

Why cutting Australia's greenhouse gases will be good for regional jobs

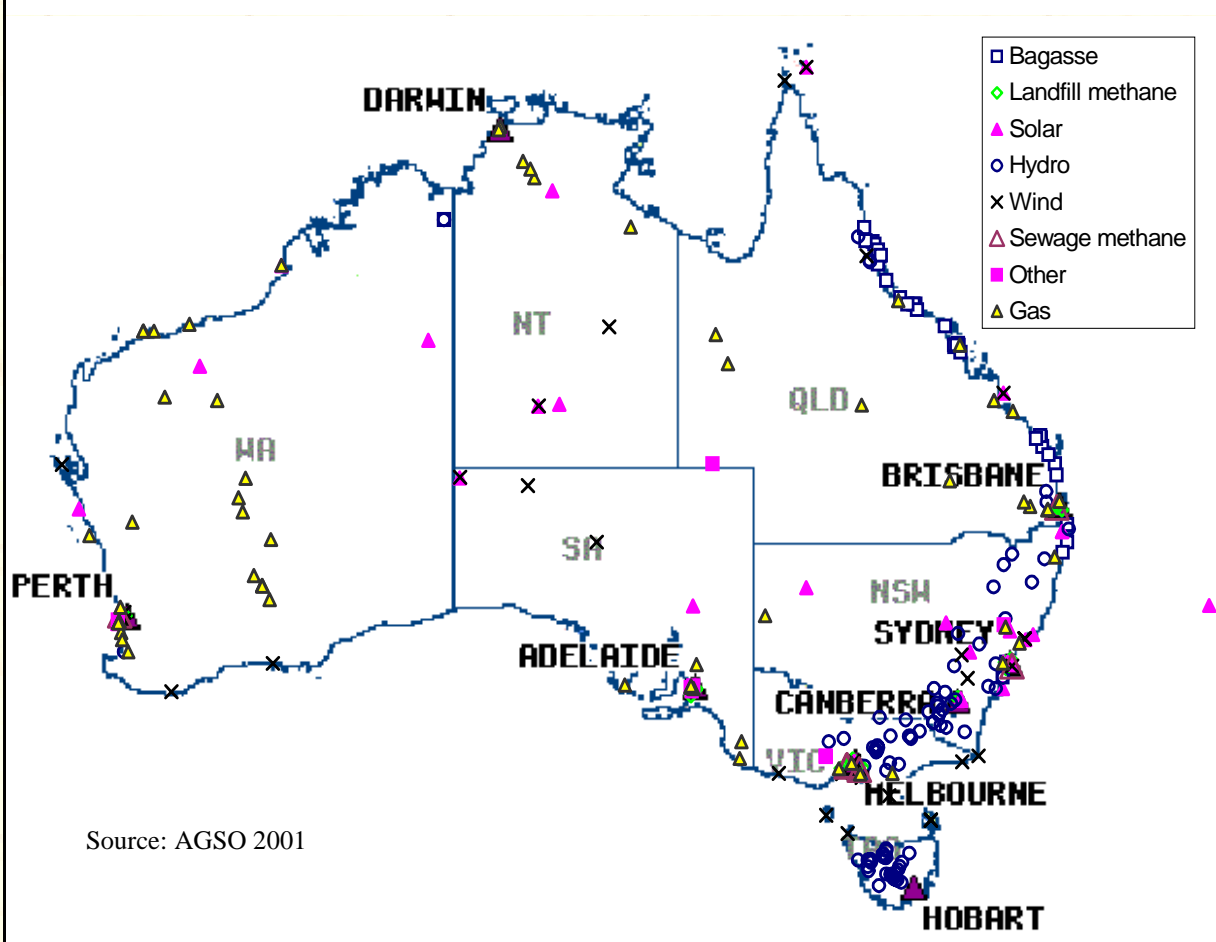
It is often claimed that reducing Australia greenhouse gas emissions to meet our commitments under the Kyoto Protocol would cause thousands of jobs to be lost in regional and rural Australia.

