
Gippsland Centre for Sustainable Technologies

A priority of the Gippsland Regional Plan 2010

*Enabling the transition of the regional economy to meet the challenge
of a carbon constrained world*

**Prepared by
MONASH University Gippsland and the Gippsland Regional Plan**

The Carbon Challenge and Gippsland

The Gippsland region has recognised that international and Australian policies are being developed to reduce greenhouse gas emissions in response to growing concern about climate change. These policies, and the constraints on carbon based emissions that will arise from their implementation, have significant implications for the ongoing sustainability, vitality and well being of the region. Gippsland supports international and Australian efforts to address climate change and seeks to ensure that its economy and community continue to prosper and, with the appropriate transition mechanisms in place, it believes that both climate change mitigation and economic growth can be achieved.

The Latrobe Valley (which includes three of Gippsland's six local government areas) has been identified as a community likely to be exposed to significant structural adjustment pressures as a result of the introduction of greenhouse gas mitigation schemes, such as the previous Australian Government's proposed CPRS. It is anticipated that the introduction of these schemes will decrease the competitiveness of the brown coal fired generators that are located within the Latrobe Valley, which would then impact on the local economy and employment growth.

The introduction of greenhouse gas mitigation schemes will also provide new opportunities for Gippsland. There is already considerable research underway examining alternative uses for brown coal as well as technologies to improve the efficiency of brown coal fired electricity generation and reduce the emissions of greenhouse gases. Schemes such as the CPRS would introduce a carbon price and this, combined with increasing world prices for energy, will improve the commercial viability of such technologies and result in a wide range of additional opportunities centering on the natural resource base of the region.

A case in point are the forestry and agricultural sectors, which are likely to be included in a CPRS scheme or alternative schemes proposed by the Coalition, at least on a voluntary basis and this would allow forestry and agricultural projects to generate carbon credits and sell those into the carbon market. Such opportunities might include soil biosequestration or biomass production which may be of particular benefit in the Gippsland region. Policies to reduce carbon emissions may also present significant opportunities for the development of facilities to generate renewable energy (e.g. wind, algae, biomass etc).

The Gippsland Regional Plan has identified an opportunity for establishment of a Centre for Sustainable Technologies in the region to investigate and deliver a range of new technologies for the local and wider State community. The Centre will work to ensure that the region's current reliance on its extensive natural resources (coal, timber, biodiversity, water, agriculture and fishing) can continue, enabling the transition of the Gippsland economy to meet the challenge of climate change. The Centre will focus on regional innovation, diversification of skills, research and development capability and commercial enterprise and will greatly assist businesses to capture opportunities that arise in a carbon-constrained world.

Encouraging Change and Increasing Productivity

There is clearly a need for research into areas that increase carbon efficiency and show the most potential for profitable use of Gippsland's resources. But successful application of these technologies will depend on bringing the region's industry and community leaders on board, a process that is best facilitated by acquisition of new knowledge and understanding. Alongside this is a requirement to meet the skill needs of workers in transition and to properly equip the new cadre of professionals that will be demanded by emerging industries. This analysis points to two major areas for investment to allow this process of change, namely: education and research.

Centre for Sustainable Technologies

The Centre will be composed of academic staff, industry partners and personnel, research fellows and students. It will be a collaboration between Monash Gippsland and Gippsland regional stakeholders, including Industry, TAFE and Councils with the additional involvement of relevant areas of Monash Clayton, the Monash Sustainability Institute and a broad range of expertise from other research organizations and CSIRO. The Centre will focus on education, research and industry interaction to assist the transition to new technologies both now and well into the future. The education goal will be met by developing a number of high level courses and training opportunities targeted mainly at the graduate and postgraduate level, collaboration with the region's TAFEs will allow transition and an increased base for practical skills training.

The research goal will develop technologies for the medium to longer-term restructure of existing industries and the development of new opportunities through an active program of research and development.

Industry interaction will involve matching research to industry goals, developing solutions to industry issues and assisting government and industry to co-ordinate the introduction of new technologies and opportunities relevant to climate change in Gippsland.

