



IEA

Bioenergy News

Editorial

Exciting future for bioenergy

This is the last edition of the Newsletter for this 3-year period of IEA Bioenergy but you can be sure this and other forms of communication will just get better as we enter the next triennium. This period will see major improvements to the IEA Bioenergy website and several of the new Tasks have plans to create their own pages. I would like to thank you all for assisting us in updating our mailing lists, and many of you transferring to electronic media, and of course for providing information and photographs for the newsletter and website.



The next three years will be an exciting time for bioenergy. Most governments have accepted that there is a need to change our energy consumption patterns in order to avoid the chance of global warming. An important part of that change is the move away from fossil fuels towards renewable sources of energy. Bioenergy can play its role in reducing, or avoiding further increases in, emissions of greenhouse gases, both directly and indirectly. Of course we cannot overlook other aspects of the biomass supply chain such as sustainability, social aspects, and biodiversity. In this edition, you will find several items around such themes, with a focus on the climate change aspects. Bernhard Schlamadinger, Leader of Task 25, was present at the disappointing Hague event and has provided a summary of some key issues relating to bioenergy. Peter Hall, Operating Agent for Task 18, has provided an introduction to some further environmental issues related to conventional forestry and bioenergy, from the forthcoming book by Task 18. Such aspects are becoming increasingly important and are incorporated into many of the new Tasks which are reported here.



Wishing you all the best over the festive period from the team at IEA Bioenergy.

Justin Ford-Robertson

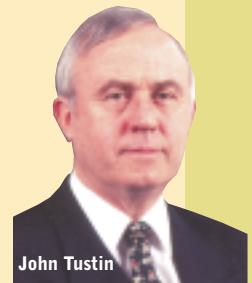
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From the Secretariat

The 46th meeting of the Executive Committee was held in Zagreb, Croatia, on 8 and 9 November 2000, with Josef Spitzer as Chairman and John Tustin as Secretary. The meeting was hosted by the Energy Institute Hrvoje Pozar. Some of the outcomes from the meeting are detailed below.



John Tustin

Possible New Contracting Parties

Interest from potential new members continues to be strong. Slovenia sent two delegates to observe the meeting and gain information on membership. An invitation to Portugal to join IEA Bioenergy was approved by the ExCo and forwarded through contacts at INETI, Lisbon. South Africa is evaluating the benefits of participation prior to making a recommendation to their government. Ireland is also actively pursuing rejoining the collaboration through the Irish Bioenergy Association.

Changes in the Executive Committee

Hiroya Naramoto the Alternate (left) and Yoichi Okuzumi the new Member for Japan at the ITC Wood Processing Company, Varazdin during the study tour.



There are some changes in the Executive Committee. For Brazil, Eugenio Mancini Scheleider is no longer the Member - a replacement will be nominated; for France, Daniel Clement is the new Member; for Japan, Yoichi Okuzumi is the new Member and Hiroya Naramoto is the new Alternate Member; for the Netherlands, Gerard van Dijk is the new Alternate Member; and for Sweden, Erik Ling is the new Alternate Member.



Julije Domac (left) the leader of Task 29 and organiser of the ExCo meeting with Erik Ling and Josef Spitzer.

Election of Chairman and Vice-Chairman

Dr Josef Spitzer was re-elected Chairman and Dr Kyriakos Maniatis, Vice-Chairman, for the 2001 year.

IEA Climate Technology Initiative

Following on from the attendance of Mr Koji Nakui, Chairman of the IEA Climate Technology Initiative (CTI), R&D Working Group at ExCo45, there have been further discussions of a joint programme with IEA Bioenergy on biomass-based transportation fuels. Dr Spitzer has invited the CTI group to propose a new Task through the relevant ExCo members - The Netherlands, Finland and Japan. This Task could include all or part of the draft CTI Bioenergy project and build on the current programmes of existing IEA Bioenergy Tasks. The CTI R&D team did not make a proposal to ExCo46 as they needed more time to agree on a specific programme. However, they have welcomed the close contact between the CTI R&D members and the respective IEA Bioenergy Members, which should lead to the definition and implementation of a future collaboration in this field.

Task Activity for 2001-2003

The following Tasks had their budgets and programme of work approved for the upcoming triennium.

Task 28: Solid Biomass Fuels

Standardisation and Classification: with the Commission of the European Communities as the Operating Agent, and Andy Limbrick the Task Leader.

Task 29: Socio-economic Aspects of Bioenergy Systems

Bioenergy Systems: with Croatia as the Operating Agent and Julije Domac the Task Leader.

