

TASK 29

Socio-Economic Drivers in Implementing Bioenergy Projects

Task Prolongation Proposal

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Working Period 2006-2008
Task Prolongation Summary Sheet

Task Title: **Socio-Economic Drivers in Implementing Bioenergy Projects**

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Objective

To achieve a better understanding of the social and economic drivers and impacts of establishing bioenergy fuel supply chains and markets at the local, regional, national and international level, to synthesise and transfer to stakeholders critical knowledge and new information, to improve the assessment of the above mentioned impacts of biomass production and utilisation in order to increase the uptake of bioenergy and to provide guidance to policy makers.

Progress achieved in Task 29 (2003-2005)

- Completing an analysis of the existing tools for socio-economic modeling of different bioenergy systems;
- Facilitating the improvement of understanding socio-economic aspects of bioenergy in participating and other interested countries;
- Elaboration of complex social and economic interactions of bioenergy and community with references to case studies and projects in participating countries;
- Analysis of public perception and understanding, household surveys, awareness raising and educational campaigns in various participating countries;
- Review and identification of different socio-economic drivers for implementing bioenergy projects in urban communities;
- Identification and contribution to understanding of local, regional and cross-boundary partnership in implementing bioenergy projects in participating countries;
- Achieving a recognition of the overall benefits of bioenergy and importance of socio-economic aspects of bioenergy systems with the International Energy Agency and the European Commission;
- Successful linkage and joint activities with IEA Bioenergy Tasks 30, 31, 38, 40; FAO; World Bank and European Commission projects and programmes;
- Scientific papers, expert reports, workshop proceedings, meeting minutes, poster, and a large selection of papers presented during 2003-2005 at national and international workshops, conferences and seminars;
- A recognised and extensive educational web site (www.aboutbioenergy.info) as a successful and powerful educational tool aimed for a wide audience;
- Publication of a second (upgraded and extended) edition of the brochure 'Bioenergy in your Community'
- Prime contribution to IEA Bioenergy Position Paper 'Benefits of Bioenergy'

Work scope for the new Task period (2006-2008)

Much has been achieved in the first three years of activity addressing the complex topic of socio-economics as applied to bioenergy systems. The Task has been able to clearly set out the 'state-of-the-art' and begin to apply new methods and thinking to community centred initiatives, based on community interaction and feedback. Moreover, a clear impact has been manifest as a direct result of the activities of the different research groups in participating countries and beyond. Education and the contribution that education can make in removing different barriers for bioenergy around the world was seen as an important part of the past Task 29 activities. The proposed new Task will give this key activity new direction to the programme undertaken in Task 29. It will encompass the results and the findings realised previously in the Task and also embrace the international state-of-the art socio-economic evaluation of bioenergy programmes and projects. The scope will be world wide, but focus primarily on participating countries, taking into account their different international

frameworks. The work will include the sharing of research results, stimulation of new research directions in national, regional and local programmes of participating countries, technology transfer from science to resource managers, planners and industry as well as beyond national borders. The emphasis will be on an integrated approach to economic, environmental and social aspects of bioenergy systems from production through supply chains to eventual consumers. Multi-disciplinary partnerships of key stakeholders in forest biomass production and utilisation research, planning and operations will be fostered. A clear linkage with Universities will be made in order to ensure a strong **scientific** component and participation in Task activities. Likewise, stronger links will be encouraged with **industry** partners and communities able to deliver projects and data for analysis and that generate real change on the ground.

The Task participants, whom are supported by a wide range of national experts, identified the following themes which will be detailed and elaborated on in the proposed new three year programme below:

- Biomass in urban communities;
- Contribution of bioenergy to security of energy supply;
- Long term and sustainable supply of biomass;
- Bioenergy systems investment considerations (including risk)
- Socio-economic benefits from biomass supply chains and the interplay of ‘town and country’ issues;
- The impact of hybrid bioenergy solutions on local markets (including large scale co-firing)
- Socio-economic implications of bioenergy in the context of agricultural changes/policy;
- Bioenergy training at higher education institutions.

