

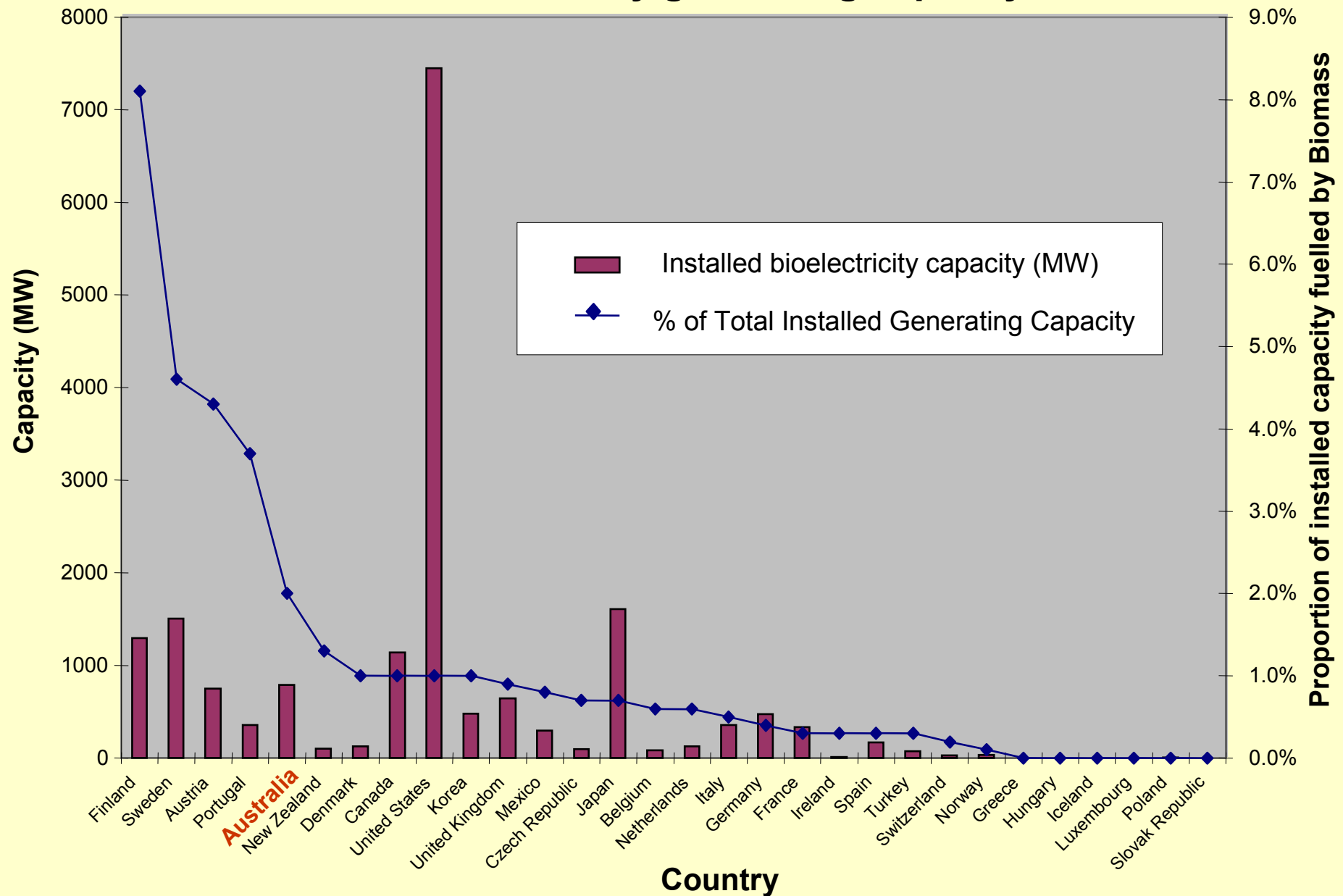
Task 32 Presentation- Australia

Task 32 meeting
Rome 14 May 2004



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OECD Bioelectricity generating capacity



