



Bioenergy Australia is an alliance of organisations  
fostering biomass for energy and products

# Newsletter

January 2003

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## Bioenergy Australia Membership<sup>1</sup> Update

The Bioenergy Australia membership now includes 49 organisations, with recent new members being Meat and Livestock Australia (Feedlot R&D Program) and the University of Newcastle (Chemical Engineering). Bioenergy Australia wishes to further expand its membership and invites interested organisations to contact the Bioenergy Australia Manager, Dr Stephen Schuck on tel/fax (02) 9416 9246 or email: [sschuck@bigpond.net.au](mailto:sschuck@bigpond.net.au) if your organisation is interested in joining this bioenergy forum. Bioenergy Australia has specifically set up a new membership tier to cater for universities and for organisations with an annual turnover of less than \$2 million per annum.

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## Bioenergy Australia 2002 Conference

152 delegates attended the third annual Bioenergy Australia Conference and Exhibition, held 2–3 December at the Manly Pacific Parkroyal Hotel, Manly, Sydney. The theme of the conference was ‘Sustainable Energy for Society, the Economy and the Environment’ and included over 50 presentations and poster presentations. A technical tour on 4 December visited Sydney Water Corporation’s 497 kW Cronulla Sewage Treatment anaerobic digester, Energy Development’s Lucas Heights 11 MW landfill gas power plant and Brightstar Environmental’s SWERF gasification plant near Wollongong. Feature of the conference were two extended panel discussions and forums on ‘Achieving Sustainability Through Bioenergy’ and on ‘The Evolving Market for Bioenergy’. The conference was linked to an IEA Bioenergy Task 36 meeting (*Energy from Integrated Solid Waste Management Systems*) at the same venue (5-6 December) and several international experts from this Task participated and contributed to the conference program.

In addition to the printed Proceedings, conference delegates are currently being mailed the entire set of presentations/papers on CD ROM. The full set of papers/presentations in hardcopy are available from Stephen Schuck for \$120 (including handling, local postage and GST). A limited number of CD ROMs are available to those who missed the conference for \$55 (including GST). Contact Steve Schuck on tel/fax: (02) 9416 9246 or email: [sschuck@bigpond.net.au](mailto:sschuck@bigpond.net.au) .

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<sup>1</sup> Founding members: RIRDC and the Australian Greenhouse Office. Membership now also includes DITR, BRS, CSIRO Energy Technology & Forestry and Forest Products, FPA of NSW/Clean Green Energy Company, Pacific Power, Delta Electricity, Macquarie Generation, Waste Service NSW, Brightstar Environmental & BEST, SEDA, SPM/CPM, Forestry Tasmania, State Forests of NSW, Western Power Corporation, Alstom Power, Stanwell Corporation, CS Energy, NRE -Forest's Service, AFFA, Tarong Energy, Country Energy, Rio Tinto R&TD, QFRI, Babcock and Brown, CVC REEF, ForestrySA, CALM, CSIRO Sustainable Ecosystems, Carter Holt Harvey, Novera Energy, Sugar Research Institute, Qld EPA Sustainable Industries, Enecon Pty Ltd, BioEnergy Australia Ltd, Forest Products Commission of WA, Victorian Sustainable Energy Authority, WMAA, Ergon Energy, AGL, Resource NSW, MBAC Consulting Pty Ltd, Environment Australia, MLA Feedlot R&D Program and University of Newcastle.

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## Early Expressions of Interest for Bioenergy Australia 2003 Conference

Expressions of Interest are sought from potential sponsors, paper and poster presenters, and trade exhibitors for the next Bioenergy Australia Conference, planned for December 2003. Please contact Stephen Schuck, Bioenergy Australia Manager Tel/Fax: (02) 9416 9246 Email: [sschuck@bigpond.net.au](mailto:sschuck@bigpond.net.au) to express your interest.

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## IEA Bioenergy Participation by Australia

Bioenergy Australia is the vehicle for Australia's participation in the International Energy Agency's (IEA) Bioenergy program. Bioenergy Australia is providing Australia's annual membership fees and other support for five current Tasks:

- Task 30-*Short Rotation Crops for Bioenergy Systems*
- Task 31-*Conventional Forestry Systems for Sustainable Production of Bioenergy*
- Task 32-*Biomass Combustion & Co-firing*
- Task 36-*Energy from Integrated Solid Waste Management Systems*
- Task 38-*Greenhouse Gas Balances of Biomass & Bioenergy Systems*

These specific Tasks run from 2001-2003. Subgroups from the Bioenergy Australia membership have formed to participate in these Tasks, with each Task selecting a National Team Leader to co-ordinate involvement. National Team Leaders are: Task 30- Don McGuire, Forestry SA, Task 31- John Raison, CSIRO Forestry and Forest Products; Task 32- Peter Coombes, Delta Electricity; Task 36- Wesley Stein, CSIRO Energy Technology; and Task 38- Annette Cowie, State Forests NSW.

Should you or your organisation wish to obtain information on IEA Bioenergy or on participation in its Tasks, please contact Steve Schuck, the Bioenergy Australia Manager and Australia's representative on the Executive Committee of IEA Bioenergy. Tel/fax: (02)-9416-9246, or email: [sschuck@bigpond.net.au](mailto:sschuck@bigpond.net.au). IEA Bioenergy Task information and its recently updated Strategic Plan are available from web site: <http://www.ieabioenergy.com>. With sufficient additional support, Australia could possibly also participate in additional Tasks, such as the Liquid Fuels, Gasification and/or Pyrolysis Tasks.

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## IEA Bioenergy Position Paper on Sustainable Production of Woody Biomass for Energy

IEA Bioenergy has released a 12-page position paper *Sustainable Production of Woody Biomass for Energy*. The paper covers biomass production systems from conventional forestry and woody energy crops, sustainability issues, including economic, environmental and social aspects, and it presents a number of conclusions. The document is available in electronic form from the IEA Bioenergy website <http://www.ieabioenergy.com/media.php> or in hardcopy from the Bioenergy Australia Manager, Dr Stephen Schuck.

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## IEA Bioenergy Meetings

Task 36- *Energy from Integrated Solid Waste Management Systems* held a very successful international meeting in Australia 5-6 December 2002 at the Manly Pacific Parkroyal Hotel, immediately following the Bioenergy Australia 2002 conference.

IEA Bioenergy combined meeting for Task 30 – *Short Rotation Crops for Bioenergy Systems* and Task 31 – *Conventional Forestry Systems for Sustainable Production of Bioenergy* was held in Belo Horizonte, Brazil from 28 October to 1 November 2002. Task 30- *Short*

*Rotation Crops for Bioenergy Systems* is planning to hold a meeting in Australia and/or New Zealand late 2003.

The Executive Committee of IEA Bioenergy will be holding its next meeting in Sydney 29- 1 May 2003.

Other planned meetings are: Task 31 in Flagstaff, Arizona October 2003; Task 32 in USA March and Sweden October 2003; Task 36 Sweden 7-9 April 2003; and Task 38 England in early 2003. In addition Tasks 32, 33 (Gasification) and Task 36 will be holding a joint meeting in Yokohama, Japan on 28 September. ExCo 52 is being held in Brazil around October 2003.

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## **Bioenergy Explained**

IEA Bioenergy Task 38 *Greenhouse Gas Balances of Biomass and Bioenergy Systems* has produced an on-line *Frequently Asked Questions* at <http://www.joanneum.ac.at/iea-bioenergy-task38/publication/task38faq.pdf> to answer key questions on bioenergy and related issues such as carbon sequestration.