The above mentioned themes will be elaborated on through international expert workshops and reviewed workshop proceedings, special issues of recognised international journals (e.g. *Energy Policy*, *Biomass & Bioenergy* etc.), case study reports, joint papers at the most important related conferences, international experts meetings, position papers etc. Much of these activities will be conducted in cooperation with other IEA Bioenergy Tasks in order to achieve the highest level of quality, synergy and global impact.

Work programme

- Completing the ongoing work in formulating a methodology for determination of economic contribution and social impact resulting from the deployment of bioenergy systems.
- Annual workshops with field study tours, and expert meetings for the sharing of scientific and technical information and furthering the Task programme, with published proceedings.
- Study of different regional and national achievements in recognition and evaluation of social and economic benefits of biomass utilisation with special emphasis on above mentioned themes.
- Establishing current best practice for maximising the social and economic gain for local communities including existing planning models for the implementation of bioenergy projects and programmes.
- Assessment of the international state of the art on socio-economic evaluation of bioenergy programmes and projects along with benchmarking national, regional, IEA and EU programmes.
- Dissemination of findings and conclusions by means of publications and an Internet web site with downloadable publications, tools, overviews communications and links relative to the activities of the Task.
- Transfer to stakeholders new knowledge and technical information.
- Co-operation and information exchange with other IEA Bioenergy Tasks.
- Make policy recommendations to the relevant bodies at various levels.
- Linkage with complementary FAO, IEA, EU and World Bank projects and programmes.

Deliverables

- Annual workshops with subsequent published reviewed proceedings.
- Special editions of recognised international scientific journals.
- Selection of scientific papers presented at major international events.
- Selected case study reports.
- Electronic information system based on existing Task 29 web site (www.iea-bioenergy-task29.hr).
- Further development of the Educational web site (www.aboutbioenergy.info).
- Technology and knowledge transfer including technical seminars, conferences and participation in different national and international events with educational goal.
- Contribution to educational/training programmes in participating countries.

Management

Task Leader: Dr Julije Domac, Energy Institute *Hrvoje Pozar*, Croatia

Associate Task Leader: Dr Keith Richards, TV Energy Ltd., United Kingdom

**A PROPOSAL TO THE EXECUTIVE COMMITTEE
IEA BIOENERGY**

FOR PROLONGATION OF AN INTERNATIONAL COLLABORATIVE TASK ON

Socio-Economic Drivers in Implementing Bioenergy Projects

OBJECTIVES

To achieve a better understanding of the social and economic impacts and opportunities of bioenergy fuel supply chains and systems to communities at the local, regional, national and international level, to synthesise and transfer to stakeholders important knowledge and new information, to improve the assessment of the above-mentioned impacts of biomass production and utilisation.

WORK SCOPE

Continuing and injecting new direction to the programme undertaken in the IEA Bioenergy Task 29, this new three years programme will focus on social and economic impacts and opportunities of bioenergy systems, taking a more holistic view of the totality of Bioenergy activities which in some instances will involve linking bioenergy projects with specific frameworks and issues such as:

- Urban communities;
- Security of energy supply / Vulnerability of bioenergy communities;
- Long term and sustainable supply of biomass;
- Local communities along biomass supply chains, addressing town and country issues;
- The impact on local biomass markets and growers of large scale co-firing
- Agricultural policy;
- Training and education at higher education institutions (universities).
- Training and education of industry/ developers.

Although biomass-based energy systems are more common in rural areas, there are more and more examples of large scale use in **urban communities**, as demonstrated in Vienna (Austria), Stockholm (Sweden) and many other cities around the world. Small scale biomass applications are also increasingly important for heating individual homes. Biomass is also gaining significant profile in the case of re-building or regeneration of urban areas where a 'greening' marketing strategy is being embraced by both public and private sector developers. An example of this is the Bracknell development in the UK. Moreover, an interesting and relatively new category – **urban biomass**, which is represented by *municipal green waste, landfill gas, biogas* from organic households waste and *used cooking oils* for biodiesel production is becoming more and more important.

