

# BIOENERGY FACT SHEET

## The benefits of converting waste to energy

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*As we move towards a clean energy future, bioenergy has huge potential in helping Australia achieve its targets for renewable energy and the reduction of carbon emissions.*

Bioenergy presently provides 0.9 per cent of Australia's electricity generation.<sup>1</sup> With the right support in place, this has the potential to increase six-fold by 2020 to more than 10,600 GWh per year - enough to power 1.4 million Australian homes and remove over 5 million tonnes of carbon pollution from the atmosphere\*. By 2050, bioenergy could potentially provide more than 72,000 GWh per year, powering a staggering 10.2 million Australian homes and removing over 39 million tonnes of carbon pollution from the atmosphere.<sup>2</sup>

However, uncertainty in policy and a lack of understanding and support from government means that an abundance of potential bioenergy resources continue to be under-utilised in Australia.

### What is waste-to-energy?

Waste-to-energy is an important type of bioenergy. This refers to any waste treatment that creates energy from a waste source.

**In Australia, waste-to-energy can be generated from:**

- Sewage gas that captures the methane emitted from the solid organic components of sewage collected by water utilities to produce bioenergy.
- Landfill gas that captures the methane emitted from landfills, which is produced mainly from municipal solid wastes and industrial wastes, to generate bioenergy.
- Agricultural-related wastes such as livestock wastes.
- Urban biomass such as food-related wastes, garden organics, paper and cardboard material, and timber from construction and demolition sites.
- Wood-related wastes such as wastes produced in the harvesting and processing of wood such as sawmill and pulp-mill residues.

### Rural & regional benefits

Waste-to-energy is unique because it doesn't just produce renewable energy – it also provides other environmental and economic benefits.

Waste-to-energy provides huge economic opportunities for a whole range of different industries, spanning agriculture, forestry, food processing, urban waste management and regulatory authorities. Farmers, truck drivers, contractors, suppliers, as well as local restaurants and shops are all provided with an economic boost.

In regional and rural areas, this provides a source of permanent fulltime employment unique from the seasonal workforce in such regions. Existing industries are supported to remain viable by diversifying into energy production. As these communities deal with the impacts of climate change, waste-to-energy can provide rural and regional areas with a more self-reliant labour force less vulnerable to the impacts of drought and flood.

\* 1,496,330 homes, based on annual household consumption of 7.1MWh; 5,742,702 tonnes CO<sub>2</sub>, based on 1850 kWh = 1 tonne CO<sub>2</sub>

<sup>1</sup> Clean Energy Council, SKMMA, Removing Barriers Facing Bioenergy in Australia, February 2011, available at [www.removingbioenergybarriers.com.au](http://www.removingbioenergybarriers.com.au)

<sup>2</sup> Clean Energy Council, Bioenergy Roadmap, September 2008, available at [www.cleanenergycouncil.org.au/bioenergy](http://www.cleanenergycouncil.org.au/bioenergy); 10,229,436m homes, based on annual household consumption of 7.1MWh; 39,258,918 tonnes CO<sub>2</sub> based on 1850 kWh = 1 tonne CO<sub>2</sub>



Clean Energy Council



bioenergy

The Clean Energy Council (CEC) is the peak body representing Australia's clean energy sector. It is an industry association made up of more than 500 member companies operating in the fields of renewable energy and energy efficiency.

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## Benefits of distributed baseload electricity

Demand for electricity in Australia is projected to grow by nearly 50 per cent between now and 2030.<sup>5</sup> As a result, Australia needs to spend at least \$100 billion during the next decade to expand its power infrastructure.<sup>6</sup> To meet these costs, network charges for consumers in NSW and QLD are predicted to increase by up to 66 per cent by 2015, with similar increases likely in other states and territories.<sup>7</sup>

Bioenergy power plants using waste as fuel generate continuous, reliable and efficient baseload power and can play a critical role in meeting demand. Waste-to-energy also provides distributed power generation at or near the point of consumption, lessening the need for costly expansion of the grid. This reduces transmission losses, stabilises the electricity grid and minimises the impact on households already concerned with rising electricity prices.

## Waste control benefits

Waste-to-energy controls many environmental problems associated with waste disposal. At landfill and sewage facilities, captured waste gas is converted to energy. This prevents the release of methane emissions (which has 21 times more impact than carbon dioxide) into the atmosphere. Landfill space is preserved thereby preventing metropolitan landfill sites from reaching full capacity. In Sydney, where all landfill sites are predicted to reach full capacity by 2016 (after which the city's annual 2 million tonnes of rubbish will have to be transported by rail 250 km south to the nearest available landfill site) waste-to-energy has an important role to play.<sup>3</sup>

Farms can control manure odour and reduce groundwater contamination by converting animal wastes into energy. For example, at Berrybank Farm Piggery waste from 20,000 pigs (equivalent to roughly the same as the sewage output of a town with a population of about 80 000 people) is converted to energy. This has provided waste material with no little market or environmental value with a viable use and has resulted in a 70 per cent reduction in water usage and improved stock conditions.<sup>4</sup>

## Competitive cost proven renewable technologies

The technology to produce power from waste is ready today and has a proven track record delivering reliable energy to industry and households. Unlike emerging renewable energy technologies yet to be commercially proven, waste can be used now to meet Australia's carbon emissions and renewable energy targets.

Existing waste-to-energy technologies are already cost-competitive in the long run, and upfront costs are lessened due to a reduction in transportation costs, the use of existing industries and infrastructure to facilitate waste-to-energy production and the value of Renewable Energy Certificates. Once a carbon price is implemented, this cost competitiveness will increase further. With the need to reduce greenhouse gas emissions now a policy reality, Australia's waste resources must play a vital role as part of Australia's clean energy future.

<sup>3</sup> Matthew Benns, Sydney Morning Herald, March 21, 2010, Waste solution left to rot as landfill capacity runs out, found at [www.smh.com.au/environment/waste-solution-left-to-rot-as-landfill-capacity-runs-out-20100320-qn6z.html#ixzz1RlybSZgT](http://www.smh.com.au/environment/waste-solution-left-to-rot-as-landfill-capacity-runs-out-20100320-qn6z.html#ixzz1RlybSZgT)

<sup>4,5</sup> Martin Ferguson, The Australian, March 22, 2010, Energy prices will keep on rising, available at [www.theaustralian.com.au/news/opinion/energy-prices-will-keep-on-rising/story-e6frg6zo-1225843475251](http://www.theaustralian.com.au/news/opinion/energy-prices-will-keep-on-rising/story-e6frg6zo-1225843475251)

<sup>6</sup> Energy Prices Will Keep Rising, 22 March 2010, available at [minister.ret.gov.au/MediaCentre/Articles/Pages/EnergyPricesWillKeepRising.aspx](http://minister.ret.gov.au/MediaCentre/Articles/Pages/EnergyPricesWillKeepRising.aspx)

<sup>7</sup> Working Paper No.17-Boomerang Paradox, AGL Applied Economic & Policy Research, April 2010, available at [www.aglblog.com.au/wp-content/uploads/2010/10/No.17-Boomerang-Paradox-Final-Oct-2010.pdf](http://www.aglblog.com.au/wp-content/uploads/2010/10/No.17-Boomerang-Paradox-Final-Oct-2010.pdf)



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