LATIN AMERICA THEMATIC NETWORK ON BIOENERGY

LAMNET

The LAMNET global network on bioenergy addresses worldwide the adequate utilisation of biomass residues and energy crops in order to:

- make use of selected reliable and proven technologies and systems
- arrive at local, regional, national and international solutions for bioenergy applications
- contribute to poverty alleviation and sustainable development to improve the socio-economic conditions of living
- develop and implement policies for the enhanced utilisation of biomass and bioenergy worldwide

This LAMNET Newsletter is issued on the occasion of the 'European Conference for Renewable Energy – Intelligent Policy Options' in Berlin, 19-21 January 2004, which also hosts the 2003 Awards Ceremony of the Renewable Energy Campaign for Take-Off (CTO).

This event in Berlin is part of the Johannesburg Renewable Energy Coalition roadmap of regional initiatives. The conclusions will be delivered to the World Renewable Energy Conference in Bonn in June 2004.

This Thematic Network is funded by the European Commission, DG Research, in the framework of the programme 'Confirming the International Role of Community Research' (Project No. ICA4-CT-2001-10106).

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4th issue – December 2003

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by Prof. José Roberto Moreira, CENBIO, Brazil

New and renewable sources of energy have been considered as an alternative to conventional sources for thirty years and during the last ten years their potential contribution to global pollution abatement has been widely acknowledged. Nevertheless, their participation in the world primary energy matrix is still quite modest (less than 2%). Today, several barriers inhibit the enhanced utilization of new and renewable energy sources, such as economic and financial, institutional and legislative, environmental as well as socio-political barriers. In order to overcome this large variety of barriers, it is necessary to create a broad portfolio of policies to foster the use of new and renewable energy sources. ***page 4***

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by Dr. Ramón Pichs, CIEM, Cuba

The Centre for World Economy Studies (CIEM) was created in November 1979 as an academic institution recognised and supported by the Cuban government and it is recognised as a centre of reference for the Latin American and Caribbean region. During the last 24 years, the CIEM has studied the main trends in the world economy, with particular reference to the problems affecting the developing countries. ***page 8***

BAZDREAM – A New Network on Sugar Biomass for Food, Energy By-products and Environment Protection

by Dr. Antonio Valdés Delgado, Centre for Managing Prioritised Programmes and Projects - GEPROP, Cuba

A new thematic network BAZDREAM has been launched, focussing on 'Sugar Biomass for Food, Energy, By-products and Environment Protection' within Subprogram IV on 'Biomass as a Source of Chemical Products and Energy' of the Ibero-american cooperation program CYTED. The main objective of this network is an exchange of experience in the fields of sugar cane biomass production and research with the aim of reducing production costs and giving rise to new employment opportunities in Latin American countries. ***page 8***

China Rural Renewable Energy Development

by Li Jingming, Chinese Ministry of Agriculture

China is the largest developing agricultural country in the world and enjoys abundant renewable energy resources. During the past 20 years, China has achieved great success in renewable energy technology development, industrialisation and commercialisation. It has accumulated useful and practical experience which other developing countries can learn from and use for reference. Moreover, China has a huge market for renewable energy technologies and products, so that China will introduce advanced foreign technologies and products as well as experiences on policy formulation, human resource training and marketing services. ***page 9***

Bioenergy and Employment Generation *and* IEA Task 29 – Socio-Economic Drivers in Implementing Bioenergy Projects

by Julije Domac, Energy Institute 'Hrvoje Pozar', Croatia

European policy-makers recognise that renewables offer potential for employment creation in addition to environmental benefits. The renewable energy industry is one of Europe's fastest growing sectors. A study carried out in 1998-1999 predicted that in the European Union the use of renewable energy technologies, including bioenergy, will more than double by 2020, and that this increase will lead to the creation of more than 800 000 jobs by 2020. ***page 10***

Addressing abrupt climate change: Can bio-energy help plug a Kyoto gap?

by Prof. Peter Read, Massey University - Centre for Energy Research, New Zealand

The availability of a potentially large-scale negative emissions energy system means that carbon dioxide levels can be brought down over a few decades to much lower levels than has previously been thought possible, given only zero emissions energy technology and increased energy efficiency. This negative emissions system includes Bio-Energy, the production of high value liquid fuels and electricity from biomass, as well as Carbon Capture and Safe Storage. Putting these two technology types together, we have BECS – Bio-Energy with Carbon Storage. ***page 12***

Socio-economic Impacts of the New Colombian Bio-ethanol Programme

by Dr. David Cala-Hederich, CORPODIB, Colombia

The New Colombian Bio-ethanol Programme, mandating the use of 10% bio-ethanol blends in gasoline from the year 2006, will require an additional area of 150.000 hectares harvested with sugar cane and it will generate 170.000 new employments, mainly for farmers in rural areas of Colombia. ***page 13***

Sugar Ethanol for the Mexican Fuel Market

by Lic. Isabel Gómez Macias, Fundación Emisión, México

Over-production and large surplus sugar stocks currently create great pressure on the Mexican sugar industry. One possiblity to solve this problem is to diversify the Mexican sugar sector through the production of bio-ethanol transport fuel from sugar cane. Presently, an initiative to promote bio-ethanol has been started by the cities of Jalisco and Mexico City in order to stimulate nation-wide activities. ***page 13***

