



Newsletter

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

January 2007

Bioenergy Australia 2006 Conference

The *Bioenergy Australia 2006 – A Growth Opportunity for Energy and the Environment* Conference, held at the Esplanade Hotel, Fremantle from 6-7 December with two separate technical tours on 5 and 8 December, was a great success, attracting close on 200 delegates, including several from overseas countries.

The conference was opened by the the Hon. Kim Chance, Western Australia's Minister for Agriculture and Food, and Minister for Forestry. The keynote speaker was Professor Jack Saddler from the University of British Columbia, Canada, who is the Task Leader for the International Energy Agency's Bioenergy Task on Commercialising First and Second Generation Biofuels. Professor David Pannell of the University of Western Australia was the conference dinner speaker.

The conference program had over 55 presentations, covering policies and programs, bioenergy projects and project development case studies, and covered bioelectricity, liquid fuels, gasification and pyrolysis and their applications, anaerobic digestion, energy from waste, plus overarching aspects such as green house gas emissions and life cycle analyses of bioenergy systems. There were up to three parallel sessions at the conference, with a stream dedicated to liquid biofuels, a topic of prominence at the conference. Several posters on bioenergy were also on display. The program also included an extended panel discussion, facilitated by Professor Ralph Sims of New Zealand's Massey University's Centre for Energy Research, currently on secondment to the International Energy Agency in Paris on the trade-off between land use for biomass and food and fodder.

The technical tour on 5 December mainly focussed on dryland salinity and its mitigation through the mass planting of oil mallee eucalypts and their use as a feedstock for bioenergy and value-added biobased products such as activated carbon and eucalyptus oil. The tour visited several sites in a 600 km round trip, including the Integrated Wood Processing power plant at Narrogin, south-east of Perth. The technical tour on 8 December visited the Woodman Point, egg-shaped biodigesters of the Water Corporation, an algae to biodiesel related site on the Peel Inlet near Mandurah, the Australian Renewable Fuels 44 million litre per year biodiesel plant at Picton, and the Simcoa charcoaling plant and silicon smelter at Kemerton.

Besides the conference Proceedings provided to delegates, the conference presentations, photos of relevant posters, delegate list and other conference related materials have been consolidated onto a CD and provided to delegates. This CD is also available for sale (see article below).

Bioenergy Australia 2006 Conference CD

The CD ROM of the Bioenergy Australia conference, held in Fremantle, 6-7 December 2006 is now available for sale. The CD contains some 79 files, and includes the conference program, speaker profiles, presentation abstracts, delegate list (names and organisations), the

presentations in PDF format and several photos from the technical tour. The cost of the CD is \$88 each (including GST, postage and handling). For further details and to place orders, please contact Steve Schuck on tel/fax: (02) 9416 9246, email: sschuck@bigpond.net.au or Emma Waygood of Conference Action, tel: (02) 9437-9333, email: emma@conferenceaction.com.au.

Early Expressions of Interest for Bioenergy Australia 2007 Conference

Expressions of Interest are sought from potential paper and poster presenters, sponsors and trade exhibitors for the next Bioenergy Australia Conference, planned for December 2007. Please contact Stephen Schuck, Bioenergy Australia Manager Tel/Fax: (02) 9416 9246 Email: sschuck@bigpond.net.au to express your interest.

Bioenergy Australia Membership Update

The Bioenergy Australia membership now includes 51 organisations, with recent new members being the Office of the Renewable Energy Regulator, BioEnergy Australia Limited, Canegrowers, Gilbert and Tobin, Cargill, Australian Pork Limited and WA Private Forestry Development Committees. 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 also set up a membership tier to cater for universities and for organisations with an annual turnover of less than \$2 million per annum.

IEA Bioenergy Participation by Australia

Bioenergy Australia is the vehicle for Australia's participation in the International Energy Agency's (IEA) Bioenergy program. Bioenergy Australia is providing Australia's annual membership fees and other support for participation in various Tasks. As of early January Bioenergy Australia has committed to the following Tasks for 2007-2009:

- Task 30 - *Short Rotation Crops for Bioenergy Systems*
- Task 38 - *Greenhouse Gas Balances of Biomass & Bioenergy Systems*
- Task 39 - *Commercialising First and Second Generation Biofuels*.

It is hoped additional support can be obtained to maintain continuity in Australia's participation in previous Tasks, such as Task 31 which concerns conventional forestry systems for the production of sustainable biomass for bioenergy, and Task 32 which covers biomass combustion and co-firing.

Subgroups from the Bioenergy Australia membership have formed to participate in the committed Tasks, with Bioenergy Australia members selecting National Team Leaders (NTL) to co-ordinate involvement at a technical level. Task leaders for 2007 – 2009 are for Task 30 - Brendan George of NSW DPI, Task 38 - Annette Cowie, also of NSW DPI, and Task 39 - Les Edye of Sugar Innovation and Research at the Queensland University of Technology.

Should you or your organisation wish to obtain information on IEA Bioenergy or on participation in IEA Bioenergy 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 Task information and the latest IEA Bioenergy newsletter are available from <http://www.ieabioenergy.com>.

IEA Bioenergy Meetings

Task 30 – *Short Rotation Crops for Bioenergy Systems* held its most recent workshop in Oxford, UK during the week commencing 18 September 2006. Brendan George, the Task 30 National Team Leader attended this meeting. The Web site for Task 30 is <http://www.shortrotationcrops.com>.

Task 38 – *Greenhouse Gas Balances of Biomass and Bioenergy Systems*. The next international Task 38 workshop and meeting will take place in the first week of February 2007 in Austria. In addition Task 38 is planning an international workshop on ‘Policies and instruments to promote bioenergy and bioproducts for GHG mitigation’ on 11 May 2007 in conjunction with the 15th European Biomass Conference in Berlin, Germany. The Task 38 business meeting will follow this conference from 12 -14 May.

Task 39 is to hold a ‘kick-off’ meeting for the new triennium on 15-16 January in the UK. Task 39 is also planning to meet in early May 2007 in conjunction with the 29th Symposium on Biotechnology for Fuels and Chemicals in Denver, USA.

ExCo 57 (Executive Committee meeting) was held in Stockholm, Sweden from 3-5 October, where Task participation by the participating countries for the next triennium was confirmed.

ExCo59 will be held in Golden, Colorado, USA on 25-27 April 2007. ExCo60 will be held in Germany in October 2007.

Renewable Energy Development Initiative

The *Renewable Energy Development Initiative* (REDI) is a \$100 million, competitive merit-based grants program supporting renewable energy innovation and related early stage commercialisation. Grant offers range between \$50,000 and \$5 million for research and development, proof-of-concept, and early-stage commercialisation projects with high commercial and greenhouse gas abatement potential.

A number of bioenergy related projects have to date been awarded grants. These are:

- Australia Renewable Fuels, South Australia, \$348,100 for micro-algal feedstock biodiesel production. Australian Renewable Fuels Pty Ltd will develop, evaluate and optimise bioreactor systems for use in the intensive production of microalgal feedstock for commercial biodiesel production. The new process will assist in the replacement of mineral based diesel fuels with a cleaner burning, biodegradable, renewable biodiesel fuel.
- CSR Sugar Pty Ltd, Queensland, \$5 million to develop its Ethanol Energy Production using its SugarBooster technology. CSR's research program aims to develop a novel, high-yielding sugarcane feedstock technology for environmentally and economically sustainable production of ethanol biofuel. Increasing the energy intensity of crops has the potential to improve the international competitiveness of both the Australian Biofuels and Sugar industries.
- SQC Pty Ltd, Queensland, \$200,000 for production of hydrocarbons from algae. The project will develop a commercially viable rural industry for obtaining renewable

hydrocarbons from algae. The process uses the energy from the sun and optimal water conditions for the growth of algae to implement hydrocarbon production in floating ponds in suitable aquatic environments in Australia.

- Brockway DiCOM Facility Pty Ltd (WA), \$2,712,050 for development of DiCOM Waste Recycling System WMRC Demonstration Plant.
- MicroBiogen Pty Ltd (NSW), \$2,482,061 for new yeast technology for converting plant waste into ethanol.
- Downer Energy Systems Pty Ltd (Qld), \$345,500 for a new generation modular biomass power plant.

AusIndustry, the Australian Government's business program delivery division in the Department of Industry, Tourism and Resources, delivers the program. Applications may now be made at any time to AusIndustry. For further information about the Renewable Energy Development Initiative see: <http://www.ausindustry.gov.au>.