The security of energy supply, together with import/export balance is an important macroeconomic and strategic issue for any country. The growing import dependence ratio in the European Union (estimated at 70% before 2030, 90% for oil), influenced several legislative initiatives (Directives) intended to facilitate development of the biofuels market in Europe. The importance of reducing **energy dependence** is so high that The Ministry of Foreign Affairs of Japan has established a so called 'energy diplomacy' initiative working to

secure the stable supply of energy (energy security) for Japan.

Biomass is often considered to be a **secure and reliable energy source**. However, biomass supply can be affected by unsuspected event like a strong hurricane in South Sweden, events that might become more frequent with the change of climate. Kronobergs County in south Sweden is an area where waste material from forestry is used for most of the heat production and electricity production to a very high extent. The hurricane Gudrun that stroke south Sweden in January 2005, damaged more than 70 million cubic meters of timber, equaling many year's normal cuttings. In a few years, shortage of waste material from forestry can be expected. This case study will examine the socioeconomic effects of the hurricane with special focus on recommendations for future resiliency.

Local communities along biomass supply chains, have a crucial role to play in bringing about real change in newly developing biomass markets or in securing existing markets. Often neglected, farmers, growers, estate owners (public and private sector) need to be more involved with the overall push to expand the uptake of bioenergy. There is also the matter of the 'interplay' of town and countryside. Most opportunities for medium to large scale deployment of biomass projects is in town/ urban environments whilst the resource is in the surrounding rural hinterland. This interdependence is a unique factor for bioenergy, differentiating it from most, if not all, other forms of energy provision. The bioenergy community has failed to grasp the significance of what can be a major problem in that town and country have very different issues and socio-economic drivers. These need to be fully understood and addressed together. In this way, a problem can be turned into a virtue.

The impact on local biomass markets and growers of large scale co-firing, there is an increasing move in some countries to the greater use of biomass in hybrid facilities, most notably wood fuel in co-fired facilities. Such initiatives are seen to be 'market enabling' and to help with the establishment of wood fuel supply infrastructures. Additionally, such a strong market pull can assist with the establishment of large scale energy plantations (such as short rotation coppice). However, unless carefully regulated and managed, such initiatives can have a profound effect on the more local dedicated biomass market. An investigation into local benefits and costs could provide useful insights for both future policy and local practical actions.

Feedstock development activities are *planting the seeds* for an integrated energy crop industry. Fast growing wood and grass varieties are mechanically planted and harvested as an alternative crop. The farming techniques that will make energy crops cost-competitive and provide a new market for the rural economy are beginning to be demonstrated across the EU and in the U.S. The increasing focus of **agricultural policy** on environmental and rural development aspects of sustainable agriculture could lead to opportunities for biomass energy. The enlargement of the EU will have significant implications on a common agricultural policy and could provide further opportunities for biomass energy.

A common barrier preventing a more intensive uptake of bioenergy is the lack of awareness and knowledge among the key stakeholders in the economy, society, and politics more generally. An improved awareness combined with significant educational effort could make major difference. Existing **education on bioenergy** in various countries (Austria, Denmark, Finland, France, Germany, Sweden, and the United Kingdom) at undergraduate and postgraduate levels is often a component in a sustainable energy specialisation in engineering disciplines. A number of courses have been identified which focus on non-engineering aspects of sustainable energy or bioenergy, including agriculture, building services, climate change, design, economics, forestry, law, rural development, sustainable development and waste management. These broader approaches are critical and need to be more strongly

promoted.

The key priority will be the analysis of the economic and social aspects of initiatives along with the net overall benefits of bioenergy use. This will include the development and promotion of tools and guidelines for their determination. The Task will also deal with connected environmental considerations and the contribution that biomass makes to rural and remote areas, in which biomass production for energy often takes place.

Geographically, the new Task will focus directly on the member countries of IEA Bioenergy that agree to participate in the Task. More generally, the new Task will seek to compare and contrast conditions in rural and urban regions in various parts of the world (e.g. Europe, North America, Japan, others), examining issues raised. However, efforts will also be made within budget limitations to involve, for example, South Africa, Brazil, and countries in Eastern Europe. Such countries may be able to contribute to the work of the Task, or to help implement its ideas through the development and expansion of bioenergy production systems in new regions. This work will be carried out in close collaboration with the FAO and European Commission.

