



Australian Government's 'Technology Investment Roadmap Discussion Paper'

Submissions: <http://consult.industry.gov.au>

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Introduction

The Committee for Gippsland welcomes the opportunity to provide input to the Australian Government's comprehensive Technology Investment Roadmap Discussion Paper (May 2020).

Established in 2011, the Committee for Gippsland represents around 85 member businesses in the Gippsland region. Sector neutral, the Committee for Gippsland seeks to positively influence government policy to improve the economic and community wellbeing of the region.

The Committee for Gippsland's priority is to protect the interests of our regional economy. We believe it is paramount for the health and wellbeing of our region, that we continue to stress the importance of a well-planned, managed transition program to ensure our regional economy remains vibrant, leveraging its comparative and competitive advantage to diversify business and industry, securing new market opportunities, high value jobs and a positive future for its citizens.

The Gippsland economy is dominated by agriculture and energy (electricity supply). Gippsland's GRP has been declining over the last 10 years, in contrast with the Victorian average, and SGS Economics predicts further decline, greater than the national average, due to the impact of COVID and bushfires.

Ongoing structural adjustment continues to have profound long term cultural and wellbeing impact on the region and recovery continues as a result of privatisation of the electricity sector which has had a significant impact on the economic and social outcomes of the Gippsland region.

Gippsland Economy Fast facts

- 2.03 billion litres of milk produced in Gippsland per year
- 97% of Victoria's natural gas comes from Gippsland
- 85% of Victoria's electricity is produced in Gippsland

Energy production is one of Gippsland's major industries with the region producing around 85% of Victoria's electricity, 97% of Victoria's natural gas, and 14% of Australia's oil.

Natural Resource

Gippsland has significant brown coal deposits and electricity production - there is a need to diversify the energy mix and transition this industry as power plants are shut down. Next Generation low emissions carbon products are now being realised in the use of advanced emerging technologies of the 21st century such as: aerospace, energy-efficient automobiles, wind turbine blades, flexible solar



panels, energy storage (lithium ion batteries, supercapacitors), smart and wearable electronics, medical diagnostics, etc.

Victoria's Latrobe Valley, with its abundant energy resources, experienced and skilled workforce and extensive transmission and energy infrastructure, is well placed to be a centre of new energy technology development, to create the new industries and jobs the region desperately needs as old industries decline.

In addition to the high-tech materials applications, there is also an emerging understanding of how carbon, derived from the regions abundant lignite resources, can contribute to the productivity of the agricultural sector through urea and in the capture and retention of CO₂ into the soil. Lignite itself is well known to be a beneficial soil amendment, increasing organic carbon in depleted soils and thereby increasing plant yields and drawdown of atmospheric CO₂.

As the economy moves to lower emissions, we know that Victoria's coal-fired power stations have a limited life. What is less known is what industries and jobs can emerge to enable the region to continue to prosper. Evolving the Latrobe Valley's energy sector provides one opportunity, amongst the many other natural advantages of the area.

The development of lignite for advanced carbon products and agricultural applications is one such opportunity. However, action must start now to provide the jobs of tomorrow and for emerging technologies the journey to commercialization can take 10-20 years.

Continuing support by the Federal government to these opportunities will be essential to advancing the regions fortunes. Investment in R&D, such as Australian Carbon Innovations and Federation University leading research to unlock technology utilising lignite for future applications, could see the development of carbon fibres and other commodities for export and import replacement. If the region is to realise the full potential of its resources in a low carbon future these activities need to continue with the support of the government.

Carbon Capture and Storage

The Committee for Gippsland supports the findings of the Grattan Institute (Australia's energy transition: a blueprint for success 2019 pg3) - Australia's energy future should be a mix of renewables, batteries, electric vehicles, hydrogen, and possibly novel uses of fossil fuel with carbon storage. Recognising gas is critical to stabilise intermittent renewables and minimise the cost of the transition. It will require collaboration, planning and flexibility by governments, energy agencies and the energy industry over several decades.

