



# Biomass Taskforce

July 1999

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## **Biomass Taskforce Membership<sup>1</sup> Update**

The Biomass Taskforce membership has increased to 23 organisations, with a recent new member being CS Energy Ltd, a Queensland based energy company, Victoria's Natural Resources and Environment - Forest's Service, and the Northern Sydney Waste Board. The Biomass Taskforce continues to wish to expand its membership and invites interested organisations to contact the Biomass Taskforce Manager, Dr Stephen Schuck on tel/fax 02 9416 9246 or email: [Steve.Schuck@bigpond.com](mailto:Steve.Schuck@bigpond.com) in this regard.

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## **IEA Bioenergy – Move to Expand Australian Participation**

From its inception the Biomass Taskforce has wished to participate in the International Energy Agency's Bioenergy program. To foster participation in this information exchange program, the Biomass Taskforce is providing the Australian annual fee to the IEA Bioenergy Executive Committee. The Biomass Taskforce Manager has been successful in securing funding from the Joint Venture Agroforestry Program for participation in IEA Bioenergy Task 17, *Short Rotation Crops for Bioenergy* with a group consisting of the Western Australian Department of Conservation and Land Management, Victoria's Centre for Forest Tree Technology (Department of Natural Resources and the Environment), Forest Products Association of NSW, CSIRO Division of Forestry and Forest Products, State Forests of NSW and Queensland's Department of Primary Industry and convened by the Biomass Taskforce. Participation in Task 17 is now under way. Stephen Schuck, the Biomass Taskforce Manager is representing Australia on the Executive Committee of IEA Bioenergy and attended the 43rd Executive Committee meeting in Norway 26-28 May.

The Biomass Taskforce is now moving to participate in additional Tasks, and is canvassing its membership regarding Task selections and preferred means of expanded participation.

Should you wish to obtain information on this program and possible participation in IEA Bioenergy, please contact Steve Schuck on tel/fax: 02-9416-9246, or email [Steve.Schuck@bigpond.com](mailto:Steve.Schuck@bigpond.com). The IEA Bioenergy has its home page at URL: <http://www.fri.cri.nz/ieabioenergy/home.htm> where the latest annual report has recently been posted.

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**Back Issues of Biomass Taskforce Newsletters** – Downloadable from the Biomass Taskforce's homepage: <http://www.users.bigpond.com/steve.schuck/abt>

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<sup>1</sup> Founding members: ERDC (replaced by DISR), RIRDC, Environment Australia (now Australian Greenhouse Office), GRDC, BRS. Membership now also includes CSIRO Div of Energy Technology & Div of Forestry and Forest Products, FPA of NSW, Pacific Power, Delta Electricity, Macquarie Generation, Waste Service NSW, EDL, SEDA, SPM/CPM, Forestry Tasmania, State Forests of NSW, Western Power Corporation, ABB Power Generation Ltd, Western Sydney Waste Board, Stanwell Corporation, CS Energy, NRE -Forest's Service and the Northern Sydney Waste Board.

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## **"Economic Contribution of the Sustainable Energy Industry to the NSW Economy" - SEDA discussion paper released**

The NSW Sustainable Energy Development Authority (SEDA) has released a survey report showing that the green energy industry was worth \$3.3 billion to the NSW economy in 1998, and that it is growing faster than the IT and tourism industries. The report estimated total sales for the sector in 1998 at \$1.2 billion, including exports of \$170 million per year. The sector was estimated to have directly employed 4,700 people in 1998 and this is expected to rise to 5,900 by the end of 2000. The 30 page report is available from SEDA.

Tel: 02-9291-5260, email: [seda@seda.nsw.gov.au](mailto:seda@seda.nsw.gov.au), web:<http://www.seda.nsw.gov.au>

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## **NSW Alternative Waste Technologies and Practices Inquiry**

The NSW Government has decided to establish an Inquiry to investigate current and emerging waste management technologies and practices. The findings of the Inquiry will be used to inform decisions of Government, Waste Boards and the waste industry about future waste management infrastructure and practices in NSW. Terms of reference for the inquiry have been developed and were advertised on 10 July, seeking comments by 23 July. The draft terms of reference are:

Describe and assess current and emerging technologies in Australia and overseas. These technologies are to be assessed in terms of:

1. Potential impact on the environment in terms of local, regional and global air, land and water impacts and amenity.
2. Contribution to waste avoidance and beneficial reuse of resources.
3. Contribution to waste reduction.
4. Economic benefits and costs of the alternative technologies, expressed per tonne of waste input; and
5. Factors affecting the capacity for accelerating the implementation of alternative waste management technologies and practices in NSW in the short, medium and long term.

It is anticipated that the Inquiry Chairperson will call for submissions in the near future.

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## **Second Paper Released on Emissions Trading**

The Australian Greenhouse Office has released the second of four discussion papers on Emissions Trading. The first paper *Establishing the Boundaries* was released in March this year and discussed the comprehensiveness of a national emissions trading system within Australia, focusing on the greenhouse gases and sectors of the economy that could be covered. The second paper *Issuing the Permits* (62pp) covers issues related to the allocation of permits, including grandfathering, auctioning, and recognition of early abatement action, permit duration, and the transition towards possible emission trading within Australia. The second discussion paper is accompanied by a commissioned report *Early Greenhouse Action* produced by the Centre for International Economics to stimulate public discussion. The Australian Greenhouse Office is seeking comment on the discussion paper by 31 August 1999. The discussion paper is available on the Internet at <http://www.greenhouse.gov.au/emissionstrading> or request a copy by phoning the AGO on 02-6274 2835.