Task 30: Short Rotation Crops for Bioenergy Systems

Systems: with Sweden as the Operating Agent and Theo Verwijst the Task Leader.

Task 31: Conventional Forestry Systems for Sustainable Production of Bioenergy

with Canada as the Operating Agent and Jim Richardson the Task Leader.

Task 32: Biomass Combustion and Co-firing:

with The Netherlands as the Operating Agent and Sjaak van Loo the Task Leader.

Task 33: Thermal Gasification of Biomass:

with USA as the Operating Agent and Suresh Babu the Task Leader.

Task 34: Pyrolysis of Biomass:

with the Commission of the European Communities as the Operating Agent and Tony Bridgwater the Task Leader.

Task 35: Techno-economic Assessments for Bioenergy

Applications: with Finland as the Operating Agent and Yrjö Solantausta the Task Leader.



Task 36: Energy from Integrated Solid Waste Management Systems:

with United Kingdom as the Operating Agent and Niranjan Patel the Task Leader.

Task 37: Energy from Biogas and Landfill Gas: with Switzerland as the Operating Agent and Arthur Wellinger the Task Leader.

Task 38: Greenhouse Gas

Balances of Biomass and Bioenergy Systems: with Austria as the Operating Agent and Bernhard Schlamadinger the Task Leader.

Task 39: Liquid Biofuels:

with USA as the Operating Agent and Don Stevens the Task Leader.

Progress with Communication

The ExCo has continued to show lively interest in communication of IEA Bioenergy activities and information. A new brochure on IEA Bioenergy is being prepared for the next triennium - with information targeted at audiences who are unfamiliar with this collaboration. The website will be upgraded and more closely integrated with other communication activities. In the medium term, the website is viewed as a pivotal element in the IEA Bioenergy communication and marketing strategy. In a new initiative, "IEA Bioenergy Update" will be published regularly in the well known journal "Biomass and Bioenergy". This provides excellent access to active bioenergy researchers and finds a place in major libraries worldwide. It will include news from the ExCo, reports on events and meetings, progress reports from the Tasks, technical articles and report summaries. Another ExCo initiative is to produce "position papers" on topical items of key interest and debate. These will be short (4-page), well researched statements written in a largely non-technical style for use by a wide range of audiences. Communication with non-technical audiences, including policy makers, is seen as a key issue.

The special coloured section of the Annual Report will continue in 2000 with specially prepared material from Task 18 "Conventional Forestry Systems for Bioenergy". This feature has proved popular since it was started in 1996. IEA Bioenergy News will also continue with an emphasis on contemporary and interesting content. The migration to electronic distribution will continue to be a priority for this publication. The recent CERT (Committee for Energy Research and Technology) communication strategy has been welcomed by the ExCo and aspects of the "code of conduct" have already been implemented.

Next ExCo Meetings

ExCo47 will be hosted by the Department of Trade and Industry in York, UK on Wednesday 2 and Thursday 3 May 2001. There will be a study tour on Tuesday 1 May to include the ARBRE demonstration project. Grace Gordon is the key contact for assistance and arrangements. Email: grace.gordon@aeat.co.uk

ExCo48 will be hosted by the US Department of Energy in Orlando, Florida, USA on Thursday 13 and Friday 14 September 2001. This meeting will tie in with the 5th Biomass Conference of the Americas which runs from 17-21 September.

Future meetings are planned for Denmark (ExCo49, May 2002); Finland (ExCo50, October 2002) and Australia (ExCo51, May 2003).

Task Reports

Task 18

The final workshop of Task 18 'Conventional Forestry Systems for Bioenergy' was held 18-20 October 2000 in Coffs Harbour, New South Wales, Australia, hosted by Bioenergy Australia and State Forests of New South Wales. The workshop theme of 'Bioenergy from Sustainable Forestry: Principles and Practice' was explored in sessions focussing on: bioenergy in Australia, forest management, production of forest fuels, fuel quality, biodiversity, environmental indicators and sustainable management, carbon sequestration and balances, management planning and decision tools, and bioenergy systems analysis. The majority of these presentations will be published, following peer review, in a special issue of the New Zealand Journal of Forestry Science.



