



Newsletter

February 2001

Bioenergy Australia Membership¹ Update

The Bioenergy Australia membership now includes 41 organisations, with recent new members being Carter Holt Harvey, Woodside Energy, Primergy and the Sugar Research Institute. 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 if your organisation is interested in joining this bioenergy development forum.

Bioenergy Australia 2000 Conference

Bioenergy Australia held its inaugural annual conference at the Grand Mercure Hotel, Broadbeach, Gold Coast from 4 –5 December with a series of field visits to the Rocky Point Sugar Mill, Visy's fluidised bed combustor and anaerobic digester on Gibson Island, and to the Luggage Point waste water treatment plant's anaerobic digester on Wednesday 6 December. The conference attracted 154 delegates from around Australia and from Canada, Germany, New Zealand, Norway, Singapore, Sweden, the Netherlands and the United Kingdom. The conference was opened by Ms Gwen Andrews, Chief Executive of the Australia Greenhouse Office, who also delivered a keynote presentation on the Federal Government's policies and programs to foster bioenergy in Australia. Other plenary session papers included a bioenergy overview paper by Associate Professor Ralph Sims of Massey University, New Zealand, an environmental group's perspective by Jeff Angel of the Total Environment Centre, RIRDC's energy crops framework program by Dr Roslyn Prinsley of RIRDC, a paper on bioenergy and carbon from forestry by Bruce Coomber of State Forests NSW and a paper on the bioenergy opportunity and how it is being addressed by Bioenergy Australia by Dr Stephen Schuck, Bioenergy Australia Manager.

A series of eight case studies followed in two parallel sessions after lunch on the first day. These were on SEDA's development of bioenergy in NSW; biomass and cellulose to ethanol developments; a large scale anaerobic digester being constructed in Sydney's western suburbs; biomass co-firing with coal; electricity and co-products from mallee eucalypts; Stanwell Corporation's bioenergy projects with the sugar industry; gasification of green and municipal solid waste; and co-generation in the sugar industry.

The Tuesday 5 December program consisted of a series of moderated panel discussions on the topics of 'Biofuels Availability', 'Technology Availability', 'Environmental, Social and

¹ Founding members: RIRDC and the Australian Greenhouse Office. Membership now also includes DISR, BRS, CSIRO Div of Energy Technology & Div of Forestry and Forest Products, FPA of NSW, 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, Western Sydney Waste Board, Stanwell Corporation, CS Energy, NRE - Forest's Service, the Northern Sydney Waste Board, AFFA, Tarong Energy, Great Southern Energy, Rio Tinto R&TD, QFRI, Babcock and Brown, CVC REEF, ForestrySA, Renewable Energy Corp Ltd, CALM, Auspine Ltd, North Forest Products, CSIRO Sustainable Ecosystems, Carter Holt Harvey, Woodside Energy, Primergy, Sugar Research Institute.

Institutional Issues', 'The Market for Bioenergy', and 'Investment in Bioenergy'. A supporting presentation to the 'Market for Bioenergy' discussion was provided on The Green Electricity Market Project by Ken Chapman of M-Co. Associate Professor Ralph Sims of Massey University, New Zealand acted as Rapporteur for these panel discussions, providing an addendum to the Proceedings.

Conference Proceedings Available: Bioenergy Australia has a few sets of the Proceedings from the conference available. These are being sold for AUD \$110 (including GST, postage within Australia and handling) each. If you are interested in purchasing a set, please contact Steve Schuck on tel/fax (02) 9416 9246. Email: sschuck@bigpond.net.au.

IEA Bioenergy Participation by Australia

Bioenergy Australia, the vehicle for Australia's participation in the International Energy Agency's (IEA) Bioenergy program, committed itself to participate in this international collaborative agreement from 2001-2003 at the 46th Executive Committee meeting, held in Zagreb, Croatia in November. Bioenergy Australia is providing Australia's annual membership fees for five new 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*

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- Dr Tom Baker, Centre for Forest Tree Technology (NRE), Task 31- Dr John Raison, CSIRO Forestry and Forest Products; Task 32- Peter Coombes, Delta Electricity; Task 36- Paul Wootton, Brightstar Environmental; and Task 38- Dr Annette Cowie, State Forests NSW.

There is also a possibility of joining Task 39-*Liquid Biofuels* should sufficient industry support be forthcoming. This is also being investigated through Initiative 2 of the *Renewable Energy Action Agenda* which is considering renewable transportation fuels.

Should you or your organisation wish to obtain information on IEA Bioenergy or 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. IEA Bioenergy has its home page at URL: <http://www.ieabioenergy.com> which provides links to the IEA Bioenergy Task sites and information such as its Annual Report, Strategic Plan and newsletters.

Australia Hosts IEA Bioenergy Meetings

Task 19 Biomass Combustion (predecessor to Task 32) held its biannual meeting at the Grand Mercure Hotel, Broadbeach on 7 & 8 December, immediately after (and coupled to) the Bioenergy Australia 2000 conference, sharing its technical tour with the conference. The meeting was attended by delegates from overseas countries including New Zealand, Canada, Norway, Sweden, the Netherlands, Austria, and the United States. For information contact Peter Coombes, Australia's National Team Leader for Task 19/32 on tel: (02) 9285 2789.

Task 38 Greenhouse Gas Balances of Biomass and Bioenergy Systems will be holding its international workshop in Australia from 26-30 March 2001 in Canberra. The workshop title is 'Accounting methods, emissions trading, and COP6 negotiations related to bioenergy,

wood products and carbon sequestration'. March 26 & 27 will be technical tours, including a visit to the Visy pulp and paper mill under construction at Tumut. Contact: Dr Annette Cowie (02) 9872 0138.

Task 36 is also planning to hold a meeting in Australia in May 2002. The Executive Committee of IEA Bioenergy is also scheduled to hold a future meeting in Australia in May 2003.