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## **Renewable Energy Commercialisation Program (RECP)**

The Australian Greenhouse Office administers this \$29 million program, which provides grant funding through a competitive process. The results of Round 2 of this program are expected to be announced late August/early September. Round 3 opens on 7 September and closes on 12 October 1999.

Grants under RECP are normally expected to be in the range of \$100,000 - \$1 million. The Australian Greenhouse Office encourages intending applicants to contact the Renewable Energy Team and to submit draft applications prior to making formal submissions. The RECP3 application form, which should be available late August is expected to be similar to the RECP2 form, which is available on the AGO's web site [www.greenhouse.gov.au](http://www.greenhouse.gov.au).

Further information is available from the Australian Greenhouse Office. Contact Gillian McDonald, Program Manager, Renewable Energy Grants Programs, telephone 02 6274 1376 or the Renewable Energy Hotline on 02 6274 1880.

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## **Macquarie Generation Launches Co-firing at Liddell Power Station**

As related in the April issue of the Biomass Taskforce Newsletter, Macquarie Generation has been conducting a biomass co-firing trial at the Liddell Power Station in the Hunter Valley. During the trial up to 17 MW of the power station's output has been provided from sawdust and woodchips, at co-firing rates of up to 5% biomass blended in with the coal. Almost 3,000 MWh of renewable energy were sold to NSW electricity retailers during this trial.

Macquarie Generation, a member of the Biomass Taskforce, has now announced its intention of becoming a major producer of renewable energy in NSW by extending the trial to commercial operation. The NSW EPA has announced its intention to issue Liddell Power Station with a new licence, believed to be a first in Australia, to permit co-firing of biomass at a maximum rate of 5%. Long term supplies of wood by-products have been secured. Over the next 12 months Macquarie Generation intends to generate 100 GWh of bioenergy, increasing the NSW output of renewable energy from non-hydro sources by up to 40%. The program is expected to achieve carbon dioxide savings in the order of 100,000 tonnes p.a.

The NSW Minister for Energy, the Hon Kim Yeadon MP is scheduled to officially launch the Macquarie Generation Biomass Co-Firing Program in Sydney on 2 August. Macquarie Generation's web site is at <http://www.macgen.com.au/>

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## **Additional 2% Renewables Target in Power Supplies – Final Report Released**

The final report of the Renewables Target Working Group entitled 'Implementation Planning for Mandatory Targets for the Uptake of Renewable Energy in Power Supplies' was made public in May and invited submissions before the end of June. This 105 page report is available on the Australian Greenhouse Office's web site at URL: <http://www.greenhouse.gov.au>. The report proposes that biofuels (landfill gas, biogas and biomass); specified waste, including biomass by-products of agricultural crops but excluding broad-scale land clearing for agricultural purposes (clearing for housing developments could be eligible), biomass by-products of food processing and production industries, biomass by-products of sustainably managed forestry operations, sewerage treatment, biomass component of mixed municipal wastes and other biomass wastes as approved by the regulator; cofiring

biomass with coal and other non-renewable energy sources be eligible under the measure. 'Wood for heating' is recommended to be ineligible under the measure. The Biomass Taskforce Manager has sought clarification on the distinction between wood for heating and biofuels under the measure. For further information contact: Dr Stephen Bygrave at the AGO on tel: 02 6274 1199.

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### **BioFacts**

- Biomass production is about eight times the total annual world consumption of energy from all sources. At present the world population uses only about 7% of the annual production of biomass. Australia obtains approximately 5% of its primary energy requirements from biomass. This is mainly in the form of bagasse (sugar cane residue), firewood (domestic heating) and wood waste (forest products industries).
  - The Higher Heating Values (HHV) of biomass fuels may be calculated from their Ultimate Analysis by applying the Channiwala equation (ref. 'Thermal Data for Natural and Synthetic Fuels' by S Gaur and T Reed, Marcel Dekker, 1998)  
$$\text{HHV (MJ/kg)} = 0.3491 C + 1.1783 H - 0.1034 O [0.1005 S - 0.0151N - 0.0211 \text{ Ash}]$$
where the element values are expressed in percentages. The average absolute error of prediction for 160 biomass types is 1.45%.
  - Rules of Thumb:
    - Energy content of typical biomass is 18 MJ/kg
    - Energy of 1 kg of biomass can generate 5 kWh<sub>th</sub> or 1 kWh<sub>e</sub> (20% efficiency)
    - Gasification of 1 kg of biomass makes 3 m<sup>3</sup> of gas
    - 1 m<sup>3</sup> of gas weighs 1 kg
    - Energy content of biocrude from flash pyrolysis is approx 16 MJ/kg
  - Conversion between Joules and kilowatt-hours
    - Electrical energy is usually expressed in kWh, while other forms of energy are usually expressed in Joules. Using 1 Joule = 1 Watt x 1 second, 1 GJ = 277.8 kWh.
  - It is conservatively estimated that 870,000 tonnes of waste wood is landfilled in Australia per annum.
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### **Biomass on the Internet**

