



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

Newsletter

August 2009

Bioenergy Australia 2009 Conference

Australia's premier bioenergy conference, **Bioenergy Australia 2009 - from Opportunity to Implementation** will be held at the Radisson Resort Gold Coast, Queensland from **8 - 10 December 2009**. The **Technical Tour** will precede the formal proceedings and will be held on **8 December**.

This year's program will cover policies and programs, projects and project development case studies and emerging opportunities. It will also consider many facets of bioenergy, including over 50 presentations on biomass sources and supply aspects; first and second generation liquid biofuels; algae and other future feedstocks; pyrolysis bio-oil and bio-char; anaerobic digestion; energy-from-waste; heat and power; and overarching aspects of bioenergy, such as life cycle emissions and sustainability.

Professor Göran Berndes, from Chalmers University of Technology, Sweden, Leader of IEA Bioenergy Task 30 '*Short Rotation Crops for Bioenergy Systems*' will provide a keynote address at the conference. Professor Berndes will also lead a session by international participants in Task 30.

To express your interest as a Delegate or Sponsor/Exhibitor, please contact Zareena Prinsloo, Conference Manager, Tel: 02 9431 8641, email bioenergy@conferenceaction.com.au.

To express your interest as a Speaker or to provide a Poster, please contact Stephen Schuck, Bioenergy Australia Manager, Tel: 02 9416 9246, email: sschuck@bigpond.net.au

Bioenergy Australia Membership Update

The Bioenergy Australia membership now includes 76 organisations. The most recent members are Benedict Enterprises, The Australian Wine Research Institute, Bioindustry Partners, University of Queensland, VISY, the Institute for Sustainable Solutions, University of Sydney and The Department of the Environment, Climate Change, Energy and Water, National Project Office (New Zealand), Curtin University of Technology, Department of Resources, Energy & Tourism and the Sugar Research and Development Corporation.

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 government-industry bioenergy forum. Bioenergy Australia has a specific membership tier to cater for universities and for organisations with an annual turnover of less than \$2 million per annum.

Bioenergy Australia Quarterly Meeting 30 July 2009

This day-long meeting was held in Canberra with 56 people in attendance. The Agenda covered:

- Federal Government's Policies and Programs Related to Bioenergy (Richard Niven – Department of Resources, Energy and Tourism)
- Setting National Research, Development and Extension Priorities for Biopower and Biofuels – workshop (Julie Bird, RIRDC)

- IEA Bioenergy
Selection of IEA Bioenergy Tasks for 2010-2012 (Steve Schuck)
- Updates on Task Participation:
- Task 30 Short Rotation Crops for Bioenergy (Brendan George)
 - Task 34 Pyrolysis of Biomass (Damon Honnery)
 - Task 38 Greenhouse Gas Balances of Biomass and Bioenergy Systems (Annette Cowie)
 - Task 39 Commercialising 1st and 2nd Generation Biofuels (Les Edye)
 - Task 42 Biorefineries: Co-production of Fuels, Chemicals, Power and Materials from Biomass (Gil Garnier)
- CRC Biorefineries Proposal (Gil Garnier, Monash University, APPI)
 - Trials and Tribulations of Developing a Waste-to-Energy Plant at Chipping Norton, Sydney (David White – Benedict Enterprises)
 - Victorian Bushfire Biomass Project (Tony Richardson, TreePower Australia)
 - Victorian Bioenergy Network (Liz Hamilton, Vic DPI and Simon Holmes a Court)
 - Renewable Biochemicals and the Global BioRenewables Society (Anton Middelberg, Australian Institute for Bioengineering and Nanotechnology, University of Queensland)
 - Sustainable Biomass Project (Deb O’Connell, CSIRO Sustainable Ecosystems)
 - Report on Bioenergy Industry Developments (Steve Schuck’s report)
 - Bioenergy Australia 2009 – update on annual conference (Steve Schuck)

Members of Bioenergy Australia can download the presentations from the Members’ area of the Web page: <http://www.bioenergyaustralia.org/memberslogin.html>

Renewable Energy Target (RET) Legislation Passes

The Senate passed legislation on 20 August 2009 which will require 20 percent of Australia’s electricity to be sourced from renewable energy. The target of an additional 45,000 GWh/a by 2020 is a four-fold-plus increase on the current Mandatory Renewable Energy Target of 9,500 GWh/a by 2010.

The revised target comes into effect from 1 January 2010. The legislation also provides for the partial use of waste coal mine gas as an eligible (although not renewable) energy source under the RET. Waste coal mine gas will be eligible from 1 July 2011 until 31 December 2020, but only from power stations generating electricity from this source as at May 2009. As the Government does not intend for mine methane to contribute to the 2020 target, the annual targets have been increased by 425 GWh in 2011 and 850 GWh for 2012 - 2020 to cater for energy generated by coal mine methane. As such the RET reaches a maximum of 45,850 GWh in 2020 and then continues at a level of 45,000 GWh per annum from 2021 to 2030 inclusive, at which point the RET will cease operation.

Importantly the shortfall charge for failure to deliver under the RET rises from its current \$40 to \$65 per MWh, with effect from 1 January 2010. The RET will also be independently reviewed in 2014.

Second Generation Biofuels Funding Announced

The Minister for Resources, Energy and Tourism, Martin Ferguson AM MP, has announced the successful applicants for funding under the Australian Government’s \$15 million Second Generation Biofuels Research and Development Program. The Second Generation Biofuels Research and Development Program supports the research, development and demonstration of new biofuel technologies which address the sustainable development of the biofuels industry in Australia.

The Second Generation Biofuels Research and Development Program is part of the Government’s \$4.5 billion Clean Energy Initiative and the funding will be channelled through the newly created Australian Centre for Renewable Energy. In his announcement, Minister Ferguson stressed that we must ensure that

biofuel development does not compete with the traditional agricultural industry for land and resources. Second generation biofuel technologies provide unique opportunities to supplement existing fuel supplies in a truly sustainable manner by deriving biofuels from low cost, non-food materials.

The seven successful projects are:

The University of Melbourne (\$1.24 million): This project will look at biofuel from microalgae involving the efficient separation, processing and utilisation of algal biomass. The project is also supported by Bio Fuels Pty Ltd and will be located at Hazelwood Power Plant, Victoria.

Algal Fuels Consortium (\$2.724 million): The consortium is developing a pilot-scale second generation biorefinery for sustainable micro algal biofuels and value added products. The participants are the South Australian Research and Development Institute (SARDI), Flinders University and CSIRO. The project is to be located at Torrens Island, South Australia.

Curtin University of Technology (\$2.5 million): The project will investigate the sustainable production of high quality second generation transport biofuels from Mallee biomass by pyrolysis and utilising a biorefinery concept. The project is also supported by Spitfire Oil Pty Ltd and located in Perth, Western Australia.

Bureau of Sugar Experiment Stations (BSES) Limited (\$1.326 million): BSES will be developing an optimised and sustainable sugarcane biomass input system for the production of second generation biofuels, located at Indooroopilly, Queensland. The project is also supported by CSIRO.

Monash University (\$1.383 million): The Monash University project will aim to develop a pyrolysis biorefinery supported by the Renewable Oil Corporation and located at Monash University, Victoria.

Microbiogen Pty Ltd (\$2.539 million): The project aims to produce commercial volumes of ethanol from bagasse using patented yeast strains. The project is located at Lane Cove, New South Wales.

Licella Pty Ltd (\$2.288 million): Licella will examine the commercial demonstration of Lignocellulosics to stable bio-crude, located at Somersby, New South Wales.

Climate Ready Round 2 Funding Announcement

Three bioenergy related projects are to receive funding under Round 2 of the Federal Government's Climate Ready program. These are:

- QLD Ethanol Technologies Limited (Ethtec) will receive \$2,935,653 to develop acid/sugars separation for an ethanol from lignocellulosic materials system. This project is being conducted at the NSW's Harwood Sugar Mill. Contact Mr Robert Carey Tel: (07) 4776 5300 or 0418 778 403.
- WA ANSAC Pty Ltd will receive \$1,931,471 for research and development of small to medium scale commercial organic gasification and biomass combustion kilns. ANSAC is working towards the commercialisation of small to mid-sized green energy solutions. Through applying existing proprietary technology in pyrolysis and combustion to problems of biomass and waste, ANSAC will be able to create green power and green byproducts such as biochar. Contact Mr Steve Morgan (08) 9724 9000.
- QLD TSS (Construction) Pty Ltd will receive \$2,331,658 for a Transportable Hydrocarbon Waste Converter for Coal Mines. Contact Ms Lauren Lamont (07) 5494 8622.

Energy White Paper Process Progresses

The Australian Government is developing an Energy White Paper, scheduled to be released at the end of 2009, to position Australia to meet global challenges and opportunities such as long-term energy security.

The Energy White Paper will identify a comprehensive policy framework that will be durable to 2030 and beyond, yet be flexible and adaptable to meet new challenges and opportunities as they arise. This will include short- to medium-term actions for government and industry.