\$114 Million For New Future Farm Industries Cooperative Research Centre

The Australian Government has approved funding for a new Future Farm Industries Cooperative Research Centre (FFI CRC) which will develop revolutionary farming systems to boost returns from livestock and cropping, minimise the impact of drought and climate change, while restoring a healthy landscape. The CRC will receive \$34m support from the Government to carry out research into novel dryland farming methods and industry opportunities based on perennial plants.

The FFI CRC will integrate perennial plants, including native plants, into broadacre farming systems to improve profits, combat a variable and changing climate, fight salinity and generate new regional industries and jobs. The Future Farm Industries venture is aimed at creating opportunities for farmers and stakeholders and through R&D, education and training programs it will make millions of hectares of land more productive, restore water quality and biodiversity, enhance mainstream industries, and build new industries.

The FFI CRC will build on the previous work carried in the CRC for Plant-based Management of Dryland Salinity, taking a giant step further, and turning lessons learned into a new approach to farming.

The CRC's target market is 60 million hectares of farms and agricultural businesses in the crop-livestock and the high rainfall zones. Potential new industries flowing from the changes to farming practices include **bioenergy**, timber products, charcoal for mineral processing, and seed and technology exports.

The FFI CRC is backed by the grains, wool and meat research corporations, the Landmark agribusiness company, the Kondinin Farm Improvement Group, six State Government departments, CSIRO, four universities and individual Catchment Management Authorities. Together these collaborators will bring \$80m in resources, leading researchers and educators to match the Australian Government's investment of \$34m over seven years.

Emission Trading Task Group

The Prime Minister, the Hon. John Howard, has announced the establishment of a Task Group on emissions trading. The joint government-business Task Group is to advise on the

nature and design of a workable global emissions trading system, which would not prejudice Australia's competitive advantages that it has through its possession of large reserves of fossil fuels and uranium. The Task Group will advise and report on additional steps that might be taken, in Australia, consistent with the goal of establishing such a system.

Members of the Task Group include Mr David Borthwick, Secretary, Department of the Environment and Heritage; Mr Peter Coates, Executive Committee Member, Xstrata; Mr Tony Concannon, Managing Director, International Power; Dr Ken Henry, Secretary, The Treasury; Mr Russell Higgins, Non-Executive Company Director Australian Pipeline Trust; Ms Margaret Jackson, Chairman, Qantas; Mr Michael L'Estrange, Secretary, Department of Foreign Affairs and Trade; Mr Chris Lynch, Executive Director, BHP Billiton; Mr John Marlay, Chief Executive Officer, Alumina Limited; Mr Mark Paterson, Secretary, Department of Industry, Tourism and Resource; and Mr John Stewart, Managing Director, National Australia Bank.

APEC Biofuels Task Force Progresses

As noted in the last issue of the Bioenergy Australia Newsletter, the Asia-Pacific Economic Cooperation (APEC) Energy Ministers have created a Biofuels Task Force to enable APEC member economies to better understand the potential for biofuels to displace oil in transport. The work of this Task Force is well underway and is focusing on key issues affecting the potential of biofuels, including biofuels economics, distribution infrastructure, market penetration of flex-fuel vehicles, and available biofuel resources and trade.

Bioenergy Australia members have been participating on the APEC Biofuels Task Force working groups. Dr Les Edye, Dr Phil Hobson, both of Sugar Innovation and Research at QUT, Dr Tom Beer of CSIRO and Dr Stephen Schuck, Bioenergy Australia Manager, have been involved in its work, with Steve Schuck having attended a meeting in ZhuHai, China in October.

Topics being covered by the APEC Task Force are:

- Economics: the costs of producing transport fuels from different forms of biomass, in comparison to the projected costs of automotive fuels from oil
- Infrastructure: infrastructure requirements for adapting fuelling stations to biofuels, the cost of meeting such requirements, and how fast adaptations should be made
- Vehicles: practical measures for promoting flexible fuel vehicles that are biofuel capable, and how fast such vehicles can be expected to penetrate the market
- Resources: the likely extent of biofuel resources in terms of land that might be available to cultivate crops for biofuel production and associated biofuel output
- Trade: the potential benefits of trade in biofuels, in view of the fact that biofuels can be produced from a variety of crops at different costs across the APEC region.

The Task Force will formulate conclusions and policy responses to be put to the APEC Energy Working Group for appropriate consideration by APEC Energy Ministers at the next APEC Energy Ministers Meeting in May 2007.

South Australian Research and Development Institute Biofuels Research

The SARDI Biofuels group has been awarded \$5 million to develop a National Photobioreactor Facility in South Australia, based at SARDI's West Beach site. This will be one of two pilot scale facilities in Australia for developing novel biofuel production technologies and is supported by the National Collaborative Research Infrastructure Strategy

(NCRIS). The NCRIS program is run by the Commonwealth Government and requires State Government co-investment. The NCRIS facilities will create new research infrastructure focused on developing new technologies for producing biodiesel and bioethanol from non-food biomass, based on models which productively utilise the whole of the biomass feedstock. The facility at SARDI will enable lab-scale photobioreactor results to be validated at pilot and demonstration-scale, an essential step in taking new biofuel feedstock technologies towards full commercialisation.

Source: SARDI

SA Climate Change and Greenhouse Emissions Reduction Act

The South Australian government introduced the *Climate Change and Greenhouse Emissions Reduction Bill 2006* into Parliament on 6 December. The Bill sets out three targets:

- To reduce greenhouse gas emissions in the State by at least 60 per cent of 1990 levels by the end of 2050.
- To increase renewable electricity generated so it makes up at least 20 per cent of electricity generated in the State by the end of 2014.
- To increase renewable electricity used so it makes up at least 20 per cent of electricity used in the State by the end of 2014.

The legislation, the first of its kind in Australia, commits the government to develop policy initiatives and interim targets to reach the 60 percent emissions target.

The full text of the bill is at: http://www.climatechange.sa.gov.au/PDFs/FINAL_Bill.pdf.

Queensland - \$ 9 million for Climate Change Centre of Excellence

The Queensland Government has announced it has allocated \$9 million to establish the Queensland Climate Change Centre of Excellence. The \$9 million funding includes a one-off allocation of \$1.5 million in capital funding to assist in setting up the centre and an annual recurrent budget of \$7.5 million. The centre will provide policy advice and scientific information on climate change and its impact on the community, the economy and the environment. The centre would be a specialist unit within the Department of Natural Resources and Water harnessing the scientific knowledge and expertise of officers from the Departments of Natural Resources, Mines and Water, Environmental Protection Agency and Primary Industries and Fisheries. It will also provide advice about measures to further reduce and offset the State's greenhouse gas emissions. The centre would open its doors in early 2007 and will be located at the Queensland Government's Ecosciences Precinct at the site of the former Boggo Road Gaol in Brisbane and also in Toowoomba.

CSIRO Energy Futures Forum Final Report Released

On 5 December 2006 the CSIRO Energy Futures Forum (EFF) released its final report after a 21 month project of research, debate, and developing scenarios for the future of energy in Australia to 2050 and, in doing so, consider the implications for Australia's future. The report, *The Heat is On: The Future of Energy in Australia*, examines the issue of addressing climate change since this was identified early on in the process by the EFF as the most pressing concern for the Australian energy sector. The project involved industry, environmental and public interest groups working with CSIRO and ABARE exploring a range of plausible energy future scenarios for Australia.

The Energy Futures Forum's findings are based on discussion of a wide range of research that was applied to the EFF's postulated scenarios. This included economic modelling, risk-assessment analysis of climate change, and social mapping to gauge potential views of the public.

The report articulates the key technological, social and environmental challenges that CSIRO, in partnership with its stationary energy and transport stakeholders, will seek to address on behalf of the Australian community to 2050 and beyond.

The full report, along with five further supporting satellite reports can be downloaded from:
<http://www.csiro.au/energyfuturesforumreport>

Biofacts

- The European Union produced 3.9 million tonnes of biofuel in 2005, an increase of 65.8% over 2004. Biodiesel was the dominant biofuel, representing 81.5% of total production. Germany was the largest producer of biodiesel at 1.7 million tonnes in 2005, an increase of 61% over 2004, followed by France at 492,000 tons with a 41% increase. Spain was the leading country for ethanol production at 240,000 tonnes, followed by Sweden at 130,160 and Germany 120,000 tonnes. See:
http://www.energies-renouvelables.org/observ-er/stat_baro/observ/baro173b.pdf
 - The number of German biogas plants increased to around 2,700 with a total electrical capacity of 650 MW in 2005.
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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 1,300 odd addresses given in the previous 27 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.