Over time traditional energy industries will inevitably decline, but the industries now developing to replace them will reinvigorate many regional areas. In fact, the benefits from the growth of sustain-

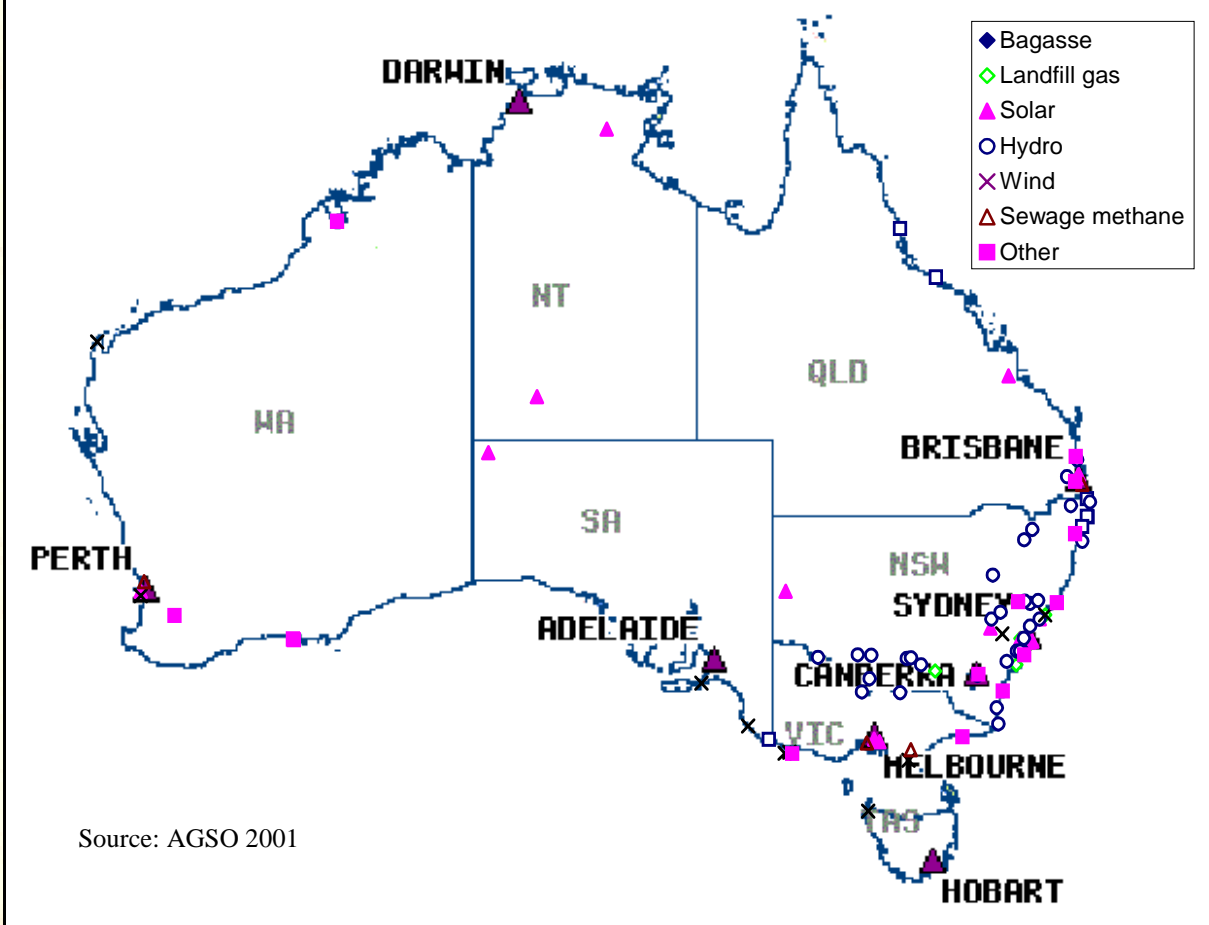
able energy industries will be concentrated in regional Australia.

Sustainable energy is energy that creates no greenhouse gas emissions. Examples include wind, solar, tidal and biomass (burning renewable crop or plantation forestry material, for electric power or motor fuels). Maps 1 and 2 show that most existing and planned renewable energy and natural gas electricity facilities

Map 1 Where renewable and gas electricity plants can be found...



Map 2 Where new renewable electricity plants are planned...



are spread across regional Australia, while Map 3 shows that very few regions benefit from traditional energy sources (i.e. coal).