The 13 page Strategic Directions Paper is at:

<http://www.ret.gov.au/energy/Documents/Energy%20Security/Strategic%20Directions%20for%20Energy%20White%20Paper%20March%202009.pdf>

NCRIS Biofuels Facilities

AusBiotech, Australia's peak biotechnology industry organisation, is managing the NCRIS (National Collaborative Research Infrastructure Strategy) Biofuels project on behalf of the Federal Government. This project provides access to state-of-the-art biofuels research equipment and facilities at highly subsidised rates. The facilities are located at MacKay, Queensland and at QUT Brisbane, at SARDI in Adelaide, and at the University of New South Wales, Macquarie University and The University of Sydney.

The Macquarie University NCRIS facility provides process development infrastructure for researchers seeking to develop and/or optimise processes for the production of enzymes for biomass degradation.

The facilities at **The University of Sydney** include the first semi-automated, continuous-flow pilot plant research facility in Australia to allow the investigation of the hydrothermal decomposition of biomass. The key differentiating factor of the facility is the independent manipulation of temperature and pressure on a continuous flow basis. This will facilitate understanding the influence of residence time, biomass concentration and type, temperature and pressure, and their interactions, on the product composition under continuous flow conditions.

The **UNSW** facilities have been built on the existing fermentation and analytical equipment at UNSW and now provide an upgraded Fermentation Laboratory with 3L and 20L computer controlled fermentors designed to develop optimal fermentation strategies for conversion of lignocellulosic raw materials to bioethanol and higher value products.

The **QUT** Mackay Renewable Biocommodities Pilot Plant ('Mackay Pilot Plant') is unique pilot scale research and development infrastructure for the conversion of cellulosic biomass into renewable transport fuels (bioethanol) and high value biocommodities in an integrated biorefinery. The facility aims to link innovations in product and process development with the assessment of commercial viability to enhance the uptake of this technology in Australia. The Mackay Pilot Plant has been jointly funded by NCRIS, the Queensland Government Department of Employment, Economic Development and Innovation, and QUT. The facility is being hosted by Mackay Sugar Limited, one of Australia's leading sugar manufacturers, on the site of the Racecourse Mill in Mackay.

NCRIS funding has enabled **SARDI** to establish the capability for researchers to study and optimise the production of microalgal feedstocks for biofuel production at pilot and demonstration scale. The pilot scale facility is located at SARDI's Aquatic Sciences Facility at West Beach, Adelaide, while the demonstration scale facility will be located at Torrens Island.

For further information contact Nicole Bleasdale at AusBiotech, email nbleasdale@ausbiotech.org Telephone 03 9828 1416. For details on these facilities and their specific capabilities see: <http://www.ncrisbiofuels.org/facilities>

Development of the National Bioenergy Research, Development and Extension Strategy

The Rural Industries Research and Development Corporation (RIRDC) is leading the development of the National Bioenergy RD&E Strategy with the assistance of Industry and Investment New South Wales

(formerly NSW Department of Primary Industries). The development of the strategy involves several phases, which include: Industry Overview; Current Sector Resource Analysis; Future Strategies RD&E Plan – 5 & 10 year; Capability Analysis; Change Plan; Approvals; and Implementation. A workshop was held to assist in the development of the Strategy within the 30 July 2009 Bioenergy Australia quarterly meeting.

Questions regarding the Strategy and its implications for businesses/organisations should be directed to Julie Bird, the Senior Research Manager at RIRDC responsible for the plan. Tel: (02) 6271 4140, email: Julie.Bird@rirdc.gov.au.

Bioenergy Australia/RIRDC Funded Report on Carbon Trading and Bioenergy

The Bioenergy Australia/Rural Industries Research and Development Corporation funded report 'Carbon Trading and Renewable Energy – A discussion paper on carbon credits and bioenergy developments for forestry and agriculture' may be downloaded at no cost from:

<https://rirdc.infoservices.com.au/downloads/08-184.pdf>. A printed version of the report may also be purchased from RIRDC for \$25.

RIRDC Scholarship and Knowledge Needs Funding

Applications for RIRDC funding and scholarships for 2010-11 are now open, with the current round scheduled to close in early November.

The Rural Industries Research and Development Corporation invests in the knowledge needs of its three portfolio areas:

- New rural industries
- Specific established rural industries; and
- Cross-sectoral national rural issues

Investments are driven by Five-Year R&D plans and it welcomes and encourages applicants' collaboration with other research providers to build the critical research mass necessary to meet RIRDC's objectives.

In planning and submitting proposals for RIRDC-funded projects, prospective researchers need to familiarise themselves with the application procedure, the Corporation's over-arching goals and strategies, the goals and strategies of the relevant R&D programs and the specific priorities for R&D for the year for which the proposal is being submitted. A 16 page booklet, Doing Business with RIRDC, outlines this process at: http://www.rirdc.gov.au/shadomx/apps/fms/fmsdownload.cfm?file_uuid=0DE1EFE0-BDD9-5706-C2F5-FF763E5C82B9&siteName=RIRDC .

The Forest Industries Development Fund

The Australian Government has committed \$9 million to the Forest Industries Development Fund (www.daff.gov.au/fidf), a new competitive grants program to boost the international competitiveness of Australia's forest products. The fund will encourage increased investment in measures designed to add value to Australia's forest resources. Through this initiative the Australian Government is working with the states and territories, and industry, to ensure the long-term economic viability of Australia's forest industries.

Forestry and forest product enterprises across Australia are being encouraged to apply for funding to develop initiatives that will increase the value of Australia's forest products. Projects should be principally focused on value adding initiatives in the following areas of activity:

- new timber products—shifting from low to high value products
- improvements in cost efficiencies across the value chain
- new uses for wood.

The first funding round closed in February 2009 and the second round is open and will close on **17 September 2009**. The program will end on 30 June 2011.

As part of its 2007 election commitments, the Australian Government committed \$8 million to work with industry and other stakeholders to address the major knowledge gaps about the impacts of climate change on forestry and the vulnerability of forest systems. In 2008/09 work is being carried out to:

- accumulate basic inventory and management data for the forest and forest products industry for benchmarking
- develop regional level climate predictions and scenarios in forested areas
- accelerate deployment of proven, but not commercialised, bioenergy technology; and communication activities.

Priorities for 2009-10 and 2010-11 under this commitment were finalised in May by Minister Burke and his Advisory Committee.

Emissions Calculator for Agriculture and Forestry to be Developed

The development of a tool that will be used to estimate emissions produced by forestry and agricultural activities has received \$16 million funding under the 2009-10 Federal budget.

The funding, which is to be provided over four years, will be used to develop a nationally consistent emissions estimation tool for forestry and agriculture, and assist decision-making around agriculture entering the Carbon Pollution Reduction Scheme (CPRS) in the coming years.

The Federal Government plans to make the National Carbon Accounting Toolbox operational for forestry before its voluntary coverage within the Carbon Pollution Reduction Scheme. It also plans to use the tool as part of its consultation with agriculture industries to make a decision in 2013 on coverage of agriculture under the CPRS.

Developing Systems for Native Tree Plantations for Carbon Pollution Reduction

Australian PhytoFuel has announced that it will establish large scale plantations of the native Kalpa tree (*Mellittia pinnata*) for the production of biofuels. The plantations will be established across northern Australia on land which is reported not to compete directly with agricultural production. The Kalpa will be grown for its oil rich nuts which will provide a feedstock for the production of biodiesel. The company intends to produce up to 1 billion litres of renewable fuel feedstock and 2 million tonnes of seed cake as animal feed annually, and in the process will accumulate 16 million tonnes of carbon dioxide equivalent each year in the plantations. As the plantations will be located in relatively remote areas, Australian PhytoFuel reports it will provide a significant regional employment opportunity.

Development Approval Granted to National Biodiesel

National Biodiesel (part of National Biofuels Group, a Bioenergy Australia Member organisation) has announced it has received Development Approval for a \$243 million biodiesel production facility to be constructed at Port Kembla, NSW. The facility will process soyabeans for the primary industry, with the by-product refined to make biodiesel. The facility will ensure the security of supply of at least 280 million litres of premium quality domestic fuel and over 800,000 tonnes of high-protein animal feed, currently

being imported into Australia. The company has launched Soybiodiesel® in NSW and QLD with reported strong demand already coming from mining, construction, agricultural and transport industries.

This is the first integrated soybean processing and biodiesel production facility in Australia. The project is expected to generate \$977 million in revenue and in addition to 235 new permanent full-time jobs, will provide approximately 725 jobs in related industries and a further 500 jobs during construction of the facility.

For the full media release go to:

<http://natbiogroup.com/docs/media/the%20economy%20and%20environment%20to%20win%20from%20new%20soybean%20biodiesel%20plant.pdf>

Largest Biochar Research Project in Australia's History

The Australian Government has announced the allocation of \$1.4 million for the biggest biochar research project in Australia's history—and one of the biggest in the world. The CSIRO will coordinate the three-year project, to look at biochar's potential to reduce greenhouse gas emissions and boost farm productivity. For more information visit www.daff.gov.au/emissions-reduction. The full media release is at:

http://www.maff.gov.au/media/media_releases/2009/may/largest_biochar_research_project_in_australias_history

Plantation Energy Signs First Export Deal

Plantation Energy Australia Pty Ltd, Australia's largest manufacturer and exporter of wood pellets, has signed a three year, \$70 million supply agreement with Belgium-based Electrabel NV. Plantation Energy is backed by leading US-based global private equity firm Denham Capital, which previously announced an equity investment of up to US\$80 million in the company.

