BIOENERGY FACT SHEET 2

The benefits of energy crops

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

Bioenergy presently provides 0.9 per cent of Australia's electricity generation.[1] With the right support in place, this has the potential to increase six-fold by 2020 to 10,624 GWh per year - enough to power 1.4 million Australian homes and remove over 5 million tonnes of carbon from the atmosphere*. By 2050, this has the potential to increase even further to 72,629 GWh per year, which could power a staggering 10.2 million Australian homes and remove over 39 million tonnes of carbon from the atmosphere.[2]

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 are energy crops?

Energy crops are an important type of bioenergy. This refers to crops grown specifically for energy production. This can include both annual and perennial crops; and both agricultural and non-agricultural crops.

In Australia, non-agricultural energy crops include:

- oil mallee eucalyptus
- native grasses

Currently in Australia agricultural crops are not grown specifically as energy sources, but crop residue is used as an energy source.

This includes:

- sugarcane
- sweet sorghum
- wheat and other assorted grains
- vegetable oil-bearing crops such as sunflowers, canola

What makes energy crops for bioenergy so unique from other renewable energy sources?

Energy crops are unique because they don't just produce renewable energy – they also provide other environmental and economic benefits. In excess of creating renewable energy, energy crops also provide:

- Rural & regional benefits
- Distributed baseload power
- Competitive cost proven renewable energy generation

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* 1,496,330 homes, based on annual household consumption of 7.1MWh; 5,742,702 tonnes Co2, based on 1850 kWh = 1 tonne Co2

[1] Clean Energy Council, SKMMMA, Removing Barriers Facing Bioenergy in Australia, February 2011, available at www.removingbioenergybarriers.com.au

[2] Clean Energy Council, Bioenergy Roadmap, September 2008, available at www.cleanenergycouncil.org.au/bioenergy/; 10,229,436m homes, based on annual household consumption of 7.1MWh; 39,258,918 tonnes Co2 based on 1850 kWh = 1 tonne Co2

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Rural & regional benefits

Energy crops provide great economic and social opportunities for rural and regional communities. Farmers, truck drivers, contractors, suppliers, as well as local restaurants and shops are all provided with an economic boost. This provides a source of permanent fulltime employment unique from the seasonal workforce in many rural and regional areas.

Energy crops also encourage the development of new and innovative farming techniques and can provide economic returns on land and crop residue with no other identifiable market or environmental value. As these communities deal with the impacts of climate change, energy crops provide rural and regional areas with a more self-reliant labour force less vulnerable to the impacts of drought and flood.

Energy crops can also produce both feed and energy from the one harvest. For example, sugar is harvested from sugarcane and the crushed sugarcane residue (known as bagasse) provides electricity and process steam for Australia's 23 operating sugar mills. As pressure on both food and fuel stocks increase globally, energy crops allow Australian agricultural practices to account for this reality and adopt methods of using available land and other resources to meet both food and fuel needs**.

Benefits of distributed baseload electricity

Demand for electricity in Australia is projected to grow by nearly 50 per cent between now and 2030.[3] As a result, Australia needs to spend at least $100 billion during the next decade to expand its power infrastructure.[4] 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[5].

Because energy crop power plants generate continuous, reliable and efficient baseload power, they can play a critical role in meeting this increase in demand. Energy crops also provide distributed power generation at or near the point of consumption which lessens the need for costly expansion of the grid. This reduces transmission losses, stabilises the electricity grid and lessens the impact on households already concerned with rising electricity prices.

Competitive cost proven renewable technologies

The technology to produce power from energy crops is ready today and has a proven track record delivering reliable energy to industry and households. Australia's sugar industry has used residue from cane crops to meet its electricity and heat requirements for over 100 years. Unlike emerging renewable energy technologies yet to be commercially proven, energy crops can be used now to meet Australia's carbon emissions and renewable energy targets.

Existing energy crop 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 farming methods and infrastructure to facilitate energy crop 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 energy crop resources must play a vital role as part of Australia's clean energy future.

** While the use of energy crops have been criticised for driving up the cost of food, research has shown that in reality, a complex set of factors drive up the food consumer price index such as energy-intensive activities like processing, packaging and transporting, the cost of labour and increased global demand for commodities.

3, 4 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

5 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-20101.pdf