The Internet provides a valuable source of information on biomass and allied topics. Below are some Internet addresses to supplement the addresses given in the seven earlier issues of the Biomass Taskforce newsletters. These lists are consolidated as electronic links on the Biomass Taskforce's web page at [http:// www.users.bigpond.com/Steve.Schuck/ABT](http://www.users.bigpond.com/Steve.Schuck/ABT)

Australian Greenhouse Office

<http://www.greenhouse.gov.au/>

RIRDC/LWRRDC/FWPRDC Joint Venture Agroforestry Program

<http://www.rirc.gov.au/programs/aft.html>

NOVA - Australian Academy of Science (biomass information for highschools)

<http://www.science.org/nova/>

Belrose (Sydney) landfill gas power project

<http://www.affa.gov.au/netenergy/info/renew/belrose.html>

Werribee (Melbourne) covered lagoon sewerage gas project

<http://www.affa.gov.au/netenergy/info/renew/werribee.html>

Kings College London (Prof David Hall)

[http://www.kcl.ac.uk/kis/schools/life\\_sciences/life\\_sci/hall/top.html](http://www.kcl.ac.uk/kis/schools/life_sciences/life_sci/hall/top.html)

Teimop - Biomass as an energy source (article by Prof David Hall)  
<http://www.cru.uea.ac.uk/tiempo/floor0/recent/issue29/t29a3.htm>

Wood Energy Conversion (FAO)  
[http://www.rwedp.org/i\\_conversion.html](http://www.rwedp.org/i_conversion.html)

Charcoal and its Socio-economic Importance in Asia, Prospects and Promotion  
[http://www.rwedp.org/p\\_charcsocio.html](http://www.rwedp.org/p_charcsocio.html)

EC-ASEAN cogeneration site  
<http://www.cogen.ait.ac.th/>

Environmental Engineering Corporation - Renewable Energy Division (California)  
<http://www.eeco.net>

Catholic University of Louvain - Biomass Energy Group (Belgium)  
<http://www.meca.ucl.ac.be/term/geb/>

Trends in Renewable Energies (Canadian Association for Renewable Energies)  
<http://www.renewables.ca>

Institute of Nonconventional & Hydrogen Energy Research (INHER - India)  
<http://member.tripod.com/inher>

Monash Gippsland School of Engineering (November 1999 conference on energy)  
<http://www.mugc.cc.monash.edu.au/gse/intpec.html>

World-wide Information System for Renewable Energy (WIRE- sponsored by ISES)  
<http://wire.ises.org/>

Great Lakes Regional Biomass Energy Program in WIRE module  
<http://wire0.ises.org/wire/exchanges/Projects.nsf/H/O?Open&0000BCF6>

European Union - White Paper on Renewable Sources of Energy  
<http://europa.eu.int/en/comm/dg17/whitepap.htm>  
 or [http:// europa.eu.int/en/comm/dg17/wp\\_e.pdf](http://europa.eu.int/en/comm/dg17/wp_e.pdf) (300k, 47 pp)

European Commission 'Campaign for Take-Off'  
<http://www.cordis.lu/fp5/src/t-4.htm>

Masters Thesis on gasification and pyrolysis tars (Claus Hindsgaul Hansen)  
[http://www.image.dk/~claus\\_h/thesis.zip](http://www.image.dk/~claus_h/thesis.zip)

British Biogen  
<http://www.britishbiogen.co.uk>

Whisper Gen Stirling cycle generator  
<http://southpower.co.nz/whisp.htm>

Biotechnology Directory  
<http://biotech.isr.gov.au>

Biotechnology Australia and the Office of Gene Technology Regulator - announcement  
<http://www.isr.gov.au/ba/index.html>

Precision Energy Services  
<http://www.pes-world.com>

Anaerobic digestors - small, low cost  
<http://mite.cs.cowan.edu.au/ipc6/ch08/shannon2/index.html>  
<http://www.hcm.fpt.vn/inet/~ecofarm/Biodiges.htm>

United Nations University/Institute of Advanced Studies, Tokyo  
<http://www.ias.unu.edu>

CSIRO Division of Energy Technology  
<http://www.det.csiro.au>

Australian Forest Growers  
<http://www.afg.gis.net.au>

EarthWatts (proposed green electricity exchange)  
<http://www.earthwatts.com.au>

Agriculture and Natural Resources Online (ANRO) databases  
<http://www.infoscan.com.au>

Australian Institute for Energy  
<http://www.aie.org.au>

Hurst Boiler and Welding Co., Inc. (updated web address)