The agreement between these two companies is the first of its kind in Australia and will see Plantation Energy manufacture and export wood pellets made from non-commercial plantation forest residues. Initial exports will be shipped from Albany, Western Australia, where Plantation Energy's first pellet production facility is established. The company has also announced plans for further wood pellet factories in South Australia and in western Victoria.

Wood pellets are used extensively in Europe, where they are burned with coal in coal-fired power stations. Demand for pellets exceeded 8 million tonnes in 2008 and is expected to top 16 million tonnes by 2014.

See: <http://www.plantationenergy.com.au/>

Biofacts

- Ethanol currently accounts for approximately 7 percent of U.S. gasoline market
 - Stockholm has 11 filling stations selling automotive biogas.
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Biomass on the Internet

The Internet provides a valuable source of information on biomass and allied topics. Below are some Internet addresses to supplement the approximately 1,600 addresses given in the previous 35 issues of the Bioenergy Australia newsletters. These lists are consolidated as electronic links on Bioenergy Australia's

web page at <http://www.bioenergyaustralia.org>. These links are available within an Excel file to allow interested persons to download the file and work with them off-line.

Bio2Value-Biorefineries

<http://www.biorefinery.nl/>

JatrophaBioJet

<http://www.jatrophabiojet.com/>

California Low Carbon Fuel Standard presentation

<ftp://ftp.arb.ca.gov/carbis/board/books/2009/042309/09-4-4pres.pdf>

reeFuel (biodiesel)

<http://www.reefuel.com>

FAO Bioenergy

<http://www.fao.org/bioenergy/home/en/>

ATSE Biofuels for transport – a roadmap for development in Australia

<http://www.thebioenergysite.com/articles/208/biofuels-for-transport-a-roadmap-for-development-in-australia>

Biomass Thermal Energy Council (BTEC) - USA

<http://www.biomassthermal.org/>

NREL Microalgae

http://www.nrel.gov/biomass/proj_microalgae.html

Biochar

<http://www.re-char.com/>

European Bioethanol Fuel Association

<http://www.ebio.org>

Biogas and Bioenergy Centre, Germany

<http://www.biogas-zentrum.de/ibbk/aktuell.php>

Biomass Thermal Energy Council (BTEC)

<http://www.biomassthermal.org>

Australian Institute of Occupational Health (re pyrolysis biooil)

<http://www.aioh.org.au>

NCRIS (national collaborative research infrastructure strategy)

<http://ncris.innovation.gov.au>

OriginOil (algae oil)

<http://www.OriginOil.com>

ManureNet

<http://gis.lrs.uoguelph.ca/AgriEnvArchives/bioenergy/manurenet.html>

Butalco gmbH (butanol)

<http://www.butalco.com/>

Great Lakes Bioenergy Research Center

<http://www.greatlakesbioenergy.org/>

Joint BioEnergy Institute (USA)

<http://www.jbei.org/>

Fuel (movie on biofuels by Josh Tickell)

<http://thefueelfilm.com/>

Re:char (biochar)

<http://www.re-char.com/>

Brewer's grains for biogas

http://www.datcp.state.wi.us/mktg/business/marketing/val-add/biobased_industry_grants/pdf/1059MBC.pdf

Brewer's grains for biogas (Houston brewery)

<http://www.beveragedaily.com/content/view/print/213925>

Co-firing with coal incl brewer's grains

http://www.biomasse-energie.de/pdf/pub/Moerschner_et_al2003_CONBIOT_Wisla_BiomassResidues_20-05-03_Abstract.pdf

Renewable Carbon Management LLC

<http://www.composter.com/>
Biorefineries
<http://www.biorefinery.nl/biopol>
Biorefineries
<http://www.biorefinery-euroview.eu>
Biorefinery videos (Bazancourt and Ghent)
<http://iarpolefr.nexenservices.com/biorefinery/public/promotion.html>
Agroforestry and Farm Forestry
http://www.rirdc.gov.au/RIRDC/programs/national-rural-issues/agroforestry-and-farm-forestry/agroforestry-and-farm-forestry_home.cfm
Resource Efficient Agricultural Production Canada (REAP) links
<http://www.reap-canada.com/links.htm>
All Canadian Coal-Fired Heaters (boilers)
<http://www.allcanadianheaters.com>
Beijing Laowan Bio-energy Technology Co., Ltd (boilers)
<http://www.laowan.com>
Blue Flame Stoker Boilers (boilers)
<http://www.blueflamestoker.com>
Brandelle Industries (boilers)
<http://www.brandellebiomass.com>
Decker Brand Boilers (boilers)
<http://www.deckerbrand.com>
Dell-Point Technologies (boilers)
<http://www.pelletstove.com>
KMW Systems Inc. (boilers)
<http://www.kmwenergy.com>
Bioenergy Business Magazine (paid subscription)
<http://www.bioenergy-business.com>
Bioenergy Canada (BBI magazine)
<http://www.bioenergymagazine.ca>
EEA Report No 7/2006 "How much bioenergy can Europe produce without harming the environment?"
http://org.eea.europa.eu/news/Ann1149688459/index_html
May 2009 GBEP Workshop on Indirect Land Use Change (iLUC)
<http://www.globalbioenergy.org/events1/gbep-events-2009/other-events-2009/en/>
"Development of Strategies and Sustainability Standards for the Certification internationally traded Biomass"
<http://www.umweltdaten.de/publikationen/fpdf-l/3741.pdf>
Material Flow Analysis of Sustainable Biomass Use for Energy
<http://www.oeko.de/service/bio/en/index.htm>
"Complete Book of Biogas"
<http://www.completebiogas.com/index.html>
Biofuels Center of North Carolina
<http://www.biofuelswiki.org>
Forest2market (USA)
<http://www.forest2market.com>
Verenium (cellulosic ethanol)
<http://www.verenium.com/index.asp>
BioMara (European algae project)
<http://www.biomara.org>
NCRIS Biofuels (updated web page)
<http://www.ncrisbiofuels.org/>
Renewable Energy search engine
<http://www.reegle.info>
Japanese New Energy Foundation's Asia Biomass Energy Researchers Invitation Program
<http://www.nef.or.jp/biomass/english.html>

Bellwether Gasification Technologies' presentation
http://www.ebw-expo.com/conf/bellwether_drechsler.pdf
Resource Efficient Agricultural Production Canada (REAP) links
<http://www.reap-canada.com/links.htm>
Air International Thermal Systems (AITS) – Organic Rankine Cycle
<http://www.aithermalsystems.com>
Steam Boilers - Maxitherm
<http://www.bousteadmaxitherm.com.au>
Biomass Business Magazine
<http://www.bioenergy-business.com>
Kent BioEnergy Corporation
<http://www.kentbioenergy.com>
Carbon Negative Energy Production
<http://www.ecovolve.com/>
The BITES (Biofuels Technologies European Showcase)
<http://www.biofuelshowcase.eu>
NILE (New Improvements for Lignocellulosic Ethanol)
<http://www.nile-bioethanol.org>

International

17th European Biomass Conference & Exhibition - From Research to Industry and Markets

The Bioenergy Australia Manager, Steve Schuck attended the 17th European Biomass Conference & Exhibition, a major bioenergy conference. The conference was held in Hamburg, Germany from 29 June to 2 July 2009 and was attended by approximately 1300 delegates from numerous countries. Coupled to the conference, there was a technical exhibition and two technical tours (biogas and micro-algae).

The technical program consisted of 270 oral presentations and 600 technical posters. Topics covered at the conference included:

- Thermochemical conversion – combustion and co-combustion
- Thermochemical conversion – gasification for clean synthesis gas production
- Thermochemical conversion – gasification for power and CHP and polygeneration
- Thermochemical conversion – pyrolysis for power, CHP polygeneration and chemicals
- Biorefineries
- Biological conversion – fermentation processes, enzymatic processes
- Biomass Resources
- Biofuels
- Policies
- Markets

Topics that caught the Manager's interest were: microalgae for biodiesel production; the substitution potential of biofuels in aviation; Jatropha biodiesel research and development in China; the emerging Organic Rankine Cycle technology for small scale energy production; and the emphasis on sustainability criteria especially 'indirect land use change' (iLUC).

The proceedings from this conference are expected to be released before the end of the year.

New IEA Bioenergy Report

The 12 page Executive Summary of a new report ‘Bioenergy – a sustainable reliable energy source – a review of status and prospects’ prepared for IEA Bioenergy by the Energy Research Centre of the Netherlands (ECN), E4tech (UK), Chalmers University of Technology (Sweden) and the Copernicus Institute of the University of Utrecht is now available at the IEA Bioenergy website <http://www.ieabioenergy.com/MediaItem.aspx?id=6360>. The full report will be available in a few months time.