Training and Consultancy

The Centre will develop graduate and postgraduate courses which address the engineering, science and business opportunities for change in carbon efficiency, carbon accounting and energy reduction. These programs will be targeted to the executives, engineers and scientists who lead the decision making processes of local industry and may include the development of high level workshops or courses with local companies to change specific aspects of their operation, initiate new processes or assist in the commercial development of new technologies.

Integration with TAFE offerings will allow transition between courses and also add significantly to the training opportunities available across the region. This is also true of local industry where placements and other work integrated learning opportunities will be invaluable to demonstration of new practices and technologies.

It is envisaged that the development of new courses and training opportunities will be undertaken at Monash Gippsland using the existing teaching schools. New appointments will be needed in specific areas where existing expertise is unavailable or not adequate to demands. Courses would be expected in areas such as engineering, biotechnology, sustainable business management and change management, all with an emphasis on increasing carbon efficiency and sustainable practices.

Research and Development

The research program will be geographically distributed but with a dedicated team at Monash Gippsland to initiate collaborative links, provide an analysis of low carbon growth opportunities and a workshop schedule with relevant experts. Research leaders will be appointed in each area of major project activity and would be expected to apply for competitive funds from Commonwealth or State research authorities. Seed funding in each of the areas of priority would be required to kickstart the research and ensure a competitive position in funding rounds. In addition, a range of equipment suitable to the research priorities would be required to again ensure a competitive position. This requirement would be offset to some extent by the use of existing facilities across the Monash campuses.

The broad range of expertise and facilities required to work on the research projects as outlined below will not necessarily be physically housed in the Centre at Monash Gippsland but would be developed through partnerships and collaborations. As a result, although the Centre will be administered from Monash Gippsland it will be a multi-nodal institution with links across Monash, regional Victoria and anywhere else that relevant expertise can be accessed. However, the outcomes of the Centre's

activities will be initially targeted to the Gippsland region. Collaborating organizations would include the CSIRO, other Universities, CRCs and Government departments as well as the industries of the Gippsland region and those establishing in the region to develop low carbon growth opportunities.

A process of workshops and consultation with local industry and with experts from the wider research community will determine the major research priorities and develop specific projects. Groups of researchers will be established to initiate the short-listed proposals with seed funding from the Centre's budget. It should be noted that the Centre's research projects will be targeted to longer-term research outcomes that would have major effects on industry outputs in the region and allow national and global competitive positions. Industry funding will also be sought for larger pilot scale research projects to enable submission of new grant applications to State and Commonwealth research organisations. Research topics may include, but are not limited to:

1. Development of alternative energy sources (biodiesel, alcohols, methane, hydrogen) using bioengineering and local feed stocks.
2. Development of new feedstocks from lignite coals for the energy and manufacturing industries using bioprocessing and other low energy technologies.
3. Investigation of biosequestration of CO₂ from gases (flue gas, methane sources) using algal and other biological agents
4. Reduction of methane and CO₂ emissions from environmental sources including agriculture and various industry wastes and effluents through microbial engineering
5. Investigation of new and practical methods for improving carbon sequestration in the regions agricultural soils and forests including plantations.
6. Development of soil microbe and other solutions to nitrogen and phosphorous emissions for application in local soils
7. Investigating new (including nanotechnology-based) methods for water recovery and purification from polluted or contaminated sources specifically ground water and industrial waste streams.
8. Analysis of new materials/processes for carbon capture to add value to local industries. A broad topic that might include the use of resources such as fly ash, timber waste and non-recyclable, rubbish collections.

Governance

The Centre will be governed by a Board selected from regional stakeholders including industry and regional government and including the Pro-Vice Chancellor and President of the Gippsland campus of Monash University. The Director of the Centre will Chair the Board. In addition a Panel of Experts will oversee the Science Agenda both at inception and with regular reviews as the Centre develops. This Panel will be selected from Monash and other Research Organisations including CSIRO to represent the major research themes and provide independent scientific advice.

Contact

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