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## **Bioenergy from Sustainable Forestry Book**

IEA Bioenergy Task 31-*Conventional Forestry Systems for Sustainable Production of Bioenergy* has produced a 357 page book “Bioenergy from Sustainable Forestry – Guiding Principles and Practice”. The text combines input from more than 25 international experts and synthesises guidance needed to design and implement sustainable forest management systems for production of biomass for energy in conjunction with other forest products. It provides ecological, physical, operational, social and economic information on harvesting systems and biomass production needed by forest resource managers and planners to evaluate the ability of specific forest regions to sustainably meet bioenergy production demands. A number of copies are being distributed to selected Bioenergy Australia members. Order information from Kluwer Academic Publishers <http://www.wkap.nl/prod/b/1-4020-0676-4>. Email: [orderdept@wkap.nl](mailto:orderdept@wkap.nl)

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## **Biomass Combustion and Co-firing Handbook**

IEA Bioenergy Task 32, *Biomass Combustion and Co-firing*, has produced a 352 page hardcopy *Handbook of Biomass Combustion and Co-Firing* as a major activity of this Task. In recognising that combustion accounts for approximately 90 percent of global bioenergy production, the handbook provides general and technical information that is aimed at accelerating the market introduction of improved combustion systems. Chapters are:

- Introduction
- Basic Principles of Biomass Combustion
- Biomass Fuel Supply and Pre-Treatment
- Domestic Wood Burning Appliances
- Industrial Combustion
- Power Generation and Co-Generation
- Co-Combustion
- Environmental Aspects of Biomass Combustion
- Research and Development – Needs and Ongoing Activities

The handbook is authored by academics and industry experts from all over the world and covers both the theory and application of biomass combustion and co-firing and represents decades of research experience, industrial applications and education. Bioenergy Australia

participants in this Task have been provided with complimentary copies of the publication. The book is published by Twente University Press (<http://www.tup.utwente.nl>).

For further information and to order (Euro 44.00 plus postage) see: <http://www.ieabioenergy-task32.com/>.

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### **\$60 Million Biomass Power Station Proposed for South Australia**

Babcock & Brown and National Power have announced plans for a \$60million biomass power station to be built in South Australia's south east. The facility will be built at Tantanoola (Millicent - Mt Gambier region) and will use plantation and other timber waste to generate renewable electricity. The project will create 150 direct and indirect jobs and will have a substantial multiplier impact on the regional economy. The announcement follows the completion of lengthy negotiations to secure sufficient volumes of woodwaste to move to the next stage of the project. It is estimated that a total of 280,000 tonnes of woodwaste will be required annually to operate the 30MW biomass plant, which is expected to be operational by 2005. Spokesman Allan Stewart indicated in the announcement that the majority of the woodwaste would be drawn from plantation residues; both softwood and hardwood. Other fuel sources would include sawmill and manufacturing waste and residues.

For further information contact Allan Stewart. Tel: 02 6299 8609 Email: [astew@effect.net.au](mailto:astew@effect.net.au)

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### **Alstom Power Awarded Two Bioenergy Plants in Thailand**

Alstom Power has just been awarded contracts for two large-scale bioenergy plants in Thailand. The plants are for Dan Chang Bio-Energy Co. Ltd and Phu Khieo Bio-Energy Co. Ltd, both owned by Mitr Phol Sugar Corporation Ltd., Thailand's leading sugar manufacturer. The plants are both 40MW electrical capacity, firing bagasse, rice husks up to 15% of the fuel at any time and wood waste. Process steam and power are to be provided to the sugar mills, the remaining power will be sold into the national electricity grid. Each plant will have two 120 t/h boilers, which are of a similar design to the one Alstom Power constructed for Stanwell Corporation at the Rocky Point Sugar Mill in Queensland. The plants will be fast tracked and are expected to be operational by early 2004.

Project inquiries: Ms Kelly Bradford, Alstom Power Tel: (02) 8870 6101

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### **Novera Energy Commits to Narrabri Cotton Trash to Energy Project**

Newly listed on the Australian Stock Exchange, Novera Energy (ASX: NVE) is undertaking a project for Auscott Cotton Gin near Narrabri, NSW to dispose of up to 8,500 t/a cotton ginning trash while supplying up to 29 TJ of thermal energy per ginning season. Construction is set to begin in early 2003 and the plant is expected to be operational by mid 2003.

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### **\$70 Million Waste-Recovery & Waste-To-Energy Project for Western Sydney**

Bioenergy Australia member, Waste Service NSW has entered into a partnership with Global Renewables Limited, that will see the construction of the first "Urban Resource - Reduction, Recovery and Recycling", or UR-3R facility at Eastern Creek, in Western Sydney. Construction is set to begin in early 2003, with the plant expected to be fully operational by

mid-2004. The UR-3R plant is capable of diverting 80 percent of waste from landfill and reducing greenhouse emissions.

The Global Renewables system includes manual and mechanical recyclable materials recovery. The system also biologically treats organic material that would otherwise go into landfill, to produce both compost and biogas for the production of electricity. The plant will generate 17,000 MWh of electricity per year using methane recovered from processing organic matter in waste. The balance of organic matter will be processed into some 60,000 tonnes of compost products with a small amount of residues going to landfill.

Hastings Funds Management have a Memorandum of Understanding with GRL to develop eleven UR-3R facilities in Australasia with a total project value in excess of \$500 million.

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### **Northern Territory *Mimosa Pigra* Power Station Given Development Consent**

The Northern Territory Development Consent Authority has approved a pilot power station to be fuelled using *Mimosa pigra*, one of the Northern Territory's most noxious weeds. The pilot power station will be located at the edge of the Adelaide River floodplain, which has 17,000 hectares of *Mimosa pigra* infestation. Annually, about 80 hectares of the weed will be removed, chipped and treated, to prevent decomposition and seed spread, before being converted to electricity. The project has previously been awarded an Australian Greenhouse Office RECP grant.

The power plant is expected to generate a minimum of 350kW of electricity. Removal of the mimosa is aimed at returning the weed infested pastoral land to agricultural production.

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### **COAG Energy Market Review Final Report Released**

In late December the Hon Warwick Parer, Chair of the Council of Australian Governments' Independent Review of Energy Market Directions released the Review's final report: *Towards a Truly National and Efficient Energy Market*. The final report took into account over 100 submissions received in response to the draft report. One of the most relevant recommendations for the renewable and bioenergy industries is that the Mandatory Renewable Energy Target and similar state-based schemes should cease to operate with greenhouse gas emission trading being implemented in their stead.

The final report is available from the Web at: <http://www.energymarketreview.org>

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### **AusIndustry R&D Start Program Re-opened for New Applications**

Following suspension in April 2002 of new applications for the Federal Government's R&D Start Program due to an excessive demand for grant funds, the program has been re-opened with some modifications. The key elements of the program remain unchanged. The general conditions of the grant contract have been amended to include a schedule of annual payments that can only be varied by mutual agreement between AusIndustry and the company. In addition, small grant and loan applications (less than \$250,000) will now be decided by an AusIndustry delegate appointed by the IR&D Board.

Further information on R&D Start can be obtained from the AusIndustry Hotline Tel: 13 28 46 or from <http://www.ausindustry.gov.au>

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## **Innovation Access Programme: International Science & Technology**

The Innovation Access Programme - International Science and Technology (IAP-IST) is one of the components of the DEST *Innovation Access Programme* (IAP), an initiative of the Government's Innovation Statement *Backing Australia's Ability*. The IAP aims to promote innovation and competitiveness by increasing Australian access to global research and technologies and facilitate their uptake by Australian researchers and firms, particularly Small to Medium Enterprises (SMEs). Funding is available for international R&D cooperation and related activities, including workshops and conferences. Applications will be accepted from Australian researchers, project managers, private companies and organisations, such as education institutions, Cooperative Research Centres (CRCs), industry groups and Commonwealth scientific agencies (e.g. CSIRO). Consortia of these may also apply.

The next IAP-International S&T Competitive Grants application round will close 7 March 2003. The application form is available from the IAP website at:

<https://sciencegrants.dest.gov.au/IAP/>

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## **National Research Priorities for Australia**

In December the Prime Minister, Mr. John Howard announced the Government's research priorities for the next three years. They include "An Environmentally Sustainable Australia" and "Frontier Technologies". For the former, priority goals for research fall in the six areas of water utilisation, transforming resource-based industries, overcoming land degradation, developing cleaner, more efficient fuels and energy sources, managing biodiversity and deep earth resources. "Frontier technologies" relate to building and transforming Australian industries. It is about fostering creativity and innovation by supporting leading edge research in areas such as biotechnology. As a first step towards implementation, all Commonwealth research and research funding bodies are being asked to submit plans to the Government by May 2003 outlining how they propose to support the priorities.