Prior to the workshop, a field study tour was held in the diverse agricultural and forested landscapes of the sub-tropical coastal areas of south-east Queensland and north-east New South Wales. The tour presented a varied programme of visits, including use of bagasse and urban wood waste for energy, manufacture of high quality furniture, exploratory work on the use of woody weeds such as camphor laurel for bioenergy, rainforest ecology and management, Eucalyptus plantation management, native forest management, and sawmilling of native hardwoods. The potential for the use of forest biomass for energy in this part of Australia was well illustrated, as well as some of the driving forces that could make that potential a reality, and the current issues facing management of both native and plantation forests.

A post-workshop field study tour in the South Island of New Zealand was hosted by Forest Research, New Zealand. The participants viewed and discussed plantation forest management of radiata pine, native beech for sustainable forestry on the West Coast, and integrated catchment management in drier alpine and upland landscapes, including industrial harvesting operations. Some of the technical information presented during the study tours in both Australia and New Zealand will be made more widely available in an upcoming issue of the Task 18 Technical Notes series.



The final event of a stimulating and informative series of activities was a bioenergy seminar 'Energy from Forest Residues: Issues and Opportunities' hosted by Forest Research and Task 18. The seminar brought together about 60 participants representing the forest industry, forest management and energy sectors in New Zealand and the international forest bioenergy experts of Task 18. The result was an interesting and valuable exchange of information and ideas on the potential use of forest biomass for energy in New Zealand and lessons from other parts of the world. The success of this Task 18 'Industry Day' makes it more likely that similar events will be undertaken in Task 31 which carries forward many of the activities concerned with conventional forestry systems for bioenergy.

Task 21

The Progress In Thermochemical Biomass Conversion Conference (PITBC) was held in Tyrol, Austria from 17-22 September 2000. The conference covered all aspects of thermal biomass conversion systems from fundamental research through applied research and development to demonstration and commercial applications reflecting the progress made in the last four years. The technical programme included formal presentations, posters, workshops and discussions. A wide range of papers were offered and they were grouped into three main topics: Combustion, Gasification, and Pyrolysis.



Pyrolysis attracted the most interest with 40% of the papers. These ranged from fundamental studies on mechanisms and modelling through a wide range of papers describing research in fast pyrolysis technology and in applications, to the latest developments in pilot plant activities.

All the papers have been peer reviewed, and the proceedings will be published by Blackwell Science early in 2001.

Chairman of IEA Bioenergy Josef Spitzer (right), with Tony Bridgwater, conference chair.



Task 25

IEA Bioenergy Task 25: 'Greenhouse Gas Balances of Bioenergy Systems' in conjunction with the European Forest Institute and COST E21 'Contribution of Forests and Forestry to the Mitigation of Greenhouse Effects' held a three-day meeting on 28-30 September 2000 in Joensuu, Finland. The session of the first day was entitled 'Land-Use Change and Forestry: the Road to COP6'. This allowed for the timely discussion of such issues, leading up to the Sixth Conference of Parties (COP6), in November in the Hague.

Specific themes of the session were, for example, definitions of key terms such as 'reforestation' and 'forest', carbon accounting methodologies, additional land-use change and forestry activities that can be used for meeting emission reduction targets. The meeting also included an overview of the Intergovernmental Panel on Climate Change (IPCC) Special Report on Land-Use, Land-Use Change and Forestry by some authors of that report.



The meeting was attended by scientists and policy makers and other stakeholders from over 30 countries around the world. A summary of the first day's session is available at www.joanneum.ac.at/iea-bioenergy-task25/fnew1.htm.

Task 28

September saw an important step forward in preparations for the standardisation of solid fuels that offer an alternative source of energy to fossil fuels. CEN (the European Committee for Standardisation) has established a pre-normative Task Force for Solid Recovered Fuels, with a secretariat provided by the Finnish Standards Organization (SFS).

Recovered fuels are made from non-hazardous, mono-and mixed-wastes, and the scale of their production is becoming significant in several Member States of the European Union as a result of the introduction of Integrated Resource and Waste Management practices. Waste managers in the EU have to find ways to respond to the implementation of the Landfill Directive, which requires the diversion of organic material away from landfilling. (The methane generated by the decomposition of putrescible materials in landfills is a potent greenhouse gas, much more so than carbon dioxide). One option for waste managers is to increase the capacity for mass-burn incineration with energy recovery, but that approach is still the subject of substantial public opposition. With an increase in the separation of the components of Municipal Solid Waste, driven by material recycling targets, and careful management of commercial and industrial waste streams,

opportunities can arise to manufacture solid fuels. These fuels can be produced to satisfy the requirements of a wide range of conversion technologies that are used (and are planned for use in the future) to generate electricity and heat, and to manufacture cement and lime.