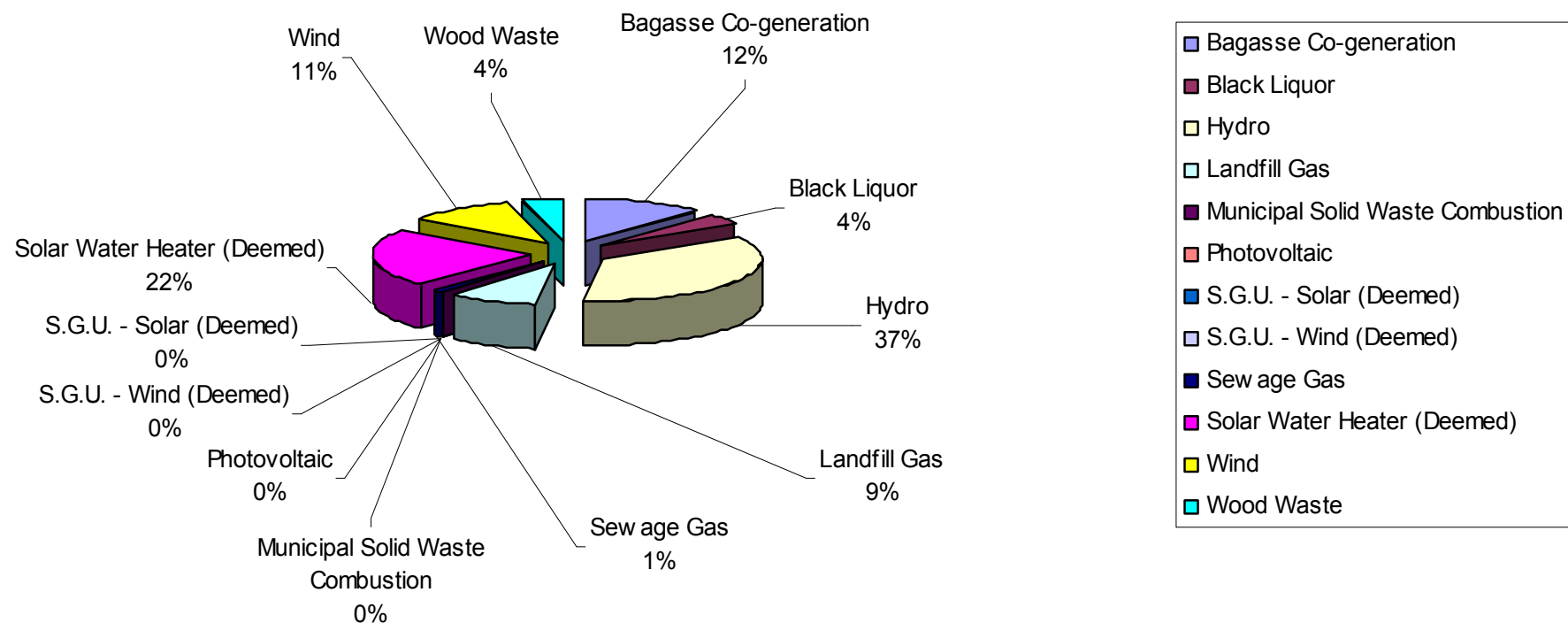
Mandatory Renewable Energy Target

- Additional 2% renewables by 2010 (9,500 GWh)
- Held at 9,500 GWh/a 2010-2020
- Electricity retailers liable parties
- Operates by creation and trading of RECs
- 1 REC = 1 MWh
- Wood waste and energy crops eligible