Biomass co-firing at a pulverized coal power plant:

<http://www.treepower.org/cofiring/LakelandElectricCofiring.pdf>

Biomass co-firing at an IGCC

<http://www.treepower.org/TECO/polk-cofiring-testburn.pdf>

System Johansson Gasifiers

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

Home Biodiesel Kit

<http://www.homebiodiesekits.com/copr.html>

Greenfuel Technologies Incorporated

<http://www.greenfuelonline.com/index.htm>

The American Energy Initiative

<http://www.AmericanEnergyNow.org>

Biomass gasifier

<http://www.puhdasenergia.com>

Biodiesel Equipment suppliers

http://journeytoforever.org/biofuel_supply.html

New Rules Project

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

Report "Putting the Pieces Together: Commercializing Cellulosic Ethanol,"

<http://www.ilsr.org>

GreenFuel Technologies Corporation
<http://www.greenfuelonline.com>

University of Nebraska Biodiesel from Tallow
<http://agproducts.unl.edu/tallow.htm>

Tallow Biodiesel article –
<http://agproducts.unl.edu/tallowarticle.pdf>

Biodiesel Education Centre University of Iowa
<http://www.me.iastate.edu/biodiesel/Pages/biodiesel1.html>

Fuel and Fibre
<http://www.fuelandfiber.com/Archive/About/Method/method.html>

Energy from Wastewater
<http://www.niwascience.co.nz/pubs/wa/13-4/wastewater.pdf>

North East Biofuels
<http://www.northeastbiofuels.com>

AltEnergy Blog
<http://alteng.blogspot.com/>

The Complete Biogas Handbook
<http://completebiogas.com/toc.html>

Canadian Biomass Innovation Network
<http://www.cbin-rcib.gc.ca>

List of gasifier manufacturers
<http://gasifiers.bioenergylists.org>

Schmitt-Enertec wood gasifier CHP units
http://www.schmitt-enertec.com/cogeneration/woodgas_chp.htm

E3 Biofuels
<http://www.e3biofuels.com/>

Sweden methane from wood chips
<http://biopact.com/2006/12/sweden-takes-biogas-to-new-level.html>

Energy & Environmental Research Center University of North Dakota
<http://www.undeerc.org>

Biofuels News
<http://www.biofuels-news.com>

Government of Saskatchewan's Ethanol site
<http://fuels05.ca>

Canadian Renewable Fuels Association
<http://www.greenfuels.org>

Diesohol for Road Transport brochure (Qld EPA)
http://www.epa.qld.gov.au/publications/p01098aa.pdf/Diesohol_for_road_transport.pdf

Bioenergy World
<http://www.bioenergy-world.com>

Whole Tree Energy Power Plant (2005)
http://www.mrec.org/confer/2005_WholeTreeEnergy.pdf

The European Union Biomass Action Plan
http://ec.europa.eu/energy/res/biomass_action_plan/green_electricity_en.htm

European Bioplastics Association
<http://www.european-bioplastics.org>

EU Bioenergy Network of Excellence
<http://www.bioenergynoe.org>

Minnesota Department of Agriculture: Minnesota Ethanol Fuel Program.
<http://www.mda.state.mn.us/ethanol/about.htm>

National Biodiesel Board: Commercial Biodiesel Production Plants
http://www.biodiesel.org/buyingbiodiesel/producers_marketers/ProducersMap-Existing.pdf

Bios Energy (Austria)
http://www.bios-bioenergy.at/bios01/bios_en.html

Gasification discussion list – new webpage

<http://gasifiers.bioenergylists.org>
Fueling a new economy paper
http://www.climatechangeconnection.org/pdfs_ccc/ethanol_aug29.pdf
Biocap web page (Canada)
<http://www.biocap.ca>
Bioenergy Project Using gasifier at Croyden UK
http://www.bioregional.com/programme_projects/forestry_prog/forestry_programme.htm
Steam activated charcoal
<http://www.lboro.ac.uk/departments/cv/wedc/papers/22/groupf/mcconna.pdf>
Gasification of MSW
<http://www.gastechnology.org/webroot/downloads/en/IEA/WasteIEA25years.pdf>
Biomass atlas of thermal properties - US DoE
http://www.osti.gov/bridge/product.biblio.jsp?osti_id=82384
ProBIOS: Promotion of Biofuels for Sustainable Development in South and South-east Asia
<http://www.probios.org/>
Wood Gas as Engine Fuel report
<http://www.fao.org/DOCREP/T0512E/T0512e00.htm>
Stirling Engines
<http://www.bekkoame.ne.jp/~khirata/>
Stirling engines
<http://www.gastechnology.org/webroot/downloads/en/IEA/ReviewofEnergyConversionDevicesrev.pdf>
Australian Institute of Agricultural Science and Technology (AIAST)
<http://www.aiast.com.au>
Geosequestration
<http://www.aph.gov.au/house/committee/scin/geosequestration/subs/sub34.pdf>
International Network on Biofixation of CO₂ and Greenhouse Gas Abatement with Microalgae
<http://www.co2captureandstorage.info/networks/networks.htm>
BORDA
<http://www.borda-net.org/>
STM Power's Stirling Engines
<http://www.stmpower.com/Technology/Technology.asp>
Biodiesel – Greenergy UK (tallow)
<http://www.greenshop.co.uk/news/Biodiesel%20FAQs.pdf#search=%22biodiesel%20rom%20tallow%22>
Fuel and Fibre
<http://www.fuelandfiber.com/Archive/About/Method/method.html>
EnAgri Magazine
http://www.enagri.info/current_issue.htm
Stirling Engines
http://www.ministeam.com/acatalog/Bohm_Stirling_Engines_and_Kit_s.html
Camp Leujeurne Biomass Gasification Project
<http://www.epa.gov/appcdwww/apb/CLEW.pdf>
Canadian Biotechnology Innovation Network brochure
http://www.cbin-rcib.gc.ca/Docs/english/cbin_brochure_e.pdf
Canadian Biotechnology Innovation Network project list
http://www.cbin-rcib.gc.ca/Docs/english/cbin_prjct_list_2006_07_e.pdf
Diesohol for Road Transport brochure (Qld EPA)
http://www.epa.qld.gov.au/publications/p01098aa.pdf/Diesohol_for_road_transport.pdf
The Small Power Generation Bible book
<http://stephenchastain.com/powergenbook.htm>

International Developments

In late November the US Biotechnology Industry Organization (BIO) released a report, *Achieving Sustainable Production of Agricultural Biomass for Biorefinery Feedstock* that addresses the issue whether farmers can supply the growing biofuel industry in the USA. The report details the potential of cellulosic biomass as an energy resource and the promise of no-till cropping for greater residue collection. It also proposes guidelines and incentives to encourage farmers to produce, harvest and deliver sufficient feedstock to the growing biorefinery and biofuels industry in an economically and environmentally sustainable way.

The report also discusses the expected economic benefits for individual farmers who invest in the practices and equipment needed for sustainable harvests of these feedstocks. It further points out the need for infrastructure to deliver feedstocks from farms to biorefineries.

The 28 page (1.6 MB pdf) report may be downloaded from:
<http://www.bio.org/ind/biofuel/SustainableBiomassReport.pdf>

United States' 25 x '25 Transformational Energy Vision

Founded in 2004, the 25x'25 Alliance is a renewable energy initiative backed by organisations and individuals united by a common interest in making America's energy future more secure, affordable and environmentally sustainable. Its Vision is that by 2025, renewable energy from America's farms, forests and ranches will provide 25 percent of the total energy consumed in the United States, while continuing to produce safe, abundant and affordable food, feed and fibre.

This goal, developed by a group of volunteer farm and forestry leaders and organisations, is now gathering support from business, labour, conservation, environmental and religious groups. 25x'25 is building significant momentum with state policy-makers, including the support of Governors, Members of Congress and State Legislatures, as evidenced by the list on the 25x'25 Webpage.

Going forward, 25x'25 partners, supported by the Energy Future Coalition (<http://www.energyfuturecoalition.org>), a non-partisan public policy initiative funded by foundations, will be working together to identify the steps needed to implement 25x'25 and achieve a secure, prosperous and sustainable U.S. energy future.

For further information see the Web at: <http://www.25x'25.org>.

Finnish Gasification Project for Second Generation Biofuels

Finnish research organisation VTT, in collaboration with Helsinki University of Technology, Neste Oil, Foster Wheeler Energy, Andritz, Vapo, Pohjolan Voima and the large forest industry companies UPM, StoraEnso, M-Real and MetsäBotnia has engaged in a substantial gasification technology development project aimed at the production of synthetic diesel via the gasification of biomass and its synthesis into transportation fuel. The gasification test plant in Otaniemi is one of the largest energy projects financed by the Finnish Funding Agency for Technology and Innovation, Tekes. The project's overall budget amounts to EUR 4 million. The extensive test operation that is about to be launched will produce basic information for the ongoing design of an industrial demonstration plant.