CDM Projects in Chile

by Dr. Germán Aroca, Catholic University of Valparaiso, Chile

Clean Development Mechanism (CDM) projects in Chile have the potential for revenues of US$ 5-8 per ton of CO_2, which is higher than the current world-wide average of US$ 3.5 per ton. This fact is due to an advantageous investment climate in Chile and the existence of a national productive sector interested in participating in CDM project implementation. ***page 13***

Launch of Mexican Network on Bioenergy (Red Mexicana de Bioenergía)

by Dr. Omar Masera, Centro de Investigaciones en Ecosistemas (CIECO), UNAM, Mexico

The newly established Mexican Network on Bioenergy (Red Mexicana de Bioenergía) has been launched on the occasion of the International Seminar on Bioenergy and Sustainable Rural Development, 26-28 June 2003 in Morelia (Mexico). This network will provide the first national forum to catalise projects, information exchange and activities in the field of bioenergy in Mexico. ***page 14***

Recent Events

International Conference on Bioenergy Utilisation and Environment Protection, Dalian, P.R. China

The International Conference on Bioenergy Utilisation and Environment Protection – LAMNET project workshop, held in Dalian, P.R. China, from September 24 – 26, 2003, was organized jointly by the Latin American Thematic Network on Bioenergy (LAMNET), the Center for Energy and Environment Protection (CEEP) of the Chinese Ministry of Agriculture and the China Association of Rural Energy Industry (CAREI).

The main objective of this conference was to stimulate the international cooperation and knowledge exchange in the field of bioenergy technology as well as to promote the development of commercial biomass energy utilization in China in order to achieve an improvement of the national and international environment and to guarantee sustainable rural development. The International Conference brought together 80 specialists in China from the academic, private, government and industrial sectors. An overview of the current conditions of biomass energy use in China and in the world was presented, focusing on availability of resources, bioenergy conversion technologies and the development of policies for the promotion and financing of bioenergy.

Within the framework of this International Conference, a technical tour was organised by CAREI in co-operation with the Dalian Academy of Environment Sciences. About 40 conference participants took part in the trip which included guided tours visiting an organic municipal waste treatment facility for the production of organic fertiliser and a gasification demonstration plant, both located in the vicinity of the coastal city Lü Shun, approximately 25 km west from Dalian.

Agricultural residues pilot gasification plant in Lü Shun, P.R. China

Forum for EU – China International Cooperation on Bioenergy, Guangzhou, P.R. China

The International Bio-energy Forum – LAMNET workshop met in Guangzhou, P.R. China from 28-30 September 2003 to discuss cooperative efforts in the field of bio-energy between China, the EU and supporting countries. This forum was organized jointly by the Ministry of Environment of Guangzhou, the Guandong University of Technology, the European Biomass Industry Association (EUBIA) and the LAMNET Global Network on Bioenergy.

One of the key objectives of the forum were negotiations concerning two Bioenergy Projects promoted by EUBIA, namely the Bioenergy Village Complex concept and the Large-scale Integration of Bioenergy (heat-power-biohydrogen) within a Crude-oil Refinery Plant. In order to reach this aim, European Industries which are potential suppliers of bioenergy technologies were invited for presentations of their products.

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Policies for the Promotion of New and Renewable Sources of Energy

by Prof. José Roberto Moreira
CENBIO – Brazilian Biomass Reference Centre

Abstract

New and renewable sources of energy have been considered as an alternative to conventional sources for thirty years and during the last ten years their potential contribution to global pollution abatement has been widely acknowledged. Nevertheless, their participation in the world primary energy matrix is still quite modest (less than 2%). Today, several barriers inhibit the enhanced utilization of new and renewable energy sources, such as economic and financial, institutional and legislative, environmental as well as socio-political barriers. In order to overcome this large variety of barriers, it is necessary to create a portfolio of policies to foster the use of new and renewable energy sources. This article presents several categories of policies providing examples of adopted and planned policy tools and actions to promote alternative sources of energy.

Introduction

Today, almost all commercial energy used in the world is derived from fossil fuels. Coal, oil and natural gas represent around 90% of the energy supply, while hydro and nuclear electricity only represent about 5%. The new and renewable sources (modern biomass, solar, wind, geothermal, and small hydro) contribute a little over 2%, and from this total, 1.7% are due to modern and sustainable uses of biomass (Figure 1).

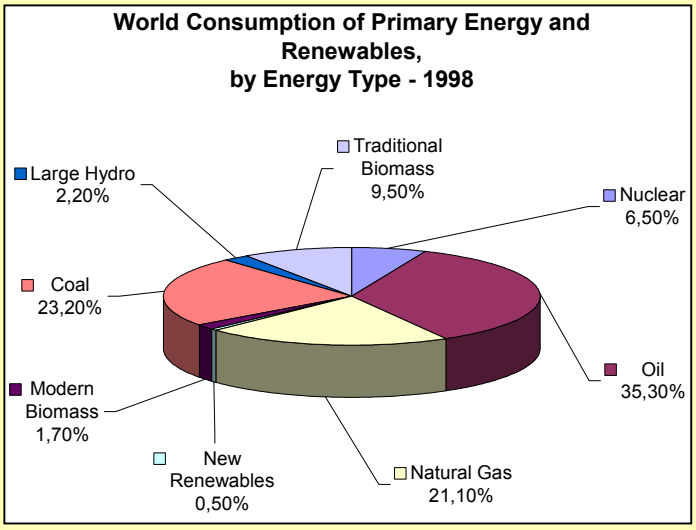

Figure 1: World consumption of primary energy and renewables (1998)

It is worthwhile to remember that new and renewable sources became to be considered as potential contributors to the energy matrix almost 30 years ago during the oil crisis of 1973 and 1979. After these 30 years their contribution seems impressive in absolute terms (Table 1), but in relative terms the increase was modest (0% to 2%).

