Introduction

June 2001

Welcome to the first issue of IEA Bioenergy Task 31 News – the newsletter of the Task on "Conventional Forestry Systems for Sustainable Production of Bioenergy". We produce and distribute Task 31 News with the intent of communicating current information about our Task activities, as well as current scientific and technical information and news related to the topics in which the Task is involved. That means primarily the production of biomass for energy from natural forestry systems and single-stem plantation systems. The objective of the Task is to synthesize and transfer to stakeholders important knowledge and new technical information concerning conventional forestry systems for sustainable production of bioenergy. We do this by sharing research results, stimulating new research directions in national programs of participating countries, and technology transfer from science to resource managers, planners and industry. This newsletter is one vehicle we use for the transfer of knowledge and information.

Task 31 gives new direction to the program undertaken in IEA Bioenergy Task 18, which was also concerned with conventional forestry systems for bioenergy. In Task 18, we produced three issues of "Task 18 Technical Notes". "Task 31 News" replaces the Technical Notes series and we intend that the new format will be more informative, current and attractive. As Task Leader, I would like to thank Barrie Hudson of Forestry Contracting Association, UK for editing and production of this issue. We would appreciate the reaction from you, the readers, to Task 31 News. A positive response will encourage us in our intention to produce this type of newsletter twice a year. Please send your input to me. (For contact information see the back page.)

Some highlights of current Task 31 activities

⇒ Completion of the Task 18 synthesis publication – the book "Bioenergy from Sustainable Forestry: Guiding Principles and Practices" which will be published by Kluwer Academic Publishers later this year. Key chapters discuss fuel resources from the forest, production of forest energy, cost of wood energy, bioenergy in the forest ecosystem, social implications of forest energy production, and policy and institutional factors affecting forest energy.

⇒ Workshops and field study tours. Jointly with IEA Bioenergy Task 29 "Socio-economic aspects of bioenergy systems", a workshop and field tour was held in Alberta, Canada in May 2001 on the theme of "Forest residues, bioenergy, communities - the link towards sustainable energy systems." A workshop and field tour on "Principles and practices of forestry and bioenergy in densely-populated regions" will be held in The Netherlands September 17-21, 2001. See the announcement in this issue. Proceedings of all workshops are published.

⇒ Industry Days - Day-long bioenergy seminars organized regionally bring together international experts associated with the Task and local personnel from forest industry and energy agencies to share knowledge and experience of issues and opportunities related to the production of energy from forest residues. A highly successful Industry Day was held in Alberta, Canada June 1 and another is planned for Garderen, The Netherlands September 27.

⇒ Development of an electronic information system - The existing Task webpage, part of the IEA Bioenergy website, will be expanded to include expanded Task publication information, other Task resources such as photos, data and presentations, and links to other web-based information sources. It will eventually draw on the considerable volume of valuable scientific and technical information in the Task 18 book, as well as incorporating practical illustrations and examples from participating countries in interactive form.

Available from Task 31

- 'Conventional Forestry Systems for Bioenergy: An Overview' - 12 page, full colour brochure describing the scientific and technical issues addressed by the Task. Available from Jim Richardson.
- Task 31 poster. Available in electronic form - PDF for printing A3 handouts, simplified version in PPT for slides - from Jim Richardson
- Task 18 workshop proceedings. Available through Task Secretary Alison Lowe.

Jim Richardson, Task Leader

IEA Bioenergy Task 31 News

IEA Bioenergy T31:2001:01

Swedish energy facts 2001

Sweden has a large proportion of energy-demanding industries with a vital need for electricity and process heat. It is situated in the boreal region, leading to seasonal fluctuations in the energy demand, especially for low quality heating energy. This affects bioenergy, since heating is a main use for bioenergy. Also, the energy demand decreases somewhat in a warm year, as 1999.

The Swedish energy markets are undergoing rapid change. This is an effect of increasing internationalisation but also of changing government policies concerning energy and environmental issues. To combine secure energy supply with low net emissions of GHG is one such goal, acting as a strong driver for increased use of bioenergy. Recently, much effort has been put into establishing conditions that will allow for effective energy markets. The most prominent change is perhaps the deregulation of the electricity market, aiming at increased competition between suppliers for the benefit of the consumers.