The purpose of the project was to produce an authoritative review of the entire bioenergy sector, aimed at policy and investment decision makers and to provide a global perspective of the potential for bioenergy, the main opportunities for deployment in the short and medium term and the principal issues and challenges facing the development of the sector.

IEA Bioenergy Report Confirms Ethanol’s Credentials

A report, ‘An Examination of the Potential for Improving Carbon/Energy Balance of Bioethanol’ commissioned by the IEA Bioenergy Task 39 examines greenhouse gas reductions from grain ethanol since 1995 and projected GHG reductions from ethanol up to 2015. The report concludes that GHG reductions will grow by over 100% from 1995 to 2015.

The report explains the variances among studies, regarding ethanol’s ability to reduce GHG relative to gasoline. It notes that many improvements in both feedstock production (growing corn and other grains) and ethanol production efficiencies have not been accurately or fully factored into lifecycle analyses of ethanol’s GHG emission and energy balance.

Using recent data and basic scientific analysis, the report is unequivocal with respect to GHG reductions from ethanol: “the GHG emissions savings from ethanol production and use have more than doubled between 1995 and the projected level in 2015. This indicates the danger of making policy decision(s) based on historical data without taking into account learning experiences and the potential gains that can be expected as industries develop. The GHG emissions reductions in 2015 from corn ethanol would qualify as advanced biofuels under proposed US regulations”. The report finds that GHG reductions have grown from approximately 26% in 1995 to over 39% today while projected GHG reductions from ethanol will reach nearly 55% in 2015 with the advent of new technology, process efficiencies and improved yields. Ethanol’s energy balance will also continue to improve. For 2005, grain ethanol’s energy balance ratio was estimated at 1:1.42, meaning every unit of energy used to produce ethanol returned 1.42 units of usable energy to the consumer. By 2015, the energy balance ratio is expected to be 1:1.93, a 55% increase in energy efficiency in just 10 years.

The report finds that the energy balance of ethanol will also continue to improve through 2015. This conclusion, together with the growing reductions in GHG emissions, stands in stark contrast to petroleum. According to the report, both the energy balance and environmental performance of petroleum will get worse. “The rapid development of new technologies will make existing ethanol production as well as next generation biofuels increasingly beneficial to global energy and environmental goals,” eBIO Secretary General Robert Vierhout said. “The bottom line is simple: renewable fuels like ethanol are a simple and effective alternative to increased used of petroleum which is a finite source of energy.”

<http://www.task39.org/LinkClick.aspx?fileticket=nRr183p3VKo%3D&tabid=1806&mid=6196&language=en-US>

Biomass Cogeneration Plant Reaches Commercial Operation in Washington State, USA

Simpson Tacoma Kraft Company, LLC have announced that their US\$90 million, 55 MW biomass cogeneration plant at their pulp and paper mill at Tacoma, Washington has reached commercial operation. Power is generated from a combination of wood based biomass and wood lignin recovered from the pulping process.

Iberdrola Renewables, which purchases all the renewable electricity from Simpson and manages high-voltage transmission and delivery to California, announced that they had sold the entire power output of this plant to the Sacramento Municipal Utility District (SMUD). SMUD uses the energy to help reach its goal of meeting 23 percent of its customers' energy needs from renewable sources by 2011. For more information, see: <http://www.simpson.com>.

Boeing Reports on Biokerosene

Boeing has recently published a report on bio-SPK (a bio-based synthetic kerosene) on its website. Later this year the company hopes to submit an application for approval to the International Aviation Fuel Committee, so that it can use bio-SPK on a commercial basis. This will be blended (50-50) with traditional kerosene. Boeing has been experimenting with fuel technologies and new biofuels since 2006, together with fuel-technology developer UOP and the US Air Force Research Laboratory.

The preliminary conclusion from their extended research, including test flights, is that the biofuel alternative performs just as well, or even better, than traditional kerosene. Tests were conducted using various types of commercial aircraft engines, using a blend of 50% JET A / Jet A-1 kerosene and 50% sustainable biofuel.

The study also showed that the bio-SPK mixture meets all technical criteria for commercial 'jet fuel'. These criteria include parameters such as freezing point, inflammability, fuel density and viscosity. The tests also showed that bio-SPK has no negative effects on the engines or their respective parts.

A presentation on biofuels in the aviation industry from Boeing has been lined up for the Bioenergy Australia 2009 conference (see leading article). Source: http://www.boeing.com/commercial/environment/pdf/PAS_biofuel_Exec_Summary.pdf

Biogas Could Heat 50 Percent of UK Homes

A report from the UK's National Grid examines how the biogenic waste streams such as sewage, food and wood could be turned into biogas and injected into the gas distribution system. Two processes are highlighted by National Grid for producing the biogas: anaerobic digestion which turns wet waste such as sewage and animal manure into biomethane, and gasification which is better suited to drier wastes and energy crops.

The report concludes that there are no insurmountable technical difficulties to delivering biogas. The main hurdle will be to get the right commercial incentives in place so waste can be turned into biomethane for gas grid injection rather than electricity. This needs to be allied with a comprehensive waste management policy. See the report at: <http://www.nationalgrid.com/NR/rdonlyres/9122AEBA-5E50-43CA-81E5-8FD98C2CA4EC/31630/renewablegasWPfinal.pdf>

New US Assistant Secretary for Energy Efficiency and Renewable Energy

Ms Cathy Zoi, the head of the Alliance for Climate Protection (founded by Al Gore), has been confirmed as Assistant Secretary for Energy Efficiency and Renewable Energy at the U.S. Department of Energy. The nomination comes as the Obama administration builds a team devoted to restructuring the energy sector to reduce greenhouse gases. She was the inaugural head of the former NSW Sustainable Energy Development Authority (SEDA).

Germany: Legalisation of 7 % Biodiesel blending - Improved utilisation of Biodiesel production capacities

The German Parliament has approved the blending of up to 7 % biodiesel into fossil diesel, in alignment with the new diesel fuel standard which came into effect from February 2009. This new regulation is anticipated to lead to an increase in total biodiesel sales from the current 1.5 million tonnes to 2.0 Mt per year in Germany.

This measure has been triggered by a new Directive of the European Union, which requires a minimum market share of 10 percent renewable energy in the traffic segment by 2020.

Source: UFOP – Germany

Prediction that global biofuels markets could reach US\$247 billion by 2020

The findings of a new report predict that the combined biodiesel and ethanol markets will reach US\$247 billion (AUD \$294 billion) in sales by 2020, up from just AUD \$90 billion in 2010. The authors of the report, Pike Research (a U.S based market research company), anticipate that the global surge in sales will principally come from fuels based on waste greases, jatropha-based fuels (by 2014) and finally algae-based biodiesel (by 2016).

See: <http://www.pikeresearch.com/newsroom/global-biofuels-market-to-reach-247-billion-by-2020-despite-near-term-challenges>

Exxon Announces US\$600 Million Algae Project

ExxonMobil Corp has announced a US\$600 million commitment over the next five to six years to algae biofuel research and development. In a news conference following the July announcement, their vice president of research and development said that if the research proceeds as expected, there would be continued investments of billions of dollars to commercialise algae as an alternative energy feedstock.

US Department of Energy to Invest US\$786.5 Million in Recovery Act Funds in Biofuels

President Obama announced that US Department of Energy will invest US\$786.5 million from the American Reinvestment and Recovery Act to accelerate advanced biofuels research and development and to provide additional funding for biorefinery demonstration projects. The funding for biorefineries will include a \$480 million solicitation for pilot- and demonstration-scale "integrated" biorefineries, which produce advanced biofuels, biobased products, and heat and power in a single integrated system. DOE anticipates making 10 to 20 awards for refineries at various scales and designs, all to be operational in the next three years. The DOE funding ceiling is \$25 million for pilot-scale projects and \$50 million for

demonstration-scale projects. In addition, \$176.5 million will be used to increase the DOE funding ceiling on two or more demonstration- or commercial-scale biorefinery projects that were selected and awarded within the last two years. The funds are expected to expedite the construction phase of these projects and ultimately accelerate the timeline for start up and commissioning.

An additional \$130 million in funds will support biofuels research and development, including \$25 million to further support the Bioenergy Research Centers that were established last year and to establish a small-scale integrated biorefinery pilot plant that will be available as a DOE user facility. The remaining funds will be distributed through three competitive solicitations, including \$20 million to evaluate the impact on conventional vehicles of gasoline blends containing more than 10% ethanol, to optimize the performance of flex-fuel blends running on E85 (a blend of 85% ethanol and 15% gasoline), and to upgrade existing refueling infrastructure to be compatible with fuels containing up to 85% ethanol. An additional \$50 million solicitation will support a consortium to develop algae-based biofuels, while a \$35 million solicitation will support a consortium to develop other third-generation biofuels, such as green gasoline and green diesel, both of which are biobased hydrocarbon fuels.