See [http://www.dest.gov.au/ministers/mcg/dec02/jmr\\_051202.htm](http://www.dest.gov.au/ministers/mcg/dec02/jmr_051202.htm)

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## **Centre for Energy and Greenhouse Technologies Established in Victoria**

The Victorian Government has established a Centre for Energy and Greenhouse Technologies, allocating \$12 million over three years from its 2002 budget and an additional \$2.25 million by the Victorian Greenhouse Strategy. The funds are to be used to:

- Invest in and stimulate, facilitate and co-ordinate industry development, input and co-investment in Research Development Demonstration and Commercialisation of new and emerging pre-commercial energy and energy-related greenhouse projects
- Establish and manage an information database that contains data on new and emerging energy and energy-related greenhouse technologies and on under-utilised research capacity and capabilities in Victoria; and
- Promote and establish links and collaboration within the energy sector.

The Centre is being established as a private company and will co-invest in new and pre-commercial projects where innovation and technology risk are still the key drivers.

For more information on the Centre, contact Peter Redlich (email: [peter.redlich@iird.vic.gov.au](mailto:peter.redlich@iird.vic.gov.au)) or Irene Wyld (email: [irene.wyld@iird.vic.gov.au](mailto:irene.wyld@iird.vic.gov.au)) of the Department of Innovation, Industry and Regional Development.

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**New South Wales [file:///outbind/%2F%2F21-00000000DA31B2DB2ABCBF11BDA7C633D662E1E8C4EF3200%2F - top](file:///outbind/%2F%2F21-00000000DA31B2DB2ABCBF11BDA7C633D662E1E8C4EF3200%2F-top)Mandatory Greenhouse Benchmarks - Update**

As reported in the last Bioenergy Australia newsletter, from 1 January 2003, NSW electricity retailers and certain other parties will be required to meet mandatory targets for abating the emission of greenhouse gases from electricity generation, supply and use. IPART has developed a new website to support its administration of the NSW Government's greenhouse gas abatement scheme. The website address is [www.greenhousegas.nsw.gov.au](http://www.greenhousegas.nsw.gov.au)

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### **NSW Ban on Use of In-forest Timber Residues for Bioenergy**

Since the last Bioenergy Australia newsletter was produced, the NSW Premier Bob Carr announced that “timber residues from native forests – such as the by-products of timber harvesting and processing, including stumps and branches - will no longer be burnt for power generation.” Mr. Carr said that “the policy will reduce pressure to log native forests for residues while allowing power generators to source wood from planted forests”. The new policy includes limiting the use of forest biomass for power generation to residues from plantation forests, exotic woody weeds, planted energy crops, sawmill residues and bagasse. An independent certification process is to be established for power generators to ensure compliance. The Government committed to undertake further consultation on implementing the policy.

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### **QSEIF Round 5 Outcome**

Queensland Minister for the Environment, Dean Wells has announced five Queensland companies have been awarded \$600,000 from Round 5 of the Queensland Sustainable Energy Innovation Fund. Two of the five projects are:

- Improving Efficiency of Crystallisation Pans in Sugar Mills - \$108,000 (Sugar Research Institute-Mackay)  
Improved designs of crystallisation pans will operate with lower temperature steam, allowing sugar mills to increase their generation and sale of electricity.
- Drying Biomass to Increase Electricity Generation in Sugar Mills - \$90,000 (Biodry Pty Ltd -Indooroopilly)  
Drying bagasse or other biomass before it is burned in sugar mill boilers allows the heat content of water vapour to be recovered and used for sugar processing.

For further information contact Dr Martin Gellender, tel: (07) 3224 8606, email: [martin.gellender@epa.qld.gov.au](mailto:martin.gellender@epa.qld.gov.au)

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### **RIRDC Wood for Alcohol Fuels Status Report**

The Rural Industries Research and Development Corporation has released a 72 page report “Wood for Alcohol Fuels - Status of Technology and Cost/Benefit Analysis of Farm Forestry for Bioenergy” by Enecon Pty Ltd in association with the Centre for International Economics and Stephen Schuck and Associates Pty Ltd. The report investigates the status of the use of alcohol fuels, the drivers for producing alcohol fuels from wood, international developments, and estimated costs of alcohol fuel production in comparison to fossil fuels. The relative

merit of electricity production from woody feedstock are also considered. The report assesses the broad benefits of alcohol fuel production from wood and makes recommendations relating to technology development, the 'triple bottom line', co-products and the requirements of Government policy in this area. A summary of the report may be viewed on the Web at <http://www.rircd.gov.au/reports/AFT/02-141sum.html>. An illustrated, more broadly pitched summary of the report is in preparation and is expected to be released by RIRDC in the near future. The full report is available for purchase from RIRDC (<http://www.rircd.gov.au>).

## Biofacts

- The table below provides indicative heating values for several gaseous fossil and biomass derived fuels:

Gas	Net Heating Value (MJ/m <sup>3</sup> )
<b>Fossil Fuels</b>	
Natural Gas	34.8
Methane	33.5
Ethane	59.5
Propane (LPG)	85.8
Butane (LPG)	111.8
<b>Biomass derived</b>	
Producer gas	5.9
Biogas	22.5

- Overall, USA consumption of renewable energy fell 12% to what was the lowest level in more than 12 years, accounting for only 6% of the energy consumed in that country. Of the renewables, biomass accounted for 50.4% of the total and hydroelectric power for 41.9%. The remainder was from the sun, wind and geothermal sources.

## 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 1,000 odd addresses given in the previous sixteen issues of the Bioenergy Australia newsletters. These lists are consolidated as electronic links on Bioenergy Australia's web page at [www.users.bigpond.net.au/bioenergyaustralia](http://www.users.bigpond.net.au/bioenergyaustralia) which includes an internal search feature.

Continuous Charcoal Process Technology

<http://www.jfbioenergy.biz>

U.S. EPA methane outreach program

<http://www.epa.gov/methane>

National Action Plan for Salinity and Water Quality

<http://www.napswq.gov.au/index.html>

DEST Innovation Access Program

<http://www.dest.gov.au/science/iap/>

Energy Products of Idaho (co-firing using gasification report)

<http://www.energyproducts.com>

Biomass Atlas site

[http://www.brs.gov.au/mapserv/biomass/national\\_dss.html](http://www.brs.gov.au/mapserv/biomass/national_dss.html)  
 Queensland Farmers Federation – presentation on Bioenergy Australia by Steve Schuck  
<http://www.qff.org.au/PDF's/Schuck.pdf>  
 Bioenergy Roadmap (UK)  
<http://www.dti.gov.uk/renewable/pdf/tech7.pdf>  
 Earthpower (AD project at Camellia NSW)  
<http://www.earthpower.com.au>  
 e-Carbon News (CRC for Greenhouse Accounting)  
[http://www.greenhouse.crc.org.au/crc/ecarbon/enews\\_Dec02.htm](http://www.greenhouse.crc.org.au/crc/ecarbon/enews_Dec02.htm)  
 World Sustainable Energy Day 2003  
[http://www.esv.or.at/aktuelles/WEST/index\\_e.htm](http://www.esv.or.at/aktuelles/WEST/index_e.htm)  
 Enstech landfill lining and monitoring system  
<http://www.landfill.us/>  
 AETF Review December 2002/January 2003 issue  
<http://www.aetf.net.au/ContentStore/pdf/ReviewDecJan2002.pdf>  
 International Conference on Co-Utilization of Domestic Fuels, 5-6 February, 2003 Florida USA  
<http://www.doce-conferences.ufl.edu/iccdf>  
 "Biodiesel Revs Up," *Chemical & Engineering News*, 27 May 2002  
<http://pubs.acs.org>  
 3rd National Life Cycle Assessment Conference papers/proceedings, July 2002, Gold Coast  
<http://www.lca-conf.alcas.asn.au/>  
 Integrated Pollution and Prevention Control-European Union directive  
<http://www.hmso.gov.uk/si/si2000/20001973.htm>  
[http://europa.eu.int/eur-lex/en/lif/dat/1996/en\\_396L0061.htm](http://europa.eu.int/eur-lex/en/lif/dat/1996/en_396L0061.htm)  
 Pig manure to energy  
<http://www.westbioenergy.org/swine/>  
 Great Lakes Regional Biomass Energy Program (GLRBEP)  
[http://www.cglg.org/1projects/biomass/index\\_frame.html](http://www.cglg.org/1projects/biomass/index_frame.html)  
 NREL database of USA renewable energy powerplants  
<http://www.eren.doe.gov/repis/>  
 Anaerobic Digestion - Brazilian prototype project  
<http://wire0.ises.org/entry.nsf/E?Open&project&00031306>  
 PennEnergy and Penn Well Inc. (online power industry news)  
<http://pe.pennwellnet.com/home.cfm>  
 International Organization of Biotechnology and Bioengineering  
<http://www.ias.unu.edu/proceedings/icibs/ibs/ibsnet>  
 Biodiesel and your vehicle  
[http://journeytoforever.org/biodiesel\\_vehicle.html](http://journeytoforever.org/biodiesel_vehicle.html)  
 Commonwealth and State Government Programs Supporting Innovation in Firms  
<http://isr.gov.au/industry/innovation/programs.pdf>  
 Biomass Utilization, Limits of (13 pp by David Pimentel, Cornell University)  
<http://www.academicpress.com/epst/biomass.pdf>  
 FERCO (Vermont gasifier)  
<http://www.future-energy.com/default.asp>  
 Anaerobic digestion site  
<http://www.anaerob.com>  
 agricultural biogas technology  
<http://www.ad-nett.org>  
 Northwest Power Planning Council (USA)  
<http://www.nwpower.org>  
 Ecowise newsletter  
<http://www.ecowise.com.au/econews.htm>  
 German Integrated Energy Farm  
<http://www.ifeed.de/ief3.htm>  
 Innovation Technologies (Ireland)