Mandatory Renewable Energy Target (MRET) to Apply from 1 April 2001

The Federal Government's renewable energy target that places a legal liability on wholesale purchasers of electricity to source an additional 9,500 GWh/a electricity by 2010 has been passing through Parliament. The enabling legislation, the *Renewable Energy (Electricity) Act 2000* and the *Renewable Energy (Electricity) (Charge) Act 2000* have been passed. The supporting *Renewable Energy (Electricity) Regulations 2001* have been tabled before Parliament. The *Regulations* which are the subject of a disallowance motion by the Greens' Senator Bob Brown are the last element of the legislation required before the MRET comes into force. The tabled *Regulations* contain 'special requirements - wood waste' and 'special requirements - energy crops' which will constrain the sources of biomass that may be used as eligible sources of renewable energy. The target will be phased in, and requires an additional 300 GWh from April to the end of 2001, then 1100 GWh for 2002, 1800 GWh for 2003, and 2600 GWh for 2004, rising up to 9,500 GWh from 2010 to 2020. The measure will operate through the trading of renewable energy certificates. A penalty of \$40/MWh has been set for non-compliance. The Target will be regulated from the newly established Office of the Renewable Energy Regulator.

Information on the Mandatory Renewable Energy Target and the legislation may be found on the Australian Greenhouse Office's website at: www.greenhouse.gov.au/markets/2percent_ren
Media release on MRET www.environment.gov.au/minister/env/2000/mr8dec00.html

Greenhouse Gas Emissions from Electricity Supplied in NSW: Workbook

The NSW Ministry of Energy and Utilities has released the Emissions Workbook, dated October 2000, which is to be used by electricity retailers for reporting their greenhouse gas mitigation, as required by the *NSW Electricity Supply Act 1995*. The 69 page workbook elaborates on the definition of 'sustainably harvested biomass', the term used in the covering legislation. Eligible biomass in the workbook is:

- All agricultural residues (but excluding residues from broad-scale land clearing for agricultural purposes).
- All sawmill residues from trees that have been taken from forests that are 'well managed' according to a definition in the workbook, subject to the condition that no additional tree from a native forest is harvested specifically for biomass.
- All silvicultural and other residues from timber plantations which are managed according to the *Plantations and Reafforestation Act 1999* which is expected to be fully implemented by late 2000 (or its equivalent in other jurisdictions).
- Biomass crops (both woody and non-woody) grown for energy use on land which has not supported native forest after 1990; and
- Logging wastes from native forests that are 'well managed' according to definitions in the workbook and subject to the condition that no additional tree is harvested specifically for biomass.

The Workbook is publicly available on the Ministry's website at: www.doe.nsw.gov.au

Renewable Energy Commercialisation Program Round 6 About to Open

Round 6 of the Australian Greenhouse Office's Renewable Energy Commercialisation Program opens for competitively selected applications on 6 March and closes on 24 April 2001. The documentation for RECP 6 should be on the AGO's web site in the near future. There are two components to this grant scheme; *technology commercialisation* where grants are generally \$100,000- \$1 million, and *industry development* where grants are generally less than \$300,000 and the outcomes are disseminated to the wider industry. The successful projects under RECP5 are expected to be announced by the end of April. For further details on RECP contact the AGO's renewable energy hotline: tel (02) 6274 1880, Email: renewable@greenhouse.gov.au Web: www.greenhouse.gov.au/recp/index.html

Integrated Wood Processing (IWP) Project Given Approval

In mid December the Western Australian Government announced that a project to make activated carbon, renewable electricity and eucalyptus oil from mallee eucalypts has been given the green light. A multi million dollar, full scale demonstration plant will be built over the next twelve months near the town of Narrogin, south east of Perth in Western Australia.

Enecon Pty Ltd developed the concept of integrated processing in 1998, to match its licensed CSIRO technology for activated carbon and energy, with supporting work by the Western Australian Department of Conservation and Land Management (CALM) and the Oil Mallee Company to derive eucalyptus oil from mallee trees. These trees are being grown to counter waterlogging and salinity in the Western Australian wheatbelt, and the opportunity to make multiple commercial products in IWP plants will provide a much needed financial incentive to large scale tree plantings.

Enecon reports it has now commenced detailed engineering for the demonstration plant, and they will also manage construction, plant commissioning and operation, and marketing/sales for the activated carbon. In the longer term, Enecon anticipates working with Western Power Corporation and the mallee growers to develop multiple processing plants, thus providing an incentive for large scale environmental tree planting in WA and beyond. A full-scale plant would handle 20,000 tonnes of mallee feedstock a year, and produce 700 tonnes of activated carbon and 200 tonnes of eucalyptus oil, plus have an electrical generation capacity of 1 MW. This project is also being supported by Western Power Corporation, with significant financial assistance from the Australian Greenhouse Office, Ausindustry and RIRDC/JVAP.

NSW Wood Waste Fired Power Stations

The New South Wales Forest Products Association (FPA) has teamed up with Babcock and Brown and National Power (USA) to develop three 30 MW scale wood waste fired power stations in NSW. The Clean Green Energy Company has been set up as the vehicle for this development. On the basis of resource and other studies completed in late 2000, two of the projects to be located near Raymond Terrace and at Koolkhan (near Grafton) are progressing to the next stage of development. Mr Colin Dorber, former Executive Director of the NSW Forest Products Association, who has taken up a position in the wool industry will retain an interest in the Clean Green Energy Company. The FPA's briefing note on the projects indicates that a total of 361 new jobs would be created in NSW and the projects would generate increased output to the value of \$62 million per annum.

Woodside Energy and Oil Mallee Company Launch Joint Venture

Woodside Energy Ltd. and the Oil Mallee Company of Western Australia jointly announced plans in late December to co-operate in the development of a business based on oil mallee planting in Western Australia and beyond. The first phase of this plan is to establish a one million tree oil mallee crop in the Esperance region and to develop a mallee harvester. Woodside will initially contribute \$550,000 to this first phase.