A well-managed transition plan for the Latrobe Valley and the greater Gippsland should include Carbon Capture and Storage (CCS). Gippsland's heavy industry and coal-based energy generation decarbonising success will be dependent on technologies like CCS – This is likely to be a key ingredient of our transition pathway.

Success in commercialising CCS is likely to help to accelerate medium-term emissions reductions and low-carbon export potential, however long-term Government support and policy certainty (long-term and investable) to commercialise the technology will prove critical.



Effective policy levers are required for the commercialisation of CCS in Australia to proceed at the pace required to achieve zero emissions by 2050. Enabling CCS projects to access finance via the Clean Energy Finance Corporation (CEFC) or Australian Carbon Credit Units (ACCUs) from the Clean Energy Regulator (CER) would significantly enhance the commercialisation prospects of CCS in Australia.

Hydrogen

Hydrogen could be a potential fuel of the future. At present, it is being investigated locally using brown coal. By reacting coal with oxygen and steam under high pressures and temperatures, a synthesis gas is formed that is a mixture primarily made up of carbon monoxide and hydrogen.

Lignite hydrogen is an essential step to bring the cost of hydrogen down. The Hydrogen Energy Supply Chain (HESC) project is providing substantial information about the handling, storing and shipping of hydrogen. This project is also linked to the development of Carbon Capture and Storage which has been proposed as another potential industry for this Gippsland.

Renewable Technology

Alongside Gippsland's traditional energy sources, rest opportunities for renewable technology. Gippsland is experiencing growth in solar and wind energy and presents opportunities for pumped hydro and batteries.

With the state electricity grid built around the Latrobe Valley, there are substantial opportunities for large scale grid connections that are not available anywhere else. Today, there is capability to connect 3,500 megawatts to the grid from the Latrobe Valley, which will expand, as planned station closures take shape.

This presents an immediate opportunity for the Latrobe Valley attracting investment without restriction. This will further facilitate the region's deployment of renewable technologies and leverage a large and highly skilled workforce with significant experience in generation, transmission, civil engineering, logistics and administration.

Based on initial feasibility studies into the project undertaken over a number of years, the south coast of Gippsland in Victoria's east provides suitable conditions for wind energy. Initial feasibility shows strong wind patterns, suitable shallow water depths and access to suitable transmission and connection assets.

The Committee for Gippsland welcomes the recent announcement by the Commonwealth Government to include offshore windfarms in the Commonwealth's Offshore Clean Energy Infrastructure bill. Alignment of Commonwealth and State policy, legislation and regulation will play a key role in progressing offshore wind projects in a timely manner, necessary to avoid the risk of losing the investment to elsewhere and the jobs that go with it. For example, the straddling bill will be important to help facilitate co-ordination between State and Commonwealth waters or it may be as simple as providing a volume commitment to renewable investors (providing market certainty).



The challenges, global trends and competitive advantages that should be considered in setting Australia's technology priorities,

In setting Australia's technology priorities regard must be given to our natural resources and infrastructure advantages, including skilled labour as we chart a course to balance the energy trilemma of affordability, reliability and lower emissions.

As described earlier in this submission Gippsland provides substantial comparative advantages, including:

- substantial natural resources both renewable and non-renewable, such as coal, oil and gas, offshore and onshore wind and pumped hydro opportunities
- scalable assets including significant transmission infrastructure enabling 3500MW of grid capacity availability
- energy leadership and capability, due to our highly skilled workforce
- proximity to a large load centre in Melbourne, with road and rail access and our own port
- educational institutions, such as TAFE Gippsland and Federation University, that have close links to supporting the educational requirements of our energy sector.

Policies that take a technology natural approach meeting the energy trilemma will best serve Australian's and play to Gippsland's strengths. We need a mature debate to emerge in Australia about technology development. One that provides for open and transparent criteria for technology or project development.