Table 1 – Renewable Electricity Grid-Based Generation Capacity Installed as of 2000 (MW)

Technology	All countries	Developing countries
Wind power	18,000	1,700
Small hydropower	43,000	25,000
Biomass power	32,000	17,000
Geothermal power	8,500	3,900
Solar thermal power	600	0
Total renewable power capacity	102,000	48,000
Large hydropower	680,000	260,000
Total world electric power capacity	3,400,000	1,500,000

Source: Martinot et al, 2002

Barriers

An increased utilization of new and renewable energy sources is prevented by several barriers:

Economic and financial barriers:

A major constraint for many biomass schemes is the relatively high cost per unit of output, which is a consequence of the small-scale nature of most biomass energy-based projects, the high capital and initial investment requirements, the high costs of raw material as well as the low cost of competitive fuels. Biomass schemes have to compete with scarce resources and it is a major difficulty to find adequate funding. It is documented that many biomass schemes, although technically and economically well prepared, often overlook financial implications. All these factors have in the past discouraged potential financial bankers and investors to engage in the financing of biomass energy projects.

Institutional and legislative barriers:

Integrating new energy sources into existing energy systems has always required a long time. Until quite recently almost all major energy suppliers were state monopolies or large private corporations, which have made it very difficult for small independent energy producers to enter the market. This situation is changing rapidly where the energy sector is open to competition. The regulatory and legal framework, whether at national, regional or local levels, can often be a barrier, as in most cases legislation deals with conventional (fossil or nuclear based) energy sources and is often lacking reference to other sources. This vacuum creates confusion and delays, when it comes to planning permissions. Thus, legislative support is important to ensure that small independent producers have access to the national grid or to provincial or local transmission lines.

Environmental barriers:

Biomass energy schemes have environmental costs and benefits that need to be quantified and compared with non-biomass options. Public perception of biomass schemes is important and their views on possible disruption to habitats, ecosystems, conservation areas as well as visual impacts, have to be taken into consideration. This has been notoriously lacking in many cases.

Socio-political barriers:

Social acceptance and participation are important elements for the success of modern biomass energy schemes. Thereby, it is important to understand political implications and to establish close contacts with decision-makers in order to realise political support for biomass energy schemes. Experiences from Austria, Brazil, Denmark and Sweden show that these elements must all be fulfilled for successful implementation of modern biomass energy schemes. However, similar policies are still lacking in many countries worldwide.

Considering this large number of barriers it is clear that an increased implementation of new and renewable energy sources requires appropriate policies. Some policy tools are designed to improve technology, others to face the lack of economic competitiveness and several are designed to change human habits and promote market transformation. The latter changes are difficult to achieve, especially when there are market forces induced by the present economic power of fossil fuel users and producers. The presented portfolio of policy tools will provide decision-makers with the opportunity to select the most appropriate options for their countries.

Policies and Policy tools

There is no "single way" for overcoming the barriers to a more sustainable energy future. A variety of policy initiatives is needed to increase the availability and deployment of energy efficiency and renewable energy technologies. These policies can be grouped into the following 12 categories (Geller, 2002):

1. Research, Development and Demonstration (RD&D) Policies

In the field of RD&D it is necessary to enact policies which expand government-funded research, development and demonstration on clean energy technologies in order to reduce their cost and improve their performance. Additionally, RD&D activities on behavioral and implementation-related issues as well as collaboration between research institutes and the private sector have to be increased in order to combine RD&D with market development efforts. Examples for RD&D policy tools are:

USA: The *Biomass Research and Development Initiative* is a multi-agency effort to coordinate and accelerate all USA Federal bio-based products and bioenergy research and development, as outlined in the Biomass Research and Development Act of 2000.

Brazil: *Utilities Compulsory Investment in Energy Efficiency and R&D*: Starting in 1998, the federal regulatory agency for the electric sector in Brazil (ANEEL) began requiring utilities in Brazil to invest at least one percent of their revenues in energy efficiency programs.

2. Financing Policies

Supportive financing policies have to provide financial services to increase the adoption of renewable energies. Financing at low interest should reward superior performance (e.g. pay for renewable energy production). Thereby, financing at low interest rates should diminish or phase out as markets for renewable energies expand. The following examples for financing policy tools have been identified:

USA: The *Commodity Credit Corporation (CCC) Bioenergy Program* provides partial compensation to producers of bio-ethanol and bio-diesel for the purchase of commodities to expand existing production.

Bangladesh: *GEF Seed Funding for Solar Home Systems*: In 1998 the Global Environment Facility (GEF) provided funding to an organisation in Bangladesh, Grameen Shakti, which enabled them to offer improved credit terms, i.e. an increased payment period for solar home systems from one to three years.