Woodside Energy is considering using the oil mallee biomass for a proposed Esperance power station and may obtain future carbon credits from mallee plantations under an agreement to be negotiated with the growers and the Oil Mallee Company. A Woodside/Energy Equity consortium has included a bioenergy facility as part of its proposal in the recent Esperance power supply bid process undertaken by the WA Office of Energy.

For further information contact Richard Beresford, Woodside Energy's Director, Business Development on tel: (08) 9248 4338.

Primergy Secures 70MW of Projects, New Technology in Purchase of Two European Renewable Energy Companies.

Australian renewable energy company, Primergy Limited, has purchased two UK-based renewable energy companies, Ambient Energy Limited and ESD-Ventures Limited, securing interests in 70MW of 'green power' projects and an advanced biomass gasification technology. Ambient Energy delivers Primergy a portfolio comprising 70MW of biomass, wind and hydro renewable energy projects, with power purchase agreements guaranteed under 15 year NFFO (Non Fossil Fuel Obligation) contracts held with the UK Government. Included in the deal is planning approval for a 5.5MW biomass energy plant at Suffolk, with approval for a second 5.5MW plant at North Wiltshire pending.

Primergy reports the ESD-Ventures acquisition gives Primergy ownership of an advanced gasification technology, now being demonstrated in the UK. ESD-Ventures was purchased from Energy for Sustainable Development Limited (ESD), a well known sustainable energy consultancy and advisory group. Under the purchase agreement, ESD will provide *Primergy Europe* with first rights to new renewable energy development projects encountered on a global basis.

The major focus of Primergy in Australia is the development of its Re-OCC (Re-Organic Conversion Centre) waste-to-energy facilities, currently planned in four States. The advanced gasification technology will become an integral part of future Re-OCC plants from 2002.

Contact: Perry Toms at Primergy on tel: (02) 8969 3400.

Renewable Energy Corporation Ltd (RECL) Announces Green Waste Project

RECL has announced it has signed a heads of agreement with Victorian company, Dormit Pty Ltd to establish a 3 MW renewable energy generating facility fuelled on wood waste at Dandenong, 30 km from Melbourne. The \$7 million project will be wholly owned by RECL and will be based on RECL's Waterwide close coupled gasifier. Part of the project cost is subject of an application for government funding. In late 2000 RECL announced a series of projects with Duke Energy, RECL's strategic partner.

Contact: Chris Uren, tel: 03 9820 1322

Brightstar Environmental's SWERF Plant Officially Opened

The Premier of NSW, Bob Carr officially opened Brightstar Environmental's \$36 million Solid Waste and Energy Recycling Facility at Whytes Gully, near Wollongong, NSW on 7 February. The plant, when fully operational will process 150,000 tonnes municipal solid waste per year, recycling heavy plastics, metal and glass, and is set to produce 120 GWh/a electricity from six gasifier modules and twelve gas engines. The core technologies are a front end autoclave for partially breaking down the organic material, a gasifier for converting the pre-processed waste to a combustible gas and gas engines for generating electricity. Ergon Energy has entered into a power purchase agreement for the electricity from the plant. Information on Brightstar Environmental is at <http://www.brightstarencvironmental.com>

\$120 million Waste to Energy Plant for Tasmania

Plans have been announced by Total Energy Services Tasmania (TEST) for a \$120 million waste to energy facility to be established at the Brighton Industrial Park near Hobart, Tasmania. The 180,000 tonnes/a municipal and industrial waste plant will incorporate front end recycling and will generate 20 MW electricity initially, expanding to 30 MW when natural gas becomes available. The company is reported to have a memorandum of understanding to sell the electricity to Aurora Energy. The project would employ 250 people during construction and create 100 full time jobs at completion. The plant is expected to open in March 2002, subject to approval.

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 previous twelve 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

ARRIP - Australian Rural Research in Progress databases (free online)

<http://www.infoscan.com.au>

Media release on the mandated renewable energy target.

<http://www.environment.gov.au/minister/env/2000/mr8dec00.html>

Biogas technology primer

<http://gate.gtz.de/biogas/basics/basics.html>

Anaerobic digestion (in German and English)

<http://www.biogas.ch/>

BTA (anaerobic digestion)

<http://www.bta-technologie.de/files/infostart-e.htm>

New Crop Resource Online Program (Purdue University)

<http://www.hort.purdue.edu/newcrop/nexus/>

Agroforestry

<http://agroforester.com/>

Farming with trees

http://journeytoforever.org/farm_tree.html

Brightstar Environmental

<http://www.brightstarencvironmental.com>

Biofuel at Journey to Forever

<http://journeytoforever.org/biofuel.html>

US EPA Landfill Methane Outreach Program (LMOP)

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

Primen (energy market intelligence company – survey of microturbines)
<http://www.primen.com/>

Wood Pellets Report
<http://www.reap.ca/Reports/pelletaug2000.html>

Tar Protocol project
<http://www.tarweb.nett>

Home built Stirling engines (pictures)
<http://www.symanski.net/stirlings/index.html>

Stirling engine links
<http://www.geocities.com/wastewatts/index.html>

Small scale gasifier (excellent photos – Tom Blackburn)
<http://www.snowcrest.com/tomb/gasifier3.htm>

Ebarex Kalina Cycle
<http://www.gwm.net/ebarex/index.htm>

Biomass Briquetting: Technology and Practices- 48pp REWP report
<http://www.rwedp.org/acrobat/fd46.pdf>

The Briquetting of agricultural wastes for fuel-FAO report
<http://www.fao.org/docrep/T0275E/T0275E00.htm>

Improved Solid Biomass Burning Cookstoves: A development manual- 125 pp REWP report
<http://www.rwedp.org/acrobat/fd44.pdf>

Novem (English site)
<http://www.novem.org>

Federal Energy Technology Center (US DOE) – fuel cells overview
<http://www.fetc.doe.gov/products/power/fuelcells/overview.html>