DOE Awards US\$377 Million in Funding for 46 Energy Frontier Research Centres

In a major effort to accelerate the scientific breakthroughs needed to build a new 21st-century energy economy, U.S. Energy Secretary Steven Chu announced the delivery of US\$377 million in funding for 46 new multi-million-dollar Energy Frontier Research Centers (EFRCs) located at universities, national laboratories, nonprofit organizations, and private firms across the USA.

Of the US\$377 million awarded to the EFRCs, \$277 million comes from funding made available through the Recovery Act with the remaining \$100 million made from DOE's FY2009 budget. The 46 EFRCs are being funded at \$2-\$5 million per year each for a planned initial five-year period.

Energy Frontier Research Centers included in the funding by the American Recovery and Reinvestment Act are:

- Arizona State University (Tempe, AZ) – \$14 million for five years to adapt the fundamental principles of natural photosynthesis to the man-made production of hydrogen or other fuels from sunlight.
- University of Delaware (Newark, DE) - \$17.5 million for five years to design and characterize novel catalysts for the efficient conversion of the complex molecules comprising **biomass** into chemicals and fuels.
- Pennsylvania State University (University Park, PA) – \$21 million for five years to dramatically increase fundamental knowledge of the physical structure of bio-polymers in plant cell walls to provide a basis for improved methods for converting biomass into fuels.
- Purdue University (West Lafayette, IN) – \$20 million for five years to use fundamental knowledge about the interactions between catalysts and plant cell walls to design improved processes for the conversion of biomass to energy, fuels, or chemicals.

A complete list of the 46 EFRCs, their lead institutions, funding levels and objectives, is available at: www.sc.doe.gov/bes/EFRC.html

Source: BiobasedNews.com

Waste Conversion Status Report

A recently published report, 'Conversion Status Report' has been posted on the California Integrated Waste Management Board web site. The report, produced under contract with UC Davis Bio Ag Engineering Department, includes a list of conversion technology vendors, the current status of conversion technologies using Municipal Solid Waste (MSW) as feedstock, and references to recent consultant reports evaluating conversion technologies. For a copy of the 16 page report go to:

<http://www.ciwmb.ca.gov/Publications/Organics/2009008.pdf>. For additional information on Conversion Technologies see: <http://www.ciwmb.ca.gov/organics/conversion/>

California Sets a Standard for American Carbon Dioxide Reduction

California has announced new regulations requiring transport CO₂ emissions by 2020 be reduced by 10 percent from a 2010 baseline. This measure also applies to the production and transport of fuels to filling stations. An important part of the regulations, which are heavily contested by industry, is the so-called *Indirect Land-Use Change* (iLUC). This involves controversial taxes for using local agricultural land (normally used to grow food crops) and changing such land to grow energy crops.

The California Air Resources Board issued these measures to reduce emissions in California by 25% within the next 10 years. It is hoped that in 2020 around 20% of the fossil-based transport fuels will be replaced by alternative fuels.

A presentation on the California Low Carbon Fuel Standard is at:
<ftp://ftp.arb.ca.gov/carbis/board/books/2009/042309/09-4-4pres.pdf>

MGT Planning 295 MW Biomass Plant in UK

MGT Power Limited has announced plans to build a 295 MW biomass-fired power plant in the Port of Tyne, northern England. The Tyne Renewable Energy plant which is scheduled to start operating in 2014 will use 2.4 million tonnes of woodchips per year and will operate as a baseload power plant. The project cost will be over £400 million (AUD\$800 million).

MGT Power outlined details of the project in a Scoping Document which has been circulated to local and planning and environmental groups. Biomass feedstock will be sourced from certified sustainable forestry projects developed by the MGT Power team and partners in North and South America and the Baltic States, and, in the longer-term, will also be sourced from UK sources.

US\$2.1 Million Grant Funding for Algae Pilot Project

Green Plains Renewable Energy, Inc. and BioProcessAlgae LLC have executed a grant award agreement with the Iowa Office of Energy Independence for a US\$2.1 million research and development grant from the Iowa Power Fund to build an algae pilot project at Green Plains' ethanol plant in Shenandoah, Iowa.

Study on Sustainability Standards and Biomass Certification

Öko-Institut (Institute for Applied Ecology) and IFEU (Institute for Energy and Environmental Research, Heidelberg, Germany) have published a study on sustainability standards and biomass certification within the project 'Development of Strategies and Sustainability Standards for the Certification of Biomass for International Trade - Bio-global' on behalf of German Federal Environmental Agency.

The study analyses/responds to the following topics/questions:

- Which international strategy is the most promising for globally sustainable biomass?
- What is the GHG balance of bioenergy production taking into account possible land use changes?
- How can we diminish the negative effects of biomass cultivation on biodiversity?
- What is the bioenergy impact on water resource?
- What is the potential of unused bioenergy areas?

- Current development of global biomass trade and existing legal framework conditions of such trade
- Sustainability standards for bioenergy – a right answer?

The 34 page study, in English, is at:

[http://www.ifeu.org/nachhaltigkeit/pdf/OEKO_IFEU%20\(2009\)%20Bio-global%20english.pdf](http://www.ifeu.org/nachhaltigkeit/pdf/OEKO_IFEU%20(2009)%20Bio-global%20english.pdf)

Forthcoming Events

- IEA Bioenergy Multitask Meeting
Biofuels and Bioenergy: A changing climate
24 - 28 August 2009
University of British Columbia, Vancouver, Canada
Contact: emmanuel.ackom@ubc.ca
<http://www.task39.org>
- Bioenergy 2009 – Sustainable Bioenergy Business
31 August – 4 September 2009
Jyvaskyla Fair and Congress Centre, Finland.
<http://www.finbioenergy.fi/bioenergy2009>.
- International Conference on Polygeneration Strategies
1 - 4 September 2009
Vienna, Austria
<http://www.icps09.org>
- 2nd Nordic Wood Biorefinery Conference
2 - 4 September 2009
Helsinki, Finland
<http://www.kcl.fi/nwbc-2009>.
- 2nd Algae Biofuel Summit
8-10 September 2009
India.
<http://www.algaebiofuelsummit.com/>
- World Bioenergy – Clean Vehicles & Fuels 2009
14 - 15 September 2009 – conference tours
16 - 18 September 2009 - conference.
Stockholm, Sweden.
<http://www.elmia.se/en/wbcvf/>
- TC Biomass 2009 – International conference on ThermocChemical Conversion Science
16-18 September 2009
Sheraton Chicago Hotel and Towers
<http://media.godashboard.com/gti/TCBiomassBrochure.pdf>
- National Algae Association Conference
September 17-18, 2009
The Sheraton North Hotel, Houston, Texas, USA.
<http://www.nationalalgaeassociation.com>
- 4-day International Biogas Study Tour
23 - 26 September 2009
Berlin to Duisburg
<http://www.gerbio.eu/neu/en/events/2009/study-tour.html>
- Atlantic Bioenergy 2009 conference
21 - 23 September 2009
Moncton New Brunswick, Canada.
<http://www.atlanticbioenergy.ca>

- Cogeneration Brazil 2009 - Generating new revenue from trading sugar cane bioelectricity
22-24 September 2009
Pestana São Paulo Hotel, São Paulo, Brazil.
<http://www.agra-net.com/cogeneration>
- 9th International BBE-conference for Wood Energy
24 – 25 September 2009
Augsburg, Germany
http://veranstaltung.bioenergie.de/IHE_e/program.htm
- 4th BTLtec Conference
24-25 September 2009
Graz, Austria.
<http://www.cmtevents.com/aboutevent.aspx?ev=090939&>
- International Bioenergy Days 2009
26 - 30 September 2009
Trollhättan Sweden
<http://www.bioenergydays.com>
- World Congress on Oils & Fats & 28th ISF Congress
27 - 30 September 2009
Sydney, Australia
<http://www.isfsydney2009.com>
- Energy from Waste
28 - 29 September 2009
Crowne Plaza St James, London
<http://www.smi-online.co.uk/goto/09energywaste.asp?emref=V47EP92430530&>
- ANZSES 2009 Conference
29 September - 2 October 2009
Townsville, Queensland
Email: anzses2009@jcu.edu.au Web: <http://eng.jcu.edu.au/anzses/>
- 2nd Algae World Asia 2009
29 September – 1 October, 2009
Bangkok, Thailand
<http://www.futureenergyevents.com/algae>
- Biogas conference
1-2 October 2009
San Francisco, USA.
<http://www.greenpowerconferences.com>
- IEA Bioenergy Task 31 International workshop on “Forests Under Pressure?! Bioenergy – Forest Industry – The Public”
5 - 8 October, 2009
Wershofen (Eifel), Germany.
<http://www.ieabioenergytask31.org>
- All-Energy Australia Expo and Conference
7 and 8 October 2009
Melbourne Convention and Exhibition Centre
<http://www.all-energy.com.au>
- 3rd Annual Algae Biomass Summit
7 - 9 October 2009
San Diego, California, USA
<http://www.algalbiomass.org/events/2009ABS>
- CAN BIO Annual Bioenergy Conference
14 -16 October 2009
Edmonton, Canada
http://www.canbio.ca/canbio_events.html
- Biomass Summit
19-21 October 2009