3. Financial Incentives

Just as in the case of financing policies, newly enabled financial incentives have to aim at increasing the adoption of renewable energies by rewarding superior performance (e.g. pay for renewable energy production):

Asia: *Greening the Energy Sector Portfolio of Multilateral Banks*: The Asia Alternative Energy Programme (ASTAE) was established by the World Bank in 1992 with the goal to enhance sustainable energy use in Asia by 'greening' World Bank lending to the power sector in this region.

4. Pricing Policies

In the field of energy pricing it is essential to eliminate subsidies for fossil fuels and enact taxes based on environmental and social costs. Additionally, tax revenues have to be implemented to support energy efficiency and renewable energy initiatives in order maximize the energy, environmental and economic benefits. Examples for pricing policies include:

USA – *Ethanol Small Producer Tax Credit*

UK – *Climate Change Levy Exemption*

5. Voluntary Agreements

Voluntary agreements between governments and the private sector may prove to be a favorable option in situations where regulations or market obligations cannot be enacted or enforced. These voluntary agreements should be complemented with financial incentives, technical assistance and the threat of taxes or regulations in case the private sector does not meet its commitments. An example for voluntary agreements exists in the Netherlands (Figure 2):

The Netherlands – *Tax Incentives for Green Investment*: The Green Fund System (GFS) was introduced in the Netherlands in 1992, as a co-operative activity between the government and the financial sector. It combines a tax incentive, a framework for designation of green projects and active involvement of the financial sector. The basic principle behind the system is that the general public receives tax advantages for investments in 'Green Funds'.

Figure 2: 'Green Power' promoted by the Dutch utility Essent

6. Regulations

Enacting regulations or market obligations are a valuable tool to stimulate widespread adoption of energy efficiency improvements or renewable energy sources. Thereby, it is necessary, that these regulations or obligations are technically and economically feasible and up-dated periodically during enforcement. Additionally, emissions caps and trading schemes have to be introduced, encouraging and providing credits for emission reductions achieved through end-use efficiency improvements and renewable energy technologies. Suggestions for enabling regulations include the following:

- Tax Treatment and Duties for Imported Bio-fuels
- Minimum Efficiency Standards for New Thermal Power Plants
- Minimum Fuel Economy or CO_2 Emission Standards for New Passenger Vehicles

7. Information Dissemination and Training

In order to increase awareness and improve know-how with respect to renewable energy options, information dissemination and training activities are of great importance. Where possible these efforts should be combined with incentives, voluntary agreements or regulations in order to increase their impact. The following global initiative provides information dissemination and training tools:

RETScreen (A Tool for Market Coherence) is a global decision support and capacity building tool for assessing potential renewable energy projects developed by the Energy Diversification Research Laboratory of Canada (Figure 3). The tool evaluates the energy production, life cycle costs and greenhouse gas emission reductions for renewable energy projects at any geographic location around the world.

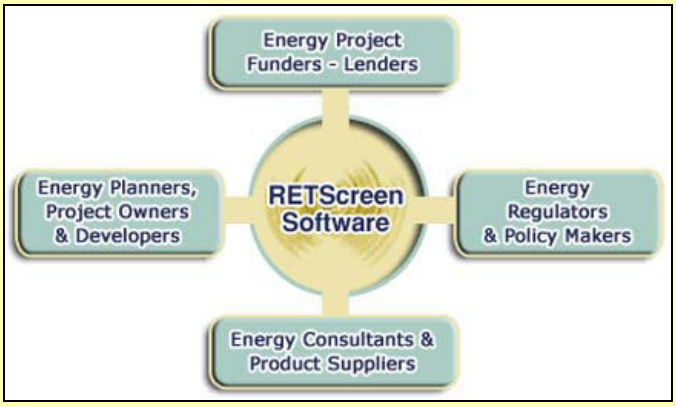

Figure 3: Dissemination and training tool RETScreen

8. Procurement Policies

Bulk procurement is a suitable measure to assist commercialisation and the establishment of initial markets for innovative clean energy technologies. Governments should purchase energy-efficient products, renewable energy devices or "green power" for their own use as well as sponsor and help to organize bulk purchases by a wide range of public and private entities.

9. Market Reform Policies

Market reform policies have the prime aim to transform markets. These policies have to be integrated into market transformation strategies addressing the range of barriers that are present under certain local framework conditions. Thereby, market reform policies have to be strong enough to remove or overcome these barriers and they should evolve over time as some barriers are removed and others come to the forefront. A successful example for market reform actions is the Brazilian PROALCOOL program, introduced in 1975 with the purpose to diversify the sources of liquid fuels in Brazil. In order to guarantee commercial opportunities for bio-ethanol, the government created a fund with resources collected from taxes on conventional gasoline. Today, bio-ethanol is a fully competitive commodity on the Brazilian transport fuel market (see Figure 4).

Figure 4: Fuel station in Brazil selling bio-ethanol and conventional gasoline

10. Market Obligations

The adoption of market obligations are a very strong tool to stimulate widespread utilization of renewable energy sources. It is necessary, that these obligations (as well as the regulations mentioned in section 6) are technically and economically feasible and up-dated periodically during enforcement. The following examples for adopted or planned market obligations have been identified:

- European Union: In September 2001, the EU adopted the *Directive on the promotion of electricity produced from renewable energy sources in the internal electricity market*. According to this Directive, EU member states shall have their own national indicative targets (of renewables) at 12% share of gross national energy consumption by 2010 and 22.1% share of electricity generation by 2020.