The work of the new Task will draw on and build upon existing scientific and technical knowledge, information and expertise within the limits of budget, time and the voluntary nature of country participation. Results of completed and ongoing research in participating countries and elsewhere will be synthesised and stimulation will be given to new research directions. Applications to real projects and linkages with other complementary initiatives and programmes will be a priority matter. Key experts from government, universities, high-level research institutions, local energy agencies, NGOs, and industry will be brought together and engaged in high-level discussions guided by scientific understanding in order to address the issues raised. In doing this, an integrated approach will be maintained involving critical social, economic and environmental sustainability components of bioenergy systems. Multi-disciplinary partnerships of the most important stakeholders will be fostered. Local communities and industrial involvement will be particularly sought in relation to the transfer of technical information concerning environmentally and socially sustainable and economic biomass production. In this way real change in the approach of project developers through development and application on the ground will be achieved. The new Task will endeavor to have a significant impact on research, development and demonstration (RD&D) and practice in participating countries in order to achieve the goals of IEA Bioenergy.

WORK PROGRAMME

Background

At a world level, biomass energy use represents nearly one billion tonnes of oil equivalent, a level comparable to the consumption of natural gas, coal and electricity. Biomass is the largest renewable energy source in use today. A wide range of sources supply this 'green energy' in developed and developing countries. For the future, bioenergy offers cost-effective and sustainable opportunities with the potential to meet up to 50% of world energy demands during the next century, while meeting the requirements of reducing carbon emissions from fossil fuels. Bioenergy based on biomass, therefore, functions in an environment of international agreements and national/international initiatives which promote sustainability.

Biofuels fit directly for all energy markets: heat, electricity and transport fuels alike. It cannot be restated often enough that only 200 years ago, we relied almost entirely on biomass. Even large energy companies such as Shell are investing in bioenergy, which indicates a bright future for bioenergy in the future world energy supply. To date, the availability of cheap fossil fuels have proven to be a major barrier to the increased use of bioenergy, which has proven to be very price-sensitive when compared with fossil fuels.

The extremely varied nature of biomass, and the many routes possible for converting the biomass resource to useful energy, make this whole topic a complex subject. When we talk about sources of biomass then we need to consider: forestry, agricultural and industrial residues, SRC plantations, communal waste, urban biomass, etc. A very broad involvement made even more complex when overlaid by the different economic sectors and human activities involved in use. As a result the totality of bioenergy is poorly understood and often misinterpreted.

Bioenergy contributes to all important elements of country and regional development: economic growth through business expansion (earnings) and employment; import substitution (direct and indirect economic effects on GDP and trade balance); security of energy supply and diversification. Other benefits include support of traditional industries, rural diversification, rural depopulation mitigation, community empowerment, etc.

Using biomass for energy can bring extensive economic and social benefits. At a local scale employment and social cohesion can be enhanced, especially in rural areas where unemployment is often high and de-population is a problem. On a larger scale the production of energy without adding to the overall emissions of greenhouse gases serves national and international policy goals of GHG reduction and environmental responsibility. The choice between highly mechanised and labour intensive methods is based on local needs, energy demands and labour costs. Local economies and national trade balances benefit from the replacement of imported fuels with local, indigenous fuels, since the revenue from the production of biofuels tends to be retained by the local community. An increase in national self-sufficiency is a policy goal for many countries in response to uncontrolled increases in the price and availability of fossil fuels.

Modern industrialised societies function within a series of trade and political relations with a variety of countries, trading blocs, as well as economic and political alliances. Bioenergy use with its associated activities, production, harvesting, and utilisation is integrated with political, economic and environmental agreements. Recently, in addition to the normal trade, political and economic agreements, countries have developed a range of environmental agreements, conventions and protocols designed to address issues of sustainability of resources and communities. There is an increasing interest in shifting to a bio-based economy which uses as a feedstock agricultural crops, mill waste and fast-growing trees. The

associated bio-processes; fermentation, biocatalysis, biosensors, and metabolic engineering growth areas by definition must rely on biomass rather than fossil fuels.