<http://www.hurstboiler.com/wood.htm>  
Biomass Technology Group - expert system on producer gas cleaning (demo version)  
<http://btg.ct.utwente.nl:8888/demo/>  
Air and Waste Management Association  
<http://www.awma.org/>  
Sewerage sludge data  
[http://www.ivar.rl.no/avlop\\_slamdisponering.html](http://www.ivar.rl.no/avlop_slamdisponering.html)  
Utrecht University, Department of Science, Technology and Society  
<http://www.chem.uu.nl/nws/www/nws.html>  
BIOEN (national Biomass and Waste Use Program of Croatia)  
<http://sunce.eihp.hr/english/bioen/bioen.htm>  
IEA Greenhouse Gas R&D Program  
<http://www.ieagreen.org.uk/>  
FAO Forestry Department's program on wood energy  
<http://www.fao.org/waicnet/faoinfo/forestry/energy/cont.htm>  
Agricultural and Forestry Biomass Network (AFB-net)  
<http://www.etsu.com/Europ/AFB/contents.htm>  
Oak Ridge National Laboratories - Bioenergy Feedstock Development Program  
<http://www.esd.ornl.gov/bfdp/reports/graham/index.html>  
and <http://www.esd.ornl.gov/bfdp/papers/bioen98/walsh.html>  
AEA Technology Environment (ETSU)/INtegrated Spatial Potential Initiative for Renewable Energy In Europe)  
<http://www.etsu.com/INSPIRE/>  
Shock wave compression motor  
<http://www.ramgen.com>  
International Cogeneration Alliance  
<http://www.localpower.org>  
Fuel and Combustion Technology  
<http://www.fctinternational.com>  
Intergovernmental Panel on Climate Change (IPCC)  
<http://www.ipcc.ch>  
Renewable energy news  
<http://www.EuroREX.com>  
Regional Wood Energy Development Program in Asia  
<http://www.rwedp.org/>  
TNO Institute of Environmental Sciences, Energy Research and Process Innovation  
<http://www.mep.tno.nl>  
HORIZON Solutions Site  
[http://www.solutions-site.org/contents\\_2.htm](http://www.solutions-site.org/contents_2.htm)  
Indian Ministry of Non-Conventional Energy Sources  
<http://www.nic.in/mnes>  
US EPA - greenhouse gas emissions from selected materials in municipal solid waste  
<http://www.epa.gov/epaoswer/non-hw/muncpl/ghg/greengas.pdf>  
US EPA - Climate Change and Waste  
<http://www.epa.gov/mswclimate/tools.htm>  
Northern States Power Company (25 MW biomass generated power)  
<http://www.nspco.com>  
Anaerobic Digester at Craven Farms :a case study (1,000 cow farm based digester)  
<http://www.cbs.state.or.us/external/ooe>  
Economic Research Service Reports (US) - Biodiesel development: New Markets for Conventional and Genetically Modified Agricultural Products (Report AER-770).  
<http://www.econ.ag.gov>  
E-15 OxyDiesel Fuel  
<http://www.oxydiesel.com>

World Bank publications ordering details (e.g. Paper 442- Report on Energy from Biomass)  
<http://www.worldbank.org/html/extpb/HowToOrder.html>

Western Regional Biomass Energy Program (USA - DoE)  
<http://www.westbioenergy.org>

Centre for Resource Solutions -Green-e Verification Report (Californian green energy report)  
<http://www.green-e.org/>

Solid Waste Association of North America  
<http://www.swana.org/>

Source Guides - Renewable Energy (3000 renewable energy businesses)  
<http://www.sourceguides.com/energy/index.html>

Sustainable Energy Industries Association (SEIA)  
<http://www.seia.com.au>

Sustainable Minnesota's Biomass Information Resources Page (updated)  
<http://www.me3.org/issues/biomass>

BRS Climate Change Newsletter  
<http://www.brs.gov.au/ccs/ccn/ccn11/ccn11v2.htm>

Canadian Association for Renewable Energies  
<http://www.renewables.ca>

Distributed Power Generation in a Deregulated Market - discussion paper  
<http://www.e-groups.com/group/distributed-generation/>

Netherlands Energy Research Foundation (ECN) Phyllis biomass database (1400 records)  
<http://www.ecn.nl/phyllis>

Technical University of Vienna's biomass database  
[http://edv1.vt.tuwien.ac.at/ag\\_hofba/biobab/all.htm](http://edv1.vt.tuwien.ac.at/ag_hofba/biobab/all.htm)

Queensland Department of Mines and Energy/Office of Sustainable Energy  
<http://www.dme.qld.gov.au>

CSIRO Forestry and Forest Products biosolids and effluent guidelines  
[http://www.ffp.csiro.au/pff/effluent\\_guideline/](http://www.ffp.csiro.au/pff/effluent_guideline/)  
<http://www.ffp.csiro.au/pff/biosolids/>

German Appropriate Technology Exchange- Information & Advisory Service  
<http://gate.gtz.de/isat>

CNN biomass segment  
<http://www.cnn.com/NATURE/9907/21/wind.biomass.enn/>

Applied Plasma Physics (electrostatic precipitators)  
<http://www.app.no>

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### **"World Bank Report on Energy from Biomass"**

The World Bank has recognised that energy is essential for development and that biomass from agricultural and municipal waste fills an important niche. This World Bank report reviews the state of the art of biomass combustion and gasification systems, as well as their merits. It also encourages investment and use of these technologies to enable developing countries to better exploit their biomass resources and to close the gap between their energy needs and their energy supplies. This 77 page report is available as Stock No. 14335 (ISBN 0-8213-4335-1) from the World Bank. Cost is US \$20. The report may be ordered in Australia from D.A. Information Services, 648 Whitehorse Road, Mitcham 3132, Victoria. Alternatively email: [books@worldbank.org](mailto:books@worldbank.org), or see web site: <http://www.worldbank.org/html/extpb/HowToOrder.html>.

