



# What markets exist for wood waste renewable energy?

## Wood Waste Bioenergy Information Sheet No. 5




Biomass is currently used to produce some 11% of the world's total primary energy needs. Wood waste makes up a significant proportion of these biomass resources, which are used to produce renewable electricity, biofuels, wood pellets and briquettes, steam, or are used as firewood for heating and cooking<sup>1</sup>.




In Australia, and many developed countries, incentive schemes and policy initiatives have been used to attract investment into renewable energy generation based on the use of wood waste<sup>2</sup>. As a result, a number of markets have been created, or may be arising, for renewable energy products in Australia. These markets include electricity or power generation and liquid fuels (such as ethanol, diesel and bio-oil) which can all be derived from existing wood waste resources<sup>3</sup>.

### Mandatory Renewable Energy Target (MRET)



Commonwealth legislation, in the form of the *Renewable Energy (Electricity) Act 2000*, requires electricity wholesalers and large energy users to source an additional 9,500 GWh of power each year from renewable energy sources for the period 2010 to 2020. Between now and 2010, annual targets for the increase in additional renewable energy generation have been specified. These targets make up the Mandatory Renewable Energy Target, or MRET, and achievement of the target is monitored through the creation, trading and surrendering of renewable energy certificates (or RECs). [Fact Sheet 8 contains a summary of how MRET operates.]



Wood waste is under-utilised in the renewable energy sector relative to the potential resources available, making up less than 4% of the RECs that have been validated as part of MRET, so far<sup>4</sup>. Black liquor (a by-product of the paper making process) provided a further 4% of the annual target. Given the large volume of wood waste currently available from existing forest harvesting and timber processing operations in Australia, these resources could make a much larger contribution to MRET<sup>5</sup>.



### Key points

- *Wood waste provides a significant proportion of the world's biomass resources that are used to meet 11% of the world's primary energy needs<sup>1</sup>.*
- *Markets are being created in Australia, and many developed countries, for renewable energy products that can be generated from wood waste<sup>2</sup>.*
- *Wood waste from timber processing, forest harvesting and recycling and demolition timbers can be used to produce:*
  - *Electricity*
  - *Biofuels*
  - *Fuel pellets and briquettes*
  - *Heat and steam*
  - *Process gas*
  - *Firewood.*
- *Two key policy instruments used in Australia to promote the production of renewable energy from a range of sources are the Mandatory Renewable Energy Target and Green Power.*

## Green Power schemes

A number of electricity suppliers around Australia offer Green Power schemes, which provide retail customers with the opportunity to purchase electricity from eligible renewable sources at a premium, relative to traditional power sources.

These schemes are nationally accredited through the National Green Power Accreditation Steering Group, and are offered nationally through joint collaboration in NSW, Victoria, Queensland, South Australian and the ACT.

Eligible green power sources include biomass from energy crops, noxious weeds and sustainably managed timber plantations.

## NSW Electricity Retailer Greenhouse Benchmarks Policy

The policy of the NSW Government incorporates mandatory targets on greenhouse gas mitigation, or abatement for generators. This approach encourages trade in NSW Greenhouse Abatement Certificates (NGACs), where abatement activities such as renewable energy generation, are recognised and given credit through a certification system.

One NGAC represents the abatement of one tonne of CO<sub>2</sub>-e emissions associated with the consumption of electricity in NSW. At the end of a compliance year, if excess emissions remain after NGACs are submitted, then any shortfall in the mandated target has to be paid for by retailers at a price of \$10.50 per tonne of CO<sub>2</sub>-e.

Currently, the New South Wales Government has decided that NGACs cannot be created for native forest residues.

## Victorian Greenhouse Strategy

The Victorian Government encourages the consumption of renewable energy by providing financial support to assist the development of renewable energy projects in that State. The financial support can be used for a range of activities, including an assessment of the technical and economic opportunities for using renewable energy sources. That Government is also committed to purchasing 5% of its electricity needs in the form of Green Power.

## Are there any 'conventional' markets for turning wood waste into renewable electricity?

A number of more traditional renewable energy markets are available for wood waste. These include combustion processes for the production of heat and/or steam, which is subsequently used to 'kiln dry' timber for the construction and housing industries.

Wood waste is also used in boilers for on-site power generation in a number of wood and wood-based panel production businesses. In these cases, if the power generated from wood waste is additional to the electricity generated at those same mills prior to the introduction of the MRET, it is possible to use the electricity at those sites and to create and sell Renewable Energy Certificates (RECS).

These RECs can be sold, at market value, to those electricity generators with a requirement to purchase the certificates and thereby, help meet their MRET targets. Alternatively, the RECs could be sold to large power consumers, such as the aluminium industry, to assist them (as large electricity users) in meeting their individual greenhouse gas targets.

## Can wood waste be used to make biofuels?

It is possible to generate a number of biofuels from wood waste resources. Ethanol could be produced from wood waste then blended with petrol or diesel. In addition, it is possible to make a bio-oil from wood waste using a process called pyrolysis<sup>3</sup>. Additional information on the processes that can be employed to produce renewable energy from wood waste are available in Fact Sheet 10.

1. IEA Bioenergy (2005) Benefits of bioenergy.
2. Report 1 – global and Australian initiatives and impediments to the production of renewable energy from wood in Australia (p.22, p.28); Report 2 – the potential for wood in a sustainable and competitive Australian renewable energy industry (Appendices 1 and 2); NSW Bioenergy Handbook (2005).
3. Report 4 – converting wood waste into renewable energy – a summary of biomass conversion technologies.
4. Rossiter (2005) Mandatory Renewable Energy Target – review of contribution from bioenergy, Bioenergy Australia Conference (Melbourne).
5. Fung, Kirschbaum, Raison and Stucley (2002) The potential for bioenergy production from Australian forests, its contribution to national greenhouse targets and recent developments in conversion processes, Biomass and Bioenergy 22: 223-236; Report 3 – potential wood flows, technical and scale issues and identification of sustainable management criteria.



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