- The *Brazilian Energy Initiative* brought to the WSSD in Johannesburg proposed to increase in the region the use of renewable energy to 10% of the total by 2010 (Goldemberg, 2002).

- USA: Establishment of a national *Renewable Portfolio Standard* that will require 20% of power generated in the United States by the year 2020 to be derived from non-hydro renewable energy sources. This ensures a market for renewable power, critical to the development and use of renewable energy (Ames and Wermer, 2001).

- USA: Establishment of a national *Renewable Fuels Standard (RFS)* that would require an increasing percentage of transportation fuel sold in the United States to be renewable biofuels, such as bio-ethanol and bio-diesel.

- Italy – *Green Electricity*: In 1999, Italy introduced a quota system that obliges each power supplier from 2002 on, to feed electricity from renewable energy sources (2% of the non renewable electricity generated or imported in the previous year) into the Electrical National System. Suppliers can meet this obligation by building their own RE-plants or by buying certificates. This "Compulsory Renewable System" (CRS) follows defined rules regarding certificate issuing and trading (Figure 5).

- Germany: The *German Renewable Energy Law* was passed in 2000 in order to establish a framework for doubling the market share of renewable energy sources by 2010. The law sets specific maximum payback prices for each individual renewable energy technology, based on their annually decreasing real cost. The aim of the tariffs is to initiate a self-sustaining market for renewables and create a critical mass through a large-scale market introduction programme, whilst not imposing any additional burden on the taxpayer.

- Morocco has set up a *Rural Electrification Programme* with the aim of increasing rural electrification from 20% in 1995 to 80% by 2006.

Figure 5: First label for Green Energy in Italy (100% Energia Verde)

11. Capacity Building

In order to ensure worldwide implementation of new and renewable energy sources, profound capacity building in all countries is of utmost importance. Businesses that will manufacture, market, install and provide service to clean energy technologies have to be trained and supported continuously.

12. Planning Techniques

In order to guide investments to options that minimize overall societal costs (including environmental costs), both integrated energy resource planning and integrated transportation and land use planning have to be carried out. Energy and transportation plans should contain concrete goals, actions for achieving the goals as well as and monitoring and evaluation procedures.

Conclusions

As has been pointed out by the Intergovernmental Panel on Climate Change - IPCC (Moomaw et al, 2001), there is no shortage of technologies to abate Greenhouse Gas Emissions in the short term (2010-2020). Some of the technologies are already cost-effective and others will be if carbon emissions are associated with costs of about US$100/tC. Nevertheless, market potential for these technologies is presently small and will probably continue to grow slowly. Thereby, this actual market potential is well below the economic market potential, which is even lower than the socio-economic market potential. The IPCC document concludes that lack of policies is the major obstacle for pushing up market potential to the level of the economic and socio-economic potential.

In this article we have attempted to classify policies in different categories and to provide examples of practical adopted or planned policy tools (actions) to implement such policies. Examples were extracted from literature and the list is far from complete, since we investigated a limited number of actions proposed in a limited number of countries (for more information, see Moreira, 2003). Nevertheless, the purpose of this document is to give insight to police makers about several possible policy tools that can be proposed to foster policies to enhance the use and production of renewable sources of energy.

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Activities of the Cuban Centre for World Economy Studies

by Dr. Ramón Pichs
Centre for World Economy Studies (CIEM), Cuba

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The main topics of research of the CIEM include:

- globalisation of world economy,
- international trade and finance,
- regional economic integration,
- main economic trends by regions (North America, Latin America, Europe, Africa and Asia).
- international co-operation for development.
- science and technology,
- sustainable human development,
- energy, environment and development.

With 13 full-time researchers, in 2003 the CIEM has carried out several projects of academic collaboration with international institutions, such as:

- *National Report on Science, Technology and Human Development (to be concluded in 2004),* sponsored by the United Nations Development Program (UNDP).
- Collaboration with the United Nations Environment Programme (UNEP) (since 1999).
- Collaboration activities with the Intergovernmental Panel on Climate Change (IPCC). One expert of the CIEM was elected as member of the IPCC Bureau during the term of the Third Assessment Report (TAR) of the IPCC (1997-2002), and was recently re-elected for that position.
- Collaboration agreements with universities: Institute of Economic Research, National Autonomous University of México (UNAM); & Autonomous University of Puebla (Mexico) (since 1980s).

The CIEM also advises and collaborates with several national institutions, such as the Ministry for Science, Technology and Environment, Ministry of Foreign Trade, Ministry of Economics and Planning, Ministry for Foreign Investment and Economic Collaboration, Ministry of Foreign Affairs and Central Bank of Cuba. This collaboration is particularly important in the preparatory process of national official delegations to international meetings/conferences, such as: Ibero-american Summits, Summits of the Non Aligned Movement and UN Conferences (including UNCED, Rio de Janeiro, 1992 & UNSSD, Johannesburg, 2002). The CIEM also supports the preparation of relevant international meetings held in Cuba, including the annual *International Meetings on Globalisation and Development*, organised by the Association of Cuban Economists since 1999.