<http://www.innovation-tech.co.uk/>  
 Cofiring at Albright Generating Station  
[http://www.eren.doe.gov/biower/projects/ia\\_pr\\_co\\_wv.htm](http://www.eren.doe.gov/biower/projects/ia_pr_co_wv.htm)  
 South Dakota Corn Utilization Council (ethanol)  
<http://www.sdcorn.org>  
 Natural Resources Canada analysis tools for renewables  
<http://www.retscreen.gc.ca/>  
 USDA Forest Service, Resource Valuation and Use Research  
<http://www.fs.fed.us/research/rvur/>  
 On-line registry of Renewable Energy Certificates  
<http://www.rec-registry.com>  
 VW's synthetic biomass fuel strategy  
[http://www.news24.co.za/News24/Wheels24/News/0,3999,2-15-47\\_1083848,00.html](http://www.news24.co.za/News24/Wheels24/News/0,3999,2-15-47_1083848,00.html)  
 United Soybean (plastics from soybeans)  
<http://www.unitedsoybean.org/>  
 Renewable Energy Policy Project-Environmental Principles for Biomass Energy  
[http://www.crest.org/articles/static/1/1004568576\\_982708646.html](http://www.crest.org/articles/static/1/1004568576_982708646.html)  
 Methanol Institute (USA)  
<http://www.methanol.org>  
 The European Union proposal on transportation biofuels target  
[http://europa.eu.int/rapid/start/cgi/guesten.ksh?p\\_action.gettxt=gt&doc=IP/01/1543|0|RAPID&lg=EN&display=](http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=IP/01/1543|0|RAPID&lg=EN&display=)  
 CSIRO Life Cycle Assessment of alternative transportation fuels  
<http://www.dar.csiro.au/res/ggss/Life%20Cycle%20Analysis%20for%20Alternative%20Fuels.htm>  
 Ethanol plant development handbook  
[http://www.bbiethanol.com/ethanol\\_info/handbook.html](http://www.bbiethanol.com/ethanol_info/handbook.html)  
 USA Biobased Products and Bioenergy Vision  
[http://bioproducts-bioenergy.gov/pdfs/BIOENGY\\_BRCH\\_0718.pdf](http://bioproducts-bioenergy.gov/pdfs/BIOENGY_BRCH_0718.pdf)  
 USA Biobased Products and Bioenergy Roadmap  
[http://bioproducts-bioenergy.gov/pdfs/BIOENGY\\_RDMP\\_0718.pdf](http://bioproducts-bioenergy.gov/pdfs/BIOENGY_RDMP_0718.pdf)  
 Berry Bank Pig farm AD case study  
<http://www.eidn.com.au/berrybank.html>  
 IEA Bioenergy Task 29 (Socio-economic aspects of bioenergy systems)  
<http://www.eihp.hr/task29.htm>  
 Estimating the Net Energy Balance of Corn Ethanol- An Economic Research Service Report, by Hosein Shapouri, James A. Duffield and Michael S. Graboski  
[http://www.ethanol-gec.org/corn\\_eth.htm](http://www.ethanol-gec.org/corn_eth.htm)  
 Ethanol report "How Much Energy Does It Take to Make a Gallon of Ethanol?", David Lorenz and David Morris  
[http://www.carbohydrateconomy.org/ceic/library/admin/uploadedfiles/How\\_Much\\_Energy\\_Does\\_it\\_Take\\_to\\_Make\\_a\\_Gallon\\_.html](http://www.carbohydrateconomy.org/ceic/library/admin/uploadedfiles/How_Much_Energy_Does_it_Take_to_Make_a_Gallon_.html)  
 Ethanol report "Comparison of USDA and Pimentel Net Energy Balances"  
[http://www.ncga.com/public\\_policy/issues/2001/ethanol/08\\_22\\_01b.htm](http://www.ncga.com/public_policy/issues/2001/ethanol/08_22_01b.htm)  
 Rooster News Network ethanol article: "Industry Argues That Ethanol Delivers"  
[http://ww2.rooster.com:80/rooster\\_public/news/detail.jsp?id=4975&cid=3&Title=Industry+Argues+That+Ethanol+Delivers](http://ww2.rooster.com:80/rooster_public/news/detail.jsp?id=4975&cid=3&Title=Industry+Argues+That+Ethanol+Delivers)  
 Report "Energy And Dollar Costs Of Ethanol Production With Corn" by David Pimentel  
<http://hubbert.mines.edu/news/v98n2/mkh-new7.html>  
 UK Bioenergy capital grants programme (April 02)  
<http://www.dti.gov.uk/renew/eoi.htm>  
 DTI's New and Renewable Energy Programme entitled Technology Status Report – Biofuels  
<http://www2.dti.gov.uk/renewable/pdf/biofuels.pdf>  
 ManureNet (Anaerobic digestion site)  
[http://res2.agr.ca/initiatives/manurenet/en/man\\_digesters.html](http://res2.agr.ca/initiatives/manurenet/en/man_digesters.html)  
 Purdue University list of crops including energy attributes

[http://www.hort.purdue.edu/newcrop/Indices/index\\_ab.html](http://www.hort.purdue.edu/newcrop/Indices/index_ab.html)  
Purdue University Handbook of Energy Crops reference list  
[http://www.hort.purdue.edu/newcrop/duke\\_energy/refa-f.html](http://www.hort.purdue.edu/newcrop/duke_energy/refa-f.html)  
Arid Land Industrial Crops report (Purdue University) by A.E. Thompson  
<http://www.hort.purdue.edu/newcrop/proceedings1990/V1-232.html>  
University of Utrecht technical publications including bioenergy  
<http://www.chem.uu.nl/nws/www/publica/sci1998.htm>  
Organic Waste Systems (anaerobic digesters)  
<http://www.ows.be/>  
Anaerobic Digester primer  
<http://www.hydor.eng.br/Pag21-1.html>  
System Johansson Gasifier (Eskom Enterprises)  
<http://www.eskomenterprises.co.za/main/Casestudies/TSIcases/systemjohansson.htm>  
Community Power Systems (small scale gasifier)  
<http://www.gocpc.com/>  
*Ethanol & Fuel Cells: Converging Paths of Opportunity* report  
[http://www.ethanolrfa.org/RFA\\_Fuel\\_Cell\\_White\\_Paper.pdf](http://www.ethanolrfa.org/RFA_Fuel_Cell_White_Paper.pdf)  
Johstone Shire Council – ethanol study  
<http://www.jsc.qld.gov.au>  
Nordic Seminar on Thermochemical Conversion of Biofuels  
<http://www.tev.ntnu.no/Oyvind.Skreiberg/NS021112.pdf>  
Biobased Manufacturers Association (USA)  
<http://www.biobased.com>  
US EPA Air Pollution biomass page  
<http://www.epa.gov/appcdwww/apb/biomass.htm#biomass>  
International Bio-Energy (Singapore) Pte Ltd (charcoal)  
<http://www.bioenergy.com.sg>  
Western Australia draft Sustainable Energy Strategy  
[http://www.sustainability.dpc.wa.gov.au/docs/Draft\\_Strategy.htm](http://www.sustainability.dpc.wa.gov.au/docs/Draft_Strategy.htm)  
Ethanol Producer Magazine  
<http://www.ethanolproducer.com>  
Biodiesel Systems (UK)  
<http://www.biofuelsystems.com/index.html>  
National Association of State Energy Officials (NASEO) distributed generation software  
[http://www.naseo.org/energy\\_sectors/power/distributed/default.htm](http://www.naseo.org/energy_sectors/power/distributed/default.htm)  
Photo library of bioenergy material ex NREL  
<http://www.nrel.gov/data/pix/>  
CSIRO Land and Water's image library  
<http://www.clw.csiro.au/ImageGallery/>  
IEA Bioenergy Task 32 Biomass Combustion and Co-firing Handbook  
<http://www.ieabioenergy-task32.com/>  
AgSTAR Handbook and Software (anaerobic digestion)  
<http://www.epa.gov/outreach/agstar/library/handbook.htm>  
Alternative fuel statistics in USA  
<http://www.eia.doe.gov/fuelalternate.html>  
Manual for the Home and Farm Production of Alcohol Fuel by S.W. Mathewson:  
[http://journeytoforever.org/biofuel\\_library/ethanol\\_manual/manual\\_ToC.html](http://journeytoforever.org/biofuel_library/ethanol_manual/manual_ToC.html)