The gasification plant will be able to exploit any carbonaceous raw-materials, e.g. forest industry residues, bark, biomass from fields, refuse-derived fuels and peat.

The commercialisation of the gasification technology will be carried out in three phases. The output capacity of the first phase plant recently launched is 500 kW. The second phase plant, expected to be launched in 2008-2009, will have the output capacity of 50 MW. This phase will involve verifying the risk aspects of operation of the process. The third phase, from 2010 onwards, is to involve the construction of a demonstration plant which will be able to meet approximately three percent of Finland's transport biofuel demand. The total cost of the development and demonstration phase will amount to approximately EUR 300 million.

In the commercial plant, the estimated production costs of synthetic diesel based on biomass will be 0.45-0.60€/litre (75-100 cents per litre). In Europe, the estimated market for transport biofuels will be approximately 20 million tonnes per year beyond 2010, which corresponds to an annual turnover of EUR 15 billion. Source: VTT

US Bioenergy Research Centres

The U.S. Department of Energy (DOE) announced in August that it will spend US\$250 million to establish and operate two new Bioenergy Research Centres to accelerate basic research on the development of cellulosic ethanol and other biofuels. This is aimed at the US goal of replacing 30 percent of transportation fuels with biofuels by 2030. DOE's Office of Science will provide US\$25 million in the first year for the establishment of each centre and up to \$25 million per year for the following four years to support the operations of each centre for a total award of up to \$125 million per centre. See:

<http://www.energy.gov/news/3872.htm>

Biofuels in the European Union - A Vision for 2030 and Beyond

The European Commission formed a group of high level experts representing widely different sectors of the biofuel chain to develop a foresight report – a vision for biofuels up to 2030 and beyond, which should address all the issues that are relevant to ensure a breakthrough of biofuels and increase their deployment in the European Union. The aim is to better prioritise, co-ordinate and implement future research and development of biofuels. The report *EUR 22066 - Biofuels in the European Union - A Vision for 2030 and Beyond* (1 MB) may be downloaded from:

http://ec.europa.eu/research/energy/pdf/biofuels_vision_2030_en.pdf

Forthcoming Events

- *Industrial Combustion of Waste in the Energy Challenge – Innovate or Stagnate* (British Flame Workshop). 16 January 2007, Sheffield, UK. Contact: Prof Tony Griffiths, Tel: +44 29 20 874316, Fax: +44 29 20 87 4316, Email: griffithsaj2@cf.ac.uk. Web: <http://www.britishflame.org.uk>
- *CLEAN ENERGY POWER® 2007*, Innovation Conference and Exposition for Renewable Energy and Energy Efficient Construction and Renovation, 24-25 January 2007, ICC Berlin, Germany. Web: <http://www.energiemessen.de/engl/index.htm?/engl/Biomassevergasung.htm>
- *Agricultural Wastes, Co-Products and Residues as Fuel for Combustion*. 25 January 2007, Birmingham, UK. Contact: Rob Fenton Tel: +44 21 204 3398 Email: r.b.fenton@aston.ac.uk Web: http://www.supergen-bioenergy.net/?_id=318

- *National Biodiesel Conference & Expo*, 4-7 February 2007, San Antonio, Texas, USA. Fax: +1 719 539 0301 Web: www.biodieselconference.org
- *Bioenergy Europe 2007 – Markets and Finance for Biofuels & Biomass*. 5-6 February 2007, London, UK. Contact: Environmental Finance Tel: +44 20 7251 9151 Fax: +44 20 7251 9161 Email: info@environmental-finance.com Web: <http://www.environmental-finance.com/conferences/2006/Bio07/intro.htm>
- US National Ethanol Conference *Building New Horizons*. 19-21 February 2007, JW Marriott Starr Pass Resort & Spa, Tucson, Arizona, USA. Web: <http://www.ethanolrfa.org/industry/conference/>
- *World Sustainable Energy Days 2007*, 27 February - 2 March 2007, Wels, Austria. Contact: O.Ö. Energiesparverband, Tel: +43 732 7720 14386 Email: office@esv.or.at Web: <http://www.wsed.at>.
- *European Pellets Conference*, 28 February 2007, Wels, Austria. Web: <http://www.wsed.at/wsed/index.php?id=1662&L=1>.
- *Bioenergia 2007: Technology & Business Opportunities*. 1-2 March 2007, Madrid, Spain. Contact: Ategrus Tel: +34 94 464 1990 Fax: +34 94 424 3854 Email: ategrus@ategrus.org Web: <http://www.ategrus.org/>
- *Power-Gen Renewable Energy and Fuels*. 6-8 March 2007, Las Vegas, Nevada, USA. Web: <http://www.power-gengreen.com>.
- *World Biofuels Markets Congress*, 6-9 March 2007, Brussels, Belgium. Web: www.greenpowerconferences.com
- *Biofuels Americas Conference & Expo III*, 12-14 March 2007, Cartagena, Colombia. Contact: Kay Marshall, Tel: +1.605 323 0119 Email: kay.marshall@biofuelsconferences.com Web: www.biofuelsamericas.com
- *Edible Oils Biodiesel Conference 2007*. 14 – 15 March 2007, Seville, Spain. Web: <http://www.edibleoil.net/new/english/files/eventos.htm>
- *Energy from Waste 2007. Targets and Beyond: Waste Management and Energy Recovery in a Changing World*. 14-15 March 2007, London, UK. Tel: +44 1722 716997 Fax: +44 1722 716926. Web: www.recyclingwasteworld.co.uk/conferences
- *Success and Visions for Bioenergy*. 21 – 23 March 2007, Renaissance Hotel and Congress Centre, Salzburg, Austria. Web: <http://www.thermalnet.co.uk>.
- *World Congress on Industrial Biotechnology and Bioprocessing*. 21-24 March 2007, Orlando, FL, USA. Email: worldcongress@bio.org Tel: +1 202-962-6630 Web: <http://www.bio.org/worldcongress/>
- *Biomass and Biorefinery Deals 2007*. 27-28 March, 2007. AED Conference Center, Washington DC, USA. Web: <http://www.infocastinc.com/biomass07.html>
- *The First Solander Pulpmill Bio-Refinery Symposium*. 28-29 March 2007, Piteå, Sweden. Contact: Robert Bergman Tel: +46 70 524 00 58 Email: robert.bergman@pnf.se. Web: www.nolia.se/solandersymposium/
- *China Eco Expo*, 4-6 April 2007, Beijing, China. Contact: Marc & Nina Merson Tel: +1 818 906 2700 Fax: +1 818 986 5890 Email: info@ecoexpo.com Web: www.ecoexpo.com
- *Zero Emission Power Generation Workshop*, 16-18 April 2007, Gebze, Turkey. Contact: Elf Caglayan Email: elif.caglayan@mam.gov.tr
- *23rd Annual BioCycle West Coast Conference*, 16-18 April 2007. San Diego, CA, USA. Contact: Celeste Madtes, Email: biocycle@jgpress.com Tel: +1 (610) 967-4135, ext. 21 Web: <http://www.jgpress.com/conferences1>
- *Ethanol Australia 2007*, 17-20 April 2007, Melbourne, Victoria. Registration information will be posted soon at: <http://www.ethanol2007.com/>
- *3rd AustralAsian Cleantech Forum™*, 17-18 April 2007, Park Hyatt Melbourne, Victoria. Contact: Jeffrey Castellias, Tel: +61 (0) 401 067 252 Web: <http://www.cleantechforum.com>
- *Wood Energy Exhibition 2007*, Orléans, France, 19-22 April 2007, Web: <http://www.boisenergie.com/>.