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### **Australian Renewable Energy Internet Site**

Part of the Prime Minister's 'Safeguarding the Future' announcement in November 1997 related to expenditure of \$300,000 to establish a high quality Internet site to promote the use

of renewable energy and to develop the Australian renewable energy industry. The Renewable Energy Internet Site is scheduled to be up and running by August/September. The backbone of this Australian Greenhouse Office's site will be a comprehensive searchable database of the Australian renewable energy industry. This database will include suppliers of technologies, electricity utilities using renewable energy, R&D organisations, industry groups, NGOs and academic bodies relevant to the industry. The data base will be searchable by product type, organisation and location. For each organisation it will include products and services supplied and contact details, including web and email details.

The Australian Greenhouse Office hopes the Internet site will evolve into a 'one stop shop' for industry wanting to know about government support for industry. It will provide the gateway for Commonwealth government programs and provide contact details for State Government assistance. If you want to discuss inclusion of your organisation on the database, contact Caroline Le Couteur of the AGO on 02 6274 1027. The Internet address is <http://renewable.greenhouse.gov.au>.

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### **Tokyo Electric Power Company (TEPCO) in Large-Scale Forestation Project**

TEPCO, one of the largest electricity companies in the world has signed a letter of intent with State Forests of NSW to establish 1,000 hectares of new forest in 2000, with plans for an ongoing program of between 10,000 and 40,000 hectares over the next ten years. The electricity utility which accounts for some 7-8% of all carbon dioxide emissions in Japan intends to factor the volume of carbon dioxide absorbed by the planted trees into calculations of its greenhouse gas emissions. At full effect TEPCO estimates that as much as 200,000 tonnes of carbon will be absorbed annually by the forests.

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### **Launch of 'Sustainable Effluent-Irrigated Plantations: An Australian Guideline'**

The Hon Nicholas Minchin, Minister for Industry, Science and Resources is set to launch the book, *Sustainable Effluent-Irrigated Plantations: an Australian Guideline* by B.J. Myers, W.J. Bond, R.G. Benyon, R.A. Falkiner, P.J. Polglase, C.J. Smith, V.O. Snow, and S. Theiveyanathan in Federal Parliament House on 10 August. This book is based on extensive CSIRO research which has included the establishment of a 10 hectare research plantation near Wagga Wagga in NSW.

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### **Co-operative Research Centre (CRC) for Terrestrial Carbon Accounting**

Believed to be a world first, a CRC for Terrestrial Carbon Accounting, to be based at the Australian National University (ANU) in Canberra has been formed by a consortium consisting of the Australian Greenhouse Office, the ANU, the Bureau of Rural Sciences, the CSIRO, Queensland Department of Natural Resources and Primary Industries, State Forests NSW and the Western Australian Department of Conservation and Land Management. The CRC has received a special grant of \$15,360,000 over 7 years from the Federal Government with additional funds and inputs being provided by the consortium members. The CRC will develop new methods for carbon accounting, aiming to demonstrate that emissions and sinks can be measured accurately and that innovative measures can be implemented to manage the Australian terrestrial carbon gas reduction objectives. The research focus is to:

- improve understanding of the terrestrial carbon cycle
- describe and predict the responses of biophysical systems, in particular carbon dynamics, to global climate change
- develop verifiable methods for measuring terrestrial ecological carbon fluxes, sources and sinks

- develop innovative ways of managing the Australian terrestrial carbon cycle to achieve greenhouse gas reduction objectives.

The CRC will be led by Professor Ian Noble who may be contacted on 02 6249 5092.

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### **Australian Greenhouse Office - Bush for Greenhouse Program Tender**

The Australian Greenhouse Office is inviting tenders from organisations or consortia to undertake the role of Carbon Broker /Investment Facilitator for the Bush for Greenhouse Program. Bush for Greenhouse aims to secure corporate investment into revegetation for environmental purposes and is an initiative of the Prime Minister's 1997 greenhouse package with funding of \$5.5 million over five years. The role of the Carbon Broker/Investment Facilitator includes:

- securing corporate finance for funding revegetation for environmental purposes.
- recruiting and channelling funds into revegetation activities, building landholder participation, and ensuring on ground works take place to best practice standards.
- Collecting data on the carbon sequestration performance (both above and below ground) of corporate funded revegetation activities, and providing these to the AGO.

The contract is for an initial two year period. The tender brief is available on the Internet at <http://www.greenhouse.gov.au/ec/> Enquiries to Lalage Cherry, Assistant Manager, Policy and Planning Team, AGO. Tel: 02-6274-1829, fax: 02-6274-1439, Email: [lalage.cherry@ea.gov.au](mailto:lalage.cherry@ea.gov.au). Tenders close on Thursday 12 August.

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### **Queensland Sustainable Energy Innovation Fund (QSEIF)**

The Queensland government has established within the Department of Mines and Energy the Office of Sustainable Energy which is calling expressions of interest from organisations, businesses and individuals wishing to research, develop, demonstrate or commercialise technologies, products, services that support sustainable energy. Funding assistance will be available for selected projects that:

- allow Queensland to become a market leader in specific areas of energy efficiency, renewable energy or greenhouse gas reduction.
- create business opportunities and employment in sustainable energy industries in Queensland.
- Address needs, problems or opportunities relating to energy efficiency, renewable energy or greenhouse gas reduction that are specific to Queensland.
- Develop expertise and/or community acceptance of sustainable energy technologies or practices in Queensland.