ExCo members visiting the PUTO waste-to-energy plant near Zagreb.

CEN Task Force 118 has two objectives. The first is to produce an informative (pre-normative) CEN Report on the status of the recovered fuels industry and the market for its products. The report will also examine the potential contribution that recovered fuels can make to the reduction of carbon dioxide emissions. The second objective is to draft a Work Programme to list all of the Standards that the industry requires. The Work Programme will provide the foundation for the work of a full CEN Technical Committee that has the authority to draft European Standards. It is planned to set up such a Committee in 2001, subject to the agreement of the European Commission's services. IEA Bioenergy's Task 28 has already established an informal liaison with CEN Task Force 118 and will follow its progress in the coming months.

The Hague did not live up to expectations

Climate change is considered to be one of the most serious environment threats we face. It is caused by rising atmospheric concentrations of greenhouse gases, such as carbon dioxide, due largely to the combustion of fossil fuels and deforestation. The response has been negotiated internationally following the development of the UN Framework Convention on Climate Change in 1992. The Kyoto Protocol to the Convention was negotiated in 1997 to set legally binding targets for emissions reductions. The latest in the series of meetings, the 6th Conference of the Parties (COP6) in the Hague, promised to provide clarity on a number of issues (for example, the consequences of non-compliance and the rules for emissions trading) and provide the way forward for implementing the Kyoto Protocol. Sadly this was not to be.

One of the key issues on the table at COP6 was how to deal with activities in the Land Use, Land Use Change and Forestry sector. This was an important issue for bioenergy, since decisions could have had major implications for the biomass supply side of bioenergy systems. Bioenergy systems can offer a number of benefits in terms of greenhouse gas removal or avoidance, as clearly outlined in the IEA Bioenergy Position Paper produced by Task 25 (www.joanneum.ac.at/iea-bioenergy-task25/pospapa4.pdf). While there are fairly clear messages that carbon stock changes during the commitment period (2008-2012) resulting from afforestation, reforestation and deforestation activities since 1990 will be included, there is still a lack of consensus on other issues. These include some definitions, whether additional activities since 1990 will be included (and how), and the question of claiming credit for land management activities in other countries, particularly developing countries.

In the final hours of the negotiations the President of COP6, Dutch Environment Minister Jan Pronk, tabled a proposal as a basis for compromise. It suggested that 15% of the carbon uptake in managed forests, and 70% of the carbon uptake in croplands and grazing lands, could be accounted for by industrialized countries. The text also included afforestation and reforestation as allowable projects in developing countries. Even though countries began to show some flexibility, no final agreement could be found on the issue of land management. It was agreed to suspend COP6 and continue negotiations in May 2001 in Bonn/Germany.

What would the compromise have meant for bioenergy?

Observers have compared the compromise paper with a line that was drawn in the sand which cannot easily be removed, and this line will likely serve as the starting point for new talks. The agreement would have included full credit for the carbon stock increases associated with establishment of new plantations on non-forest land, eg for biofuels. It would also have accounted for increases in soil carbon when non-tree crops are grown for biofuels. Greater removal of biomass from existing forests, on the other hand, can sometimes decrease carbon stocks in the short term while providing continued greenhouse-gas benefits through fossil-fuel substitution. Counting only 15% of the carbon stock changes in existing forests would have been a modest incentive for increasing or preserving carbon stocks in forests. Fifteen percent is also low enough so that it does not compromise the incentive for using biofuels, provided that they are efficiently converted into useful energy such as heat or power. Another pending decision to be taken under the UNFCCC next year is how to account for carbon in harvested wood products. This will be the focus of an informal workshop in New Zealand in February 2001, at which several Task 25 participants will be present. Task 25 will also launch an e-mail discussion list on wood products and address the issue at its next workshop in Canberra/Australia at the end of March.

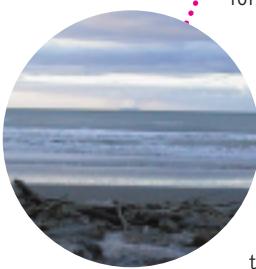
Let us all hope that there is more progress at COP6 part II in May and June 2001 in Bonn, so that countries can proceed with ratification of the Kyoto Protocol. An effective international climate-change regime will be important to foster the increased use of bioenergy.