- 29th Symposium on Biotechnology for Fuels and Chemicals, 29 April – 2 May 2007, Denver, Colorado, USA at the Denver Adams Mark Hotel. Web: <http://simhq.org/meetings/29symp/index.html>
- *International Agrichar Initiative Conference*. 29 April – 2 May 2007, Terrigal, NSW. Contact: Adriana Downie Email: adriana@biomass.com.au Web: <http://www.IAIconference.org>.
- *15th European Biomass Conference & Exhibition 'Biomass for Energy, Industry and Climate Protection: From Research to Market Deployment'*, 7-11 May 2007, Berlin, Germany. Email: biomass.conf@etaflorence.it Web: www.conference-biomass.com.
- *International Conference on Biotechnology Engineering 2007*. 8-10 May 2007, Kuala Lumpur, Malaysia. Contact: Faculty of Engineering, International Islamic University Malaysia. Tel: +603 6196 4440 Fax: +603 6196 4442 Email: icbioe@iiu.edu.my Web: <http://www.iiu.edu.my/icbioe>
- BCSE annual conference, *Sustainable Energy 2007 'Powering Australia's Future'*, 9 -10 May 2007. Hilton Hotel, Sydney. Web: <http://bcse.org.au/>
- *Waste to Energy 2007*. 9-10 May 2007, Bremen, Germany. Contact: Ines Freesen. Tel: +49 2802-948484-0 Email: info@wte-expo.com Web: www.wte-expo.com.
- *Biomass 07 – Power, Fuels and Chemicals Workshop*. 15-16 May 2007, Grand Forks, North Dakota, USA . Email: dwalters@undeerc.org Web: <http://www.undeerc.org>.
- *Risø International Energy Conference 2007: Energy solutions for sustainable development*. 22-24 May 2007, Roskilde, Denmark. Contact: Vivi Nymark Morsing Tel: +45 4677 5151 Fax: +45 4677 5199 Email: vivi.nymark@risoe.dk Web: www.risoe.dk/konferencer/Energyconf07/index.htm.
- *SYNBIOS II - international conference on the introduction of second generation automotive biofuels*. 23 – 24 May 2007, Stockholm, Sweden. See <http://www.ecotraffic.se>.
- *Eastern Biofuels Conference & Expo III*. 29-31 May 2007, Prague, Czech Republic. Contact: Kay Marshall Tel: +1 605 323 0119 Email: kay.marshall@biofuelsconferences.com Web: www.easternbiofuels.com
- *5th European Biorefinery Symposium*. 30 May - 1 June 2007, Flensburg, Germany. Contact: Jens Bo Holm-Nielsen Tel: +45 6550 4166 Fax: +45 6550 1091 Email: jhn@bio.sdu.dk Web: <http://websrv5.sdu.dk/bio/workshop07.htm>
- *2nd International Green Build & Renewable Energy Exhibition and Conference, GREX '07*. 1-3 June 2007, Australian Technology Park, Sydney. Web: <http://www.grex.com.au>
- *10th International Congress on Biotechnology in the Pulp and Paper Industry*, 10-14 June 2007. Madison Wisconsin, USA. Web: http://www.bact.wisc.edu/ICBPPI_2007/
- *Nordic Bioenergy 2007*. 11-13 June 2007, Stockholm, Sweden. Contact: Swedish Bioenergy Association Tel: +46 8 441 70 80 Fax: +46 8 441 70 89 Email: info@svebio.se Web: <http://www.nordicbioenergy2007.se/>
- *WMAA National Energy from Waste Conference*. 18-20 July 2007, Manly Pacific Hotel, Sydney. Web: <http://www.wmaa.asn.au>
- *International Bioenergy 2007*, 3-6 September 2007, Jyväskylä, Finland. Contact: Petteri Räsänen Tel: +358 14 334 0022 Email: petteri.rasanen@jklmessut.fi Web: <http://www.finbioenergy.fi>.
- *Africa Biofuels Conference & Expo I*. 25-27 September 2007, Durban, South Africa. Contact: Kay Marshall Tel: +1 605 323 0119 Email: kay.marshall@biofuelsconferences.com Web: www.easternbiofuels.com
- *Energy from Biomass and Waste*. 25 – 27 September 2007, Pittsburgh, Pennsylvania, U.S.A. Web: <http://www.ebw-expo.com/>
- *Texas Biodiesel Conference and Expo*. 27-29 September 2007, Austin, TX, USA. Organiser: Biodiesel Coalition of Texas (BCOT). Contact: Carol Farrell Email: carol.farrell@iemshows.com Tel: +1 (512) 358-1000. Web: <http://www.biodieseltexas.org/>
- *Methane to Markets Partnership Expo*, 29 October – 1 November 2007, Beijing, China.

<http://www.methanetomarkets.org/expo>

- *Biomass Asia 2007 – 2007 Asian International Bio Energy Conference & Exhibition*, 29 – 31 October 2007. China World Trade Centre, Beijing. For more information contact the Organising Committee: Mr. Marco Wang, Tel: +86-10-88145170 Fax: +86-10-88110979 Email: marcowang@windpowerasia.com .
 - *20th World Energy Congress: The Energy Future in an Interdependent World*. 11-15 November 2007, Rome, Italy. Tel: +39 06 8091051 Fax: +39 06 80910533 Email: info@micromegas.it Web: www.micromegas.it.
 - *2nd National Landfill & Transfer Stations Conference*. 19 - 21 November 2007, Hilton on the Park, Melbourne. Contact: Veronica Dullens Suite 4D, Level 4, 5 Belmore St Burwood NSW 2134. Tel: 02 8746 5055 Email: veronica@wmaa.asn.au
 - *Asian International Biomass Energy Conference and Exhibition*. 22-24 October 2007, Beijing, China. Web: <http://www.bioenergy-asia.com>.
 - *10th Biennial Trade Fair Conference on Business and the Environment*. 12-14 March 2008, Vancouver, BC, Canada. Organiser: GLOBE Foundation of Canada Email: info@globe2008.ca Tel: +1 (800) 274-6097 Web: <http://www.globe.ca/>
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Residues

- Dr Stephen Schuck, the Bioenergy Australia Manager is currently an appointee to the Fuel Standards Consultative Committee, representing the Alternative and Renewable Fuels Industry. This is a Statutory Federal Government committee, with whom the Minister administering the Fuel Quality Standards Act is obliged to consult in setting fuel standards and placing requirements on the distribution of fuels, such as labelling. Those involved in the biofuels industry are encouraged to make contact with Steve Schuck to promote the flow of information.
- Steve Schuck, the Bioenergy Australia Manager gave a presentation on bioenergy and opportunities for the forestry industry at the Australian Forest Growers biennial conference held in Launceston, Tasmania, 22-25 October 2006.
- Steve Schuck gave a presentation 'Bioenergy as a source of sustainable energy' at the Terrapinn-organised Tasmanian Power Conference in Hobart on 8 November. A further presentation 'Biofuels – part of the broader path to a bio-based economy' was given at Terrapinn's Biofuels Congress in Sydney on 21 November.
- A 13 page article, entitled 'Biomass as an energy source' by Stephen Schuck appears in the International Journal of Environmental Studies, Vol. 63, No. 6, December 2006, 823–835. This is one of several articles in a special edition of this journal profiling the Australian sustainable energy industry and related research capabilities. See the Taylor and Francis web page at: <http://www.tandf.co.uk/journals>.
- The Australian Government's Low Emissions Technology Demonstration Fund's policy framework is at: <http://www.greenhouse.gov.au/demonstrationfund/framework.html>. LETDF supports the commercial demonstration of technologies that have the potential to deliver large-scale greenhouse gas emission reductions from energy use, and is designed to leverage \$1 billion in additional private sector investment.
- The State of Victoria has mandated for 10 percent of the state's power to come from renewable sources by 2016. See *Our Environment, Our Future* action statement at: <http://www.dse.vic.gov.au/ourenvironment-ourfuture/>.
- The December 2006 issue of the IEA Bioenergy Newsletter can now be viewed and downloaded at: <http://www.ieabioenergy.com/Library.aspx>
- It is the International Energy Agency's practice to offer free PDF downloads of IEA publications two calendar years after issue. A new batch has just been added to the free publications list. See http://www.iea.org/Textbase/publications/free_all.asp.
- A 99 page report (6 MB) entitled *Energy from Biomass: A Review of Combustion and Gasification Technologies*, Technical Paper No. 422, by Peter Quaak, Harrie Knoef, and Hubert Stassen dated January 1999 is available on the Web at: <http://www->