In 1999, the total energy supply was 615 TWh. Roughly 2/6 was based on petroleum products, 2/6 nuclear power, 1/6 biofuels and 1/6 consisted of hydro power, coal and coke, waste heat and natural and gasworks gas, with hydro power as the main part. As much as 32% of the energy is delivered in the form of electricity. Of the input energy, 187 TWh was lost in the production process and energy transmission, mainly in nuclear power generation.

Adding wind and hydropower to bioenergy, the proportion of energy based on renewable sources was 26%. In Sweden, bioenergy uses mainly fuels with a forest origin. Of the total supply of biofuels – 92 TWh – only 10% have a non-forest origin. It is natural that the forest industries are the most prominent users of biofuels. Their total use of forest fuels in 1999 was around 52 TWh of which 34 TWh was based on black liquor and 16.5 TWh was based on solid wood fuels from the pulp and sawmill industries. Most of this energy was used for heating and process heat, but 2.5 TWh was used as electricity through co-generation plants. Other industries used less than 2 TWh.

The second most important use of biofuels is for district heating. Of the total biofuel use in this sector, 26 TWh, 67% was based on forest fuels and crude pine oil, 20% on municipal waste and the remaining 13% on peat and other fuels. Around 1 TWh is delivered in the form of co-generated electricity.

Finally, private house owners, most commonly in rural areas, use 12 TWh in the form of traditional firewood and chips for heating.

A proposed EU directive aiming at increased production of electricity from renewable sources may increase the proportion of biofuel-based co-generation through direct and indirect subsidies.

Most of the forest fuels used consist of industrial waste products. Only around 6 TWh are produced from small trees, logging residues and other unmerchantable wood. There is an unutilised potential corresponding to approximately 10 million dry tons of forest fuels available from forest operations, half of which is logging residues from final felling.

An important issue to be addressed jointly by environmental and operations research is how this potential can effectively be put at the service of society in a sustainable way. Presently, most R&D efforts are directed towards increased integration of fuel and conventional forest operations, e.g. through "residue log" bundling (pictured left) and towards monitoring and describing the effects of fuel harvesting on nutrient status and ecological balance in affected stands.

Pictured left. Bundling of residue logs with FiberPac 370 machine.
Photo courtesy of Timberjack Ltd.

Pictured right. Timberjack Harvester.
Photo courtesy of Timberjack Ltd.

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Bioenergy in Canada 2001

Energy and bioenergy in Canada are becoming increasingly interesting subjects for the public, policymakers and decision-makers. During the past few years we have seen sudden, unpredicted, and sharp rises in fossil-derived energy prices, and continued public aversion to the continuation or expansion of nuclear energy, all in the context of enhanced environmental concerns. Policy-makers and the public are becoming aware of, and concerned with, the outcomes of the United Nations Framework Convention on Climate Change that created the Kyoto Protocol (1997) and is stimulating the use and trading of carbon credits as methods to address the emissions of greenhouse gases, particularly carbon dioxide.

The agricultural policies of the OECD countries are being scrutinized in the context of trading obligations, low commodity prices, and public concern about agricultural methods. Land use changes increasingly result in additional land becoming available for other crops with product diversification developing as a way of life in agricultural communities.

Technological changes in the manufacture of products from wood and other types of biomass are opening up a number of opportunities for a variety of biomass feedstocks. These changes and trends present new opportunities for increased use of bioenergy in Canada with the development of a commercial market for biomass being encouraged by a combination of these factors.

Bioenergy use in Canada amounts to 590 petajoules annually and comprises 5% of our primary energy demand. Most of this is utilized in the forest sector in pulp and paper mills, and is supplied from self-generated waste or pulping liquors. The combustion equipment supplying this ranges from small wood stoves to large industrial units burning in excess of 1 tonne per minute of residue. Resource availability is frequently not a problem. In 1998 there was a supply of 17.7 million dry tonnes (MDT) with a current use of 12.3 MDT. Much of the waste used, however, is not where it is needed and regional surpluses/deficits are characteristic of the market.