Cutting greenhouse gas emissions will also mean a shift to natural gas cogeneration, a low-emissions source of energy that can be developed to benefit regional Australia. Cogeneration is the combined generation of heat and power where the heat is used directly for domestic, commercial or industrial purposes. Because the heat from generation is used productively, cogeneration achieves energy efficiencies of 75 to 85 per cent, compared with only 30 to 35 per cent in conventional coal-fired power

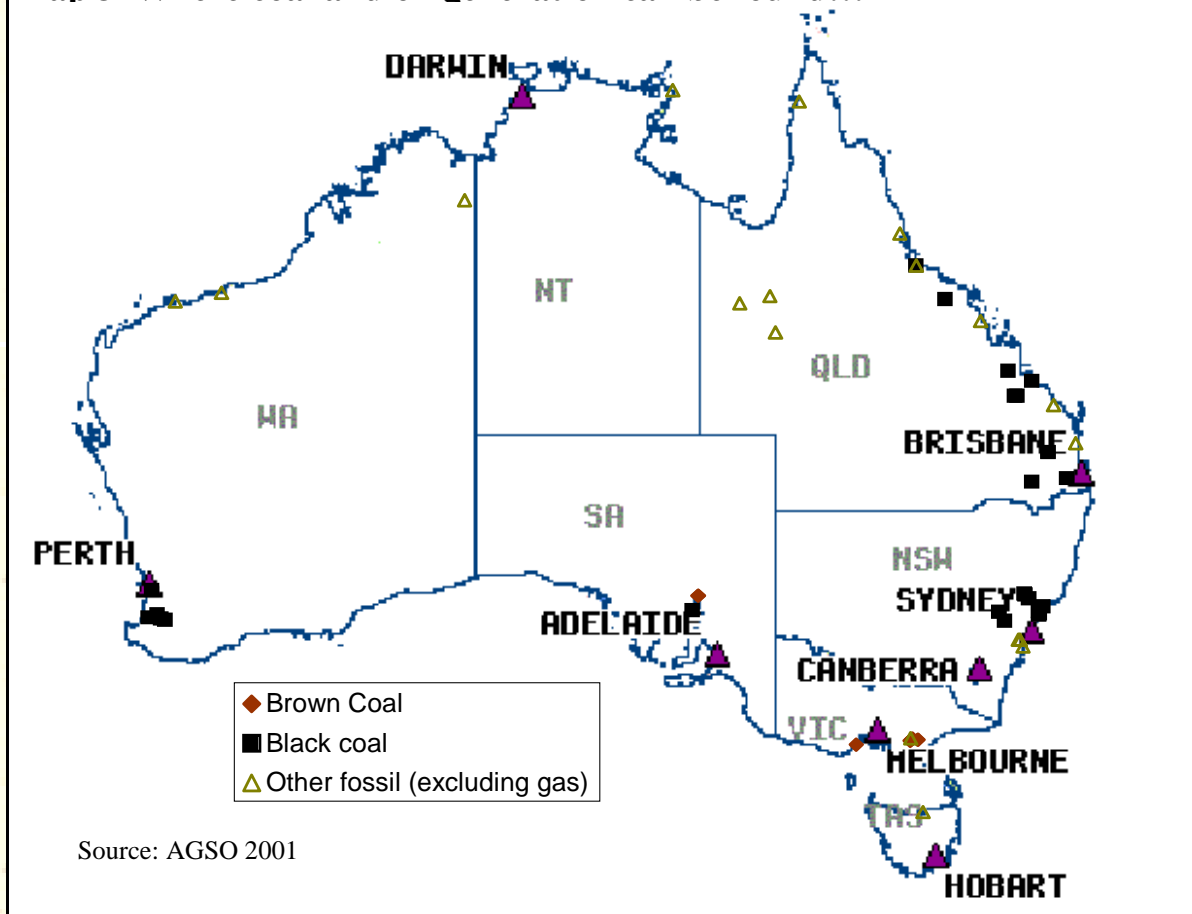
plants. Cogeneration can also use biomass wastes instead of natural gas as fuel, with excess electricity being sold to the grid.