web site www.orer.gov.au

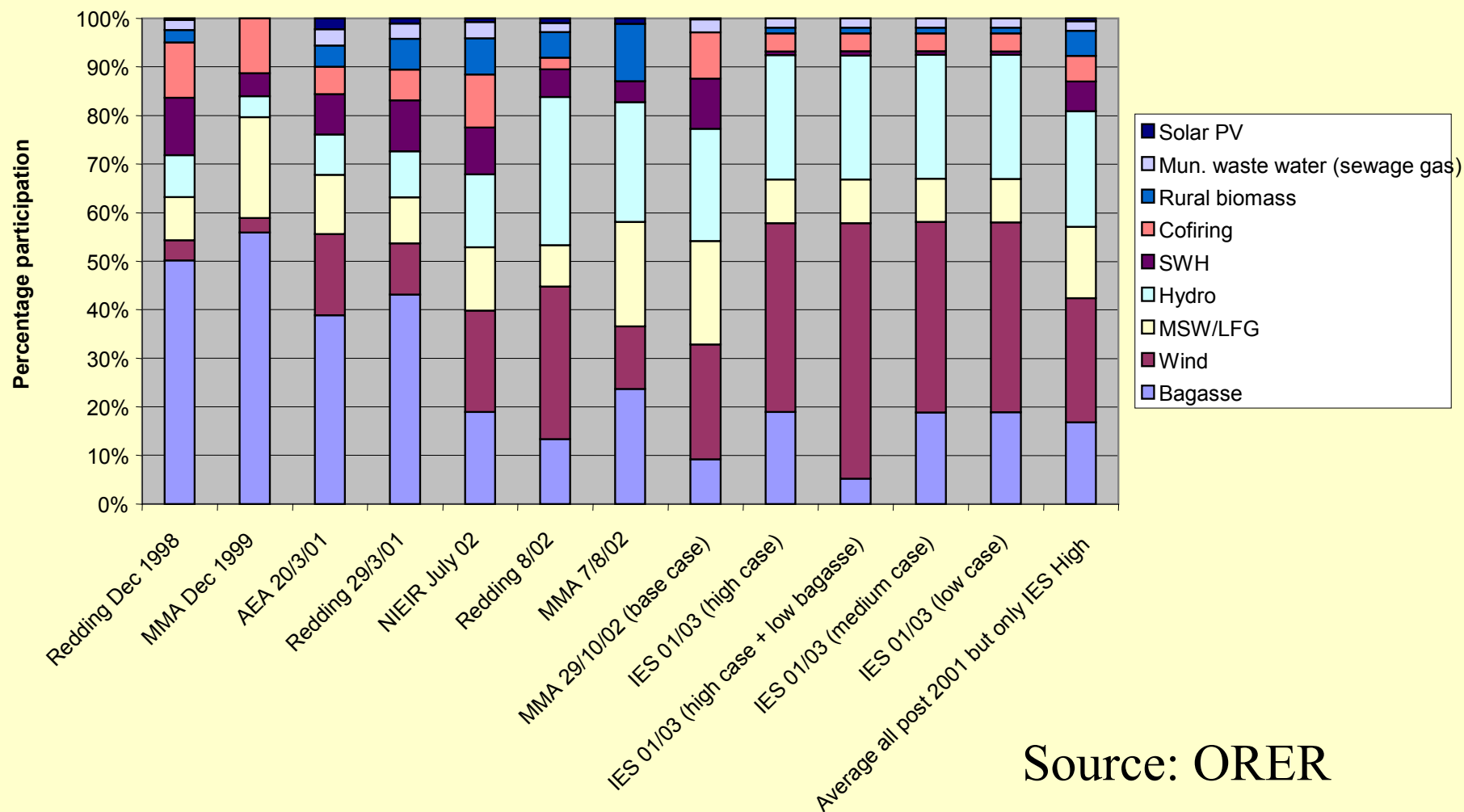
Breakdown of Renewable Energy Certificates

At 31/12/2002
www.rec-registry.com



Source: ORER
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Forecasts of Mix of Fuel Sources for 2010



Source: ORER

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Project Examples in Australia

- Rocky Point Sugar Mill 30 MW
- Brightstar Environmental's SWERF project
- Green Pacific Energy's projects including 5 MW at Stapylton, Gold Coast (85 MW approved)
- Delta Electricity's 100 MW bagasse/wood in NSW
- Co-firing wood at Liddell, Muja and Wallerawang
- Co-firing biogas at Swanbank Power Station, Qld
- 3 MW sewage gas at Malabar, Sydney
- Visy's 20 MW co-generation plant at Tumut
- Western Power Corporation's oil mallee project (1MW initially)
- Auspine's 60 MW bioenergy plant at Tarpeena, S.A.
- 35 MW Southwood project in Tasmania
- 10 MW Blair Fox chicken litter project in WA

Rocky Point Sugar Mill – 30 MW

- Stanwell Corp / Heck Group
- Multi-fuelled Alstom Power VU-40 boiler 510°C / 70 Bar
- Vibrating grate
- Bagasse, Green Wastes, Timber Fuels



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Macadamia Nut Project – Gympie

1.5 MW pinhole grate unit



Source: Ergon Energy

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Biomass Co-firing

Commercial Co-firing

- Wallerawang PS, Mt Piper and Vales Point (Delta)
 - Waste Wood, Plantation wood residues, Green Waste
- Liddell Power Station (Macquarrie Gen)
- Swanbank (CS Energy)
 - Plantation wood residues, processed vegetable oil
 - Land fill gas