- Almas Temple Club, Washington, DC, USA
 Email: mail@infocastinc.com
<http://www.infocastinc.com/index.php/conference/biomassfall09/download>
- Biocycle 9th Annual Conference on Renewable Energy From Organics Recycling
 19 - 21 October 2009
 Ramada Mall of America, Minneapolis, Minnesota, USA.
<http://www.biocycleenergy.com>
 - 3rd Annual Global Biogas Congress - Increasing the efficiency of anaerobic digestion to expand the market for biomethane and waste-to-energy in power generation and transport fuels
 20-22 October 2009
 Brussels, Belgium.
<http://www.agra-net.com/biogas>
 - Platts 4th Cellulosic Ethanol and 2nd Generation Biofuels Conference
 22 - 23 October 2009
 Chicago, USA
<http://www.platts.com/ConferenceDetail.aspx?xmlpath=2009/pc937/index.xml>
 - 2nd Jatropha World – Europe/Africa
 24 - 15 October 2009
 Brussels Belgium.
<http://www.cmtevents.com/eventschedule.aspx?ev=091021&>
 - Sustainable Innovation 09 - Towards a Low Carbon Innovation Revolution
 14th International Conference
 26 - 27 October 2009
 Farnham Castle, Farnham, UK
<http://www.cfsd.org.uk>
 - Carbon Market Expo Australasia 2009
 26 - 28 October 2009
 Gold Coast Convention & Exhibition Centre
<http://www.aetf.net.au>
 - AusBiotech 2009 – ‘Taking Asia to the World’
 27 - 29 October 2009
 Melbourne Conference and Exhibition Centre
<http://www.ausbiotech2009.com.au>
 - Biomass & WtE (Waste to Energy)
 28 - 29 October 2009
 Sofitel Shanghai Jin Jiang Oriental Pudong, China
<http://www.cmtevents.com/aboutevent.aspx?ev=091035&>
 - Biofuels International Canada expo & conference
 28 - 29 October, 2009
 Westin Montreal Hotel, Canada
<http://www.biofuelsinternationalexpo.com/canada/>
 - Pacific Rim Summit on Industrial Biotechnology and Bioenergy
 8 - 11 November 2009
 Honolulu Hawaii USA
<http://www.bio.org/pacrim>
 - Biomass and Organic Waste as Sustainable Resources conference
 19 - 21 November 2009
 Beijing, China.
<http://www.orbit2009.de>
 - UN Framework Convention on Climate Change
 30 November – 11 December 2009
 Copenhagen, Denmark
<http://www.unfccc.int>
 - IEA Bioenergy Task 30 meeting, ‘Short Rotation Crops: Linking technology and biomass’
 2 - 4 December 2009

Huka Falls Resport, Taupo, New Zealand
For more information email:
ian.nicholas@scionresearch.com or telephone +647 343 5420
<http://www.shortrotationcrops.org>

- **Bioenergy Australia 2009 – From Opportunity to Implementation**
8-10 December 2009
Radisson Resort Gold Coast, Gold Coast, Queensland
Contact: Stephen Schuck, Tel: (02)9416 9246, Email: sschuck@bigpond.net.au
<http://www.bioenergyaustralia.org>
- World Sustainable Energy Days – European Pellet Conference
3 - 5 March 2010
Wels, Austria.
<http://www.wsed.at>
- Salon BOIS ENERGIE (the French Wood Energy Exhibition)
18 - 21 March 2010 (new dates)
Exhibition parc in St Etienne, France.
<http://www.boisenergie.com>
- LIGNOBIOTECH ONE 2010
28 March to 1 April 2010
Reims, France.
https://colloque2.inra.fr/ligno_biotech
- 9th European Conference on Industrial Furnaces and Boilers (Infub-9)
6 - 9 April 2010
Portugal
<http://www.cenertec.pt>
- BBI's International Biomass Conference and Expo
4-6 May 2010
Convention Center Minneapolis, Minnesota, USA.
<http://www.biomassconference.com/ema/DisplayPage.aspx?pageId=About>
- Renewable Energy 2010 - Conference and Exhibition
27 June – 2 July 2010
Pacifico Yokohama, Yokohama, Japan
<http://www.re2010.org> and <http://www.renewableenergy.jp>
- ORBIT 2010 "Organic resources in the carbon economy"
29 June -3 July 2010
Heraklion, Crete, Greece.
The deadline for abstract submission is November 15, 2009.
[http:// www.orbit2010.gr](http://www.orbit2010.gr)

Residues

Coal-Cofiring Handbook: Bioenergy Australia has taken over the distribution of the former CRC Clean Coal in Sustainable Development's 'Coal-Biomass Cofiring Handbook'. The 284 page, 8 chapters, hard-cover handbook, is one of the most comprehensive texts on this subject, and has chapters on: Biomass and bioenergy; Australian Biomass resources- types and characteristics; Protocols for the sampling and trace element analysis of biomass; Fuel handling and processing issues associated with the cofiring of biomass and coal; Technical issues associated with co-combustion and ash deposition; Impacts on the environment; Commercial applications; and Case studies.

Bioenergy Australia Members may have a complimentary copy for their organisation while stocks last. The book may be purchased by non-members for \$110, including GST, postage and handling. Contact: Stephen Schuck, Bioenergy Australia Manager, email: sschuck@bigpond.net.au, Tel: (02) 9416 9246.

The transcript and presentation slides from Steve Schuck's talk at a public forum organised by the Australian Academy of Science 3 March 2009 is at:

<http://www.science.org.au/events/publiclectures/re/schuck.htm>.

IEA Bioenergy Newsletter: The July 2009 issue can now be viewed and downloaded at:

<http://www.ieabioenergy.com/Library.aspx>

Biogas Purification: A 132 page 2003 Masters thesis from Cornell University, USA, entitled 'Removal of Hydrogen Sulfide from Biogas Using Cow-Manure Compost' is available for download from:

http://www.cowpower.cornell.edu/project_docs/MS-Thesis-Steve-Zicari.pdf

Biomass Energy Report: The 250 page report, 'Biomass Energy Production in Australia – status, costs and opportunities for major technologies', reprinted with funding from Bioenergy Australia, is available at:

<https://rirdc.infoservices.com.au/items/04-031>

Catchment Management Authorities receive \$1.5 million for a Biochar Trial: Victoria's largest trial to turn organic waste into charcoal will be run by catchment management authorities (CMA) in the state's south-west and north-east. The North East and Glenelg Hopkins CMAs have received \$1.5 million from the Victorian State Government to test a biochar machine's ability to sequester carbon. The funding for this trial exceeds that of a biochar project run by the CSIRO. For further information see:

<http://www.abc.net.au/news/stories/2009/07/21/2631958.htm>

Biofuels Should Replace Aviation Jet Fuel Says UK Think Tank: In its July 2009 report, *Green Skies Thinking*, Policy Exchange recommends wide scale deployment of sustainable biofuel for use in the aviation industry to meet UK's 2050 emissions reduction targets for replacing standard kerosene jet fuel with biofuel from 2020, through the implementation of an EU-wide Sustainable Bio-jet Fuel Blending Mandate. This Mandate on the proportion of jet fuel derived from, or blended with, sustainable biofuel would rise from 20% in 2020 to 80% in 2050. See:

<http://www.policyexchange.org.uk/publications/publication.cgi?id=129>

Impact of Corn-based Ethanol on Food Prices: The US Congressional Budget Office has reported that ramped-up use of corn-based ethanol accounted for 10 percent to 15 percent of the increase in food prices between April 2007 and 2008.

Investment in Brazilian Biofuel: According to a new Business Plan, Petrobras Biocombustivel, Brazilian state-owned energy giant Petrobras' biodiesel subsidiary, plans to invest the equivalent of US\$2.4 billion in biodiesel and ethanol production during 2009-2013.

Canola Oil Export for Biodiesel: A record shipment of 63,000 tonnes of canola, grown on the Eyre Peninsula, South Australia was exported from Port Lincoln in March to Rotterdam in The Netherlands for bio-diesel production.

Jatropha Divestment: BP has sold its shares in the joint venture with D1-Oils to D1 for half a million Pounds. D1 is now the sole owner of 220,000 hectare of jatropha, which represents around 25% of the world crop area for this plant. BP will focus on ethanol production in the U.S. and Brazil and the development of biobutanol.

Mantria Industries, LLC announced the opening of the Mantria Place EternaGreen Center – the world's largest Biochar plant. The Center, located in Dunlap, Tennessee, USA will potentially sequester 96,000 tons of CO₂, reduce 43,000 tons of waste, produce 32,000 tons of EternaGreen™ BioChar annually, and bring an estimated US\$10 million in revenue. The Center is also the world's first commercial-scale BioChar facility, and will transform waste into value-added products.

Rentech, Inc. in the USA has announced that it has signed a multi-year agreement to supply eight airlines with up to 5.7 million litres per year of renewable synthetic diesel (Fischer Tropsch fuel) for ground service equipment operations at Los Angeles International Airport (LAX) beginning in late 2012, when the plant that will produce the fuel is scheduled to go into service.