STM Corporation (Stirling engines)
<http://www.stmcorporation.com/multiheat.htm>

Whisper Tech Ltd., Christchurch, New Zealand (Stirling engines)
<http://www.whispergen.com/whispfaq.htm>

World Energy Council
<http://www.wec.co.uk/>

CADDET Australia Web site (recently upgraded)
<http://www.isr.gov.au/caddet>

IEA Bioenergy Task 29
<http://www.eihp.hr/task29.htm>

Queensland's Sustainable Energy Allies Directory
<http://www.sustainableenergyqld.com>

Wood distillation
http://getnet.com/~dickg/nmra/sigs/RR_Industries/Industry-Lineside.html

Greenhouse gas chemistry
http://kish.physics.iastate.edu/gccourse/chem/carbon/carbon_lecture.html

Biomass growth in enriched CO₂ atmosphere
<http://www.uswcl.ars.ag.gov/>

Faster higher quality production of biomass
<http://www.agronicsinc.com>

Grain as a source of energy
<http://come.to/heat-with-wheat>

Dyadic International, Inc.(cellulases)
<http://www.dyadic-group.com>

Energy-Wise News (NZ)
<http://www.eeca.govt.nz>

Cotton: An Australian Success Story
<http://www.ruralfunds.com.au/CottonFacts.htm>

Carbon Trading:
<http://www.carbon-trading.com>
<http://www.carboncredit.com.au>
<http://www.thecarbontrader.com>

Wisconsin Focus on Energy Web page
<http://www.wifocusonenergy.com>

Report by Access Economics for the Australian Conservation Foundation on land clearing
<http://www.acfonline.org.au/campaigns/globalwarming/discussion/ghlc.htm>

Environment Protection and Biodiversity Conservation Act 1999
<http://www.environment.gov.au/epbc>

Global Reporting Initiative - New Sustainability Reporting Guidelines
<http://www.globalreporting.org>

Environmental Accounting and Reporting - Victorian State Inquiry
<http://www.parliament.vic.gov.au/paec/>

Marcor Remediation Inc. Surplus Generating Assets to the worlds energy sectors
<http://www.marcor.com/services/sales/sales.htm>

Finnish Bioenergy Report (PDF file)
http://www.finbioenergy.fi/index_english.asp

Ethanol and Biofuels Resources
<http://www.me3.org/issues/ethanol/>

Green Power Marketing in the United States: A Status Report - by Blair Swezey and Lori Bird, National Renewable Energy Laboratory, August 2000
<http://www.me3.org/projects/dereg/nonmn.html>

A Fuel Cell Primer: The Promise and the Pitfalls - by Tom Koppel and Jay Reynolds
<http://www.me3.org/issues/fuelcells/>

Oil palm and coconut biomass
<http://www.oilpalm.net>
<http://www.oilpalm.net/noelw>

Tyre gasification and pyrolysis
<http://recycle.net/recycle/Rubber/pyro/index.html>

Pyrovac pyrolysis process
<http://www.pyne.co.uk/tech2.htm>

Article "Construction of a Simplified Wood Gas Generator for Fuelling Internal Combustion Engines in a Petroleum emergency"
<http://www.gengas.nu/byggbes/index.shtml>

Stirling Technology
<http://www.stirling-tech.com/index.htm>

Integrated Bio-Systems Network (IBSnet) electronic seminar on "How to install a polyethylene biogas digester" The Royal Agricultural College Cirencester, UK, 5-23 March 2001
<http://www.ias.unu.edu/proceedings/icibs/ibs/ibsnet/af-sem.html>

Switchgrass co-firing at 650 MW Ottumwa Generating Station (US)
<http://www.msnbc.com/local/RTIA/M7353.asp>

USA Technology Roadmap for Plant/Crop-Based Renewable Resources 2020, projects solicitation
<http://e-center.doe.gov/>

MTBE ban in Chicago
http://www.findarticles.com/m3TOD/239_49/58295002/p1/article.jhtml

International Society of Sugar Cane Technologists Conference
<http://www.ccm.com.au/issct>

Go-Green (California)
<http://www.Go-Green.com>

Gasifier (Arnt)
<http://skyboom.com/arnt/ssrcolor.gif>

AEW gasifiers
<http://aewgasifiers.netfirms.com/gasification.html>

Report on a simple pyrolyser/combustor based on dry wood pellets
http://www.ikweb.com/enuff/public_html/paperhtml/Punepaper2b.htm

Ecoforestry Institute
<http://ecoforestry.ca/>

Forest Steward's Guild

<http://www.foreststewardsguild.com>
Iowa State University (bioenergy)
<http://www.lifelearner.iastate.edu/conference/bioenergy2.htm>
Doble monotube boiler (vehicle application)
<http://www.greenhills.net/~apatter/DobleBoiler.html>
Hazen Research, Inc.
<http://www.hazenus.com>
Genetically engineered trees
http://www.daviesand.com/Perspectives/Forest_Health/Mutant_Trees/
Hazen Research, Inc.
<http://www.hazenus.com>
Rocky Mountain Institute.
<http://www.rmi.org/>
World Resources Institute (WRI)
<http://www.wri.org>
Industry Canada Roadmap (Electrical Power Roadmap has a chapter on renewable energy)
http://strategis.ic.gc.ca/sc_indps/trm/engdoc/homepage.html
Industrial Technology Research Institute (Taiwan)
<http://www.itri.org.tw>
Danish Centre for Biomass Technology
<http://www.videncenter.dk>
GEM (Green Electricity Market)
<http://www.gemoz.com/update.html>
Eco Sustainable Developments
<http://www.ecosustainable.com.au>
Progressive Engineer (landfill gas- journal)
<http://www.progressiveengineer.com>
Combustion Gasification Propulsion Lab.-Dept. of Aerospace Engineering Indian Institute of Science Bangalore
<http://cgpl.iisc.ernet.in>
Construction of a Simplified Wood Gas Generator for Fueling Internal Combustion Engines(book)
<http://www.gengas.nu/byggbes/index.shtml>
VTT Energy
<http://www.vtt.fi/virtual/afbnet/>
Waste to energy technology (Canadian)
<http://www.valueatlantic.com/kearns/>
Wood Ethanol report - Technology Review
<http://www.pyr.ec.gc.ca/ep/wet/section16.html>
MSW to Ethanol facility (Masada OxyNol)
<http://www.ci.middletown.ny.us/cityhall/dpw/pmfaq.htm>
Ethanol
<http://journeytoforever.org/ethanol.html>
<http://www.webconx.com/ethanol.htm>
Agrecon
<http://www.agrecon.canberra.edu.au>
Environment Industry Action Agenda
<http://www.isr.gov.au/agendas/sectors/eiaa.html>
Gasification in Texas Newsrelease
http://www.woodfuel.com/b_press_releases.asp?pr=1
Woody agriculture
<http://www.badgersett.com/Intro%20to%20woody%20Ag.html>
Integrated Waste Services Association (excellent source of information on wte)
<http://www.wte.org/waste.html>
Bioprocessing of Solid Waste & Sludge
<http://www.orbit-online.net/journal>