Electricity generation in Canada is derived from a variety of sources. For example, Ontario electricity generation is derived from hydro 27%, nuclear 39%, coal/oil 26%, natural gas 6%, and renewables consisting of solar, wind, biomass, and waste 2%. The proportions vary widely among provinces depending upon the available resources. For example, in Alberta about 80% of electricity is generated from coal, reflecting the local abundance and cost of this resource.

Markets for biomass use in Canada are limited by high capital and operating costs for combustion units despite incentives such as capital cost sharing (25%) for the installation of commercial systems supplying building heat, and an Accelerated Capital Cost Allowance for installation of electrical cogeneration systems. Other barriers include an imbalance between residue supply and energy demand coupled with high transportation costs and low calorific values for biomass fuels. Environmental concerns are frequently raised regarding the high levels of particulate pollution although this can often be alleviated through new technologies. Feedstock costs for biofuels in Canada are low compared to those in European countries strengthening the advantages for these more environmentally-friendly fuels.

Pictured left. Camphor Laurel biomass recovery trial for fuel. Photo J.B. Hudson.

Pictured right. Excavator sorting log poles. Photo J.B. Hudson.

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Bioenergy from Sustai

The following are edited abstracts of scientific and technical papers presented at the final workshop of IEA Bioenergy Task 18 held in Coffs Harbour, NSW, Australia and at an associated Bioenergy Seminar held in Nelson, New Zealand in October 2000. The complete papers will be published in a proceedings to be issued by the New Zealand Forest Research Institute Ltd. in autumn of 2001.

Bioenergy from conventional forestry – more than logging residues

Rolf Björheden, Växjö University, Sweden

There has been considerable effort from forestry to develop forest residue harvesting. But parallel to this development, forestry has also intensified energy recovery based on 'secondary' forest fuel consisting of waste products from conventional forest industry. This is now a major item of the Swedish energy budget. More energy is currently recovered from 'secondary' sources than from primary forest fuel harvested on logging sites. In south Sweden, the supply of 'secondary' forest fuel is so high that 'primary' forest fuel handling is restrained. The paper presents and compares the use of 'primary' and 'secondary' forest fuels in Kronoberg, a county in southern Sweden. An attempt is made to compare the two different fuel sources and to analyze why the expansion of 'secondary' fuels has been so much stronger than the corresponding development of primary forest fuel harvesting.

Wood energy in Finland

Pentti Hakkila, VTT Energy, Finland

Wood is the most important source of indigenous energy in Finland. The primary sources of wood-based energy are black liquor, bark and sawdust from the forest industries. Wood-based fuels produce 19% of the total consumption of primary energy. Two primary untapped sources of forest fuels are: residues left unutilized in conjunction with silvicultural activities and logging operations, and a part of the unutilized annual net increment of biomass, which includes small-sized trees which should be removed from young stands for silvicultural reasons. In 1999 Finland launched a 5-year Wood Energy Technology Program. The goal is to raise the use of forest chips to 2.5 million m^3 solid by 2003. The additional forest fuel would come from precommercial tending, integrated recovery of fiber and fuel from first commercial thinnings, and from final harvest. The present total consumption of forest chips is 747,000 m^3 solid, which is still considerably less than the small-scale use of traditional firewood, 5 million m^3 per annum.

Results of voluntary forest management practice guidelines to protect water quality in the southeastern US: An example from South Carolina

Thomas M. Williams, Donal D. Hook, Donald J. Lipscomb, Clemson University, USA

The South Carolina Forestry Commission published the most recent edition of Forestry Best Management Practices in 1994. In 1995 we installed a study to measure effectiveness of these BMP's on four experimental watersheds on the Clemson Experimental Forest, in the Piedmont of South Carolina. After 15 months of pre-treatment monitoring, three watersheds were cut and site prepared using all appropriate BMP's. Following logging, site preparation treatments were: natural regeneration; shear, rake and pile; and herbicide and burn. Suspended sediment, NO_3-N, PO_4-P, pH, and water temperature were measured throughout the pre treatment period and for 12 months post treatment. Maximum suspended sediments with BMP's were ten fold less than logging without BMP's, and resulted in concentrations near to those caused by increased flow due to tree removal. All other parameters were similar to pre-treatment levels.