The first round of expressions of interest closes on 31 August 1999. Funding for QSEIF is currently \$850,000 per annum. To obtain guidelines, the application forms and advice on the QSEIF funding contact the QSEIF Secretariat on 07-3235-4146. Information on QSEIF is available on the Internet at <http://www.dme.qld.gov.au>.

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### **SEDA Considers Renewables Investment Program Expressions of Interest**

The NSW Sustainable Energy Development Authority has called for Expressions of Interest under its \$3,000,000 Renewables Investment Program to meet its closing date for submissions of 9 July 1999. Criteria for selection under the program requires proposals to be:

- based on renewable energy sources (includes biomass)
- eligible for accreditation under the Green Power Accreditation Program

- involves either electricity generation, cogeneration or biogas production
- has a power output greater than 25 kW electrical, or 360 MJ/h thermal and
- be located in NSW.

Bid winners are due to be advised by 6 August with major equipment orders required to be placed by 26 November 1999. For information contact SEDA tel: 02 9291 5260, email: [seda@seda.nsw.gov.au](mailto:seda@seda.nsw.gov.au)

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## Forthcoming Events

- Fourth Biomass Conference of the Americas. *Biomass: A Growth Opportunity In Green Energy and Value Added Products*. 29 August – 2 September 1999. Oakland Marriott City Center, Oakland, California. Web <http://www.nrel.gov/bioam>.
- 5th International Conference on Thermochemical Biomass Conversion, Tyrol, Austria, 21-26 May 2000. Main topics to be covered are: Feedstock Preparation, Pretreatment, Conversion, Products, Applications, and Systems. Deadline for one page abstracts 30 September 1999. Contact: Prof. Tony Bridgewater, Bio-Energy Research Group, Aston University, Birmingham, B4 7ET, UK. Fax: +44 121 359 6814, Email: [a.v.bridgewater@aston.ac.uk](mailto:a.v.bridgewater@aston.ac.uk).
- Expanding the Horizons for Recycled Organics 'A Boots and All Approach to Industry Development'. Hyatt Regency, Coolumb, Queensland, 8-11 November, 1999. Hosted by the Queensland Environmental Protection Agency, Division of Sustainable Industries. Participation expected from wide range of industries including; solid waste, water and waste water, agriculture, horticulture and landscaping, energy, intensive animal industries, food processors, local and state government. Coupled to trade displays. For further information contact Exceptional Events, tel: 07 3359 2476, fax: 07 3359 2397, email: [conference@organicproducts.com.au](mailto:conference@organicproducts.com.au) & <http://www.organicproducts.com.au/conference>
- Monash Gippsland School of Engineering is arranging a conference INT-PEC for November 1999 which will cover all aspects of energy - engineering, business, sociological and environmental. Contact is Ray Beebe of Monash University at [Ray.Beebe@eng.monash.edu.au](mailto:Ray.Beebe@eng.monash.edu.au). Also see <http://www-mugc.cc.monash.edu.au/gse/intpec.html>
- 1999 SEIAA Energy Smart Expo, Australian Technology Park, Sydney, Monday 8 November. Contact Suzanne Dunford at SEDA tel: 02 9249 6107 or email: [sdunford@seda.nsw.gov.au](mailto:sdunford@seda.nsw.gov.au).
- 1st World Conference and Technology Exhibition on Biomass for Energy and Industry, 5-9 June, 2000. Seville, Spain. Details in future Biomass Taskforce newsletters.
- The ESAA's 5th Renewable Energy Technologies & Remote Area Power Supplies Conference, 30 & 31 August 1999, Cairns, Queensland. Contact The Meetings Manager, tel: 02 9241 2955, fax: 02 9241 5354, Web: <http://www.esaa.com.au>.
- The Changing Land of Europe - The First European conference of Renewable Energy and Agriculture, 12 -14 March 2000, Leeuwenhorst Congress Centre, Noordwijkerhout, The Netherlands. An Altener conference (Program of the European Commission DGXVII), supported by Novem. Details from European Media Marketing, email: [sustain@emml.co.uk](mailto:sustain@emml.co.uk), Fax: +44181 289 8484. Web [http://www.emml.com/changing\\_land](http://www.emml.com/changing_land)
- 4th International Congress on Energy, Environment and Technological Innovation: 'Technological Innovation and Compatible Uses of Natural Resources', Rome, Italy, September 20-24, 1999. Contact: <http://www.ing.ucv.ve/ceait/eeti.htm>
- 5 August, 1:00pm - 2:00 pm, seminar 'Renewable Energy for NSW- Current Status and Future Prospects', Colin Crawford-Smith, University of NSW, room 418 Electrical Engineering Building. Contact Assoc. Prof. Hugh Outhred, 02-9385-4035.
- Solar '99 ANZSES Conference. Geelong Victoria, 1-4 December. Fax: 03-5227-8303, email: [luther@deakin.edu.au](mailto:luther@deakin.edu.au), web: <http://www.ecse.monash.edu.au/prof/solar/solar99.htm>.