The article "Construction of a Simplified Wood Gas Generator for Fueling Internal Combustion Engines in a Petroleum emergency" can be found at
<http://www.gengas.nu/byggbes/index.shtml>

LA Times article (2 Jan 01) on California biomass plant
http://www.latimes.com/business/reports/power/lat_chips010102.htm

"Danish Bioenergy Solutions - reliable and efficient" June 2000
 from the Danish Energy Agency. It can be downloaded as 7 pdf type files from publications"
<http://www.videncenter.dk>

Trees, Water and Salt: an Australian guide to using trees for healthy catchments and productive farms – Research Update No.1
 Summary:
<http://www.rirdc.gov.au/reports/AFT/00-170sum.html>

Full report:
<http://www.rirdc.gov.au/reports/AFT/00-170.pdf>

Emerging products and services from trees in lower rainfall areas – Research Update No.2
 Summary:
<http://www.rirdc.gov.au/reports/AFT/00-171sum.html>

Full report:
<http://www.rirdc.gov.au/reports/AFT/00-171.pdf>

Commercial Prospects for Low Rainfall Agroforestry
http://www.rirdc.gov.au/reports/AFT/99_152.doc

RIRDC's Agroforestry and Farm Forestry programs
<http://www.rirdc.gov.au/programs/aft.html>

IEA Bioenergy Task 17 proceedings from Auburn, Alabama meeting
<http://bioenergy.ornl.gov/pubs/international.html>

Thermal Acoustic Stirling Engine & 265 pp book
<http://www.lanl.gov/mst/engine/>
<http://www.lanl.gov/projects/thermoacoustics/Book/index.html>

Bioenergy from Finland
<http://www.bioenergy.fi>

Foster Wheeler technical papers
http://www.fwc.com/publications/tech_papers/index.cfm

1st International Congress on Biomass for Metal Production & Electricity Generation (8-11 Oct 2001, Brazil)
<http://www.issbrazil.org>

Assessment of Pelletized Biofuels report by R. Samson and P. Duxbury
<http://www.reap.ca/Reports/pelletaug2000.html>

BDI Austria (biodiesel technology supplier)
<http://www.biodiesel-intl.com>

STATCO (biodiesel technology supplier US)
<http://www.STRATCO.com>

Austrian Biofuels Institute
<http://www.biodiesel.at/index2.html>

Biodiesel (German site)
<http://www.biodiesel.de/english.htm>

Griffin Industries US (biodiesel)
<http://www.griffinind.com/html/biodiesel.html>

US National Biodiesel Board
<http://www.biodiesel.org>

US Dept of Agriculture (biodiesel)
<http://www.ncaur.usda.gov>

US Biofuels
<http://www.nal.usda.gov/ttic/biofuels.htm>

"Cost Reduction in Bio-Diesel Production", B. Rice, A. Fröhlich and R. Leonard, Crops Research Centre, Oak Park, Carlow, Ireland.
<http://www.teagasc.ie/research/reports/crops/4321/eopr-4321.htm>

Biodiesel site
<http://www.biofuels.fsnet.co.uk/>

NOPEC Corporation Biodiesel Technology Unit
<http://www.nopec.com/Technology.htm>

World Energy Alternatives, LLC (biodiesel)
<http://www.worldenergy.net>

Biodiesel Development Corporation
<http://www.pipeline.to/biodiesel/>

Southern States Power Company (biodiesel processing and distribution)
<http://www.sspowerco.com/>

Pacific Biodiesel, Inc (100%-recycled vegetable oil)
<http://www.biodiesel.com/>

Biodiesel site
http://journeytoforever.org/biodiesel_make.html

California Working Group of the Distributed Power Coalition of America
<http://www.dpc.org>

California Alliance for Distributed Energy Resources
<http://www.cader.org>

Biomass Energy Research Association (BERA)
<http://www.bera1.org>

International Wood Energy Institute of Europe (ITEBE)
<http://www.itebe.org>

World Business Council for Sustainable Development (WBCSD)
<http://www.wbscd.org/>

Pellet Fuels Institute equipment suppliers
<http://www.pelletheat.org/industry/industry.html>.