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## International Developments

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### USA Vision for Bioenergy and Biobased Products Released

The US Biomass Research and Development Technical Advisory Committee, established by the US *Biomass R&D Act of 2000* and composed of 26 representatives from industry, non-profit organisations, academia, and the agricultural and forestry sectors has released *A Vision*

for *Bioenergy and Biobased Products in the United States*. The document cites significant goals for biomass use in the U.S. economy and energy industry. It calls for cooperative approaches to expand domestic renewable biomass resources to help supply their energy needs, develop rural economies, and protect its environment. The *Vision* recognises the potential of biomass to harness the molecular building blocks of plants and agricultural residues to produce quality chemical intermediates and materials.

The *Vision* establishes challenging, long-term objectives for integrating sustainable, competitive biomass technologies into the US economy. The following are the *Vision's* long-term goals, set to be completed by 2030:

- Increase biomass consumption for power to 5% of electricity and heat demand in utilities and industry
- Increase biomass-derived transportation fuels from the current 0.5 percent of U.S. transportation fuel consumption to 20%
- Increase production of chemicals and materials from biobased products from the current 5% of target U.S. chemical commodities to 25%

A full copy of the *Vision* is available at <http://www.bioproducts-bioenergy.gov>.

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Source: Biobased Products and Bioenergy newsletter

### **Grant for Assessing Biofuels as Fire Hazard Reduction Measure**

The Colorado Office of Energy Management and Conservation (OEMC) has received a US\$74,000 grant from the U.S. Forest Service to determine potential markets and uses for small-diameter waste wood, as a fire hazard reduction measure. The project, called the Biomass Energy Project, is focusing on branches, dead needles and other woody debris that results from natural forest processes and the material left after the mechanized removal of lumber during logging operations. The relatively new US National Fire Plan calls for the timely removal of hazardous fuels from forests and the development of new markets for the material in order to make removal profitable. More information is available at the OEMC Web site: <http://www.state.co.us/oemc/programs/forest.htm> and <http://www.state.co.us/oemc/comm/media/mc0203.htm>.

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### **Biomass Gasification Co-firing Study**

Black & Veatch and Energy Products of Idaho (EPI) have conducted a study that examined the technical feasibility and economic viability of biomass as a supplementary fuel source in existing power plants. The study, which was conducted in conjunction with the Nebraska Public Power District (NPPD), resulted in the identification of a promising green power alternative that uses biomass gasification. Employing biomass gasification at existing power plants can improve air quality and provide green power at a considerably lower cost compared to the development of a new biomass power plant.

The study found that use of biomass gasification in place of directly co-firing biomass with coal overcomes a number of problems and disadvantages inherent with directly co-firing biomass in coal boilers. These include excessive wear on pulverisers, fouling and slagging of tubes, ash contamination. These problems are eliminated or minimized through the use of a gasifier.

Black & Veatch and EPI evaluated the technical feasibility and economic viability of the system as a biomass gasification retrofit at the NPPD Sheldon Station. The biomass gasification system was sized to displace about 17 percent of the boiler coal heat input, which produces the equivalent of about 18 MW of green power. The estimated cost for the biomass

gasification system could vary from US\$8 to \$13 million, depending on options for biogas cleanup and modifications to the existing boiler systems. NO<sub>x</sub> reduction from the reburning of the biogas was projected in the study to be about 40 percent.

The study was funded by the U.S. Department of Energy (DOE) through the Western Regional Biomass Energy Program (WRBEP). Copies of the study can be downloaded from the EPI Web site at <http://www.energyproducts.com>.

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### **Global Climate and Energy Project to Develop Renewable Energy**

Power technology and services company General Electric, petroleum giant Exxon-Mobil and Stanford University have established a 10 year, US\$225 million collaborative research project to identify and develop alternative and next-generation energy technologies.

GE will invest US\$50 million, Exxon-Mobil up to US\$100 million, and Schlumberger, a global technology services company US\$25 million. Energy sources that will be researched involve a wide array of technologies including advanced transportation systems, the production, distribution and use of hydrogen and biomass fuels, combustion and energy storage.

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### **Lignocellulosic Ethanol Research Project**

High Plains Corporation, part of Abengoa SA, has received US\$17.7 million from the U.S. Department of Energy for a project that aims to improve the production process for bio-ethanol. The US\$35 million project involves VTT-Finland, Novozymes North America and the U.S. National Renewable Energy Laboratory. The project will develop a lignocellulosic production system for ethanol. Abengoa has three ethanol plants in the U.S. with a production capacity of 322 million litres per year. (source REfocus)

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### **Environmental Award for Britain's First Manure-Fueled Power Station**

A pioneering £7.7m anaerobic digester-power plant complex at Holsworthy, north Devon, has won the UK Euro Solar award for 2002 for its builders, German-based Farmatic UK. The plant runs on around 1.6 million tonnes of slurry collected each year from 30 local farmers. At full capacity, the plant will produce 1.4 MW of power. For further details view: <http://news.bbc.co.uk/1/hi/england/2307229.stm>

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### **Biomass Technology Receive USA 2002 R&D 100 Award**

Acion Technologies received an R&D 100 Award from R&D Magazine (<http://www.rdmag.com>) for one of the hundred most technologically significant new products for 2002. Acion markets a process, CO<sub>2</sub> Wash™ Technology, that is reported to be the first to successfully remove trace levels of toxic volatile organic compounds produced during the digestion process of microorganisms in landfills. The process uses liquid carbon dioxide obtained directly from landfill gas. Contaminants are concentrated in a separate small stream of CO<sub>2</sub> for incineration in the landfill flare. The contaminant-free methane and CO<sub>2</sub> stream can be used as medium calorific value fuel gas, and for a feedstock for methanol. Alternatively, it can be further processed to separate CO<sub>2</sub> from methane to produce pipeline methane or transportation fuel (compressed or liquefied) and liquid CO<sub>2</sub>. Natural gas fleet vehicles are a potentially steady market for methane recovered from LFG. For further information see <http://www.acion.com>

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## IEA Renewables Information 2002

The International Energy Agency has produced a 160 page report on the use of renewable energy technologies and wastes in OECD countries. The book can be obtained free of charge from the IEA Bookshop at: [books@iea.org](mailto:books@iea.org). A PDF version can be downloaded at: <http://www.iea.org/stats/files/Ren2002.pdf>. For more information on *Renewables Information 2002* and other IEA publications: See <http://www.iea.org/public/index.htm>.