Bioenergy and the Environment

Recent global events affecting the energy sector have promoted the increased use of biomass for energy production, particularly in industrialized countries. One of these events has been the increasing recognition of the local and global environmental advantages of bioenergy as applied to the issue of global warming. The trend towards cleaner, greener, smaller and more decentralized energy production facilities is having a significant positive impact on the demand for biomass energy. Bioenergy raises issues related to sustaining forest cover, slowing deforestation, regenerating natural forests, engaging in intensive forest management generally, and improving management of agricultural and rangeland soils. Biomass energy plantations can be developed in rural areas where land is becoming less suitable for agriculture. Bioenergy can also use forest biomass that would otherwise be unmerchantable, and harvests can be integrated with the harvesting of traditional timber products. The forest industry has taken advantage of the opportunity for co-generation of electricity based on wood waste and may become energy self-sufficient, and/or be an exporter of energy. Biomass is the largest renewable energy source in use today, and represents nearly a billion tonnes of oil equivalent, a level comparable to that of

natural gas, coal and electricity consumption. The growing diversity of public expectations for goods and services to be provided by forests has led to the concept of sustainable forest management as the ultimate goal of the management and use of forests. The criteria for sustainable forest management include many issues central to conventional forestry bioenergy production systems, such as biodiversity, protection of soil and water resources, the carbon cycle, and socio-economic aspects of community sustainability. The concepts central to those proposed to be the criteria and indicators for sustainable forest management and the protocols associated with audits for certification of forest management operations and forest products are also central to definitions of sustainable bioenergy production and use. The negotiation of the United Nations Convention on Biological Diversity in 1992, the United Nations Framework Convention on Climate Change in 1992, and its associated Kyoto Protocol in 1997 provide a clear international framework within which countries will see an increased use of biomass for the production of energy.



Publications

Growing Carbon

Growing Carbon: A New Crop that Helps Agricultural Producers and the Climate Too has been published by the USA Department of Agriculture's Natural Resources Conservation Service in cooperation with the USDA National Agroforestry Center and the Soil and Water Conservation Service and Environmental Defense. It may be downloaded from the web site:
www.swcs.org/docs/carbon_brochure.pdf

Confronting Climate Change

Confronting Climate Change: Economic Priorities and Climate Protection in Developing Nations. This book reviews domestic actions to reduce greenhouse gas emissions in a diverse group of 14 developing countries in Asia, Africa, Latin and Central America, Southeast Asia, and the Pacific. For a copy of the report contact Boni Biagini, National Environmental Trust, Washington D.C. 20036, USA; Tel: +1-202-887-8853; Fax: +1-202-887-8877; Email: bbiagini@environet.org

Scenarios for a Clean Energy Future

Scenarios for a Clean Energy Future, is a report commissioned by the US Department of Energy's Office of Energy Efficiency and Renewable Energy. The report seeks to develop a better understanding of the potential for R&D programmes and public policies to foster clean energy technology solutions to the energy and environmental challenges facing the nation. These challenges include global climate change, air pollution, oil dependence, and inefficiencies in the production and use of energy.
www.ornl.gov/ORNL/Energy_Eff/CEF.htm

Prioritizing Opportunities under the Clean Development Mechanism

ETSU has recently completed a study on the Clean Development Mechanism (CDM) examining the extent to which the CDM may bring additional funding to support projects that reduce poverty while promoting sustainable development. The report is called Prioritizing Opportunities under the Clean Development Mechanism and a summary of the findings is available at www.etsu.com/dfid-kar-energy.

Calendar of events

Meetings

ExCo 47 will be hosted by the Department of Trade and Industry in York, UK on 1-3 May 2001. There will be a study tour on Tuesday 1 May to include the ARBRE demonstration project. Grace Gordon is the key contact for assistance and arrangements. Email: grace.gordon@aeat.co.uk.

ExCo 48 will be hosted by the US Department of Energy in Orlando, Florida, USA on Thursday 13 and Friday 14 September 2001.

Task 25 workshop: Carbon accounting, emissions trading, and COP6 negotiations related to bioenergy, wood products and carbon sequestration.
 26-30 March 2001, Canberra, Australia.
 Contact: Kimberly Robertson, Joanneum Research, Graz, Austria.
 Tel: +43-316-876-1330;
 Fax: +43-316-876-1320;
 Email: kimberly.robertson@joanneum.ac.at;
 Web: www.joanneum.ac.at/ieabioenergy-task25

EECO 2000: Environment and Energy Conference - Business Strategies for Sustainable Economic Growth. 29-30 January 2001, Toronto, Canada
 Contact: Globe Foundation of Canada, Vancouver, BC, Canada. Tel: +1-800-274-6097 (in Canada or the US);
 Fax: +1-604-666-8123;
 Web: www.eeco2000.com

Creating an All-Energy Future - Renewables and Diversification. Conference & Exhibition.
 27-28 February 2001, Aberdeen, Scotland, UK.