Socio-economic impact studies are commonly used to evaluate the local, regional and/or national implications of implementing particular development decisions. Typically, these implications are measured in terms of economic indices, such as employment and monetary gains, but in effect the analysis relates to a number of aspects, which include social, cultural and environmental issues. A complication lies in the fact that these latter elements are not always tractable to quantitative analysis and, therefore, have been precluded from the majority of impact assessments in the past, even though at the local level they may be very significant (table 1).

Table 1 Selected indicators of socioeconomic sustainability within the context of modernised biomass energy for sustainable development

Category	Impact	Quantitative indicators
Basic needs	Improved access to basic services	Number of families with access to energy services (cooking fuel, pumped water, electric lighting, milling etc.), quality, reliability, accessibility, cost.
Income generating opportunities	Creation or displacement of jobs, livelihoods	Volume of industry and small-scale enterprise promoted, jobs/\$ invested, jobs/ha used, salaries, seasonality, accessibility to local laborers, local recycling of revenue (through wages, local expenditures, taxes), development of markets for local farm and non-farm products.
Gender	Impacts on labour, power, access to resources	Relative access to outputs of bioenergy project. Decision-making responsibility both within and outside of bioenergy project. Changes to former division of labour. Access to resources relating to bioenergy activities.
Land use competition and land tenure	Changing patterns of land ownership. Altered access to common land resources. Emerging local and macroeconomic competition with other land uses	Recent ownership patterns and trends (e.g. consolidation or distribution of landholdings, privatisation, common enclosures, transferral of land rights/free rights). Price effects on alternate products. Simultaneous land uses (e.g. multipurpose crop production of other outputs such as traditional biofuel, fodder, food, animal products, etc.

The increased use of bioenergy has stimulated a revival of cultural traditions. In the boreal forest, many remote communities have no year-round road or connections to electricity grids, and are dependent on diesel generators supplied by fuel flown or barged in at high cost. These communities are often surrounded by forest that could provide the necessary biomass for energy generation, making the community more self-sufficient, reduce costs, provide employment, and integrate well with a forest-based culture. There are examples where a shift to locally-produced bioenergy has been very successful and these successes need to be communicated and fostered.

Task 29 of IEA Bioenergy included exchange of results and information among the normally discrete research areas of social, economic, techno-engineering/engineering-economic and environmental issues. The Task provides a platform for integration of research among those areas (table 2). As a result, a wider, system-oriented and multi-criteria-based view of the issues connected to production and utilisation of biomass for energy activities has evolved from this successful collaborative effort. Some concrete outcomes are a number of reports

and studies as well as a book of proceedings from Task workshops.

Table 2. Socio-economic issues associated with bioenergy utilization

Dimension	Benefit
Social	Increased Standard of Living Environment Health Education Social Cohesion and Stability Migration Effects (mitigating rural population) Regional Development Rural Diversification
Macro Level	Security of Supply/ Risk Diversification Regional Growth Reduced Regional Trade Balance Export Potential
Supply Side	Increased Productivity Enhanced Competitiveness Labour and Population Mobility (induced effects) Improved Infrastructure
Demand Side	Employment Income and Wealth Creation Induced Investment Support of Related Industries
Institutional Aspects	Democratic Decision Processes Participatory Problem Solving Local Problem Solving

Task 29 collaborated with several other Tasks, e.g. by organising joint workshops that were documented by joint proceedings. These activities also contributed to the development of a more integrated knowledge base. As well as the positive experience of synergistic effects of the multidisciplinary collaboration within Task 29, it is believed that this concept should be developed further. Important effects would include increased opportunities to share and exchange model components, technical information and linkages with other IEA Bioenergy Tasks.

The current proposal for a new Task builds on the achievements of Task 29 so far. It is designed to capitalise on the present body of knowledge, and to continue to add to it and develop it further drawing in new expertise sometimes generated by the action itself. The aim is an enhanced transfer of holistic, integrated knowledge and technical information which is believed to be of substantial value to local communities, scientists and decision makers in the field of biomass production and utilisation and energy planning. Most of all, the activity seeks to transfer the approaches developed to real developments on the ground making for improved projects with ever wider application and take-up.