wds.worldbank.org/servlet/WDSServlet?pcont=details&eid=000094946_99033105581764

- The first commercial-scale cellulosic ethanol plant was scheduled for start-up in December 2006 in Babilfuenta, Spain, at the BCyl cereal ethanol plant of Abengoa Bioenergy, Seville, Spain, and St Louis, Missouri, USA. The ethanol plant, which has a five million litres per year capacity from a feed of 70 metric tonnes per day of agricultural residue, has been constructed alongside a far larger (195-million liter per year cereal ethanol plant to benefit from its infrastructure.
- Canada's largest ethanol plant, Suncor Energy Products' 200 million litres per year St. Clair Ethanol Plant has been commissioned and will use 20 million bushels of corn per year as the primary feedstock. See <http://www.suncor.com/>
- The US Department of Energy (DOE) has published a research agenda for the development of ethanol from cellulosic biomass.. This roadmap shows what research is still required to produce cellulosic ethanol on a large scale. The roadmap also describes the latest progress in biotechnology that might allow the cost-effective production of cellulose ethanol. See Web page: <http://www.energy.gov/news/3804.htm>
- Japan's Mitsui Engineering and Shipbuilding Co., in its attempt to diversify its business, has established an experimental factory in Maniwa, Okayama Prefecture, that uses wood chips to produce ethanol. Mitsui uses genetically modified yeasts to breakdown sugars extracted from wood chips to ferment it to produce ethanol. Source: Oil Trends
- With renewed interest in alternative feedstocks for biodiesel production becoming apparent, a 1998 report from the USA's NREL (3.7 MB) may be of interest to readers. The report *A Look Back at the U.S. Department of Energy's Aquatic Species Program: Biodiesel from Algae* may be downloaded from the Web from: http://www.senternovem.nl/mmfiles/nrel_biodiesel_from_algae-full_report_1998_tcm24-171161.pdf
- In mid 2006 *Biodiesel Magazine* launched its new website on biodiesel, <http://www.biodieselmagazine.com>. This site, developed by BBI International Media, contains information on biodiesel initiatives in the USA and Canada..
- A UFOP report *Current Situation and Prospects for Biodiesel and Vegetable Oils as Fuels: From Niche Products to Market Players* provides an overview of the current situation in Germany regarding biodiesel and vegetable oils. The report may be downloaded from http://www.ufop.de/downloads/Biodieselreport_engl_070306.pdf.
- A report entitled *The Use of Biomass for Power Generation in the US* provides an overview of the US market interest in biomass for power generation and analyses the challenges and prospects for the bioenergy market, implementation challenges faced and the future of this industry. A copy of the report is at URL: http://www.researchreportsintl.com/products/product.cfm?report_ID=89
- The International Energy Agency has predicted that the production of biofuels is likely to double within the next five years as new plants begin production. Biofuel production are expected to rise to 1.2 million barrels a day in 2011, compared to 650,000 barrels in 2005, with most of the increase coming from the USA and Brazil.
- A presentation on the German biogas systems is at: http://www.omafra.gov.on.ca/english/engineer/facts/bg_pres4.pdf
- Some quick facts about the cultivation and use of algae as a food can be found at: http://www.asiabiotech.com/01/english/preserved-docs/0102/0015_0018.pdf.
- The FAO book *Wood Gas as Engine Fuel* is freely downloadable from <http://www.fao.org/docrep/t0512e/t0512e00.htm>. The book covers small scale wood and charcoal gasifiers and their use for both power production and mobile energy. Examples of gasifiers from Paraguay and Sri Lanka are provided. It covers many aspects, such as the gasification process, health and safety aspects, gas cleaning, the design of the downdraft gasifiers and the economics.
- GreenFuel's proprietary Emissions-to-Biofuels™ process is written up in a New Scientist article: <http://www.newscientist.com/channel/earth/mg19225725.600-biofuel-made-from-power-plant-cosub2sub.html>

- GreenFuel Technologies Corporation, a US based developer of algae bioreactor systems that recycle carbon dioxide in flue gases into a feedstock for biofuels has signed a licensing agreement with The Victor Smorgon Group headquartered in Melbourne.. The agreement provides The Victor Smorgon Group with an exclusive license to distribute, install and operate GreenFuel's Emissions-to-Biofuels™ proprietary technology for growing, harvesting, and processing biomass and products derived from algae throughout Australia and New Zealand. See <http://www.greenfuelonline.com>.
- South African fuels firm De Beers Fuel Ltd plans to produce 16 to 24 billion litres of biodiesel a year from algae within five years with an initial investment of 3.5 billion Rand (\$625 million). The company has bought licenses for 40,500 hectares to be developed into algae farms, for which the initial investment is targeted . They expect a eight-fold increase in production within five years. De Beers Fuel currently has a biodiesel plant at Naboomspruit in the northern Limpopo province which uses sunflower seed oil as feedstock. The project is based on technology supplied by a US company, GreenFuel Technologies Corporation, while Green Star Products, also of the US, will build the biodiesel reactors.
- The Timber Development Board in conjunction with the Australian Plantation Products and Paper Industry Council are to develop a national strategy for waste timber. The strategy has received co-funding from the Australian Government's Industry Partnerships Programme through the Department of Agriculture, Fisheries and Forestry and will run for a 12 month period. See: <http://www.a3p.asn.au/news/epr.html>
- A \$23 million joint venture between Adelaide Brighton Cement and Resourceco to turn commercial, industrial and construction waste to fuel for ABC's cement kiln has been launched in South Australia. The JV, known as the Alternative Fuel Company opened a facility at Wingfield, Adelaide and is capable of recycling 200,000 tonnes of combustible waste a year with half to be used at ABC's Birkenhead cement plant. There are also plans to market some to the fuel for power generation.
- Poland has become the 19th country to join the Methane to Markets partnership, the international initiative that promotes the recovery and use of methane as a source of clean energy.
- The Japan Times reports that Japan's Prime Minister Shinzo Abe has ordered Ministries and Agencies to create frameworks to boost domestic biofuel output to 6 billion litres per year, ten percent of Japan's total liquid fuel consumption.
- The New Zealand Government has released 'New Zealand Energy Strategy to 2050, Powering Our Future - Towards a Sustainable Low Emissions Energy System,' for public consultation until March 30. The document is at: <http://www.med.govt.nz/upload/43136/draft-energy-strategy.pdf>
- The focus of the January Fleets and Fuels Newsletter is a 10 page article on biomethane as a transport fuel. See Web at: <http://www.fleetsandfuels.com/>
- BP has announced its intention to invest US\$500 million over the next 10 years to establish a biosciences research laboratory attached to a major academic institution in the United States or in the United Kingdom. An early 2007 announcement is likely. The new BP Energy Biosciences Institute (EBI) will be dedicated to energy technologies, focusing on development of new biofuels and increasing efficiency and flexibility of current technologies. Source RE Access
- The Chippewa Valley Ethanol Company (CVEC) and the Central Minnesota Ethanol Cooperative (CMEC) in Minnesota, USA are both installing biomass gasifiers to replace fossil fuel burned for heat and electricity for the production of ethanol.
- The International Bioenergy Platform - IBEP is the UN's FAO bioenergy platform through which the FAO promotes, develops and undertakes its bioenergy work. See the 26 page plan at: <ftp://ftp.fao.org/docrep/fao/009/A0469E/A0469E00.pdf>
- BioPact is a Brussels-based organisation which unites EU citizens and African citizens who are working towards a common bioenergy future, in which the EU couples part of its green energy policies to its humanitarian and development policies in Africa. Biopact

also monitors biofuels and bioenergy news coming from the developing world. For further information see: <http://www.biopact.com>.