Trials

- Muja Power Station (Western Power)
 - Trials Plantation wood residues
- Stanwell Power Station (Stanwell Corp)
 - Trials on plantation residues

Name of plant	Owner	Size	Fuel Type	Current Status	Burners	Fuel Feed
Vales Point	Delta Electricity	2 x 660 MWe Pulverised Fuel units	Less than 5% by weight of wood waste	Co-firing commercially	Tangentially Fired	Via Coal Pulverising Mills via conveyor
Wallerawang	Delta Electricity	2 x 500 MWe Pulverised Fuel units	Less than 5% by weight of wood waste	Co-firing commercially	Tangentially Fired	Via Coal Pulverising Mills via conveyor
Mt Piper	Delta Electricity	2 x 660 MWe Pulverised Fuel units	Less than 5% by weight of wood waste	Co-firing commercially	Wall Fired	Via Coal Pulverising Mills via conveyor
Liddell	Macquarie Generation	4 x 500 MWe Pulverised Fuel units	Less than 5% by weight of wood waste	Co-firing commercially	Tangentially Fired	Via Coal Pulverising Mills via conveyor
Plants Conducting Trials						Via Coal Pulverising Mills via conveyor
Swanbank B	CS Energy	4 x 125 MWe Pulverised Fuel units	Wood waste	Trial only	?	Via Coal Pulverising Mills via conveyor
Muja	Western Power	Pulverised Fuel units	Wood waste	Trial only	?	Via Coal Pulverising Mills via conveyor
Tarong	Tarong Energy	2 x 350 MWe Pulverised Fuel units	Wood waste	Trial only	?	Via Coal Pulverising Mills via conveyor
Stanwell	Stanwell Corporation	4 x 350 MWe Pulverised Fuel units	Wood waste	Trial only	?	Via Coal Pulverising Mills via conveyor



Co-Firing Biomass with Coal

Wallerawang Power Station



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Materials Handling and Mill Performance Trials

Materials Handling:

- Metering on to existing conveyors only way to ensure consistent blend ratio.
- Good mixing observed on coal conveyor after chute gate drops.



