FACTSHEET

Climate change science and solutions.

beyond ZERO emissions

Wind Power

Humans have been using wind as a cheap, safe and clean energy source for thousands of years.

Modern wind turbines consist of an electric generator powered by aerodynamically efficient blades.

A single wind turbine is capable of generating enough electricity to power around 2,000 Australian households.

The wind turbine industry is booming with over $60 billion in turbine sales in 2008, projected to rise to $240 billion by 2020.

Wind Power Economics

Wind turbine prices have dropped by 80% in the last two decades. Wind is now the cheapest form of renewable energy.

Today, wind energy can be generated for 10 cents per kilowatt-hour. The entrance of Chinese manufacturers to the global market is expected to reduce turbine costs by at least another 50% in the next few years. This will bring wind power roughly in line with the cost of coal energy.

When the costs of dealing with the impact of the pollution that coal plants emit are included, wind power becomes far cheaper.

Fast Facts:

- Modern wind turbines are efficient, relatively cheap and capable of generating large amounts of electricity.
- Wind is the cheapest form of renewable energy.
- A wind farm “pays back” the energy used in its construction in only a few months of operation.
- Wind farms can co-exist with existing farmland.
- Installed wind power is growing at a massive 30% per year.
- Denmark plans to have 50% of its electricity coming from wind by 2025.

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Environmental Effects

The environmental impact of wind power is small. Wind power does not consume fuel or emit pollution. The amount of energy used in building and transporting a wind farm is "paid back" within a few months of it beginning to operate.

Concerns have been raised about the danger wind farms pose to birds and bats. Studies show that the number of birds killed by wind turbines is negligible compared to the numbers that die through impacts with vehicles and buildings. Many more again are impacted through the effects of oil spills and climate change.

Wind farms are compatible with land use such as agriculture. A wind farm uses only a small area of land for the turbine foundations and infrastructure.

Grazing and cropping can continue on the ground as turbines generate clean electricity above.

Wind Power Challenges

The main challenge with wind is that it doesn't blow all the time and it's expensive to store. However, wind variability can be managed so that the electricity grid is consistently fed high levels of wind energy. For example, Denmark is updating its grid in anticipation of 50% wind penetration.

Wind farms can be geographically spread. Wind will be blowing at some locations even if it isn't blowing at others.

The variability of wind makes it a good partner for other renewable energy technologies such as solar thermal that are capable of storing energy and dispatching electricity when needed.

Action:
Beyond Zero Emissions is working to secure Australia's future through a zero emissions economy.

If you would like to learn more about wind technology or find more information about the work that Beyond Zero Emissions does, take a look at our website.

beyondzeroemissions.org

Wind Power Worldwide

Over 120Gigawatts (GW) of wind power is installed around the world. This figure is projected to grow at around 30% per annum.

Germany has over 19,000 wind turbines, with a capacity of 25GW. This is with less land and wind than Australia.

China has grasped the opportunity of wind power in a big way. Their new 2020 wind target is a staggering 100GW, double the entire Australian electricity generation capacity.

Wind Power in Australia

Australia currently has around 1.5GW of wind power installed. Compared to other developed countries with similar wind profiles, this is a low figure.

Australia has an abundance of consistently windy locations within a short distance of our existing electricity grid. There is potential to vastly increase our use of wind power and reduce our reliance on inefficient, polluting, coal-burning plants.