The National Group of Collaborators of CIEM includes around 100 national experts. This group meets at least three times a year, for discussing relevant topics related to main trends in the world economy. Around 10 members of the National Group of Collaborators of CIEM are involved in R&D on the energy sector (national or international perspectives).

In the last few years, international workshops dealing with environment and development have been co-organized by CIEM, such as:

- *IPCC Regional Meeting on Development, Equity, and Sustainability in the Context of Climate Change Response Strategies*, Havana, 23-25 February 2000 (40 participants, including 30 foreign experts).
- *IPCC Outreach Meeting on Climate Change Mitigation*, Havana, 23-24 September 2002 (71 participants, including 13 foreign experts). The electronic version of the Proceedings is available at: www.onu.org.cu/havanarisk/eventos/cchange4/evento.html

The CIEM electronic journal *"Temas de Economía Mundial"* (in Spanish only) is available at the web site of the Network on World Economy (based in Puebla, México): www.redem.buap.mx

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BAZDREAM – A New Network on Sugar Biomass for Food, Energy By-products and Environment Protection

by Dr. Antonio Valdés Delgado
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A new thematic network BAZDREAM has been launched, focussing on 'Sugar Biomass for Food, Energy, By-products and Environment Protection' within Subprogram IV on 'Biomass as a Source of Chemical Products and Energy' of the Ibero-american cooperation program CYTED. The main objective of this network is an exchange of experience in the fields of sugar cane biomass production and research with the aim of reducing production costs and giving rise to new employment opportunities in Latin American countries.

The Ibero-american program CYTED (Ciencia y Tecnologìa para el Desarrollo) is an international and multilateral program created in 1984, bringing together Spanish and Portuguese speaking countries form both sides of the Atlantic. CYTED involves various international institutions, acting as observers, such as the Economic Commission for Latin America of the UN, the United Nations Organisation for Education, Science and Culture as well as the Interamerican Development Bank. The main aim of CYTED is to be an instrument to foster the technological development and innovation by means of coordination and cooperation among universities, investigation and development centres and innovative companies in the Ibero-american region. CYTED is engaged in the modernization of production processes and the improvement of life quality in Ibero-american countries and finally, it stimulates collaboration between Europe and Latin America.

Until today, CYTED has initiated 76 thematic networks and more than 250 research and innovation projects with participation of about 10.000 scientists and engineers from Ibero-american countries. The CYTED program hosts 19 sub-programs of which Subprogram IV is concerned with 'Biomass as a Source of Chemical Products and Energy'. Within Subprogram IV the Thematic Network '**Empleo de la Biomasa Azucarera como fuente de Alimento, Energía, Derivados y su Relación con la Preservación del Medio Ambiente – BAZDREAM**' has been launched in late 2003, focussing on the importance of sugar cane biomass for a large variety of Latin American countries. This thematic network has a duration of four years and it will bring together 17 investigation groups and 176 researchers from a total of twelve countries.

The general objective of BAZDREAM is to improve the economics of food, energy and by-products derived from sugar cane in order to generate fully competitive commodities for Ibero-american markets. This will be realised through significant cost reductions achieved with due reference to environmental protection concerns. The following specific objectives will be tackled by the BAZDREAM network:

- efficient use of energy and fuels in technological processes
- cogeneration and generation of energy from sugar cane biomass resources such as bagasse and harvest waste
- production technologies for different forms and qualities of sugar cane and for the transformation of sugar cane biomass to products of higher value such as animal food and alcohol
- development and application of technologies for the transformation of bagasse to products of higher value such as paper, boards, furfural, animal food, biocides and filter materials
- development and application of technologies using cellulose and lignin for the production of very high value products such as human and animal medication and human food
- use of agricultural residues for environment protection and income generation
- reduction of water consumption and liquid waste emissions related to sugar cane production and processing
- development of models and computer programmes for the control and supervision of technological and auxiliary processes
- results dissemination by means of publications and the organisation of specialized workshops and thematic courses

The BAZDREAM network will thereby promote information exchange, qualification activities and the identification of project opportunities which have the perspective to improve sugar cane production processes, to increase technological and energetic efficiencies and to reduce production costs. Moreover, the sound use of residues of all sugar cane industries involved will contribute to an improvement of the environment and the quality of life in Ibero-american countries.

More information on CYTED and the activities of its Sub-program IV is available at www.cyted.org.

China Rural Renewable Energy Development

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China is the largest developing agricultural country in the world and enjoys abundant renewable energy resources. During the past 20 years, China has achieved great success in renewable energy technology development, industrialisation and commercialisation. It has accumulated useful and practical experience which other developing countries can learn from and use for reference. Moreover, China has a huge market for renewable energy technologies and products, so that China will introduce advanced foreign technologies and products as well as experiences on policy formulation, human resource training and marketing services.

Due to high pressure from population, environment and resource management, the Chinese government has started rural renewable energy construction as early as 1960. Great importance has been attributed to this activity, and rural biogas projects have been listed as key priority with the objective to build a comparatively well-off Xiaokang society and to improve farmers' living and productive conditions. In the Chinese *Agriculture Law* and *Energy-saving Law*, it has been clearly stipulated that governments at various levels should encourage and support the development of rural energy and increase investment steadily.