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## Forthcoming Events

- 3rd International Slovak Biomass Forum conference, Bratislava, 3 - 4 February 2003. Web: <http://www.ecb.sk>. Contact Miroslava Mitková, Energy Centre Bratislava, Bajkalská 27, 821 01 Bratislava Slovakia. Fax: +421-2-58 2448 470
- International Conference on Co-Utilization of Domestic Fuels, 5-6 February 2003, Florida USA. Contact Andy Campbell at (0011 1 352) 392-1701 ext. 246 or [acampbe@doce.ufl.edu](mailto:acampbe@doce.ufl.edu). <http://www.doce-conferences.ufl.edu/iccdf>
- Envirenergy 2003, 12-13 February 2003, Bolton, UK. Web: <http://envirenergy.org.uk>
- US Renewable Fuels Association's National Ethanol Conference: Policy & Marketing "Building a Secure Energy Future" 17-19 February, 2003. Marriott's Camelback Inn, Scottsdale Arizona. <http://www.ethanolrfa.org/nec.shtml>
- 6th Annual Victoria Power 2003, 18-20 February 2003. Grand Hyatt Melbourne, Australia. Web: <http://www.powergenerationworld.com>
- Waste to Energy 2003 Symposium (Meinhardt and SEDA), 27 February 2003, Sydney. Contact Christine Wardle, Tel: 03 8530 1241 Email: [christine@vic.meinhardt.com.au](mailto:christine@vic.meinhardt.com.au).
- *BioCat2003 - Interdisciplinary Approaches to Industrial Biocatalysis*, Second Annual Conference & Exhibition. March 6-7, 2003, Barcelona Hilton, Barcelona, Spain. Contact: Email: [bsj@catalystgrp.com](mailto:bsj@catalystgrp.com) Web: <http://www.catalystgrp.com>. Tel (001 1)(215) 628-4447.
- World Sustainable Energy Day 2003, Wels, Austria, 6-7 March 2003. [http://www.esv.or.at/aktuelles/WEST/index\\_e.htm](http://www.esv.or.at/aktuelles/WEST/index_e.htm)
- IUFRO - Division 5 Conference 11-15 March 2003, Rotorua, New Zealand. See <http://www.forestresearch.co.nz/site.cfm/alldiv5iufroz>
- LEGNO ENERGIA CENTRO 2003 Arezzo-Toscany, Italy (Italian), 13-16 March 2003, Email: [segreteria@expoenergie.it](mailto:segreteria@expoenergie.it)
- ISEC 2003, International Solar Energy Conference, 16-18 March, 2003, Mauna Kea Resort, Kohala Coast, Hawaii Island, Hawaii USA. Web: <http://www.asme.org/divisions/solar/call/index.html>
- IUFRO - section 1.09.00 Short-Rotation Forestry. World Perspective of Short-rotation Forestry for Industrial and Rural Development, Solan, Himachel Pradesh, India. April 6-10, 2003. Contact: Kartar S. Verma-Tel: +91-1792-52270, Fax: +91-1792-52242, Email: [khuranasolan@yahoo.com](mailto:khuranasolan@yahoo.com) or [ists-nauni@hclinfinet.com](mailto:ists-nauni@hclinfinet.com)
- 25<sup>th</sup> Symposium on Biotechnology for Fuels and Chemicals. Beaver Run Resort, Breckenridge, Colorado, USA. 4-7 May 2003. Web: [http://www.nrel.gov/biotech\\_symposium](http://www.nrel.gov/biotech_symposium) Email: [mark\\_finkelstein@nrel.gov](mailto:mark_finkelstein@nrel.gov).
- 4<sup>th</sup> Asia Pacific Conference on Sustainable Energy and Environmental Technologies, 8-10 May 2003, Yokkaichi, Mie, Japan. Web: <http://www.imacro.com/office/meetinge.html>

- Sustain 2003: The World Sustainable Energy Exhibition and Conference, 13-15 May 2003, Amsterdam. Web: <http://www.sustain2003.com>
- MRET and NSW Mandatory Greenhouse Benchmark Schemes, 19-20 May 2003. Rydges Jamison Sydney. IBC Conferences. Web: <http://www.ibcoz.com.au/greenhouse2003>
- 2003 International Conference on Energy and Environment, Shanghai, China May, 2003. Contact: Dr. Daoping Liu, Executive Secretary of ICEE, University of Shanghai for Science and Technology, P.O. Box 224, No. 516, Jun Gong Road, Shanghai, 200093, China. Email: [dpliu@online.sh.cn](mailto:dpliu@online.sh.cn) Web: <http://www.usst.edu.cn/2003ICEE/icee.htm>
- 5th Annual NSW Waste Management Conference & Expo 4 – 6 June 2003. Sydney. Tel: 02 4632 7567 Fax: 02 4632 7687 Email: [enquiries@nswwasteconference.com.au](mailto:enquiries@nswwasteconference.com.au)
- 19th Annual International Fuel Ethanol Workshop & Trade Show, Sioux Falls Convention Center, Sioux Falls, South Dakota, USA June 16-19 2003. Contact: BBI International, PO Box 159 Cotopaxi, CO 81223. Tel: (719) 942-4353 Email: [conferences@bbiethanol.com](mailto:conferences@bbiethanol.com) : Web <http://www.bbiethanol.com>
- 11th International Rapeseed Congress, 6-10 July 2003, Copenhagen, Denmark <http://www.kemi.kvl.dk/gcirc-congress/>
- BIOMASSE-ENERGIE 2003 Libramont, Belgium, 25-28 July 2003, Email: [info@itebe-expo.com](mailto:info@itebe-expo.com)
- Bioenergy 2003: International Nordic Bioenergy Conference and Exhibition, 2-5 September 2003, Jyväskylä, Finland. FINBIO. Web: <http://www.finbioenergy.fi>
- Eighth Grove Fuel Cell Symposium - 'Building Fuel Cell Industries' - 24-26 September 2003, London, UK. Web <http://www.grovesfuelcell.com>
- BOIS ENERGIE 2004 in Lons le Saunier-Jura, France, 1-4 April 2004, Email: [info@itebe-expo.com](mailto:info@itebe-expo.com)
- 19<sup>th</sup> World Energy Congress and Exhibition, Sydney, 5-9 September 2004. Tel: (02) 9248 0800 Web: [www.tourhosts.com.au/energy2004](http://www.tourhosts.com.au/energy2004).

## Residues

- The Bioenergy Australia Manager, Dr Stephen Schuck attended the US *Bioenergy 2002* conference in Boise, Idaho in late September 2002. The conference, which highlighted many recent advances in biomass technologies, attracted more than 500 people from over 30 countries. More than 200 presentations were given on various topics including:
  - Anaerobic Digestion
  - Chemical By-Products and Co-Products
  - Densified Fuels
  - Ethanol
  - Feedstock Engineering
  - Gasification and Co-firing
  - Pyrolysis

The conference included a citizen's night, during which all residents of Boise were invited to lectures and to visit exhibits and poster presentations to learn more about the energy security and environmental benefits of biomass technologies. For additional information on the conference, or to purchase a copy of the proceedings, see <http://www.bioenergy2002.org>. Bioenergy Australia members are invited to borrow the CD ROM of the conference Proceedings from Steve Schuck.
- Steve Schuck was interviewed on ABC regional South East radio on 5 December regarding main outcomes of the Bioenergy Australia conference.
- CSIRO held an International Workshop on Pyrolysis and Bio-Oil *Bio-oil Production Opportunities for New Liquid Fuels and Chemicals through Research and Development* on 25-26 November 2002, at CSIRO Ian Wark Laboratories, Clayton, Victoria 3169. For additional information contact Vanessa Dusting Email: [Vanessa.Dusting@csiro.au](mailto:Vanessa.Dusting@csiro.au) Web: [http://www.ffp.csiro.au/conference/bio\\_oil/](http://www.ffp.csiro.au/conference/bio_oil/)