Technical focus

The proposed Task 29 work programme continues and extends the work undertaken by Task 29 in the previous period. In particular, it encompasses results and findings obtained previously in the Task and also through the international state-of-the-art in the socio-economic evaluation of bioenergy programmes and projects. The scope is world wide, but in practice focuses primarily on participating countries, also taking into account national and international regulatory and policy frameworks. Efforts are being made to expand activities further, in order to also include developing countries through the Food and Agricultural Organization (FAO) of the United Nations and other international organisations.

The emphasis will be on an integrated approach to study economic, environmental and social aspects of bioenergy systems. Multi-disciplinary partnerships of key stakeholders in forest biomass production and utilisation research, planning and operations will be fostered. A clear linkage with Universities and other higher research and education institution will be made in order to ensure strong **scientific** component and participation in Task activities. Likewise a stronger link will be made with **industry** and more specifically with developers of bioenergy projects. The new three years programme will focus on social and economic impacts and opportunities of bioenergy systems, which in some instances will involve linking bioenergy projects with specific frameworks and issues like:

- Biomass in urban communities;
- Contribution of bioenergy to security of energy supply;
- Long term and sustainable supply of biomass;
- Socio-economic benefits from biomass supply chains addressing ‘town and country’ issues
- The impact on local biomass markets and growers of large scale co-firing;
- Socio-economic implications of bioenergy in the context of agricultural changes/policy;
- Bioenergy training at higher education institutions;

The above mentioned themes will be elaborated on through international expert workshops and reviewed workshop proceedings, special issues of recognised international journals (e.g. *Energy Policy*, *Biomass & Bioenergy* etc.), case studies, joint papers at the most important related conferences, international experts meetings, position papers etc. Much of these activities will be conducted in cooperation with other IEA Bioenergy Tasks in order to achieve the highest level of quality, synergy and global impact.

The Task as proposed will continue to organise a series of international workshops and meetings in participating countries with each workshop designed to provide a technical and scientific programme involving input from Task programme areas that will incorporate the local/regional context (if possible linking with a community action). Successive workshops are designed to build one upon another, and by doing so to maintain the collaborators’ interest and continuity in the programme. Workshops and meetings aim for a high quality of scientific and technical contributions and fruitful and intensive interaction among the participants.

The Task will also deal with: stakeholder involvement, local income, public acceptance, local NGO involvement, long-term support, technology transfer, technology diffusion, distribution of benefits, fuel substitution aspects, fuel supply contracts, policy aspects, education and capacity building, definition of collateral effects, market development in relation to timber and non-timber products markets (e.g. shift of income or changing in financial sources for sustainable development), institutional development, the nature and role of local and co-

operative ESCOs (Energy Services Companies) in propagating community actions, and other means relevant to secure long-term success and to minimise leakage and maximise additionality of projects. An integrated approach will be taken to investigation and sharing of knowledge on these separate aspects.

Linkages with other Tasks

The activities envisaged under the proposed work programme for this Task will be carried out in cooperation with Tasks focused on conventional forestry, short-rotation energy crops, greenhouse gas balances, liquid biofuels and international bioenergy trade. This Task will provide technical information such as:

- Society agreement and acceptance of greenhouse gas reductions and carbon trading concepts;
- Complementary review and comparison of:
 - NIMBY-ism and protest/ support,
 - effects on society of energy market liberalisation,
 - RES integration,
 - the nature and role of ESCOs (Energy Services Companies) in propagating community actions
 - environmental champions and
 - maximising local benefit for people accrued from bioenergy adoption.
- Socio-economic benefits of integrating the harvesting of forest residues into conventional forestry practices;
- Development of tools and guidelines for determining social and economic impacts of bioenergy systems;
- Socio-economic implications of bioenergy in the context of agricultural changes/policy;
- Socio-economic impacts of international bioenergy trade.
- Socio-economic impacts of co-firing on emerging local dedicated biomass markets