Carbon farming provides a real opportunity for the region but needs to be made easier to do on a smaller scale, individual farm level, to be realised. Deeming abatement upfront as occurs with the small-scale solar scheme would be one way to boost the investment in these activities providing a supplementary income to farmers and increasing Australia's carbon sink. Linking this to voluntary markets will be critical or developing a program like "Greenpower" on energy bills, car loans, air travel etc that consumers can choose to offset their emissions would be necessary to drive the market development.

To support further development of energy in the Gippsland region, C4G would welcome Federal Government support to enable the exploration of unconventional gas in the region (noting it is a state responsibility). High environmental standards must sit alongside such development. This could provide an opportunity to supplement the incomes of farmers, while collectively could offset the depleting Longford gas field and put downward pressure on gas prices.

Other emerging and less well-known areas of technology development in Gippsland include:

- The large layer of coal in the region acts as a blanket for the underlying aquifers presenting a geothermal resource. It is being used commercially for the first time at the new Gippsland Aquatic Centre and Performing Arts Centre which will be using this to heat the water at the



pool and the arts buildings. This water could be accessed at the cost of a small pump and pipeline to facilitate new tourism opportunities.

- There are developments underway investigating the pyrolysis of biomass to produce several products such as diesel, biochar, graphene and wood vinegar. These high-value products offer a solution to jet fuel replacement, soil improvement and potentially carbon engineering.
 - The biomass can be developed utilising the regions plantation timber or even timber which has been exposed to fire. of This option can provide a methodology to recover resources from bushfire affected areas and utilise timber workers that have been displaced by restrictions to logging areas.
 - Another product that can be grown is a grass species known as miscanthus, which can be used as a biofuel and can act to improve soil carbon.
- Expertise in power protection systems and grid protection systems, alongside battery installation, could provide a pathway to long-term employment as new distributed generators come online. As traditional sources of energy shut down this could provide employment opportunities for Gippsland's energy literate workforce.
- Recycling centres to recover and reprocess products such as metal, cans and plastics could provide a new industry to the region. The Latrobe Valley has experience in the development of chemical processes such as the conversion of brown coal into gas and oil. This expertise provides a resource for new chemical-based industries to draw upon. Other opportunities include recycling products such as solar panels, which are a growing source of waste.

The shortlist of technologies that Australia could prioritise for achieving scale in deployment through its technology investments.

- Carbon capture and storage (refer above)
- Offshore windfarms (and associated design, manufacturing and construction of towers)
- Solar farms (and build local supply chain expertise)
- Residential and Commercial solar and battery
- Battery – Support the network reliability (Grid Reliability Fund)
- Gas – A viable transition option because of its ability to scale up and down (when there are gaps in renewable energy supply)
- Energy from Waste
- Hydrogen – coal (supported with CCS) and/or renewable
- Pumped hydro (enabling access to water resources for the opportunity to be developed, noting the low evaporation rates)



- Carbon Farming – enabling smaller opportunities to emerge with less risk to farmers.
- SME – circular economy capability and transition (energy efficiency)
- Investment in rail freight (intermodal incentive schemes)
- Transport – incentives to transition to electric/hydrogen fuel cells vehicles
- Demonstration to commercialisation facilities and funding
- Industrial businesses – Alternative heat sources for high temperature processes
- Agriculture – Innovative technology to monitor/track/report emissions
- Geothermal resources to attract new industry
- Anaerobic digestion (use of waste to produce biogas), combustion (used to produce high-pressure steam for generation) and gasification (to produce synthetic gas), as well as emerging technologies such as pyrolysis (separated waste streams to produce synthetic gas (syngas) or biochar).
- Microgrid technologies – more work needs to be done to understand and identify viable sites so that a provider is well equipped with the necessary information to progress opportunities. As communities are learning more about these technologies, government must consider solutions to provide market confidence – a more proactive role in promoting the benefits of such technologies.

We appreciate the opportunity to provide feedback on the Australian Government's 'Technology Investment Roadmap Discussion Paper' and extend an invitation to the Commonwealth Government Minister's and departmental personnel to meet with our energy members, representing traditional and new and emerging energy sector.

Yours sincerely

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