Since China's reform and opening up, rural economy has achieved a historic breakthrough. Energy supply and consumption patterns in rural China have changed dramatically from the past overall energy shortage to a current pursuit for high-quality energy. After 20 years of efforts, integrated development and utilisation of rural renewable energy has achieved notable environmental, economic and social benefits. It contributed greatly to the alleviation of global climatic change, to rural economic development, to an improvement of farmers' living standards as well as to environmental protection. The accelerating development of rural renewable energy has reached a new phase and the time has come when rural renewable energy is utilised on a large scale.

By the end of 2002, there are 11 million household digesters in China, 1560 large- and medium-scale biogas plants, 115 thousand biogas plants for municipal sanitary sewage purification, 190 million improved household stoves, 390 thousand solar stoves, 55 thousand household PV systems, 91 thousand micro-hydro power generation systems, 121 thousand small wind power generation systems and more than 500 straw gasification systems. Based on past experience, the Ministry of Agriculture has launched a "Bio-household Program". Since 2001, a 1.4 billion fund has been invested by the central government to implement the Bio-household Program and 1000 counties, 8826 villages and 1.7 million households have benefited from the program.

Although China enjoys a long agriculture development history, the large population, scarce per capita resources and the backward agricultural infrastructure have posted severe problems and challenges for agricultural sustainable development. There are still 20 million people living in poverty and the same number has no access to power. An additional 0.2 billion people are threatened by desertification.

Nevertheless, the Chinese "**grain for green**" policy has shown an important impact on rural community's traditional living and productive style. The utilisation of renewable energies such as biomass, solar energy, wind energy, geothermal energy and the extension of various wood & coal saving technologies has brought satisfactory results. Integrated renewable energy utilisation technologies and models (with biogas as the link) have been applied on a large scale. In northern China, the **"Four-in-one" model**, which integrates biogas digester, pig pen, water closet and a greenhouse (see Figure 1), has developed rapidly and became one of the major measures to implement the "Vegetable Basket Project" and to help farmers cast-off poverty. In southern China, biogas, fruit and grain planting and livestock raising has been integrated within the so-called **"Pig-biogas-fruit" model** (see Figure 2). Both models have served to increase the income of farmers significantly.

In addition, straw gasification technology, which converts straws and stalks into gas, has been widely used in grain production dominated areas and the aim of *"two men light a fire and supply gas to the whole village"* has been realised. This practical application of rural renewable technologies has promoted the development of small towns and avoided the phenomenon of *"bringing firewood to storied buildings"* and it has improved the villages' sanitary conditions and helped many farmers to become rich. Therefore, it can be said that rural renewable energy development has played an irreplaceable part in poverty alleviation in rural China.

Finally, the farmers' consciousness and enthusiasm has increased, since rural RE development has brought benefits to rural economic development, agricultural production, environmental protection and farmers' income generation. A variety of stakeholders have been encouraged to participate in RE development due to its apparent economic and social benefits, and a growing number of investors from home and abroad, including investors from private sectors and nongovernmental business, has been attracted to invest in rural renewable energy construction. All these factors have created a favorable environment for the industrialisation and commercialisation of rural renewable energy development in China.

In the future, China's rural renewable energy will be further developed from the current small-scale to a large-scale and intensive pattern. The energy consumption pattern will no longer be dominated by cooking and lighting, but by power generation and central heat supply systems. Technologies and products will be in conformity with international standards. At the same time, China is ready to provide practical renewable energy technologies and products as well as human resource training for other developing countries.

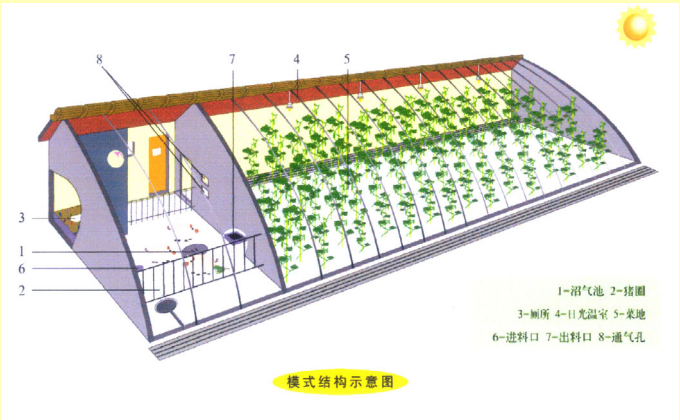

Figure 1: 'Four-in-one' biogas model for Northern China

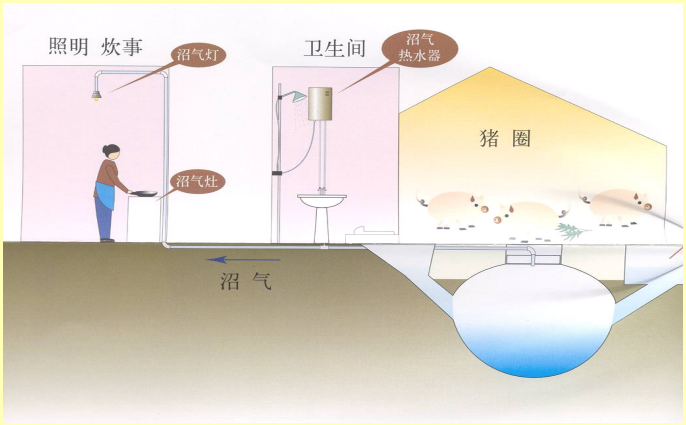

Figure 2: 'Pig-biogas-fruit' biogas model for Southern China

Bioenergy and Employment Generation

by Julije Domac
BIOEN Program Coordinator
Energy Institute 'Hrvoje Pozar', Croatia