Contact: Judith Patten, JPPR, Richmond, Surrey, UK.
 Tel: +44-208-241-1912
 Fax: +44-208-940-6211;
 Email: info@all-energy.co.uk
 Web: www.all-energy.co.uk

World Sustainable Energy Day 2001, including awards, seminar, conference and exhibition.
 28 February - 2 March 2001, Stadthalle Wels, Austria.
 Contact: Christine Oehlinger, 0.0e. Energiesparverband, A-4020 Linz, Tel: +43-732-6584-4861;
 Fax: +43-732-6584-4383;
 Email: christine.oehlinger@esv.or.at; Web: www.esv.or.at

Power-Gen Europe 2001
 29-31 May 2001, Brussels, Belgium.
 Contact: PennWell Registration, POWER-GEN Europe, PO Box 94732, Tulsa, OK 74194, USA.
 Tel: +1-918-831-9160;
 Fax: +1-818-831-9161; Email: powergeneurope@pennwell.com;
 Web: www.powergeneurope.com

Greenhouse Gas Control and Utilisation, ACS International Symposium on 1-5 April 2001, San Diego, CA, USA.
 Contact: Chunshan Song, Pennsylvania State University, USA.
 Tel: +1-814-863-4466
 Fax: +1-814-865-3248;
 Email: csong@psu.edu

Bioenergy 2001 - Conference, exhibition and plant visits.
 25-28 September 2001, Aarhus, Denmark.
 Contact: DANBIO
 Tel: +45-6550-4165;
 Fax: +45-6550-1091;
 Email: jhn@esb.sdu.dk or lbd@niras.dk

5th Biomass Conference of the Americas. Bioenergy and biobased products: Technologies, Markets and Policies.
 17-21 September 2001, Orlando, Florida, USA.
 Contact: Dee Scheaffer, NREL, Golden, Colorado.
 Fax: +1-303-275-2905;
 Email: dee_scheaffer@nrel.gov;
 Web: www.nrel.gov/bioam/

Power Generation and Sustainable Development
 8-10 October 2001, Liege, Belgium.
 Contact: Chantal Lacrosse-Pirotte, AIM, B-4000 Liege, Belgium.
 Tel: +32-4-222-2946;
 Fax: +32-4-222-2388;
 Email: ch.lacrosse@congres.skynet.be

Energy Markets: The Challenges of the New Millennium, the 18th WEC Congress
 21-25 October 2001, Buenos Aires, Argentina
 Contact: 18th WEC Congress, c/o Congresos Internacionales S.A., Argentina.
 Tel: +54-11-4342-3216 or 3283;
 Fax: +54-11-4331-0223 or 3811;
 Email: 18th-wec@congresosint.com.ar;
 Web: www.18th-wec.com.ar

UNFCCC COP7
 29 October - 9 November 2001, Marrakech, Morocco.
 Contact: Isabelle Colineau, UNFCCC, Bonn, Germany;
 Tel: +49-228-815-1425;
 Fax: +49-228-815-1999;
 Web: www.unfccc.int

Networking

The International Institute for Sustainable Development (IISD) provides the Linkages website (www.iisd.ca) as 'A multimedia resource for environment and development policy makers'. It provides coverage of major international events such as the recent COP6 meeting. It also hosts a number of mailing lists, and publishes the Linkages journal, a quarterly publication that includes analysis of issues related to sustainable development, brief meetings reports and upcoming meetings.

NOVEM have launched a website on new climate neutral substitutes for petrol, diesel, and natural gas in the Netherlands. They have identified attractive fuel chains for the transport and natural gas sectors, which could offer 50% reduction in Dutch greenhouse gases. They are now preparing a demonstration programme. More information

on this initiative can be found at www.novem.org/gave.

Several new Technical Brochures on renewable energy applications, including bioenergy systems, have been published on the CADDET Renewable Energy website www.caddet-re.org in PDF format.

CADDET Energy Efficiency have added a section to the website to allow you to access Energy Efficiency Tools on other websites around the world www.caddet-ee.org/ee_tools.htm

A public greenhouse gas emissions reduction database has been launched on the World Energy Council website at www.worldenergy.org to show voluntary emissions reduction in over 75 countries.

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