Even at this early stage in meeting the challenge presented by climate change, sustainable energy projects are already

[In earlier industrial and social movements], attitudes changed from defence and denial, to recognition of opportunities, and ultimately to the realisation that what is right for the community in the long term can be good for the growth and profits of industry ... Increasingly the world's major corporations accept this transition. If we wait for ratification while other countries act, Australia runs the risk of missing out on global opportunities, and may be left behind in terms of greenhouse compliance.

Prime Minister's Science, Engineering and Innovation Council.

Map 3 Where coal and oil generation can be found...



helping to revitalise some areas of regional Australia. Throughout the country, over \$6 billion of new investment is being made in renewable energy and manufacturing and processing projects powered by gas-fired cogeneration.

There are over 80 new projects under construction or proposed in regional and rural Australia, amounting to investment of between \$3 billion and \$4 billion. Even in the absence of effective policies, the development of greenhouse-friendly energy industries is creating a large number of jobs in regional Australia.

The more that Australia responds to the need to lower greenhouse gas emissions, the greater will be the shift of energy production to regional Australia. This will mean more local jobs, and less centralised power generation.

Below we provide an overview of six regional communities that have already benefited from investments in the new sustainable energy industries, providing jobs, training and, above all, renewed hope for the future. This is only the beginning. With proper planning and government policies, much of regional Australia could enter a new era based on sustainable energy.

Tumut, Southeast NSW
Pulp and paper mill

This \$400 million pulp and paper mill recently built by Visy Industries processes the timber from softwood plantations in this part of NSW. Up to 400 people were employed during the construction phase over 18 months, and 145 people are now employed permanently in the operations of the mill. In addition,

at least 600 forestry and other jobs were created indirectly. There may be other spin-offs in terms of using waste heat in horticulture and wastewater in other agriculture. The project has already revitalised Tumut in various ways, but this is likely to be only the beginning.

The new mill generates 75 per cent of its own energy needs using cogeneration fuelled by plantation forest wastes and gas. Excess power is fed into the electricity grid for use elsewhere.

The viability of the project is based on the use of new technologies of gas cogeneration and efficient biomass burning, and on the market for 'green energy'. The latter arises from the demand for clean electricity by consumers, and the federal government's new renewable energy policy.

However, investment in the project has also been assisted by the realisation that in the longer term there is every probability that there will be much greater financial benefit in having an energy ef-



A typical cogeneration plant

The sustainable energy industry covers a wide range of firms providing equipment and services for sustainable energy and energy efficiency. In 1999-2000 it directly employed 22,800 people. By comparison, in 1999 the whole Australian electricity industry employed 33,000 people. While employment in the traditional electricity has been declining due to restructuring, the sustainable energy industry is growing at 12 per cent each year. High growth has been achieved with almost no direct government measures to control greenhouse emissions, suggesting that the industry could achieve an extraordinary rate of growth if government created a more sympathetic policy environment.

Sustainable Energy Industry Association

ficient, low emissions operation – that is, there are lower energy costs and there may be credits for greenhouse gas reductions, as well as for the plantation 'sinks' on which the project is built.

This project is an example of how regional Australia can be revitalised by the ever-increasing focus by business, government and consumers on doing something about climate change.

Ravenshoe, North Queensland Wind farm

This project involved the construction of 20 wind turbines with a generation capacity of 12 megawatts (MW) at Windy Hill, near Ravenshoe, on the Atherton Tablelands. Built by Stanwell Corporation, it provides electric power to the grid. A second stage could see the building of a further 22 turbines.

About 10-15 per cent of the \$20 million construction cost was spent locally, with a small number of construction jobs. There

will be three local ongoing operational jobs. However, the major direct benefit has been in visitor numbers, with 84,000 visitors to the area to see the wind farm in the first three months. The wind farm has revitalised the tourism industry in the area.

A long-term indirect benefit of this type of development is that regions will increasingly source their power locally, thus reducing their dependence on electricity imported from distant generators, thereby avoiding heavy power losses from long-distance transmission.

The Windy Hill project is an early example of how regional Australia can benefit from measures to cut greenhouse gas emissions.