Renewable energy - the Danish case: pictured by policy, biomass and wind

Niels Heding, Forest and Landscape Research Institute, Denmark

This article provides an overview of the Danish bioenergy sector pictured by policy, biomass and wind. Since the mid-1980s changing governments and parliamentary majorities in Denmark have persisted in the importance of an active energy policy with increased emphasis on a resource-based and environmentally responsible policy. By far the largest share of energy generated from renewable energy sources in Denmark comes from biomass. Three sources are discussed: wood, straw and short-rotation forestry. Among those, wood is ranked number one, straw number two and short rotation forestry is nearly insignificant. A short history of the development of modern Danish wind turbines is presented to illustrate why Denmark accounts for half of today's world wind energy market, and a short description of present day industry is given.

nable Forestry - Principles and Practice

Forest residues – effects of handling and storage on fuel quality and working environment

Raida Jirjis, Swedish University of Agricultural Sciences

Forest residues, produced after final felling or commercial thinning operations, constitute one of the major assortments of wood fuel. Due to various reasons, immediate use of the biomass is often infeasible. This means that the fuel has to be stored in the forest or at industrial terminals. The storage of fresh biomass in any form, under aerobic conditions, leads to biological and chemical degradation. The extent of the degradation depends on many internal and external factors. The type of biomass and the properties of its components are among the major internal factors while the material form (whole or chipped), the storage location and duration are some of the external factors. Various methods of storing forest residues have been tested and evaluated. Problems connected with these methods and possible solutions are described. The effect of storage and handling of forest residues on fuel quality and working environment is also discussed.

Life Cycle Assessment of wood energy

Helena Mälkki[1], Tiina Harju[1], Tarja Turkulainen[1], Margareta Wihersaari[2], [1]VTT Chemical Technology and [2]VTT Energy, Finland

Environmental burdens and impacts concerning use of logging residue in energy production are assessed with the Life Cycle Assessment (LCA) methodology throughout a product's life from forest cultivation to energy production. Five different production systems for logging residue were studied in view of greenhouse gas emissions and energy consumption. Environmental differences between the fresh and dry forest chip chains were analysed in a detailed LCA study accounting for a variety of air emissions from chip production and transportation. The emission measurements and the material balance calculations provided a good database for the LCA calculations. The life cycle approach gives an opportunity to evaluate environmental issues regarding the wood energy chain by compiling systematic and transparent data for decision-making processes and by supporting environmental communication directed to interested parties.

Planted trees, silviculture and bioenergy production

Don J Mead, New Zealand

Most silvicultural practices do not currently reflect bioenergy considerations, although silviculture could readily adapt to greater use of biomass for energy. In industrial plantations for wood production management practices range from growing high value logs on longer rotations, through to growing short rotation coppice for pulp. With radiata pine, silviculture varies widely, depending on factors including location, site, markets, owner's needs and economics; bioenergy production is relegated to waste materials and currently no growers are planting the species just for bioenergy. For hardwoods, as grown in Europe, more complex shelterwood and group or single-tree selection systems are often more appropriate because of prime objectives, or ecological and social reasons; energy production is again likely to be of secondary consideration in such stands. In developing countries, agroforestry is frequently an appropriate practice for poor rural communities; however, despite their need for fuelwood, farmers seldom grow fuelwood woodlots; rather, multipurpose species and systems that provide a range of products (shelter, fruit, fodder, wood and fuelwood) are often seen as the most appropriate option.

Europe as an arena for developing forest biodiversity targets at the landscape scale

Grzegorz Mikusinski and Per Angelstam, Swedish University of Agricultural Sciences and Örebro University, Sweden

The evolutionary past of the European forests and the cultural development of European landscapes are used to discuss the present status and prospects for forest biodiversity in the face of expected dramatic land use changes. Particular emphasis is put on the use of land use history gradients from reference areas to altered landscapes for ascertaining how the balance between use and conservation of European landscapes shall be achieved. Examples from the

different components of biodiversity (habitats, species, genes and processes) illustrate the value and importance of international and interdisciplinary co-operation among regions with different land use history within each biogeographic region. The presence of biogeographical and historical gradients gives an opportunity to develop forest biodiversity targets integrating knowledge from both highly altered landscapes and relatively undisturbed reference areas. These targets shall be applied to strike the balance between the future use and conservation of the European landscapes, thereby assuring their long-term sustainability. The identification of critical thresholds for forest biodiversity in different forest ecosystems followed by communication, understanding and finally use in practical forest and land use planning is a great challenge for international research and practice.