Annual workshops

The Task will organise at least three annual workshops in different participating countries, if possible connected to major related international events. Workshops will further the Tasks' work of collecting, synthesising and sharing leading-edge science and technology on issues and themes identified in the work programme. These events will provide an opportunity and venue for resource managers, power industry representatives, bioenergy systems equipment manufacturers, energy production professionals, energy users, energy programme managers, educators, scientists and researchers to exchange information and discuss sustainable management, production and use of biomass for energy as an integral part of resource management for multiple benefits. The workshops will focus particularly on practical solutions to lower barriers to implementation of bioenergy systems and to get improved methods adopted for future project initiatives (green field and retrofit).

The workshop format will include two or three days of technical sessions and one or two days of field tours. Technical sessions will include presentations of invited papers along with volunteer posters and papers. These international workshops will offer attendees the opportunity to make and maintain professional contacts and to identify the opportunities for future collaboration. The proceedings of each annual workshop will be published following scientific peer-review. These proceedings will record substantive and progressive scientific and technical information, discussion and analysis. The Task intends to publish some of the proceedings as special issues of recognised international journals (e.g. *Energy Policy*, *Biomass & Bioenergy* etc.)

SCHEDULE AND MILESTONES

- 2006
- detailed Task work programme planning
 - selection and commissioning of scientific and industry experts
 - establishing mechanisms for co-operation with related Tasks
 - concept and content planning for a special issue of a recognised scientific journal (*Energy Policy*) dedicated to *Biomass in Urban Communities*
 - concept and content planning for a special issue of a recognised Planners/Developers or Architects Journal relating to *Biomass in Urban Communities*
 - establishing review process for a special issue, arrangement with a scientific journal
 - call for papers and preparation of a special issue
 - workshop 1 (Theme: *Contribution of bioenergy to security of energy supply*), co-organised together with Task 31 in British Columbia, Canada
 - publication of the special issue
 - participation in a major international scientific or industry based event
 - concept and content planning for a FAQ database
 - Educational website maintenance
 - Task 29 information web site updating
- 2007
- publication of 1st workshop proceedings
 - Expert meeting (invited participation) *Bioenergy training at higher education institutions* in Austria
 - concept and content planning for a Task 29 paper on *Bioenergy training at higher education institutions*
 - publication of a paper in a recognised scientific journal (e.g. *Biomass & Bioenergy*) or industry/ trade association publication
 - mid-Task assessment and, if necessary, re-orientation
 - Workshop 2 (Theme: *Long term and sustainable supply of biomass*), co-organised with Task 40 in Växjö region, Sweden
 - participation in a major international scientific event
 - implementation and presentation of a FAQ database
 - Educational website maintenance
 - Task 29 information web site updating
- 2008
- publication of 2nd workshop proceedings
 - Seminar on *Socio-economic implications of bioenergy in the context of agricultural changes/policy* in Ireland
 - presentation of seminar findings and conclusions
 - concept and content planning for a Task 29 paper on *Socio-economic implications of bioenergy in the context of agricultural changes/policy*
 - publication of a paper in a recognized scientific journal
 - final work by scientific experts on issues
 - participation in a major international scientific event
 - workshop 3 (Theme: *Local socio-economic benefits from biomass supply chains*), co-organised with Task 30 in the UK
 - Educational website maintenance
 - Task 29 information web site updating
 - publication of 3rd workshop proceedings
 - summary document, final Task report

ANNUAL BUDGET

Staff costs	38 %	US\$
Workshops, seminars, meetings etc	10 %	US\$
Travel	21 %	US\$
Materials, supplies, publications etc	15 %	US\$
Contribution to annual report and newsletters	1 %	US\$
Consultants and contracts	15 %	US\$
Overhead	0 %	US\$
TOTAL	100 %	US\$

96,000*

* based on (an estimated) eight participating countries with a contribution of US\$ 12,000 each.

Notes on budget items

Staff costs - includes cost of remuneration of Task Leader and Associate Leader, who will each devote approximately 25% of their time to the Task, as well as others directly involved in the work of the Task.