Rentech, Inc. has also announced that it has completed two investment agreements with biomass gasification technology companies. These agreements represent major steps forward in Rentech's strategy of offering integrated solutions for the conversion of various types of urban and rural biomass feedstocks into high-value energy products such as renewable synthetic jet fuel, diesel fuel and electric power. Rentech has signed a definitive agreement to acquire 100% of SilvaGas Corporation and its commercial-scale biomass gasification technology, which converts urban waste feedstocks into synthesis gas. Rentech has also executed agreements with ClearFuels Technology Inc. whose technology converts rural virgin cellulosic biomass feedstocks into syngas. Rentech has acquired a 25% ownership interest in ClearFuels, and has agreed to the installation of a ClearFuels biomass gasifier at the Company's Product Demonstration Unit. The agreement with ClearFuels provides for multiple licensing agreements for the Rentech Process at bio-energy facilities under development by ClearFuels.

Rialto Renewable Energy Center: Rentech, Inc. has announced a plan to build a plant in Rialto, California for the production of ultra-clean synthetic fuels and electric power from renewable waste biomass feedstocks. The Rialto Renewable Energy Center is designed to produce approximately 600 barrels per day of pure renewable synthetic fuels and export approximately 35 MW of renewable electric power that is expected to qualify under California's Renewable Portfolio Standard (RPS) program.

UK's Largest Energy from Waste Project: Keppel Seghers has secured a AUD\$624 million contract to build combined heat and power/energy from waste facilities, as part of one of the largest waste and renewable energy projects in the UK. This will provide an integrated solution for 1.3 million tonnes of municipal waste and will divert more than 75% of Greater Manchester's waste away from landfill.

Christian Aid Report: A report, 'Growing Pains', urges governments to adopt a 'new vision' on biofuels, seeing them as a force for rural development in poor countries, rather than a silver bullet solution to climate change. The report's author said that vast sums of European and American taxpayers' money are being used to prop up industries which are fuelling hunger, severe human rights abuses and environmental destruction - and failing to deliver the benefits claimed for them. The author believes the best approach to biofuels is to grow them on a small scale and process them locally to provide energy for people in that area. The 40 page report may be downloaded from: <http://www.christianaid.org.uk/images/biofuels-report-09.pdf>

LiveFuels, Inc., a developer of algae-based biofuels has announced the start of pilot operations at the company's test facility in Brownsville, Texas, USA. The facility consists of 45 acres of open saltwater ponds and will be used for research on optimizing algal productivity and increasing the rates of conversion of biomass into renewable oils. See: <http://www.livefuels.com>

European Biodiesel Production: Biodiesel production in Europe was 7.7 million tonnes in 2008, an increase of 35.7% compared to the 2007 production level of 5.7 million tonnes. 2007 saw a reduced 16.8% increase compared to 2006. This has to be compared with 2005 and 2006 biodiesel production, which increased by 65% and 54% per year, respectively. A four page release on production levels is available at <http://www.ebb-eu.org/EBBpressreleases/EBB%20press%20release%202008%20prod%202009%20cap%20FINAL.pdf>

Prime Minister Kevin Rudd pledged to create 50,000 "green jobs" as the centrepiece of his opening address to Labor's 45th Federal Conference, earlier in August.

A new bioenergy magazine Bioenergy Business has started up in the UK. The inaugural annual 15% discounted subscription for those who attended the European Bioenergy conference in July is £335/€490. See: <http://www.bioenergy-business.com>.

Stationary power using algae biodiesel viable: In a study conducted at the CSIRO, Australia's national science agency, researchers have determined that it is possible for biodiesel to be produced from saltwater algae for less than the cost of production of petroleum diesel, reducing greenhouse gases in the process. Go to: <http://www.csiro.au/resources/Greenhouse-Sequestration-Algae.html> for the full report;

Rise in Renewable Energy Targets: In France, a report by REN21 concluded that, for the first time, more renewable energy capacity was added in a calendar year than conventional energy. The group reported that global power capacity from renewable energy rose 16 percent in 2008, and said that 73 countries have set renewable energy targets, an increase of 10 percent over 2007.

EU finances BioMara- biofuel produced from algae: The EU has recently allocated €4.87 million to a research project to study the possibilities of producing biofuel from algae. The project is named BioMara, and the subsidy is derived from the Interreg IVA programme. Partners include Scotland's University of Strathclyde, Belfast's Queen's University and the University of Ulster in Northern Ireland, and the Dundalk Institute of Technology and Institute of Technology, Sligo in Ireland. Sources: [BioMara](#) en [Cordis](#)

FarmReady Industry Grant: Under the FarmReady Industry Grants – part of Australia's Farming Future program, a bioenergy related project entitled 'Reduction of methane emissions from effluent ponds on small piggeries' has been awarded to the Western Australian Pork Producers' Association. They will receive funding of up to \$190,000. This project aims to bridge the gap between research and practical implementation of methane reduction technology on small piggeries by using impermeable covers over effluent ponds.

Australia to join International Renewable Energy Body: The Federal Government has announced Australia is to become a member of the International Renewable Energy Agency (IRENA). IRENA, which was founded in January, is headquartered in the United Arab Emirates.

New Wood Bioenergy Newsletter: US forestry market intelligence company, Forest2Market, Inc.® produced the first issue of its new wood bioenergy newsletter, Forest2Fuel, in June 2009. Published bi-monthly, Forest2Fuel will cover the state of the wood bioenergy industry in the United States as well as international factors affecting U.S. markets. See: <http://www.forest2market.com>.

Agreement to Supply Plantation Harvest Residues: Australian manufacturer and exporter of energy pellets, Plantation Energy Australia Pty Ltd, and Great Southern Export Company Pty Ltd have signed a 12-month agreement for the supply of plantation harvest residues. The agreement, which started in May 2009, will see Plantation Energy supplied with harvest residues from Great Southern's blue gum pulpwood plantation estate. Plantation Energy will use the residues to produce energy pellets at its \$25 million biomass fuel pellet facility, which has a capacity of 250,000 tonnes per annum and commenced operation earlier this year.

The University of Adelaide has established the Centre for Energy Technology, within the Environment Institute. This Centre will support the development of cleaner energy technologies and looks to work closely with industry, government and the community.

Greenhouse Gas Sequestration by Algae – Energy and Greenhouse Gas Life Cycle Studies: A 24 page paper by Peter K. Campbell, Tom Beer, and David Batten is available at: <http://www.csiro.au/files/files/poit.pdf>

European bioenergy report: A 98 page report from the European Environment Agency 'Maximising the Environmental Benefits of Europe's Bioenergy Potential' is at: http://www.aebiom.org/newsletter/March2009/Bioenergy_Potential1.pdf

Bioenergy Report: The UK's Environment Agency's summary report, 'Biomass: Carbon Sink or Carbon Sinner' (0.1 MB), is available to download at http://www.environment-agency.gov.uk/static/documents/Biomass_carbon_sink_or_carbon_sinner_summary_report.pdf

A historical gasifier design paper from 1939 is posted at: <http://gekgasifier.pbwiki.com/Historical-Gasifier-Designs>.

A 10 page document, 'Biochar for Climate Change Mitigation: Fact or Fiction?' by Almuth Ernsting and Rachel Smolker is at <http://www.biofuelwatch.org.uk/docs/biocharbriefing.pdf>.

Danish Power Plant to Cofire Straw Pellets with Coal: The 438-megawatt Amager Power Station in Copenhagen, Denmark has been renovated by Stockholm-based Vattenfall AB, a European heat and electrical utility, to cofire straw pellets with coal. The plant, which supplies both heat and electricity, burns 70,000 tonnes of pellets with 700,000 tonnes of coal annually. The company expects to increase the pellet portion to 150,000 tonnes during 2009.

Wood-fired Plant in USA: Georgia Power will transform its Mitchell 164 MW coal-fired power station, near Albany, Georgia, to a 96 MW, 100 percent wood-fired plant. This will then be the largest operating biomass power plant in the USA. The transition is planned to start in 2011 and be commissioned during 2012. Upon completion, it is expected that up to 75 new jobs relating to waste wood recovery will be created.

European pipeline to transport upgraded biogas: Gasunie, with more than 15,000 kilometres of pipeline in The Netherlands and Germany, will transport upgraded biogas through its pipeline for the first time at the end of 2009. The biogas will be supplied by Natuurgas Overijssel BV, which is building a plant with the capacity to produce 2 million cubic meters of biogas from organic household waste annually.

New Pilot-Scale Gasification Plant at Karlsruhe, Germany: Lurgi GmbH, a subsidiary of Air Liquide Group, plans to build a €24.85 million (\$44 million) pilot-scale gasification plant at the Karlsruhe Institute of Technology in Karlsruhe, Germany. The facility, which is being built for Forschungszentrum Karlsruhe GmbH, will produce one metric ton of the company's trademarked bioliqSynCrude synthesis gas per hour from dry biomass. The project is expected to be complete by 2012.