Carbon distribution and aboveground net production as influenced by harvesting in a second-growth boreal mixed wood forest in eastern Canada

I. K. Morrison, J. Lee Jr., D.A. Cameron, J.-D. Leblanc, and M.T. Dumas, Canadian Forest Service

Effects of harvesting on carbon © distribution and recovery of aboveground net primary productivity (NPP) were investigated in a boreal mixed wood stand in northern Ontario, Canada. Treatments were applied to replicated 10-ha compartments. These included (i) clearcut and (ii) partial cut by cut-to-length and full tree systems (leaving high and low quantities of slash, respectively. Amounts and distributions of organic C in the biomass, necromass, forest floor and mineral soil prior to and following harvest were assessed. Total ecosystem organic C content prior to harvest was estimated at 247.6 Mg ha-1, with ca. 38% in the biomass, 11% in the necromass, 19% in the forest floor and 32% in the mineral soil. Harvest removals ranged from 15% for the partial cut, cut-to-length treatment to 30% for the clearcut, full-tree option. Aboveground NPP and C assimilation remained high on uncut plots. Recovery of NPP during the first 5 years was higher on partial cut plots than on clearcut plots, due mainly to accrual onto the residual overstory. Pro-rating aboveground NPP onto live biomass suggested that trees on clearcut plots were substantially more effective as C-fixers than trees on partial cut plots which, in turn, were more effective than trees on uncut plots.

Harvest of energy-wood from urban forests

Job Vis, The Netherlands

In 1999 and 2000 a practical trial on harvesting energy wood from Dutch forests was carried out on behalf of the National Forest Service and NOVEM (a governmental organisation for energy and environment). The goal was to find efficient and well-considered harvesting methods to supply two new biomass power plants. The trial compared three methods for harvesting full trees and one each for harvesting stemwood, assortments and topwood. The last method is the most efficient, but likely to be rarely used, because the majority of Dutch foresters want to leave treetops to provide nutrients on the site. Harvesting stemwood and assortments is more expensive than harvesting full trees, but these two methods will be needed during the bird-breeding season from mid-March to mid-August, when work in the State forest stands is forbidden. First thinning will be the most important source of energy wood from Dutch forests. The best method for first thinning is the so-called three-step method. It can be carried out all year, at reasonable costs and with lightweight equipment.

The fuel quality of Norway spruce logging residue in relation to storage logistics

Juha Nurmi[1] and Kari Hillebrand[2], [1]Finnish Forest Research Institute and [2]VTT Energy, Finland

The effect of harvesting logistics on the fuel characteristics of non-comminuted Norway spruce logging residue from regeneration cuttings was studied in central Finland. Roundwood harvesting took place in the summer of 1999. As a result of exceptionally favourable weather conditions the residue in roadside windrows reached 22% moisture content in just four weeks. Simultaneously the residues on the clear-cut area in harvester-made heaps sunk below the 20% mark. Thereafter drying was considerably slower. With the approach of fall and winter the residue mass started to absorb moisture. As long as the weather had been favourable the cover did not seem to have much significance. However, with increased precipitation, first rain and then snow, the uncovered windrows rewetted at a faster rate. This applied to both green and brown residues. When recovery of green residue takes place the highest yield per harvested area is guaranteed but the bulk of the nutrients is also removed. When residues are left on the clear-cut area to dry in favourable conditions the majority of the needles are shed to the ground. Shedding also takes place in roadside storage but not quite to the same extent as on the clear-cut area.

Bioenergy in Australia

Stephen Schuck, Bioenergy Australia

This paper provides an overview of bioenergy development in Australia. It sets out the drivers and key issues and how bioenergy is being promoted through Bioenergy Australia, a group of 41 government and industry organisations. Bioenergy Australia is the vehicle for Australia's participation in IEA Bioenergy. The paper broadly provides an indication of bioenergy projects under development for meeting Australia's forthcoming mandate for an additional 9,500 GWh/a (additional two percentage points renewable energy) by 2010 and other regulatory and business requirements.