Rocky Point, Southeast Queensland *Sugar mill*

The Rocky Point sugar mill in southeast Queensland uses energy generated by burning bagasse, the fibrous waste material from sugar cane processing. Using cogeneration technology (the efficient production of both heat and power), excess electricity will be sold to the grid as 'green power'. The project, to be com-

pleted in November 2001, will also use other green wastes, and involves a \$50 million cogeneration investment. It will be the largest biomass cogeneration plant in Australia and will produce enough electricity for 10,000 homes.

The biomass project is based on improved technologies for biomass burning and cogeneration, and will benefit from the emerging market for green power. It typifies the longer-term likelihood of increased competitiveness for industrial projects that have low greenhouse emissions.

The Rocky Point sugar mill is an example of how an old industry can be revitalised by current and expected measures to combat climate change. The more vigorous the measures by government to address climate change, the greater the benefits for those industries in regional Australia that take advantage of sustainable sources of energy.

Codrington, Victoria *Wind farm*

This recently completed project involves a wind farm of 14 turbines producing 18.2 MW of power (enough for 14,000



Codrington wind farm

homes) at Codrington near Portland in western Victoria. Built by Pacific Hydro, total project cost is \$33 million. More wind farms are planned for the area. Local firms were involved in construction, and it is expected there will be flow-on benefits from the windfarm sourcing services and supplies from the local community. Large numbers of visitors are also expected.

This development came about as a result of the steady fall in cost of wind power generation, and the emerging market for green power. However, there is also a strong belief among some electricity companies that zero-emission power will be even more competitive in the future as governments inevitably take stronger measures to combat climate change. Regions that invest early in new sources of energy will be well placed to develop into centres of new industry.

Tweed Shire, Northern NSW
Biomass power

Currently under construction, this project comprises three biomass cogeneration facilities to service sugar mills at Condong, Broadwater and Harwood in the Tweed

Shire of northern NSW. The project at Condong alone represents an investment of \$45 million and will provide 30 MW of new generating capacity, enough to meet more than half the electricity needs of the entire Tweed Shire. Seventy per cent of the fuel used will be bagasse, the remainder noxious wood wastes (such as camphor laurel).

This project is another example of a regional industry being renewed through greenhouse-driven investment. Biomass wastes will fuel the efficient cogeneration of heat and power for an industrial process, as well as for the market for green power. In the longer term this project will deliver locally-generated power that is highly competitive because of its low greenhouse gas emissions.

Albany, Southwest WA
Wind farm

This project involved a \$45 million investment in 12 wind turbines to produce 22 MW of generating capacity, making it the largest wind farm at present in Australia. The new wind farm can supply about three-quarters of Albany's power needs (or the equivalent of about 15,000 homes).

The development has been driven by the falling costs of wind power generation capacity, the excellent wind resource in southwestern WA, the remoteness of Albany on the grid and the scope for supplying green power to the existing market. The developer, Western Power, says that the unit cost of electricity is about the same as coal-fired



Werribee biomass (sewage methane) plant

power, especially when the impact of the Federal Government's Mandatory Renewable Energy Target is factored in.

The factors driving the windfarm development at Albany are reproduced in many regional areas. The continuing decline in the cost of renewable energy generation technology, the availability of renewable energy (such as wind) and the increasing demand for green power, by both government and consumers, leaves many regions well-placed to benefit from the sustainable energy revolution.

Narrogin, WA *Plantation-based bioenergy*

This proposed project includes a plantation-based bioenergy plant to be built in the West Australian town of Narrogin. The \$5 million demonstration plant will have generation capacity of 1 MW. If successful, a 5 MW plant is planned. The plant will use CSIRO developed technol-



ogy to produce electric power, activated carbon and eucalyptus oil from oil mallee tree plantations.

The first stage is being supported by federal government grants. If successful it will demonstrate how biomass energy can be generated in conjunction with other products in a continuous process.

