agri.org/sites/default/files/Smart%20equipment%20for%20sustainable%20agriculture.pdf>

¹⁶ <https://bze.org.au/landuse>

The Tasmanian Waste Review conducted in 2014 by Blue Environment found that despite the implementation of the Tasmanian Waste and Resource Management Strategy in 2009, waste management practices and achievements in Tasmania continue to lag behind most other Australian states. This is evidenced by our low recycling rate of 33%, compared with the national rate of 60%. Considering glass, which constitutes a major component of the total recycle tonnage, is predominantly landfilled in Tasmania (75% estimated from our investigations), our recycling rate would actually be significantly lower than this. Add to this the fact that although around 400,000 tonnes of landfill waste are reported each year, concrete rubble, road pavement, glass, bricks and industrial stockpiles are not required to be reported. If these were included (as is done on the mainland), then our waste tonnage would be significantly higher, making our recycling rate even lower.

All in all, the waste situation is looking very bleak in Tasmania and requires some attention. There is great opportunity to improve this situation. According to National Waste Reporting 2013¹⁷, of the 400,000 tonnes that we bury in landfill each year in Tasmania:

- 42% is food and green waste
- 18% is cardboard and paper
- 13% is recyclable plastics
- 20% is building materials (timber, metal, concrete)

The materials listed above are almost all recyclable. Most businesses will only implement waste reduction strategies to the extent limited by cost and return, and so pricing structures to incentivise waste reduction and better recycling and composting could turn this situation around overnight. For this reason, it is imperative that the State Government acts in the waste space now.

Currently, without committed Tasmanian Government involvement in the waste space, Tasmanian landfill fees are too low to cover the true costs of operation, pollution control and rehabilitation. NSW landfill sites charge around \$222 per tonne and the current Tasmanian rate is around \$80 per tonne or less for high annual usage customers.

This means the onus falls to rate-paying households and businesses, which in turn fund only the cheapest waste management options. It is time to transfer the onus to the waste producers by accurately pricing landfill. The effect of levies elsewhere in Australia has been to increase costs for waste producers from 1% of operating costs towards 2-3%. This should not be seen as a barrier but rather a fairer waste management strategy leading to an increase in jobs in the waste sector. Removing artificially cheap landfill increases recycling and resource recovery opportunities and creates the headroom for recyclers to operate competitively.

Recommendation 25: Introduce a Tasmania-wide waste levy

Local governments need the Tasmanian Government to introduce a substantial levy (over \$120/tonne). We recommend a similar levy to that in NSW of \$133/tonne, introduced progressively over five years.

Recommendation 26: Introduce a container deposit scheme

Our investigations indicate that, of the glass that Tasmanians earnestly place in recycling bins, only 25% is downcycled into road base or bricks, and the remaining 75% is taken from materials recycling centres and

¹⁷ <http://www.environment.gov.au/resource/waste-generation-and-resource-recovery-australia-report-and-data-workbooks>

dumped into landfill. The 2014 Cost Benefit Analysis of a container deposit scheme did not capture the magnitude of glass landfilled each year or the associated costs.

Recommendation 27: Establish state waste reduction targets

Recommendation 28: Advocate for national product stewardship programs

The Government should advocate for additional product stewardship programs to be regularly implemented through the National Waste Policy (such as C&D wastes, polystyrene, batteries, oils, fluorescent light globes, paint, plastics, mattresses, e-waste, flexible plastics, steel, textiles, tyres, timber, plasterboard and masonry).

Divestment

Recommendation 29: Divest from all fossil-fuel businesses

The Tasmanian Government can have an enormous impact on climate change by transferring funds out of fossil fuel projects and into clean developments including renewable energy and electric vehicles, and so should do so as soon as possible.

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