Harvesting-related soil disturbance: implications for plant biodiversity and invasive weeds

Daniel G. Neary, William H. Moir and Barbara G. Phillips, USDA Forest Service

Harvesting for conventional forestry products, bioenergy, or fuels reduction creates varying levels of soil disturbance depending on the felling and extraction systems used. Site preparation before replanting imposes additional disturbances depending on the mix of mechanical, chemical, and fire techniques used. These inter-rotation disturbances usually affect subsequent plant diversity in different ways. Although the common assumption is that these impacts are negative, they can be highly positive depending on the type and level of disturbance. One new aspect of environmental concern regarding plant diversity is the potential for harvesting and site preparation soil disturbance to accelerate invasions by noxious weeds. There is growing evidence that, in some forest ecosystems, noxious weed invasions pose a far greater threat to plant diversity than the physical effects of harvesting or site preparation alone or in combination. This paper examines how soil disturbances and invasive weeds affect post-harvest plant diversity.

Effects of storage on fuel parameters in piles of raw and comminuted logging residues

Peter Hall, Forest Research, New Zealand

In order to describe changes in fuel quality parameters over time, in raw and comminuted logging residues, piles of both types of residue from a radiata pine clearfell were created. They were regularly sampled and analysed to collect data on moisture content, inorganic content, heat value and fuel characteristics. The most significant results were seen in moisture content. The results indicate that there may be a benefit in storing residues in an uncomminuted form to gain increased fuel value from air-drying. The most notable change in inorganics was the substantial drops in the levels of K in both raw and comminuted residues and P in the raw residues. Fuel analysis of the two types of residue showed that there were few changes over time but that the two fuels were different, with the comminuted residues having higher ash content. This was ascribed to differences in handling during fuel processing. The effect of the in-forest drying on potential delivered energy cost is described.

Pictured p4. Farm-scale woodfuel processing, Sweden. Photo courtesy of R. Björheden.

Pictured p5. Log sorting with woodfuel potential, New Zealand. Photo courtesy of C.T. Smith.

Pictured p6. Spreading Ash, Finland. Photo courtesy of P. Hakkila.

Pictured p7. Native Beach forest, New Zealand. Photo courtesy of P. Hakkila.

"Principles and practice of forestry and bioenergy in densely-populated regions"

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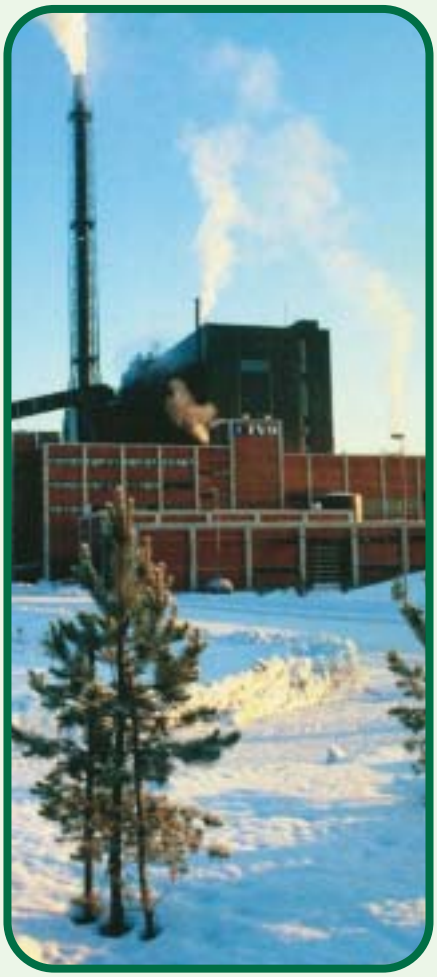

Optional Post-Workshop Tour

Monday 24 – Wednesday 26 September

Monday of the 3-day field tour in The Netherlands will focus on water management and nature-conservation in the Zeeland Coastal area. On Tuesday we travel through the centre and south of the country to look at aspects of integrated forest management including harvesting of biomass and large-scale use of biomass in combination with use of high quality wood. The largest biomass plant in Western Europe will be visited. Wednesday morning we visit the Amsterdam forest – a good example of an intensively used city forest on excellent soil, and in the afternoon the city.