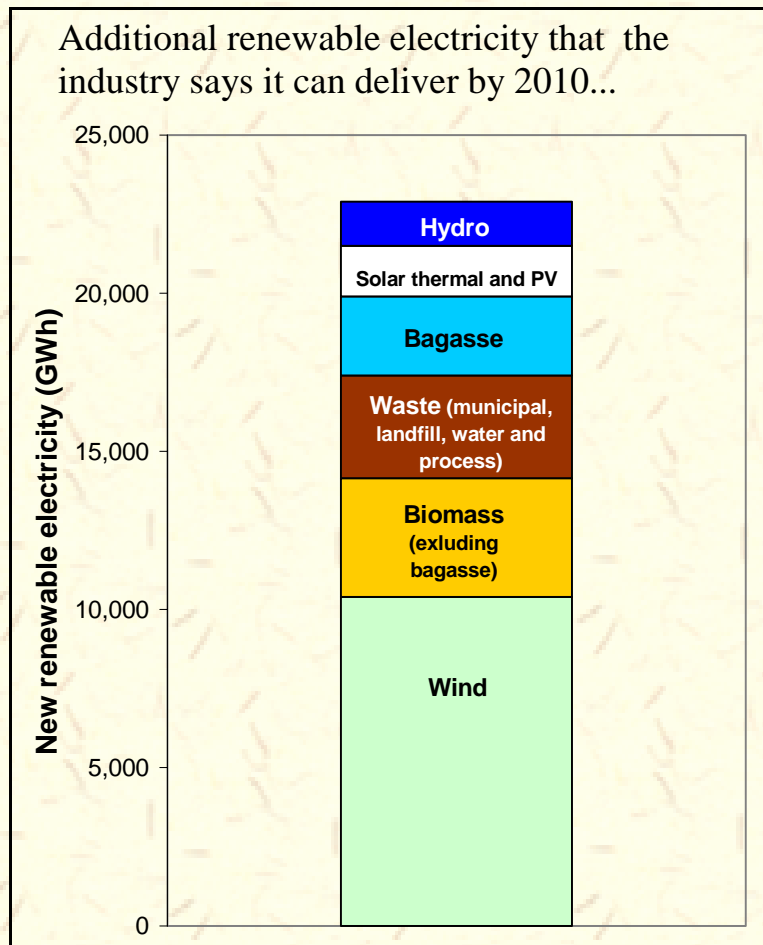
This is a form of energy with no net greenhouse gas emissions (when the carbon stored by the plantations is taken into account). Consequently it could benefit from the growing market for green power; any serious moves by government to combat climate change are likely to increase its viability.

And many more...

The examples above relate to wind power and biomass energy from plantation forestry and sugar cane wastes. These are clearly the early movers for regional Australia at the present time. However, given the rapid technological improvements taking place in almost all forms of renewable energy, there are several new industries that are likely to emerge as viable new opportunities in the future for regional Australia. These opportunities include tidal power, solar, mini-hydro, high temperature geothermal ('hot rocks') and ethanol and biodiesel from crops for motor fuel.

The development of these technologies and industries will depend on local circumstances and, crucially, on the extent to which governments introduce measures to reduce greenhouse gas emissions. They also depend on how businesses, communities and consumers react to the opportunities and incentives provided by the need to reduce greenhouse gas emissions.

The Government's Mandatory Renewable Energy Target legislation requiring an additional 9,500 GWh of renewable electricity by 2010 is just one of the factors driving growth. The renewable energy industry itself has indicated that it can expand well beyond this target with appropriate signals from government. The chart shows the type and scale of electricity generation the industry says it could supply by 2010 – the total is more than twice what will be achieved under current government programs. Effectively, by failing to promote further the sustainable energy industry the government is forgoing the opportunity to develop new regional industries.



There are also huge greenhouse-related opportunities from natural gas for regional Australia. While gas is a fossil fuel, using it to generate power efficiently, in a combined cycle gas turbine or as part of cogeneration producing both heat and power, results in greenhouse emissions that are only a fraction of those produced by existing coal-fired power stations. Consequently, vigorous climate change measures by governments are likely to promote the efficient use of gas, particularly by those industries that can benefit from cogeneration.

This will provide opportunities for all those parts of regional Australia that either produce gas or lie along gas pipelines that take gas to larger markets. Users in regional Australia can access that gas on a fair basis, and certainly at prices comparable to users in larger markets

supplied by the pipelines. This contrasts with current electricity supply in much of regional Australia where communities pay much higher prices than city areas or large users near power stations, because of the heavy transmission losses and costs of building the transmission network to remote areas. In this way climate change measures will help to level the playing field for much of regional Australia with respect to energy costs.

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