- CSIRO Entomology held a workshop on Biotransformation, 3-6 November 2002 near Canberra involving several international experts in the field. The workshop developed an outline plan to progress the industry, including a working group on ethanol.
- Steve Schuck gave a presentation on the prospects for bioenergy at an ACT Legislative Assembly Conference on Sustainable Energy on 11 October. During the conference he was interviewed about bioenergy by WIN TV.
- An Ethanol study for the Johnstone Shire Council in Queensland, conducted by Enecon Pty Ltd in association with Stephen Schuck and Associates Pty Ltd may be downloaded as a PDF file from the JSC web site: <http://www.jsc.qld.gov.au>
- Matthew Warnken's report *Utilisation Options for Wood Waste: A Review Of European Technologies and Practices* has been published on the Gottstein Trust web site. The report is downloadable as a pdf file from: <http://www.gottsteintrust.org/html/reports/catalog.htm>
- The Renewable and Sustainable Energy Roundtable, of which Bioenergy Australia is a member, has released its '6 Steps to a Sustainable Energy Future for Australia'. This 15 page document may be downloaded or viewed from the Bioenergy Australia web site at <http://www.users.bigpond.net.au/bioenergyaustralia>.
- The Australian Co-operative Research Centre for Renewable Energy failed in its bid for renewed funding from the Federal Government in the most recently announced CRC awards. ACRE is now likely to close in June 2003.
- The Australian Federal government announced that from 17 September excise is to be imposed on ethanol used in petrol at the rate applying to petrol (38.143 cents per litre). The government will also be providing an equal production subsidy for ethanol used in petrol. This subsidy will be paid to Australia ethanol producers.
- Purdue University has a web based Handbook of Energy Crops. The Reference List from this web site is [http://www.hort.purdue.edu/newcrop/duke\\_energy/refa-f.html](http://www.hort.purdue.edu/newcrop/duke_energy/refa-f.html), while a listing of some 200 plants, including their energy attributes is at URL [http://www.hort.purdue.edu/newcrop/Indices/index\\_ab.html](http://www.hort.purdue.edu/newcrop/Indices/index_ab.html)
- A nine page report, *Arid Land Industrial Crops* by Anson E. Thompson of Purdue University is downloadable from the Web from <http://www.hort.purdue.edu/newcrop/proceedings1990/V1-232.html>
- Scientific publications, including many bioenergy reports, papers and articles from the University of Utrecht in the Netherlands are available off the Web from <http://www.chem.uu.nl/nws/www/publica/sci1998.htm>
- The latest version of the UK Bioenergy Technology Route Map considers the future role of bioenergy in the UK and the path to realise its potential . It consists of 24 pages and can be found at: <http://www.dti.gov.uk/renewable/pdf/tech7.pdf>
- The US EPA *Camp Lejeune Energy from Wood Project* has been undertaken to demonstrate small scale (1MW) biomass gasification for electricity for government installations, industrial sites, rural co-operatives, small municipalities and regions of developing countries. The plant consists of a moving bed bulk wood dryer, a downdraft, fixed bed gasifier using hogged wood residues, a gas cleaning and cooling system, and a spark ignition engine. The process design, some operating results, and future direction are provided on the web at: <http://www.epa.gov/appcdwww/apb/biomass.htm#biomass> with a downloadable conference paper on the project at <http://www.epa.gov/appcdwww/apb/CLEW.pdf>
- Cratech has been developing a Biomass Integrated Gasification Gas Turbine power plant capable of producing 1 MWe for commercial use. The BIGGT technology consists of a fuel feed and pressurization system, a pressurised fluid-bed gasifier, and a dry hot gas cleanup assembly coupled to a gas turbine generator set. A technical paper has been published by the US EPA to provide more detail on this project. The URL is <http://www.epa.gov/appcdwww/apb/bioen98.pdf>
- A US Biobased Manufacturers Association has been launched to promote excellence in the manufacture, sale and use of biobased products and the responsible development of renewable resources. Its web address is <http://www.biobased.com>

- The 194 page Proceedings from the recent Nordic Seminar on Thermochemical Conversion of Biofuels are available at:  
<http://www.tev.ntnu.no/Oyvind.Skreiberg/NS021112.pdf>
- Powergen of the United Kingdom has announced it has begun a co-firing trial of green biomass fuel mixed with low-sulfur coal at its Ironbridge Power Station in Shropshire. Powergen's website is <http://www.powergenplc.com>.
- The US Renewable Fuels Association has produced a report *Ethanol & Fuel Cells: Converging Paths of Opportunity* (August 2002) prepared by Jeffrey Bentley & Robert Derby in which it assesses ethanol to be an ideal fuel to power fuel cells. The report presents a vision of how ethanol and fuel cells can be combined to create significant synergy, reaching markets and bringing benefits that are not achievable with any other fuel or with any other power technology. The report is downloadable from [http://www.ethanolrfa.org/RFA\\_Fuel\\_Cell\\_White\\_Paper.PDF](http://www.ethanolrfa.org/RFA_Fuel_Cell_White_Paper.PDF)
- California now has legislation that requires the state to double its use of renewable energy to 20 percent of retail power sales by 2017. Municipal utilities such as SMUD are exempted from the measure.
- Bioenergy Australia member Southern Pacific Petroleum (SPP) has released a greenhouse gas strategy, addressing concerns about the GHG emissions associated with its AUS \$340 million Stuart oil shale demonstration project, situated near Gladstone, Queensland. The report, called [\*Building a Sustainable Energy Future - Oil shale GHG emissions strategy\*](#), shows that SPP's net GHG emissions intensity can be 5% less than conventional oil. The SPP's GHG strategy includes:
  - co-developing a bio-ethanol plant, using woody biomass as its feedstock, as it will have a symbiotic relationship with oil shale production, producing 1,300 to 3,500 barrels of ethanol daily; and
  - Undertaking carbon sequestration through planting 116 million trees to create permanent forests, thereby sequestering 121 million tonnes of CO<sub>2</sub> as well as enhancing biodiversity and mitigating salinity. (source E3 International)
- Agriculture, Fisheries, Forestry Australia (AFFA) has released a booklet on climate change and agriculture and a Greenhouse Resource Kit aimed at private forest growers. These are available at no charge from AFFA via email: [greenhouse@affa.gov.au](mailto:greenhouse@affa.gov.au) or telephone (02) 6272 3537. Web based versions of the booklet and kit can be downloaded from <http://www.affa.gov.au>.
- EnergyAustralia has announced it will invest up to \$10 million in developing new green energy projects in 2003 as part of a plan to source more than 20% of energy from renewable sources by 2007.
- Sustainable Energy Ireland has been launched and is set to spend £223 million over five years to promote renewable energies and reduce GHG emissions in the Irish Republic. Ireland is the latest country to join IEA Bioenergy. Web address is <http://www.irish-energy.ie>
- A new Australian Forestry Standard has been approved by stakeholder groups and endorsed by Federal, State and Territory governments. The Standard aims to provide an independent assessment of claims about the sustainability of forest management in Australia.
- According to a recent US Department of Agriculture study, ethanol reduces greenhouse gas emissions by up to 55 percent compared to gasoline. The study also found that ethanol contains 34 percent more energy than it takes to produce it - contrary to a popular misconception.
- A prototype renewable energy plant powered by wood chip fuel will receive £2 million from the British government. The 2.5 MW plant at Castle Cary in Somerset will be developed by Bronzoak Wellman at a cost of £6.43 million. The UK has a target of 10% of electricity from renewables by 2010.
- An Internet conference on *Ecocity Development*, including topics such as industrial ecology and urban waste management is being staged from February till June 2003. There will be almost 230 abstracts, papers and presentations available. The e-conference

is organized in 10 sessions with 2 sessions every month. To view the approximate 230 abstracts, papers, slides for e-discussion see <http://www.ias.unu.edu/proceedings/icibs/ecocity03/tt-2.html> . To join a session, enter a virtual conference room by clicking the red-ball for the session in <http://www.ias.unu.edu/proceedings/icibs/ecocity03/parti2.html#lists>.