Fees

Workshop

Hfl. 1830 (approx. US$ 730) per person based on single accommodation or
Hfl. 1680 (approx. US$ 670) for twin-share accommodation.

This will cover all costs from registration on Sunday night through to departure Friday 21 September.

Reduced rates for a limited number of students.

Optional Post-Workshop Tour

Hfl 1180 (approx. US$ 470) per person based on single accommodation or
Hfl. 1030 (approx. US$ 410) for twin-share accommodation.

This will cover all costs from Sunday night accommodation through to arrival at the Amsterdam international airport for flights departing after 5pm Wednesday 26 September.

Reduced rates for a limited number of students.

Optional Extra Bioenergy Seminar, Baarn, Netherlands Thursday 27 September 2000.

The Bioenergy Seminar will bring together resource managers, planners and industry from the Netherlands who wish to explore the local potential of bioenergy, with international experts from the participating countries of IEA Bioenergy Task 31 who can offer the benefits of their own experience. Issues and concerns will be discussed, new contacts and partnerships can be made, and new directions stimulated. Free of charge to registered participants.

Information

Further information about any aspect of the workshop, field tours or seminar - including tentative program, fees and registration - may be obtained from the Task 31 webpages at www.ieabioenergy.com (look under 'Tasks' for 'Task 31') or by contacting the Task 31 Secretary Alison Lowe at alison.lowe@forestresearch.co.nz

IEA Bioenergy

Task 31. Conventional Forestry Systems for Sustainable Production of Bioenergy

WORKSHOP

Garderen, Gelderland
The Netherlands

17-21 September 2001

AND OPTIONAL

Post-Conference Tour
The Netherlands

24-26 September 2001

Organised by Niek Borsboom and Job Vis on behalf of host committee: National Forest Service (Staatsbosbeheer); Forest Contractors Organisation (AVIH); Alterra Research Institute; Institute for Forests and Forest Products (SBH).

Contact person: Carla Piazza; c.piazza@sbb.agro.nl

"Principles and practice of forestry and bioenergy in densely-populated regions"

Workshop Objectives

The workshop focuses on an important, but under-appreciated source of biomass for energy - forestry systems in densely-populated regions - and considers the many impacts that society may have on forest ecosystems and forest management. The objective is to share experiences and identify guiding principles for sustainable bioenergy production from forestry systems in densely-populated regions based on state-of-the-art knowledge in three main topic areas. Despite the focus on issues of densely-populated, highly urbanized landscapes, we recognize that experiences from other situations may also bring valuable insight through common principles. Broader treatments of the topics will be included.

Field Study Tour — Monday 17 & Tuesday 18 September

A field tour by coach each day starting and ending at the Talma Hoeve Holiday Resort, Garderen. Day 1 will be in the Flevopolder – new land developed in 1960-1970. The focus will be new land development, "lowland" high productive forestry, and integrated forestry and use of biomass, including a visit to the local bio-energy plant. Day 2 will be in the central part of the country focussing on integrated forest management, use of forests in urban areas, harvesting and production of biomass, including the kings park forest.

Technical Sessions — Wednesday 19 – Friday 21 September

The 3-day workshop with presentation of scientific and technical papers and posters will be held at Talma Hoeve Holiday Resort, Garderen, near Apeldoorn in the center of the Veluwe Area.

Contribution of Conventional Forestry to Energy Supply and Greenhouse Gas Balances — Wednesday 19 September

Contribution of conventional forestry to energy supply and greenhouse gas balances - to evaluate the potential for bioenergy to satisfy energy demand on regional, national and global levels, and the contribution to GHG balances to be made by conventional forestry bioenergy production systems.

Forestry and Vegetation Management Challenges — Thursday 20 September

Mixed species stand management - forestry and vegetation management challenges - to review current trends and research directions in forest vegetation management in order to assess opportunities for woodfuel recovery, and to provide input to future research directions.

Forestry Operations and Bioenergy Options in the Urban-Wildland Interface — Friday 21 September

Forest operations and bioenergy options in the urban-wildland interface - to analyse system requirements for forest operations and forest product flows providing opportunities for bioenergy in densely-populated regions.

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