- Renewable Energy for the New Millennium (combining the 6th ESAA Renewable Energy Technologies & Remote Area Power Supplies Conference, 2nd World Solar Electric Buildings Conference, and Solar Thermal 2000 International Conference). 8-10 March 2000, Sydney. Contact The Meetings Manager Pty Ltd, tel: 02 9241 5354, fax: 02 9241 2955, Web: <http://www.esaa.com.au>.
  - 99-ICAE, 99 International Conference on Agricultural Engineering, 14-17 December 1999, Beijing, P.R. China. Mail: ICAE, P.O. Box 101, East Campus, China Agricultural University, Qinghua Donglu, Beijing 100083, China. Email: [icae@bjaeu.edu.cn](mailto:icae@bjaeu.edu.cn). Web: <http://www.lib.bjaeu.edu.cn/icae/index.htm>.
  - World Renewable Energy Congress VI, 1 July 1999, Brighton UK. Tel: +44118 961 1365. Email: [asaayigh@netcomuk.co.uk](mailto:asaayigh@netcomuk.co.uk)
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## Residues

- Stephen Schuck, the Biomass Taskforce Manager has had a paper accepted for the Fourth Biomass Conference of the Americas (see Forthcoming Events) entitled 'The Role of the Australian Biomass Taskforce in Bioenergy Development'. The paper will be presented at the Policy and Programs session as well as being presented at an interactive poster presentation session. Papers from this conference will be published by Elsevier Science of England.
- The EPON Nijmegen power station in the Netherlands co-fires waste wood with coal. It is reported that a second large-scale co-firing project in the Netherlands will see gasified wood being co-fired at the EPZ Geertruidenberg power station. This will use a Lurgi CFB gasifier and is expected to be operational at the beginning of 2000.
- The Institute for Local Self Reliance, based in Washington DC, USA publishes quarterly *The Carbohydrate Economy*, to provide in-depth information on biobased substitutions for petroleum products, the newest uses for nonwood fibres, USA legislation that encourages industry and other developments in this emerging field. The Annual subscription (4 copies) is US \$45 outside the USA. Contact [smitchell@ilsr.org](mailto:smitchell@ilsr.org) or see web page <http://www.ilsr.org>.
- Sentec of the UK has prototyped what they claim to be a simple, robust, on-line sensor to give real-time indications of the ratio of methane to carbon dioxide produced in anaerobic digestors. See web site <http://www.sentec.co.uk>.
- The EMIAA NSW Network is holding a series a meetings on the theme *Environment Management for Sustainable Urban Development*. Recent meetings have included panel discussions on wastewater management, landfill disposal and energy conversion of municipal waste. Contact Paul Howlett, the NSW Convenor on [paul.howlett@wrightstrategy.com](mailto:paul.howlett@wrightstrategy.com), tel: 02 9954 1200 for details and to be put on the distribution list for notices.
- The European Union has published a White Paper on Renewable Sources of Energy which calls for doubling the share of renewables from 6% to 12 % in the EU. Most of this increase is supposed to come from biomass energy. See <http://europa.eu.int/en/comm/dg17/whitepap.htm> or [http://europa.eu.int/en/comm/dg17/wp\\_e.pdf](http://europa.eu.int/en/comm/dg17/wp_e.pdf) (47pp).
- The Federal Budget brought down in May announced funding for development of a comprehensive new biotechnology strategy. Two new agencies, Biotechnology Australia and the Office of the Gene Technology Regulator, have been established to ensure Australia realises the potential gains from biotechnology. Details on these initiatives can be found at <http://www.isr.gov.au/ba/index.htm>. A Web-based biotechnology directory has been established at <http://biotech.isr.gov.au>.
- An article appeared in the April edition of *Interface*, the newsletter of the CSIRO Division of Energy Technology regarding that Division's membership of the Biomass Taskforce.

