



# Wood for Bioenergy

## (IFA Forestry Policy Statement No. 8.1)

### The issue

Wood and other biomass are potentially renewable energy sources that can reduce greenhouse gas emissions when used to replace fossil fuel energy. However, there is community concern about the potential impacts of large-scale use of wood for bioenergy on other forest values such as biodiversity and reluctance in some quarters to accept energy generated from wood as genuinely renewable.

### Background

Bioenergy is energy derived from biomass. Biomass can be produced from purpose grown agricultural crops, from plantations and native forests, or from the by-products of processing of forest or agricultural products.

Humans have long used the energy contained in wood for cooking and heating and it remains the primary energy source for most of the world's population. Burning wood has generally been an inefficient way of producing usable energy, but with new more efficient technologies wood can now be more widely utilised to produce energy. Bioenergy generation facilities vary in scale from small household plants to larger plants providing electricity for towns or industries.

Waste from wood or sugar cane processing is currently used to produce energy in conjunction with processing. If not used for energy this material would be burnt or disposed of in land fills. Some coal-fired power stations can use a proportion of wood in their fuel mix. Other technologies, such as gasification, pyrolysis and methanol production have potential for more extensive use of wood biomass. Forest biomass already provides a considerable proportion of energy in countries such as Austria, Finland and Sweden. The USA invested heavily in bioenergy technology in the early 1970s. It has recently increased bioenergy research and development and in 1999 had 9% growth in electricity production from biomass.

Currently in Australia 42% of our energy is produced from coal, 34% from crude oil and 18% from natural gas. Only six percent of Australian energy comes from renewable sources, including 2.3% from sugar residues, 1.3% from hydro power and 2.3% from wood. The use of wood mainly involves co-generation where waste products are used to generate energy in the wood processing facility. Wood is also used for heating in areas of rural Australia and an estimated five million tonnes (18% of total timber removals) is taken from forest and woodlands for firewood each year.

There is national and international concern about the impacts on the global climate system from increasing concentrations of atmospheric CO<sub>2</sub> and other greenhouse gases, largely caused by burning fossil fuels for energy and transport. Growing forests absorb atmospheric CO<sub>2</sub>. Energy can be produced from woody biomass without increasing atmospheric CO<sub>2</sub> if a balanced cycle of growth and harvest is sustained.

Market-based mechanisms, such as the Federal Government's Mandatory Renewable Energy Target or 'greenpower' schemes, can provide effective ways of bringing greenhouse gas benefits of bioenergy into the energy market.

There is a considerable biomass energy resource available from Australian forests and plantations, especially from residues from both plantation and native forest harvesting operations that are otherwise burnt or left to rot on the forest floor. Plantations can also be grown specifically for bioenergy purposes. The development of bioenergy facilities can potentially provide additional financial returns from plantations and native forests through new markets for low quality wood. These facilities could provide regional economic development and employment benefits.

The economics of energy production are such that the market price for bioenergy resources is likely to be relatively low compared to other uses of wood. Establishment of plantations or harvesting in native forest for production of bioenergy alone are unlikely to be profitable in the short-term. Buyers will not transport the resource long distances. Consequently, bioenergy resources will generally only be utilised from harvesting operations that include the production of higher value products.

## Policy

The Institute of Foresters of Australia supports the use of wood from both native forests and plantations from all land tenures for biomass energy provided that:

- Forests are managed according the Institute's policy on sustainable forest management.
- Maximum value recovery is sought from all trees harvested.
- Harvested areas are regenerated or replanted to ensure that forest greenhouse gas balances are maintained over the long term.

The Institute of Foresters of Australia considers that:

- Development of bioenergy facilities should involve extensive community consultation and be consistent with local planning and environmental regulations.
- Financial incentives for the production of energy from all sources (fossil fuel and other sources) should be equitable, transparent and efficient.
- Government regulations controlling accreditation of biomass energy sources should be easily understood and based on sound science and market principles.
- There is a need for investment in community education about the benefits and disadvantages of using wood for energy.
- Accounting for the greenhouse gas benefits of bioenergy should be scientifically based and take into account the emissions from all components of the forest ecosystem and fossil fuels used in energy production.
- There is a need for investment in research to support efficient energy generation from wood and to quantify greenhouse gas balances.

## Further Information

Bioenergy Australia website: <http://www.users.bigpond.net.au/bioenergyaustralia/>

British Biogen (undated) Good practice guidelines on the use of wood fuel from forestry and arboriculture. <http://www.britishbiogen.co.uk/gpg/wfgpg/wfgpgfront.htm>

International Energy Agency Bioenergy website: <http://www.ieabioenergy.com/>

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