"Smart Choices for Biofuels" Report: The Sierra Club and World Watch Institute have published a 16 page report, 'Smart Choices for Biofuels' which takes a look at the current biofuels industries and considers second generation biofuels and beyond. The full report is downloadable from: <http://www.worldwatch.org/files/pdf/biofuels.pdf>

Nexterra Energy: A program to commercialise a new application of its biomass gasification technology to generate power and heat from small-scale plants (2 - 10 MWe) by direct-firing syngas into high efficiency gas engines has been announced by Nexterra Energy. Once fully developed, Nexterra's gasification technology is planned to be combined with GE's Jenbacher gas engines to form modular biomass combined heat and power (CHP) plants. The scale of individual plants will range from 2 - 10 MWe (megawatt electric) and will yield net efficiencies of up to 60% in cogeneration mode and 30% in combined cycle mode. The total cost of this program will be approximately US\$30 million over two years.

Workshop on Algal Oil for Jet Fuel Production: In 2008, the National Renewable Energy Laboratory (NREL) and the US Air Force Office of Scientific Research (AFOSR) held a joint workshop that brought together a panel of outside experts in the microalgae field to discuss a variety of basic science research issues related to microalgal oil production. The presentations are now available from: http://www.nrel.gov/biomass/algal_oil_workshop.html.

Australia's Plantations Inventory Update: The area of Australia's plantation estate increased to 1.97 million hectares in 2008 from 1.90 million hectares in 2007, according to new figures from the Bureau of Rural Sciences. The annual *Australia's Plantations Inventory Update* shows that in the past ten years,

Australia's total plantation area has increased by 55%. Copies of the update and associated reports and data can be found at www.brs.gov.au/plantations.

Pyrolysis Bio-oil: UOP LLC, a Honeywell company, has launched Envergent Technologies LLC, a joint venture with Canada's Ensyn Corporation, to offer technology and equipment to convert second-generation biomass into pyrolysis oil for power generation, heating fuel and for conversion into transportation fuels. The new company will offer Ensyn's Rapid Thermal Processing (RTP) technology to convert second-generation biomass, such as forest and agricultural residues, to pyrolysis oil for use in power and heating applications.

\$5 million Commercialisation Grant: Oxford Catalysts, a catalyst innovator for clean fuels, said on 29 May that its U.S. unit, **Velocys Inc**, had been awarded a US\$5 million commercialisation grant for a period of two and a half years. Velocys Inc is developing micro-channel reactors for small scale Fischer Tropsch fuel production. See: <http://www.oxfordcatalysts.com/press/news-archive/pr20090528.php>.

'Opportunities and Challenges in Algae Biofuels Production', a 15 page report, by John Benemann may be downloaded from: http://www.fao.org/uploads/media/algae_positionpaper.pdf. The report covers Current Commercial Technology, Ponds and Photobioreactors, Algae Biofuels, Algae Harvesting and Strains, Power Plant CO2 Utilisation, Economics, Productivity, R&D Needs, Resource Potential, Waste Water Treatment and provides some additional resources for further information.

Anaerobic Digestion model: An Excel model for anaerobic digestion of wet wastes is available at: http://www.adelaide.edu.au/biogas/anaerobic_digestion/model/digcalc.zip

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 and energy companies, source of finance and other opportunities. If you or your organisation is interested in such assistance, please contact Steve Schuck for a free listing. Please note notices are placed using supplied information, without checking its veracity. Interested parties should make their own enquiries to verify the information below.

- **Conversion of Dairy Effluent to Energy:** Barrie Bardshaw from DPI dairy research farm at Ellinbank in Gippsland, Victoria is looking for low technology options and potential investors for converting dairy effluent to energy on this large research farm. He has already undertaken research on the potential for bioenergy and has installed a solids trench which he plans to use as the basis for methane digestion. If you think you can help, please contact:
Barrie Bradshaw, Project Manager - Gippsland Nutrient Extension
Department of Primary Industries
1301 Hazeldean Road
Ellinbank Victoria 3821
Phone: 03 5624 2235 or Mobile 0427 858 137
- **Development of Jojoba:** NBG International is seeking assistance to develop a project related to 'Jojoba'. The Jojoba shrub, besides producing raw material for pharmaceutical industries can also generate bio-gasoline and rocket fuel. The project could be developed in Egypt, USA, México, Australia and/or Middle East. The proponent is actively looking for Joint Venture opportunities to raise capital. A business plan is available upon request. Contact Leandro Sousa, NBG International at leandrojpsousa@hotmail.com or leandro58sousa@gmail.com.
- **Investment in Renewable Projects:** Alan Burrell is a private investor in renewable projects (an owner in a technology company www.airless-systems.co.uk), and is also part of a Swiss private

venture capital group (www.atmosclear.com) which focuses its investments into this sector. They are currently agreeing terms for investing in a large NZ project and are looking for further investments within Australasia. If you can assist Alan in identifying any further investment opportunities, he can be contacted at alan.burrell@airless-systems.co.uk.

- **Internship Position Sought:** Dmitry Tarasov is a student of Lappeenranta University of Technology (Finland) undertaking a Master's Degree Programme in Environmental Engineering with focus on bioenergy technology. The title of his thesis is 'Wood pellets. Market research in Russia'. He also holds a degree in Electrical Engineering from Saint-Petersburg Electrotechnical University "LETI" (ETU), Russia. Dmitry graduated in June 2009 and is looking for an internship position in the field of bioenergy or environmental engineering. He can be contacted at Dmitry.Tarasov@lut.fi.
 - **Ji Zhong Wei Ltd** is an innovative new energy technology company that has set up several production lines which directly transform biomass to regular gasoline/diesel/gas in China. They are interested in bringing this technology to Australia. Interested parties can contact Charles Wang at wanghong_v6p5a@yahoo.com.
 - **Importers of Biomass – Palm Kernel Shell:** The World Sales Group Pty Ltd represents suppliers of Biomass - Palm Kernel Shell and is searching for bulk importers in Australia/New Zealand. Interested companies can contact Vic Porter on 0417 200 602.
 - **Castor/Jatropha:** Donald Chakras from Zambia is interested to contact companies who may be interested in venturing into the field of castor/jatropha curcas oil. He is available to assist in inception/implementation of a project in Zambia, Tanzania or Mozambique. A market survey carried out by Donald showed the demand for biodiesel in Zambia is very high (a lucrative and captive market being the copper mines). Donald can be contacted at donald.chakras1@gmail.com.
 - **Potential Study - Seaweed as a Biofuel:** Jennifer Ogrodnick, Coastal Engineer, with GHD, is working with Hobsons Bay City Council (HBCC) in Victoria on a project to investigate alternate disposal methods for the 4,500 tonnes of seaweed they collect each year from Altona Beach. The seaweed is currently being trucked to landfill, which is very costly for HBCC but is also filling up landfills with green waste. Composting is not viable. With few options left, she is wondering if there is any potential to use the seaweed from Altona Beach for a potential bioenergy facility. Please contact Jennifer at jennifer.ogrodnick@ghd.com.au.
 - **Energis Consultancy and Planning** is a renewable energy research company dealing with remote sensing and GIS techniques as a support for biomass projects. They are seeking partners and/or companies in Australia which could use their expertise. The company helps with the planning and development of environmental studies, agricultural, land use and land use change, carbon emission and biomass calculations, strategic environmental evaluation, etc. For more information contact: Carolina Carvalho, Geologist, MSc Remote Sensing, PhD Energetic Planning (in progress). Email: carvalhocm@gmail.com.
 - **Work Experience:** Gita Maruthayanar is studying for her Masters in Sustainability at RMIT in Melbourne. She is interested in the possibility of gaining valuable volunteer experience in investigating any upcoming topics within the biofuels/bioenergy sector with an industry partner. Any company that is looking for someone who thrives on new challenges and has an innovative approach along with the desire to learn, please contact Gita Maruthayanar on: Tel: (03) 9645 8763.
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Self-Managed Subscription to Bioenergy Australia Newsletters

An email distribution list has been set up, to allow readers of this newsletter to self-subscribe (and unsubscribe) to the Bioenergy Australia Newsletters and to receive our conference notices. To self-subscribe, go to: <http://groups.google.com/group/bioenergyaustralia/subscribe>

Joining this list is purely to facilitate management of the distribution of Bioenergy Australia newsletters, notices regarding the annual conference, and endorsed Bioenergy Australia activities. It will only be used for this purpose and you will not receive other emails through this list. It is intended that over time, this will be the primary way of distributing the Bioenergy Australia newsletters and conference notices. Self-subscribing will require you to take on a list password. It would be much appreciated if you would join this group, as this will soon be the only way newsletter notices will be disseminated. If you have any queries, please contact Steve Schuck.

Back Issues of Bioenergy Australia Newsletters – Downloadable from the Bioenergy Australia homepage:
<http://www.bioenergyaustralia.org>

The Bioenergy Australia Newsletter is a complimentary service provided by Bioenergy Australia to stimulate interest and involvement in biomass and bioenergy in Australia. The email distribution list is the preferred way of distributing these newsletters. If you do not wish to receive future newsletters, please advise Steve Schuck.

Bioenergy Australia Newsletter is interested in 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.

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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:

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