A Non-Incineration Alternative for Mercer County, New Jersey
<http://www.ilsr.org/recycling/mercer.pdf>

Adelaide University Bioenergy Website:
<http://www.gisca.adelaide.edu.au/~lzimmerm/uofabioenergy/bioenergy.html>

Biomass Energy Atlas Website
http://sg211.gisca.adelaide.edu.au/bioenergy_atlas/html/atlas_index.html

USA National Bioenergy Centre article
<http://www.bioproducts-bioenergy.gov/page1.html>

Vermont Methane Project
<http://www.state.vt.us/psd/ee/Methane.htm>

Distributed-generation e-group,
<http://www.egroups.com/group/distributed-generation>

Biofacts – Further Reference to Life Cycle Analysis Article

There was considerable interest in the life cycle analysis information of various renewable energy technologies presented in the October 2000 Bioenergy Australia newsletter in this *Biofacts* section. The table presented showed that on a life cycle basis, bioenergy had significantly lower life cycle emissions of carbon dioxide (the most important greenhouse gas) than photovoltaics. The source material for the article came from *New and Renewable Energy: Prospects in the UK for the 21st Century, Supporting Analysis*. UK Dept of Trade and Industry, March 1999. The source document data in the table originated from work done for the International Energy Agency. It is on their web site: www.iea.org/pubs/free/benign

US Establishes National Bioenergy Centre

The U.S Department of Energy has established the National Bioenergy Center to be located at the National Renewable Energy Laboratory at Golden, Colorado. It is aimed to create new

economic opportunities for farmers, enhance U.S. energy security and help manage the impact of energy on the environment. The facility will be the focal point for technology development and information about bioenergy in the U.S. The DOE estimates that biomass could generate US \$20 billion a year in new income for farmers and rural communities, while reducing annual GHG emissions by 100 million tons a year. See URL: www.bioproducts-bioenergy.gov/page1.html for details.

World's Largest Straw-Fired Power Plant in UK

The world's largest straw-fired power plant, the Elean Power Station in Cambridgeshire, UK commenced operation in late September 2000. The plant's output is 36 MW and it will generate a total of 271.5 GWh annually using 200,000 tonnes of straw. The project is supported by the UK Non Fossil Fuel Obligation (NFFO) program. The project partners are UK renewable power developer Energy Power Resources and the US utility company Cinergy. FLS miljo a/s of Denmark is contracted to build the turnkey USA \$100 million power station.

Forthcoming Events

- SEDA's *Regional Sustainability Seminars 2001*. Wollongong 12 March, Port Stephens 13 March, Dubbo 15 March. Contact Impact Environmental Seminars, tel: 02 9570 1577. Email: seminars@impactenviro.com.au.
- IEA Bioenergy Task 38 *Greenhouse Gas Balances of Biomass and Bioenergy Systems* meeting and workshop. Canberra, 26-30 March 2001. Contact: Dr Annette Cowie, 02 9872 1038.
- Queensland EPA's *Harvesting Business Opportunities through Environmental Management – a business strategy seminar for sustainable farming*, Sheraton Brisbane, 16 March 2001. Further information tel: 07 3227 6357.
- Australian Ecogeneration Association National Conference And Exhibition, 28-30 March 2001, Melbourne. Web: www.ecogeneration.com.au
- 4th Annual Emissions Trading Forum, 2-4 April 2001, Four Points Hotel Sheraton, Sydney. Web: <http://www.ibcoz.com.au>
- *Emissions Trading and the Kyoto Paradigm*, Sheraton Towers, Melbourne. 5-6 April 2001. Web: www.marcusevans.com. Tel: 02 9223 2137.
- IBC conference on *Renewable Energy Generation and Certificate Trading*, 28-29 May 2001, Sydney. Contact: Sofia Khayech on tel: 8235 5314.
- *Community Technology 2001*. Murdoch University, Perth, Western Australia, 5 & 6 July 2001. Website: <http://www.concon.com.au>, tel: 08 9242 2232.
- ESAA *Renewable Energy and Remote Areas Power Supply Conference*, 27-28 August 2001, Cairns, Queensland. Contact Pat McMullan, 02 9261 0141.
- 24th *International Society of Sugar Cane Technologists Congress*. 16-21 September 2001, Brisbane. Web: www.ccm.com.au/issct, fax: 07 3369 3731.
- *Second National Recycled Organics Conference and Trade Expose*, University of Queensland Graton College, 25-27 Sep 2001. Web www.recycledorganics.com.au. Contact Denise Hart, ROC Operations Manager, Tel: 07 5460 1518, or email: dhart@recycledorganics.com.au
- *ISES 2001 Solar World Congress*, Nov/Dec 2001, Adelaide. Web: <http://www.unisa.edu.au/ises2001congress>
- 1st *World Biofuels Conference*, 3-4 April, Hyatt Regency, Paris, France. Web: www.fo-licht.com Email: conferences@fo-licht.com.
- *The First European Conference on Agriculture & Renewable Energy*, RAI International Exhibition & Congress Centre, Amsterdam, The Netherlands. 6-8 May 2001. Web: www.emml.com Email: land@emml.co.uk.

- 2nd International CHP Symposium. Amsterdam, The Netherlands, 9-10 May 2001. Website: www.2ndCHPSymposium.com
 - 7th International Cogeneration and Environmental Conference & Exhibition, 24-25 May 2001. Istanbul, Turkey. Web: www.teknikyayindlik.com
 - POWER-GEN 2001, 29-31 May 2001, Brussels Exhibition Centre, Belgium. Web: www.powergeneurope.com.
 - Integrated Bio-Systems Network(IBSnet)electronic seminar on "How to install a polyethylene biogas digester" is to be presented by Mr. Francisco X. Aguilar , The Royal Agricultural College Cirencester, UK. Date: 5-23 March 2001. Seminar-Chairperson: Prof. Horst Doelle, Chairman IOBB. Registration: contact foo@swipnet.se or <http://www.ias.unu.edu/proceedings/icibs/ibs/ibsnet/af-sem.html>
 - 2001 International Fuel Ethanol Workshop and Trade Show. Radisson Hotel Riverfront, St Paul, Minnesota, USA. 19-22 June 2001. Web: www.bbiethanol.com.
 - Fifth Biomass Conference of the Americas, Orlando, Florida. 17-21 September 2001. Web: <http://www.nrel.gov/bioam/>. Deadline for submitting papers is February 28, 2001.
 - IEA Bioenergy Task 31, *Conventional Forestry Systems for Sustainable Production of Bioenergy*, will be holding its first annual workshop in the Veluwe Area, Gelderland, The Netherlands from 17 to 21 September 2001. This workshop will focus on Bioenergy from urban forestry- principles and practice. An optional 3-day post-workshop tour in the Netherlands will follow. Web: www.ieabioenergy.com
 - 1st International Congress on Biomass for Metal Production & Electricity Generation. Congress and Exhibition Centre, Belo Horizonte, Brazil 8 - 11 October 2001. Web: www.issbrazil.org
 - COGEN Europe's 9th Annual Conference, 7-9 November 2001. Europa Intercontinental Hotel, Brussels, Belgium. Email: Info@cogen.org.
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Residues