- A report entitled 'Estimating the Net Energy Balance of Corn Ethanol' by Hosein Shapouri, James A Duffield and Michael S. Graboski may be downloaded from the Web from: <http://www.ers.usda.gov/publications/aer721/aer721.pdf>. The report shows a moderate, but positive energy balance from ethanol from corn.
- Goldman Sachs & Co. has invested Canadian \$30 million [US\$27 million] with Iogen Corporation of Ottawa. The funds will be used to accelerate Iogen's commercialisation of cellulose ethanol technology.
- A new book on small scale power generation, including some coverage of bioenergy is at <http://stephenchastain.com/powergenbook.htm>.
- Treepower has created a biomass energy web search page into data bases specific to biomass energy (e.g., DOE labs, EPA, etc.). Go to: <http://www.treepower.org/biomass/searchengines.html>
- The assets of Bioenergy Australia member Biomass Energy Services and Technology (BEST) Pty Ltd have been acquired by US company BEST Energies Inc. The Wisconsin based parent company has also bought US company Generation International to become a diversified bioenergy company with interests in pyrolysis, biochar bioenergy parks and biodiesel. Sibling company, BEST BioEnergy Park Cashton LLC is constructing a 30 million litre per year biodiesel plant adjacent to the Cashton Green Energy Park in the USA.
- Natural Fuels Australia Limited (NFAL) based in Perth broke ground in November on the world's largest biodiesel plant, which is being built in Singapore. The firm will invest US\$130 million in the project, according to Richard Selwood, managing director and chief executive officer of Natural Fuels. The first phase of the plant will be operational by the end of 2007. It is expected to produce about 600,000 tons per year or 12,000 barrels per day (bpd) of biodiesel. A second and third phase will increase output to 1.8 million tons of biodiesel per year. Palm oil will be the base feedstock for the biodiesel plant, but other vegetable oils such as soya and canola will also be used. ConAgra Food Inc. has agreed to supply the plant's feedstock needs.
- The Technical University of Denmark has two reports on updraft gasifiers. A study on thermal tar cracking is at: http://bgg.mek.dtu.dk/publications/pdf/sevilla2000_v8-67.pdf and a study on integrating an updraft gasifier with a Stirling engine that shows mass and energy flows is at: http://bgg.mek.dtu.dk/publications/pdf/amst02_v2_99.pdf.
- The December *American Energy Security Newsletter*, which is used to advocate gasification technologies, projects and supporting US federal and state legislation is available at: <http://www.americanenergysecurity.org/newsletters.html>.
- A US Department of Energy document provides details of a pilot biomass to methanol plant that was to have been built in Hawaii, using the RENUGAS technology. See: <http://www.tpub.com/content/altfuels10/methanol/methanol0001.htm>.
- An article entitled 'Sweden takes biogas to a new level: methane from wood chips to fuel 75,000 cars' discusses the use biogas as a transport fuel in Sweden and plans by Gottenburg Energy to set up a synfuels project to gasify biomass and synthesise transportation fuels. See: <http://biopact.com/2006/12/sweden-takes-biogas-to-new-level.html>
- Some time ago a high profile 1 MW scale biomass gasification project was carried out by the US EPA at a Marine Corp camp in the USA. A write up, Camp Lejeune Biomass Gasification Project is on the Web at: <http://www.epa.gov/appcdwww/apb/CLEW.pdf>
- A Russian Federation company wants to produce wood pellets for the European and Asian markets. They claim they have some 500,000 tonnes of pine wood biomass (chips, sawdust, shavings) and require investment for the establishment of a pellet plant. Interested investors are asked to contact Vitaly Minenko, KPTF Grants of Sea Co., Ltd, Email: vitminenko@mail.ru.

- Balcas Ltd of Enniskillen in Northern Ireland has announced plans to build a £24 million (\$60 million) biomass plant in northern Scotland to produce electricity and wood pellets. The Cogeneration power plant will produce 5 MW of electricity and use 3 MW thermal energy for producing wood pellets, to meet the emerging green fuels heating market in Europe.. The plant is set to commence operation in early 2008. The project is to receive £5.5 million from the Highlands and Islands Enterprise towards the cost of the project as part of a Scottish government biomass support scheme. The Bioenergy Australia Manager, Steve Schuck visited the Balcas Enniskillen bioenergy CHP plant, on which this plant is to be modelled, as part of an IEA Bioenergy Executive Committee technical visit in October 2005. Also see: <http://business.scotsman.com/latest.cfm?id=1705992006>.
- A calculator model for the moisture content of wood is at: <http://www.woodbin.com/ref/wood/emc.htm>
- The Canadian Frontier Centre for Public Policy recently held a Prairie BIOHEAT policy luncheon. The Powerpoint presentation on BIOHEAT from energy crop farming from the luncheon is at http://www.fcpp.org/main/publication_detail.php?PubID=1580, while the accompanying audio from the 30 minute ppt presentation is at: http://www.fcpp.org/main/media_file_detail.php?StreamID=502.
- A B5 biodiesel made by NZ Marlborough-based company Aquaflo Bionomic, derived from algae, made its debut at NZ Parliament on 20 December 2006. See <http://www.stuff.co.nz/stuff/0,2106,3899892a7693,00.html>
- Evergreen Gasification Technology of Greenwood , Mississippi, USA has developed a pressurised downdraft gasifier to generate process gas from wood chips for a tunnel kiln. Their first application consumes approximately 300 kg of wood per hour. See <http://gasifiers.bioenergylists.org/evergreenphg005>.
- The first closed-loop system for distilling commercial quantities of ethanol using methane gas recaptured from cow manure has begun production at the E3 Biofuel's Genesis ethanol plant, at Mead, Nebraska, USA. The 94 million litres per year ethanol plant will be substantially independent of the use of fossil fuels in the production of its ethanol. Such operation is expected to substantially improve the plant's greenhouse gas performance over that of conventional ethanol from corn facilities. See: <http://www.e3biofuels.com/index2.html> and <http://www.renewableenergyaccess.com/rea/news/story?id=46414>
- Hermann Scheer's new book "Energy Autonomy - The economic, social and technological case for Renewable Energy" is available via Hermann Scheer's Website <http://www.hermannscheer.de/en>. He is well known in renewable energy circles being a member of the German Parliament, President of EUROSOLAR, the European Association for Renewable Energy, and General Chairman of the World Council for Renewable Energy (WCRE).
- Colusa Biomass Energy Corporation (CBEC) has announced the completion of its first-ever rice straw harvesting operation in Colusa County, California. See: <http://www.colusabiomass.com/> and <http://www.renewableenergyaccess.com/rea/news/story?id=46657>
- A publication, *Bioenergy in Europe: Opportunities and Barriers* aims to give a comprehensive overview of the opportunities for and barriers to bioenergy development in Europe. The study is carried out within the Bioenergy Network of Excellence 'Overcoming Barriers to Bioenergy' and covers EU policy issues and their implementation in Europe, biomass availability and technology development aspects, and RTD goals to overcome the barriers to bioenergy development. Web page to download is: http://www.bioenergynoe.org/?_id=179
- A report, *Co-utilisation of Biomass with Fossil Fuels: Summary and Conclusions* from an IEA Bioenergy Executive Committee meeting in Copenhagen, Denmark in May 2005, which related to the development of biomass co-utilisation with fossil fuels - in particular co-firing - and about the remaining barriers that need to be overcome in order to accelerate the penetration of co-utilisation technologies in the market. Download a copy

at: <http://www.ieabioenergy.com/LibItem.aspx?id=5346>. Steve Schuck has a limited number of hard copies for Bioenergy Australia members.

- The European Union Biomass Action Plan is at URL: http://ec.europa.eu/energy/res/biomass_action_plan/green_electricity_en.htm
- On 06/07/06 a meeting took place in Brussels on European Union National Biomass Action Plans. The presentations from that meeting detailing individual country's plans are available for download on the Web from: http://ec.europa.eu/energy/res/biomass_action_plan/nationa_bap_en.htm
- An highly recommended article on green chemical processing is at: <http://www.chemicalprocessing.com/articles/2007/003.html?page=3>
- VTT Technical Research Centre of Finland is developing printable biofuel cells in which enzymes convert the energy bound in the renewable fuels - sugar, alcohols, etc. - into electricity. An enzyme-based power source is a viable source of electricity for the rapidly proliferating RFID tags used in the medical sector and logistics. Applications include plasters containing a memory circuit and measuring electrode for temperature, and sensors monitoring food quality. A patent on the solution, which has yielded a 0.7V voltage with a current density of 20 microampere per square centimetre, is pending. See: <http://www.vtt.fi/newsletter/042006art03.jsp?lang=en> Source: VTT
- India's Petroleum Secretary has announced plans to introduce the mandatory blending of 10 percent ethanol into petrol across the entire country from June 2007.
- The 2nd International Biomass to Liquids congress took place in Berlin, Germany from 12 -13 October 2006. The conference provided an overview of the current state of the art of processing raw materials and their conversion to synthetic biofuels, an overview of the political framework, and an outlook for BtL-fuels. All presentations are available for download at: http://www.fnr-server.de/cms35/Beitraege_br_Script.1465.0.html
- A new ethanol plant capable of processing 200,000 tonnes of cassava per year is being constructed in the Guangxi Zhuang region of China. It is expected that this region will become the largest producer of ethanol from alternative crops in China.. Over the next five years the region's capacity is to be expanded to one million tonnes. See: <http://www.worldwatch.org/node/4351>.
- China aims to use 6.7 million tonnes of ethanol and 11 million tonnes of biodiesel by 2010, to meet 10 percent of its forecast transport fuel requirements.
- Within the next four years Indonesia would like to see 10 percent of its oil and gas use replaced with biofuels. Foreign investors are being sought for investments totalling 20 billion Euros which will be required. See: <http://www.gasandoil.com/goc/news/nts63323.htm>
- A European Union funded project PREMIA is investigating the effectiveness of measures to accelerate market uptake of biofuels and hydrogen. To date several reports have been produced, including: Bio-ethanol and biodiesel in the US; Bio-ethanol in Brazil; Bio-fuels in India; Hydrogen in the US and Hydrogen in Asia. These, and several previous reports, can be downloaded from <http://www.premia-eu.org/reports.htm>.
- Dutch methanol manufacturer Methanor, based in Delfzijl, has announced that it will soon be producing biomethanol. A consortium MCN (Methanol Chemie Nederland) has reached general agreement with Methanor to take over plant, and intends to produce large quantities of biomethanol based on green raw material. The consortium will initially produce 500,000 tonnes per year, and later this will be expanded to one million tonnes per year. The demand for biomethanol in the Netherlands this past year has been estimated to be 164,000 tonnes, and for this coming year this is expected to rise to 270,000 tonnes. The surplus biomethanol production from MCN will be sold to other European countries.
- Sir Richard Branson's Virgin group has announced that it will expand into the renewable energy market and has formed a new company Virgin Fuels. The company has pledged to invest up to US\$400 million dollars in biofuels over the next three years. Virgin's first investment is in a California-based startup company, Cilion, Inc which builds and runs ethanol plants with reduced energy consumption compared to conventional ethanol plants.. See: <http://www.cilion.com>.

