

# **Senate Inquiry into the Social and Economic Impact of Rural Wind Farms**

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*Wind farms produce clean energy, generate jobs and income in rural areas, and have minimal environmental impacts, when located appropriately.*

Commercialising clean energy technologies is a profitable enterprise that is moving steadily into mainstream business. As the world economy faces challenges from energy price spikes, resource shortages, global environmental problems, and security threats, renewable energy technologies are seen to be the next engine of economic growth (Pernick and Wilder, 2007).

Wind power has a high potential and has already realised relatively low production costs (Brown 2006, p. 189). At the end of 2009, worldwide wind farm capacity was 157,900 megawatts (MW), representing an increase of 31 percent during the year (Koldrup 2010). By June 2010 the capacity had risen to 175,000 MW and energy production was 340 TWh, which is about 2% of worldwide electricity usage. The percentage contribution from wind is growing steadily even in this time of economic slowdown. (International Energy Agency, 2009, pp. 7-9). More than 500,000 people worldwide are employed by the wind power industry, and the annual market for wind turbine installations is worth over \$60 billion (Koldrup 2010).

Eighty countries around the world are using wind power on a commercial basis and wind power is widely used in Europe, the United States, and Asia. Wind power accounts for approximately 19% of electricity generation in Denmark, 11% in Spain and Portugal, and 9% in the Republic of Ireland. Electrical output from wind in the world is "enough to cover the electricity consumption of Australia" (International Energy Agency, 2009, pp. 7-9).

South Australia has half of Australia's installed wind power capacity. Wind power in South Australia is a significant energy source for the state which is well suited to wind farms due to its proximity to the "Roaring forties". South Australia has thirteen operational wind farms, with an installed capacity of 1,018 MW. A further 184 MW of projects are under construction (Government of South Australia, 2010). Wind farms do not emit greenhouse gases in the generation of electricity, and so wind power is considered a highly desirable form of renewable energy which assists in the reduction of the State's reliance on coal and gas fired electricity generation.

Vestas is the largest wind turbine manufacturer in the world with a 20% market share. The company operates plants in Denmark, Germany, India, Italy, Britain, Spain, Sweden, Norway, and China. GE Energy is the world's second largest wind turbine manufacturer, with 19% market share (Johnson, 2009). GE has installed more than 13,500 wind turbines worldwide and has manufacturing and assembly facilities in Germany, Norway, China, Canada and the United States. Gamesa, founded in 1976 with headquarters in Spain, is the world's third largest wind turbine manufacturer. Other major wind power companies include Enercon, Siemens, Suzlon, Sinovel and Goldwind (Johnson, 2009).

Many wind power companies work with local communities to reduce any environmental and other concerns associated with particular wind farms. In other cases there is direct community ownership of wind farm projects, as with the Hepburn Wind Project in Victoria. Appropriate government consultation, planning and approval procedures also help to minimize environmental risks. Some people may still object to wind farms

but, their concerns should be weighed against the need to address the challenges posed by climate change and the opinions of the broader community (The Australia Institute, 2006, p. 28).

Surveys of public attitudes across Europe and in many other countries show strong public support for wind power. In Germany, for example, hundreds of thousands of people have invested in citizens' wind farms across the country and thousands of small and medium sized enterprises are running successful businesses in a new sector that in 2008 employed 90,000 people and generated 8 percent of Germany's electricity. In the United States, wind projects are reported to boost local tax bases, helping to pay for schools, roads and hospitals. Wind projects also revitalize the rural economies by providing steady income to farmers and other landowners.

Newer wind farms have larger, more widely spaced turbines, and have a less cluttered appearance than older installations. Wind farms are often built on land that has already been affected by land clearing and they co-exist easily with other land uses such as grazing and crops. Wind farms also have a smaller footprint than other forms of energy generation such as coal and gas plants (New South Wales Government, 2010). However, wind farms may be close to scenic or otherwise undeveloped areas where aesthetics are important. Aesthetic issues are subjective and some people find wind farms pleasant and optimistic, or symbols of energy independence and local prosperity. While some tourism officials predict wind farms will damage tourism, some wind farms have themselves become tourist attractions, with several having visitor centres at ground level or observation decks on top of turbine towers.

Modern wind turbines produce significantly less noise than older designs. Turbine designers work to minimise noise as it reflects lost energy and output. Sound levels at nearby residences may be managed through the siting of turbines, the approvals process for wind farms, and operational management of the wind farm (New South Wales Government, 2010). A 2009 expert panel review assessed the possible adverse health effects of those living close to wind turbines and concluded that wind turbines do not directly make people ill (Colby *et al.* 2009). In July 2010, Australia's National Health and Medical Research Council reported that "there is no published scientific evidence to support adverse effects of wind turbines on health."

Livestock are unaffected by the presence of wind farms. International experience shows that livestock will "graze right up to the base of wind turbines and often use them as rubbing posts or for shade" (New South Wales Government, 2010).

There is a worldwide trend towards offshore wind farms. Better wind speeds are available offshore compared to on land, so offshore wind power's contribution in terms of electricity supplied is higher. There are 39 European offshore wind farms with an operating capacity of 2,396 MW. More than 100,000 MW of offshore projects are proposed or under development in Europe. The European Wind Energy Association has set a target of 40 GW installed by 2020 and 150 GW by 2030 (Environmental and Energy Study Institute, 2010).

## **References**

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