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Typical Fuel Specification

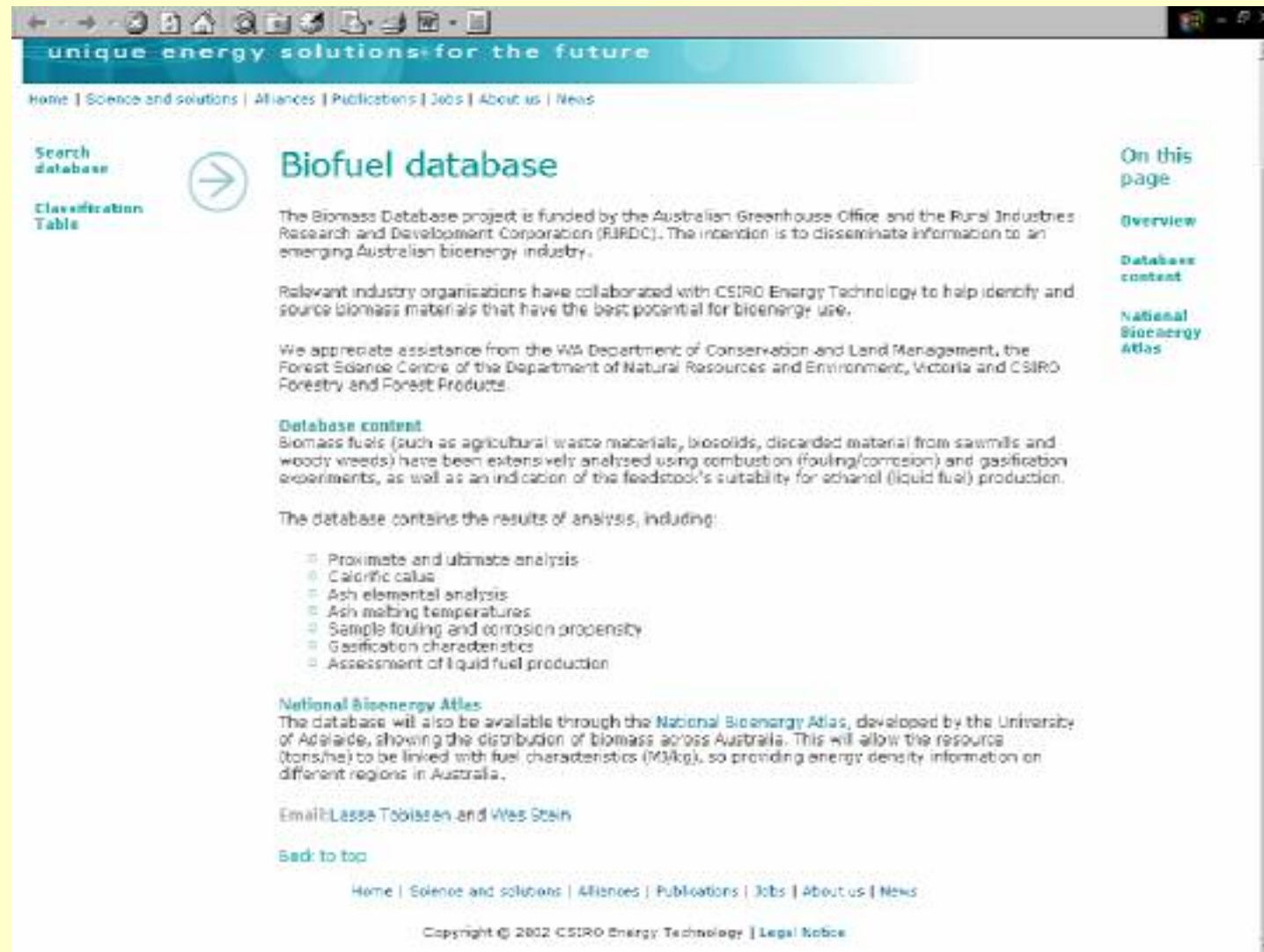
Specification	Biomass Fuel Categories
Specific Energy (MJ/kg) (Oven Dry Basis)	18 minimum
Total Moisture (%) (as received)	60 maximum
Ash Content (%) (Oven dried basis)	5 maximum
Trace Metal Concentration (Applies to fuel sources from manufactured wood products or by-products or construction demolition wood wastes.	350mg/kg Maximum of an aggregate of Sb, As, Be, Cd, Cl, Cr (total), Cu, Co, F, Pb, Mn, Hg, Ni, Se, Sn and V.
Visible Foreign Matter	None
Sizing (in accordance with AS1152 test sieve)	< 100mm and > 3mm

Fuel Size and Contamination



CSIRO Biofuel database

<http://www.det.csiro.au/science/energyresources/biomass.htm>



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Classification Table

Biofuel database

The Biomass Database project is funded by the Australian Greenhouse Office and the Rural Industries Research and Development Corporation (RIRDC). The intention is to disseminate information to an emerging Australian bioenergy industry.

Relevant industry organisations have collaborated with CSIRO Energy Technology to help identify and source biomass materials that have the best potential for bioenergy use.

We appreciate assistance from the WA Department of Conservation and Land Management, the Forest Science Centre of the Department of Natural Resources and Environment, Victoria and CSIRO Forestry and Forest Products.

Database content

Biomass fuels (such as agricultural waste materials, biosolids, discarded material from sawmills and woody weeds) have been extensively analysed using combustion (fouling/corrosion) and gasification experiments, as well as an indication of the feedstock's suitability for ethanol (liquid fuel) production.

The database contains the results of analysis, including:

- Proximate and ultimate analysis
- Calorific value
- Ash elemental analysis
- Ash melting temperatures
- Sample fouling and corrosion propensity
- Gasification characteristics
- Assessment of liquid fuel production

National Bioenergy Atlas

The database will also be available through the [National Bioenergy Atlas](#), developed by the University of Adelaide, showing the distribution of biomass across Australia. This will allow the resource (tons/ha) to be linked with fuel characteristics (MJ/kg), so providing energy density information on different regions in Australia.

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Cofiring LFG with Coal

Swanbank Re-Organic
Energy Plant (co-firing
biogas with coal)

Gas extraction



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Coal-Biomass Cofiring

CRC for Coal in Sustainable Development

Key Researchers:

Prof Terry Wall and Dr B Moghtaderi (Newcastle University);