- Neste Oil of Finland has announced plans to spend 100 million Euros on building a second bio-synfuel plant at its refinery in Porvoo, Finland. The plant will have a capacity of 170,000 tonnes per year and is scheduled to be commissioned in mid 2007.
- A 350 MW bioenergy power plant, to be fueled on imported wood from sustainable forests is set to go ahead at Port Talbot, south Wales, UK. Prenergy Power is to develop the £400 million power station on a disused site near the town's deep water harbour. The wood chip fuel would be mainly imported from the US, Russia, and the Ukraine.
- New York based company, Green Energy Resources is reported to be receiving US\$10 million for the sale of 200,000 tons of biomass for green power generation in the Netherlands. The contract is the second recently received by Green Energy Resources.
- Canadian companies SunOpta Inc. and GreenField Ethanol Inc have signed a joint venture agreement to develop and implement commercial scale cellulosic ethanol from wood chips. The first plant is planned to produce 40 million liters of cellulosic ethanol per year, which would be the first commercial scale cellulosic ethanol plant built and operational in the world using wood chips. Greenfield Ethanol and SunOpta are actively involved in selecting a site for the first plant in Ontario or Quebec, Canada.
- The US Department of Energy/US Department of Agriculture's report 'Biomass as a Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply' is available on the Web, together with other reports at <http://www.eere.energy.gov/biomass/publications.html>.
- In October 2006 the Victorian Government's Environment and Natural Resources Committee released its inquiry report 'Inquiry into the Production and/or Use of Biofuels in Victoria'. Bioenergy Australia provided a submission to this inquiry.
- One of the factors affecting the economics of biodiesel production is the market for glycerin, a co-product from the esterification process for manufacturing biodiesel. The US biodiesel industry alone is expected to require markets for an additional 455,000 tonnes of glycerin, in a market with total current demand of 273,000 tonnes per year. One alternative being considered is a less toxic alternative to ethylene glycol for antifreeze and many other uses. Propylene Glycol can be manufactured from glycerin. In fact Cargill, headquartered in Minneapolis, Minnesota, USA, is forming a new company to make propylene glycol from renewable feedstocks using a proprietary process that is said to increase production efficiency by providing better yields and fewer byproducts than other renewable and non-renewable routes. Source: ChemicalProcessing.com
- A major cellulosic ethanol project under development is a 30 million litres per year unit in Orange County, California., that will use process technology from Arkenol, Irvine, Calif. The plant is being engineered by JGC Corp., Yokohama, Japan, and Houston, Texas and is due to commence operation in early 2009.
- While many anaerobic digester energy projects produce green electricity, six large dairies in the central San Joaquin Valley in California, USA are participating in a project to produce and purify biogas, and inject it into a major natural gas pipeline network as green gas. The project involves energy utility Pacific Gas and Electric and Microgy, a company that builds and operates methane digesters. Methane gas from the manure on the dairies will be collected in digesters and be scrubbed to remove carbon dioxide and water vapor and other impurities.
- Manfred Wörgetter of IEA Bioenergy Task 39 has summarised the 'Fuels of the Future 2006' conference, held in Berlin, Germany on 27-28 November into a summary document downloadable from: <http://www.bioenergie.de/fuels-of-the-future.htm>.
- US-based PetroSun Inc. has announced plans to establish a new company, Algae BioFuels-Australia, prior to the end of the second quarter 2007 with headquarters in Brisbane.
- Two bioenergy projects have received grants from Round 9 of the Queensland Sustainable Energy Innovation Fund (QSEIF). Approved projects are:
 - \$200,000 to horticulture body Growcom to build an anaerobic digester at a banana packing facility near Cardwell in far north Queensland to convert waste bananas to biogas.

- \$108,500 to Rentbowl of Cairns to produce boiler fuel from grease trap waste.
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Opportunities Corner

The Bioenergy Australia Manager would like to assist and facilitate biomass and bioenergy projects and businesses by providing information and industry contacts to link project developers, resources, energy companies, sources of finance and other opportunities. If you or your organisation are 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 inquiries to verify the below information.

- The Canadian Consulate General is organising an Industrial Biotechnology and Bioprocessing Trade Mission to Canada and USA in March 2007. The program consists of customised activities and meetings with key Canadian players in Industrial Biotechnology & Bioprocessing during part or all of the week of 13 - 20 March in Vancouver, Winnipeg, Toronto and Montreal. This will be followed by a visit to the world's major conference in the sector, 'World Congress on Industrial Biotechnology and Bioprocessing' to be held in Orlando, Florida USA from 21 - 24 March. See Web page: <http://www.bio.org/worldcongress>. Contact: RG (Bob) Gow, Trade Commissioner - Environment & Energy, Canadian Consulate General, Sydney. Tel: 02-9364-3045 or 0418-206-218. Email: robert.gow@international.gc.ca
- Warren Kalinko is a commercial lawyer and business developer with a strong interest in renewable energy and biofuels. He has worked for several years with leading law firm Mallesons, has acted as legal adviser to the NSW Government on its high profile laws called "BASIX"; lectured in Environmental Law at the University of NSW Law School; and over the past three years has worked on the commercialisation of a breakthrough technology for the re-use and recycling of water. If you're looking for a commercial/legal person to join your team, please contact Warren on 0413 357 473 or at warren.kalinko@optusnet.com.au.
- Shamal Chandra Das, who is close to completing his Doctor of Philosophy (PhD) from the Department of Civil and Environmental Engineering, Saitama University, Japan, majoring in Biological and Environmental Systems is seeking a research position in Australia in the field of multiple uses of harvested wetland biomass (such as nutrient uptake, biomass power). He also has a Masters degree in Water Resources Engineering from the Bangladesh University of Engineering and Technology, BUET. He may be contacted at: Room no-135, Jinde-Danchi-1, Saitama-Shi, Jinde-517, Saitama-Ken, 338-0812, Japan. Email: shamal1967@yahoo.com Telephone. 81-48-856-5890 (Res.)
- Jon Carle has more than seven years' local and international broad-ranging experience spanning environmental engineering, project / development planning, management and delivery (property and infrastructure), research and policy. He holds postgraduate qualifications in Town Planning and combined undergraduate qualifications in Environmental Engineering and Arts (policy major). Organisations looking to grow their bioenergy business, looking to recruit professional staff, are invited to contact Jon by email at: joncarle@yahoo.com, or Tel: 0423 943 232
- Stephan Nielsen, who has a Bachelor of Science in Biochemistry and a Masters in the social sciences is seeking an entry-level employment position in bioenergy. He has experience working in the environmental departments of the United Nations and within the Directorate-General Environment of the European Commission. He was also responsible for coordinating EU input into the 2006 Commission on Sustainable Development and was superficially involved with the Johannesburg Renewable Energy Coalition. His contact details are: Email: stephnielsen1@yahoo.co.uk, Telephone: 0044 (0) 207 431 1177. Address: 38 Denning Road, Hampstead. London. NW3 1SU.
- A representative of a company that manufactures fertiliser from organic waste and who has recently been to India on a South Australian trade mission is seeking an Australian company that has experience in capturing biogas and bottling it for use as a fuel. Contact

is Darian Hiles, Chairman, Oz Products Pty Ltd, GPO Box 1000 Adelaide SA 5001 Tel: 0401 122 801.

- Greenmount Travel is organising a Biofuels Study Tour of the United States and Brazil from 17 March to 2 April. The cost per person, twin share is \$10,750. Tel: (07) 4659 3555, email: travel@greenmountpress.com.au.

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<http://groups.google.com/group/bioenergyaustralia/subscribe>

Joining this list is purely to facilitate management of the distribution of Bioenergy Australia newsletters and the annual conference notices. 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 in the not too distant future this will 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. Email 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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