- Bioenergy Australia has released its six page glossy brochure entitled *Biomass - Energy and Products* to inform a wider community about biomass and the opportunities it affords. The brochure provides a general introduction on biomass, and covers biomass conversion technologies and the benefits of biomass energy. To obtain a copy please contact the Bioenergy Australia Manager, Dr Stephen Schuck.
- The Bioenergy Australia Manager, Dr Stephen Schuck has been invited to give presentations at: a SEDA (Sustainable Energy Development Authority of NSW) *Regional Sustainability Seminar* at Port Stephens on 13 March, at an IBC Conference on *Renewable Energy Generation and Certificate Trading* in Sydney 28-29 May, at the Australian Ecogeneration Association's annual conference in Melbourne 28-29 March, and at the Queensland EPA's *Harvesting business opportunities through environmental management* seminar on 16 March. See *Forthcoming Events* above for contact details.
- The ABC Radio Natonal *Earthbeat* program aired a segment on the Brightstar Environmental SWERF project at Wollongong on 10 February. The transcript is on their web site at <http://www.abc.net.au/rn/science/earth/stories/s246274.htm>
- Guidelines and material about the Environment Protection and Biodiversity Conservation Act are available through Environment Australia's Internet site at <http://www.environment.gov.au/epbc>. Alternatively contact Environment Australia on 1800 803 772.
- A June 2000 publication "Danish Bioenergy Solutions - reliable and efficient" provides a comprehensive overview of the Danish bioenergy sector. The report can be downloaded as seven .PDF type files from the web at: www.videncenter.dk
- Ensyn has developed a reportedly profitable business based on fast pyrolysis of biomass. They operate three biorefineries in the USA and one in Canada, producing some 30 bio-based commercial chemicals, with the residual bio-oil sold as boiler fuel. Their first commercial plant was commissioned in 1989 and they are currently building three new plants in America. The company also operates a demonstration plant, two pilot plants

and two R&D plants. Ensyn views bio-based chemical products as the economic driver for their projects, with fuel being a lower value product. See www.ensyn.com

- Finland's Vapo Timber's spruce Lieksa sawmill processes 200,000m³ timber annually. It is powered by Vapo Energy's 30MW CHP plant which utilises sawmill residues and peat, and also provides heat and power to the district. Further information at <http://www.tekes.fi/eng/international/opet/cymic.html>
 - A report by Access Economics for the Australian Conservation Foundation reports *inter alia* that in Queensland "...for every \$3-4 profit to the grazing industry from tree clearing, there is a social cost of around \$285." The report is available at URL: <http://www.acfonline.org.au/campaigns/globalwarming/discussion/ghlc.htm>
(source: Natural Steps Newsletter)
 - A summary of the proceedings of the IEA Bioenergy Task 25 *Greenhouse Gas Balances of Bioenergy Systems* session "Land Use, Land-use Change and Forestry - the Road to COP6" (28 September, Joensuu, Finland) and collation of the slides presented is available at <http://www.joanneum.ac.at/iea-bioenergy-task25/workshop/fwrkshp.htm>
 - Until recently the U.S. Forestry Service collected fallen trees in the Lake Tahoe Basin in California and burned them as a way to prevent forest fires. Now Go-Green will use this waste wood as biofuel to generate electricity to sell to California customers under the Tahoe Green Power product name. Go-Green's Tahoe Green Power Program is responsible for transporting the fallen wood to a clean burning power plant. The Program is meant to eliminate the open air burning of the wood which has been adding to air and water pollution in the Basin. See Go-Green at <http://www.Go-Green.com>. (Energies Week).
 - The US based Institute for Local Self Reliance continually updates its Biomass Information Resources Page at <http://www.me3.org/issues/biomass/>. Some recent additions have been:
 - Ohio Biomass Energy Program
 - Final Report of the Bioenergy Research Programme - 1993 - 1998 -
 - Finland Bioenergy
 - California Biomass Energy Alliance
 - Final Report: Haubenschild Farms Anaerobic Digester - Minnesota Project, December 2000
 - Biomass Exchange Directory
- Recent additions to the Ethanol and Biofuels Resources Page:
<http://www.me3.org/issues/ethanol/> are:
- Central Minnesota Ethanol Cooperative
 - Ethanol 2000 - Bingham Lake, MN
 - Ethanol Corporation
 - Iogen Corporation - cellulose to ethanol
 - California Energy Commission's Alternative Fuel Vehicle Information Center
- A municipal solid waste (MSW) to ethanol plant for New York State, USA is in the planning stages. Masada OxyNol is planning to build a facility in Middletown, NY. Information can be found at <http://www.ci.middletown.ny.us/cityhall/dpw/pmfaq.htm>.
 - The US Vermont Methane Project is investigating technical, resource, policy, environmental, and energy issues affecting anaerobic digestion of manures (and other organic wastes) generated in that state. Research has been conducted into the types and design of digesters most suitable to Vermont's dairy farms or farm co-operatives and a research and demonstration digester has been established on a dairy farm. The Project has a website at: <http://www.state.vt.us/psd/ee/Methane.htm>.
 - Recently introduced legislation, Bill AB 2514, in California establishes an Agricultural Biomass Utilization Fund providing US \$2 million in incentives for ethanol production from rice straw.
 - Biomass is a tiny contributor of electricity in California. The entire industry, 31 bioenergy plants in all, generates 600 megawatts - about 1.5 percent of the power produced in that state.