- A Kenaf Information Centre has been set up in the USA to compile and make available summaries of research findings and economic studies from countries such as the USA, India and Australia. Kenaf (a relative of hibiscus) has been identified for biomass energy, fibre, livestock feed and bioremediation. A free subscription to EnviroVerde Technologies' email Kenaf Bioremediation Newsletter can be obtained by emailing Malcolm Scot at [export@irimagnum.com](mailto:export@irimagnum.com).
- The Australian Biomass Taskforce gets a mention on the Sustainable Minnesota's Biomass Information Resources Web Page <http://www.me3.org/issues/biomass/>
- The Australian book 'Producer Gas for Motor Vehicles', 1942, 194pp by John and Martin Cash has been reprinted. See <http://www.lindsaybks.com//bks/producer/index.html>
- The University of Groningen (RUG) has developed an expert system on cleaning biomass producer gas. The work was carried out with BTG (Biomass Technology Group B.V.) of the Netherlands. The software allows an evaluation of different gas cleaning methods, such as cyclones, fabric filters, ceramic filters, venturi scrubbers, and catalytic crackers. The expert system is available on the Internet, with a demonstration version being available at <http://btg.ct.utwente.nl:8888/demo/>
- Capstone micoturbines (see April issue of the Biomass Taskforce Newsletter) will be selling its micoturbines through New Energy Ventures (NEV) of the USA. The 30 kW Capstone Model 330 is the size of a keg of beer and operates on air bearings and is designed for the remote area power supplies and back-up power. Web address for Capstone is <http://www.capstoneturbine.com/> and NEV is <http://www.newenergy.com/>
- Thermogenics Inc. reports that it has completed 24 hours continuous operation of its new gasification system. The unit operates on sawdust, municipal waste, dried sewerage sludge, wood chips, tyres, coal and other combustible waste and currently powers a spark ignition engine to produce 20 kWe. The unit is capable of driving a 100 kWe generator. The gasifier is reported to take 30 minutes to reach stable operation and does not require start up fuel for the engine. Gas quality is reported to be very good. Thermogenics is represented in Australia with details and system photograph on the web at <http://www.thermogenics.com>.
- BIOTEN, a Tennessee, USA based company has completed initial operational testing of its 5 MW direct fired biomass turbine. Dried, classified, and pulverised sawdust is injected into a pressurised, offset combustor where the fuel dust is efficiently burned. The resulting hot-air end products of combustion are cleaned and reinjected into the combustion turbine to produce electricity. BIOTEN has refined its fuel injection system to allow the combustion turbine to be accelerated and controlled to synchronous speed. This fine control allows the output of the generator to 'follow' a load, which gives the ability to operate the plant independently of an electricity grid. BIOTEN are reported to be ready to commit to commercial orders. Contact Bill Freve, Marketing and Business Development, BIOTEN GP, tel: 0011-1-423-675-2130, email: [biotengp@aol.com](mailto:biotengp@aol.com).
- A software product from Mathtrek, EQS4WIN can model the thermodynamics and predict the precipitation of carbon dioxide from a gasifier gas steam in the form of carbonates when passed through a solution of washed ash, which is rich in CaO and other oxides. For information contact W.R. Smith at [support@mathtrek.com](mailto:support@mathtrek.com). The software can be found at URL <http://www.mathtrek.com>.
- *Energies*, a free weekly email newsletter on renewable energy and energy efficiency may be obtained by emailing [bmulliken@nrglink.com](mailto:bmulliken@nrglink.com) or viewing <http://www.nrglink.com> for past issues. This e-letter reports occasionally on bioenergy and fuel cell development.
- The Oak Ridge National Laboratories in the USA is conducting resource assessment of agricultural and wood residues which focuses on the design, modification and integration of resource assessment models for the US. Preliminary results can be found at URLs: <http://www.esd.ornl.gov/bfdp/reports/graham/index.html> and <http://www.esd.ornl.gov/bfdp/papers/bioen98/walsh.html>

- AEA Technology Environment (ETSU) with its partner INSPIRE (INtegrated Spatial Potential Initiative for Renewable Energy in Europe) have been carrying out resource assessment and analysis of renewables for the past four years. This has included; farm livestock wastes, straw, forestry residues, yield modelling and mapping of short rotation coppiced willow. The analysis has involved determining the optimum places for building of biomass-to-energy facilities. Further details are at <http://www.etsu.com/INSPIRE/>
- The Regional Wood Energy Development Program in Asia maintains the Internet site <http://www.rwedp.org/> from where the document "Images of Wood and Biomass Energy in Industries in Thailand (1998)" may be downloaded. The document relates to a potential export market and provides useful information on consumption data of the major fuelwood using industries in Thailand.
- The HORIZON Solutions Internet site links four United Nations programs plus Harvard and Yale Universities and Canada's IDRC to share ideas on how renewable energy technology can solve world problems. The site publishes peer-reviewed case studies that address problems in energy and related issues, and promotes its work to students and institutions for research in relevant areas. The URL is [http://www.solutions-site.org/contents\\_2.htm](http://www.solutions-site.org/contents_2.htm) (source Convertech)
- The April edition of Australian Coal Review carried an article "Co-firing Waste with Coal" by Robert Davidson. The article covered a range of issues relating to co-firing biomass with coal, including emission and ash characteristics.
- The World Sustainable Energy Fair, Sustain '99, held in Amsterdam in late May attracted 400,000 visitors over three days. Included in the exhibition was a Biomass Park which showed visitors actual growing bioenergy crops such as willow and miscanthus. Various biomass processing operations such as waste-to-energy, woodchipping and organic waste derived fuels were demonstrated. (source SEDA Allies newsletter)
- The June 1999 issue of Australian Energy News carried an article entitled *Mallee Power*, which relates to an RECP1 grant (see April 1999 Biomass Taskforce Newsletter). The two page article provides an overview of the participants, the 1 MW biomass demonstration project, the link with salinity control and carbon sequestration in the oil mallee's extensive root system. For further information contact Don Harrison at Western Power Corporation, tel: 08 9326 4022.
- The NSW Sustainable Energy Development Authority (SEDA) is sponsoring the inaugural IEAust award for Excellence in Sustainable Energy, to be presented at the 1999 National Excellence Awards in Canberra on 4 November. There will be two categories; 'Energy Smart' for energy efficiency and innovation in the reduction of greenhouse gas emissions; and 'Green Power' for power generation from renewable sources. Up to two highly recommended projects will be selected in each of the two sub-categories and an overall winner of the National Awards for Excellence in Sustainable Energy will be selected.
- The Australian Greenhouse Office held a public consultation forum in Sydney on 23 July to consider the Alternative Fuel Conversion and the Alternative Fuels Grants programs, which were spawned by the Federal Government's "A New Taxation System for Australia". A similar forum is scheduled for Melbourne in late July. Contact Marion Stefaniw of the AGO on 02-6274-1389 for further information.
- The NSW Independent Pricing and Regulatory Tribunal has released its final report into the Review of Pricing for Electricity Networks and Retail Supply. It is available on the IPART's web site under What's New at <http://www.ipart.nsw.gov.au>. The Paper is also available in hard copy - tel: 02-9290-8498.

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## Opportunities Corner