Travel - for participation of Task Leader, Associate Leader and scientific experts in workshops and meetings.

Consultants - cost of specific contracts to achieve elements of the Task goals. Efforts will be made to obtain the participation of appropriate scientific expertise through remuneration of travel costs to international meetings rather than through more costly contracts.

Overhead - no overhead charge is made by any of the institutions involved in the Task.

MANAGEMENT

The Task will be led by Dr Julije Domac of Energy Institute 'Hrvoje Požar', Zagreb/Croatia, assisted by Dr Keith Richards of TV Energy, Newbury/UK. Accountability and an institutional guarantee of performance and delivery of the Task will be provided by the Energy Institute 'Hrvoje Požar' through Dr Branka Jelavic, the Croatian representative on the IEA Bioenergy ExCo. Each participating country will provide a representative to the scientific management team, the primary vehicle for active country involvement in the Task. The expenses of these representatives will be borne by the individual countries, according to IEA Bioenergy policy.

Julije Domac, Ph.D., is the co-ordinator of BIOEN National Energy Programme in Croatia and responsible for international co-operation in field of biomass utilization. He has been involved in many bioenergy implementation projects and renewable energy promotion and education campaigns in Croatia and abroad. Julije is a recognised international expert with more than 50 scientific and professional papers and 7 invited lectures at major international scientific events. He had served as a paper reviewer at several major international events (12th European Biomass Conference, 17-21 June 2002; Conference on *Renewable Energy for Local Communities of Europe*, 23-26 June 2001; 2nd World Biomass Conference, 10-14 May 2004) and for scientific journals (Forest Policy and Economics, ASME Journal of Solar Energy Engineering, etc). In 2002 he received National Award for Science (technical sciences/young researchers) and in 2004 he was awarded with Biomass Junior Award in occasion of 2nd World Biomass Conference. From 2005, Julije is serving as *Independent expert evaluator* for European Commission. His working experiences also include being *Technical editor* for FAO Forestry Department (Report: *Socio-economic aspects of bioenergy: A focus on employment*), *Project coordinator* for UNIDO (Project: *Promotion of Biodiesel Production in Croatia*) and *National expert* for World Bank (Project: *Forest Related Carbon Offset Investment Opportunities in Croatia with Special Reference to the World Bank's Prototype Carbon Fund*).

The Energy Institute 'Hrvoje Požar' (EIHP) is a non-profit organisation owned by the Republic of Croatia and the central scientific institution for global planning in the energy system and its subsystems. EIHP is member of WREN – World Renewable Energy Network, EWEA – European Wind Energy Association and active participants in Bioenergy Agreement of the IEA. From February 2005, EIHP is also a member of EnR (European Energy Network) and COGEN Europe. The EIHP currently has 59 employees, 7 working in administrative positions, and 52 in research programs. The Institute employs 47 persons with high university distinctions: 11 PhD, 18 MSc, and 18 professionals in attendance of post-graduate studies. EIHP has also been the Croatian signatory to the IEA Bioenergy Agreement since its inception.

Keith Richards, Ph.D., has 25 years experience of renewable energy project management and consultancy. He has been central to the take up of energy from waste and biomass projects in the UK developing strategies for Government and then implementing them. He has championed the development of resource assessment tools (particularly GIS) to aid in regional and community initiatives in the UK, Europe and OECD countries (through the IEA). Over the last five years, Keith has focused on working with community groups in close collaboration with Local Authorities and Regional Government to introduce hybrid renewables and rational use of energy solutions. Keith has acted as an independent technical expert evaluator for the European Commission for more than 20 years. Some of his recent experiences include: TV Energy Limited - Managing Director, The Association of UK Energy Agencies – Director, University of Reading & Oxford – External Lecturer: to renewable energy MSc course, soil and environmental sciences and sociology departments; *AFBV 100% Renewable Energy Communities Task* - Project Manager: the Agro-Forestry Biomass network (funded through DGXVII/ALTENER); Project Manager for the *RENAISSANCE* project under the European Commission Concerto programme (DG TREN).