- US ethanol production in November set an all-time record for the fourth month in a row, and was 32 percent higher than in November 2001.
- The NSW Independent Pricing and Regulatory Tribunal's (IPART) final report "Inquiry into Demand Management and Other Options in the Provision of Energy Services" is available from the its website at <http://www.ipart.nsw.gov.au/pdf/rev02-2.pdf>
- Adelaide University's Education Centre for Innovation and Commercialisation (ECIC) provides a Master of Science and Technology Commercialisation (MSTC) program which is offered in both Adelaide and Sydney. For program brochure see website at <http://www.stc.adelaide.edu.au/news!.htm>
- Minnesota based Cargill Dow LLC National is receiving US\$45.9 million from the US government over three years for a project that will focus on process and fermentation technologies and sustainable agricultural systems that will economically produce sugars and chemicals such as lactic acid and ethanol.
- For a copy of *Energy Victoria*, the Victorian Government's energy statement of late November 2002, visit <http://www.nre.vic.gov.au/energystatement> or call 136 186.
- Indian Railways is trialling biodiesel fuel to run passenger trains, with the first trial conducted on 31 December 2002 when the Delhi-Amritsar Shatabdi Express used five percent of biodiesel as fuel. The biodiesel is derived from the seed-oil of the jatropha plant which is suited to arid regions.
- Sydney based New Horizon Energy Ltd announced mid November that it had signed a Heads of Agreement with Landfill Management Services Pty Ltd (LMS) to evaluate and potentially develop a series of Renewable Energy Parks at a number of locations around Australia. Under the Agreement, renewable energy would be generated from two sources, landfill gas and solar energy. Phase 1 of the Joint Venture is to generate approximately 750 GWh of electricity, equating to 80 - 100 MW of capacity.
- The US National Association of State Energy Officials (NASEO) has available on their web site its Distributed Generation Analysis Tool Version 1.0. With this software, users are able to conduct a 20-year lifecycle cost analysis and assess the environmental impacts of distributed generation technologies. This tool was developed by the Science Applications International Corporation with assistance from NASEO and support from the U.S. Department of Energy. See [http://www.naseo.org/energy\\_sectors/power/distributed/default.htm](http://www.naseo.org/energy_sectors/power/distributed/default.htm)  
The Microsoft Access 2000 version is downloadable from:  
[http://www.naseo.org/energy\\_sectors/power/distributed/Distributed\\_2000.zip](http://www.naseo.org/energy_sectors/power/distributed/Distributed_2000.zip)  
The Microsoft Access 97 version is at:  
[http://www.naseo.org/energy\\_sectors/power/distributed/Distributed\\_97.zip](http://www.naseo.org/energy_sectors/power/distributed/Distributed_97.zip)  
while the User Manual is downloadable from:  
[http://www.naseo.org/energy\\_sectors/power/distributed/Distributed\\_User\\_Manual.zip](http://www.naseo.org/energy_sectors/power/distributed/Distributed_User_Manual.zip)
- California has banned MTBE from its petrol, effective from the end of 2003. The MTBE ban has arisen from environmental and health concerns. This will mean in future most of California's petrol will be blended with ethanol, which acts as an oxygenate.
- Greenpeace Australia has produced a report "Putting Renewables on Target" that Dr Frances Macguire presented at the Bioenergy Australia conference. It is available in electronic copy from: <http://www.greenpeace.org.au/climate/solutions/powershift.html>
- The Forest Products Commission of WA issued a Request for Proposals for some 300,000 tonne/annum plantation residue material over a 20 year period in December 2002. The Request for Proposals closed on 9 January and was brought to the attention of Bioenergy Australia members.
- Bioenergy reports from the former Energy Research and Development Corporation, such as 'Biomass in the Energy Cycle' may be ordered through <http://www.energypublications.com.au>

- The US Department of Energy's Office of Science has awarded US\$3 million to the Institute of Biological Energy Alternatives to develop a synthetic chromosome as the first step in developing cost-effective and efficient biological sources of energy, such as engineering organisms that could generate hydrogen or serve other purposes, such as carbon sequestration.
- U.S. EPA's Landfill Methane Outreach Program (LMOP) is a voluntary assistance and partnership program that promotes the use of landfill gas as a renewable energy source. Web site is <http://www.epa.gov/lmop/>
- In the Chicago area alone, more than 95% of the gasoline sold contains 10% ethanol. The city also has eleven E85 refueling facilities (85 % ethanol blend with petrol).
- The papers and proceedings from the 3rd National Life Cycle Assessment Conference, July 2002, Gold Coast, Queensland, including some papers relevant to bioenergy are at <http://www.lca-conf.alcas.asn.au/>
- Ascent Power Systems Inc. of Littleton, Colorado and Community Power Corporation have successfully tested a bench scale planar solid oxide fuel cell using gasified biomass. In a one-day demonstration, a Community Power Corporation gasification system and an Ascent Power Systems fuel cell were connected and together successfully generated electricity from gas streams derived from pecan shells, ponderosa pine wood chips and coconut shells.
- Renewable energy supplied 13.8% of the world's total primary energy in 2000, of which biomass contributed 80% and hydroelectric was 17%, according to the International Energy Agency. [http://www.re-focus.net/news/111202\\_2/](http://www.re-focus.net/news/111202_2/)

## Opportunities Corner

The Bioenergy Australia Manager would like to assist and facilitate biomass and bioenergy projects and businesses by providing information and industry contacts to link project developers, resources, energy companies, and sources of finance. If you or your organisation are interested in such assistance, please contact Steve Schuck for a free listing.

- A project partner is being sought for an energy crop project near Tenterfield, NSW. The proponent is also seeking expertise to find a suitable crop species for the area. The land is located at Silent Grove Road, between Tenterfield and Deepwater in NSW. The land is 155ha, but area for growing may be subject to Council's approval. Presently the land has a clear plot at its front of about 20ha. Photo of the land can be viewed at <http://photos.groups.yahoo.com/group/silentgrove/lst>. Contact is David Chee who can currently be contacted by email at [da\\_chee@yahoo.co.uk](mailto:da_chee@yahoo.co.uk).
- Warren Kalinko is a lawyer with 6 years' legal experience in commercial, finance and environmental law (five years with Mallesons Stephen Jaques and one year with the Environmental Defender's Office). Warren is looking for opportunities to join a small venture involved in the generation of energy from biomass or using other environmental technologies. If your venture is looking for someone to assist with business development, contract negotiation, regulatory approvals, the establishment of commercial relationships, and to generally drive the project forward, Warren can be contacted on telephone (02) 9327 2849 or on email at: [warren.kalinko@optusnet.com.au](mailto:warren.kalinko@optusnet.com.au).
- Resource NSW advertised on 16 December 2002 its Secondary Resource Tender to identify Contractors prepared to transport and receive pre-treated Municipal Solid Waste in the prescribed fractions for further processing and direct end-market sale. Closing date is Tuesday 4 March 2003. For further information use the link to a viewable copy of the documentation on the NSW Department Of Public Works and Services web site: [https://tenders.nsw.gov.au/dpws/full-frame.cfm?p\\_mode=FindRFT&page=shared%2Frftselection.cfm&menu=submenus%2Fcurrent.shtml&p\\_criteria=0203136&Search=Search](https://tenders.nsw.gov.au/dpws/full-frame.cfm?p_mode=FindRFT&page=shared%2Frftselection.cfm&menu=submenus%2Fcurrent.shtml&p_criteria=0203136&Search=Search)  
All inquiries in relation to this tender are to be directed to Mr Anthony Lee, Tel: (02) 9372 7586

- Enstech Inc. of Arizona, USA are seeking a working partner in Australia for a new landfill technology. They report that they have just received full patent coverage in Australia, and are now offering this technology for licensing or sale. The Enstech system is designed for safer landfill containment. Details of the system may be seen on a video clip on <http://www.landfill.us>. If interested contact Enstech's CEO, Burt Hampton, Tel (0011 1) 870 234-1421 or email: [burt@landfill.us](mailto:burt@landfill.us)

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Bioenergy Australia Newsletter is interested your organisation's bioenergy related activities. Please send all press releases, article leads, and conference announcements to Steve Schuck. Fax: (02) 9416 9246 Email: [sschuck@bigpond.net.au](mailto:sschuck@bigpond.net.au).

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## Privacy Statement

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Editor: Dr. Stephen Schuck, Bioenergy Australia Manager  
Any comments, suggestions, articles and feedback are welcome. The views expressed in this newsletter are not necessarily those of the member organisations. Bioenergy Australia may be contacted at:  
Bioenergy Australia  
7 Grassmere Rd, Killara, NSW 2071  
Phone/Fax: (02) 9416 9246  
Email: [sschuck@bigpond.net.au](mailto:sschuck@bigpond.net.au)  
Web: <http://www.users.bigpond.net.au/bioenergyaustralia>