- Greenpeace recently gave away 6,000 litres of biodiesel free to London cabbies and all comers, with local biodiesellers assisting.
<http://www.greenpeace.org.uk/Multimedia/Live/FullReport/2750.PDF>
- Southern States Power Company of the USA has reached a processing and distribution agreement with a Florida biodiesel manufacturer, NOPEC Corporation (www.NOPEC.com), that will allow production of up to 5 million gallons of OXYG B-60 Biodiesel fuel using spent vegetable waste oils and greases from major fast food companies. SSPC will market OXYG B-60 Biodiesel at a price substantially below the competition by producing OXYG B-60 Biodiesel fuel primarily from used vegetable waste oils and greases. See web at: <http://www.sspowerco.com>
- A downloadable report, 'Evaluation of Gasification and Novel Thermal Processes for the treatment of MSW' by W.Niessen et al., 1996 NREL by Camp Dresser and McKee, ISBN 1-890607-15-0 can be accessed from web site:
<http://www.osti.gov/bridge/search.easy.jsp>. (source: Jim Bland, Enecon)
- The US Department of Energy's Office of Energy Efficiency and Renewable Energy has redesigned their Bioenergy Site. The redesigned site now consists of information topic links on bioenergy technologies, general information, related organisations, and relevant resources. The URL is: <http://www.eren.doe.gov/RE/bioenergy.html>
- The US based Institute for Local Self Reliance's Carbohydrate Economy program has recently released a report "Lubricants from Vegetable Oils" A link to more information on the report and ordering details are on
<http://www.carbohydrateeconomy.org/html/puborder.html>
- NSW Government has established a select committee on salinity, to examine business opportunities arising from salinity; management options for salinity available to local councils; barriers to adoption of salinity management by local councils; adequacy of the Commonwealth Government's response to salinity. Chair is the Hon Pam Allan. See www.nsw.gov.au then follow the path; Parliament; Committees; Select Committee on Salinity.
- The Hobart Mercury reported on 25 January that the closed Bonlac milk factory at Legerwood, northern Tasmania could be converted into an ethanol distillery. Gary Fisher, a Launceston surveyor has been promoting this project.
- Lior International has launched a new CD-ROM interactive encyclopaedia *Biomass Gasification*. Visit the web site <http://www.lior-int.com> to see demo screens and content lists. Cost is US \$250 for the CD-ROM.
- Green Energy News vol.5 no.43 of 27 January 2001 reports according to Primen, an energy related market intelligence company, sales and shipments of microturbines grew by more than 300 percent in 2000. Last year more than 1200 units were shipped, up from 300 the year before, and Primen expects at least 3500 to be delivered in 2001, possibly as many as 5500. See Primen at <http://www.primen.com/>.
- The US production of wood pellets is about 700,000 tons per year. See Pellet Fuels Institute :Where do Pellets Come From? <http://www.pelletheat.org/fuel/fuel.html>
- Chicago's City Council has unanimously voted to prohibit the manufacturing, blending, delivery, sale, distribution, and use of MTBE as a gasoline additive in the city. See Web at: http://www.findarticles.com/m3TOD/239_49/58295002/p1/article.jhtml
- An excellent collection of annotated photographs of a small scale gasifier set up as a RAPS system can be viewed at <http://www.snowcrest.com/tomb/gasifier3.htm>
- The Visy pulp and paper mill under construction at Tumut NSW is scheduled for commissioning in June 2001. It incorporates a 17 MW biomass cogeneration power plant.
- A 3.5 MWe radiata pine residues fired cogeneration power plant has been operating since 1968 at the Carter Holt Harvey sawmill, Mt Gambier SA.
- Juniper Consultancy Services of the UK has produced 'The Worldwide Directory of Gasification and Pyrolysis Technology Suppliers and Processes'. The directory provides a 'route map' which cross references about 500 different process acronyms, brand names and marketing partners to the developers of each technology. It also provides contact details of more than 100 different process suppliers, partners and licensees on a world-wide basis. The price is £175. Web: www.juniper.co.uk/waste

- The first round of the Federal Government's \$400 million Greenhouse Gap Abatement Program (GGAP) attracted 107 proposals seeking Commonwealth funding of \$1.7 billion. \$100 million is allocated for each year of the four year program. An announcement of the successful grant applications is expected in the first quarter of 2001. Further information is at www.greenhouse.gov.au/ggap/
- The CSIRO has announced its plans to establish a Centre for Distributed Energy and Power. The Centre will build on the CSIRO's existing work in fuel cells, energy storage, solar/fossil hybrid systems, and more recently bioenergy. For inquiries tel: Ms Chris Thomas on 02 9710 6816.

Opportunities Corner

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

- Edition 88 of Spore Magazine which circulates widely in central Africa carried an article restating the above offer of assistance. Close to 30 responses have been received by the Bioenergy Australia Manager from various groups in several African countries. Besides having referred these to the Department of Industry, Science and Resources for their attention, readers of this column may wish to follow up such export opportunities and assistance. Please contact the Bioenergy Australia Manager for details of requests.

Back Issues of Biomass Taskforce Newsletters – Downloadable from the Bioenergy Australia homepage: <http://www.users.bigpond.net.au/bioenergyaustralia>

The Bioenergy Australia Newsletter is a complimentary service provided by Bioenergy Australia to stimulate interest in biomass and bioenergy in Australia. Email is the preferred way of distributing these newsletters. **Should you have received your copy by post, and you have email, it would be appreciated if you would inform Steve Schuck** (email: sschuck@bigpond.net.au) **of your email address.**

Editor:	Dr. Stephen Schuck, Bioenergy Australia Manager
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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:

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Phone/Fax: (02) 9416 9246

Email: sschuck@bigpond.net.au (New address)

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