European policy-makers recognise that renewables (in this case bioenergy) offer potential for employment creation in addition to environmental benefits. The renewable energy industry is one of Europe's fastest growing sectors. A study carried out in 1998-1999 predicted that in the European Union the use of renewable energy technologies, including bioenergy, will more than double by 2020, and that this increase will lead to the creation of more than 800 000 jobs by 2020.

Varying conditions and a lack of relevant data make it difficult to apply standard methods for appraisal of employment and earnings from bioenergy, especially when more sophisticated theories are applied, such as those including induced effects and multiplier effects.

The employment opportunities vary with the scale of the operation. A landowner who heats the family home and farm buildings with a wood-fired system will probably harvest the fuel supply from the family's own woodlot using the family's own labour. There are no wages involved, only "sweat equity". The same landowner may also benefit from the sale of wood or from renting out equipment for production. In many countries agroforestry is becoming more widespread, with trees considered another crop in addition to grains, vegetables or forage crops.

Do bioenergy systems provide earnings that are high enough to make it worthwhile to mobilize local resources to implement them? It is assumed, and possibly generally true for rural conditions, that some of the required resources (e.g. labour, machines, forests or forest residues, land, infrastructure and management capacity) would otherwise not be fully utilized. Moreover, the work is generally not performed under wage contracts, but by self-employed farmers, forest owners or local contractors whose interest is to get adequate earnings regardless of the source (whether personal labour, rental of machines or sale of biofuel).

An important developmental comparisons is what would be the investment cost per job created in the bioenergy sector. A study examinating job potentials in tree plantation for electricity production industry, bio-ethanol industry, and sugarcane industry in Northeast Brazil found that for the biomass energy

industries envisaged above, this lies between US$ 15,000 and US$ 100,000 per job, with costs in the ethanol agro-industry between US$ 12,000 and US $ 22,000. Such job creation costs compare with the average employment costs in industrial projects in the Northeast Brazil at US$40,000 per job created, in the petro-chemical industry of about US$ 800,000 per job, and for hydro power over US$ 1 million per job (Carpentieri, 1992). Lower job creation costs are one of the most significant benefits of bioenergy.

A study for the European Union looked at the impact of bioenergy on job creation and came to the following conclusion (Grassi, 1997): The total average investment cost for about 1 million new direct jobs (the cost of the indirect jobs will derive automaticly from private investment) will be around 250 billion Euro less than the estimated 345 billion Euro of total subsidies paid to 1.5 million non-employed people in socially relative protected EU society during the 20 year minimum life of the investment (plants).

Although biomass-based employment has an impact primarily in rural areas of developing countries, it is also important in cities and in developed countries, as demonstrated in Stockholm, Sweden and some other European cities (Dalén, 1999).

European policy-makers recognise that renewables (in this case bioenergy) offer potential for employment creation in addition to environmental benefits. The renewable energy industry is one of Europe's fastest growing sectors. A study carried out in 1998-1999 predicted that in the European Union the use of renewable energy technologies, including bioenergy, will more than double by 2020, and that this increase will lead to the creation of more than 800 000 jobs by 2020 (ECOTEC Research and Consulting Ltd/Directorate General for Energy, European Commission, 1999). The use of biomass for power or heat has the potential to create 323 000 jobs by 2020, while 515 000 jobs could be created in the provision of energy crops or forest or agricultural wastes as fuel.

In closing, it should be noted that at the local level bioenergy production and use may have other significant implications besides employment and monetary gains (social, cultural and environmental) which are not tractable to quantitative analysis and are therefore omitted from most impact assessments.

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IEA Task 29 – Socio-Economic Drivers in Implementing Bioenergy Projects

by Julije Domac, Energy Institute 'Hrvoje Pozar', Croatia
Leader of IEA Bioenergy Task 29

Task 29 on Socio-Economic Drivers in Implementing Bioenergy Projects (1 Jan 2003 – 31 Dec 2005) is an international collaboration within the IEA Implementing Agreement on Bioenergy. The aim of Task 29 to achieve a better understanding of the social and economic drivers and impacts of establishing bioenergy 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. The participating countries are Canada, Croatia, Ireland, Japan, Norway, Sweden and United Kingdom.

Among others, during the next three years deliverables will also include an educational website about biomass and bioenergy, designed to be as visual and interactive as possible, aimed at a wide audience and very user friendly. At this stage the educational website is already operational and can be seen at www.aboutbioenergy.info. Additional information is available at www.iea-bioenergy-task29.hr.

Figure 1: Activities of IEA Bioenergy Task 29 - Socio-Economic Drivers in Implementing Bioenergy Projects

Figure 2: Educational website of IEA Bioenergy Task 29

Addressing abrupt climate change: Can bio-energy help plug a Kyoto gap?

by Prof. Peter Read
Massey University - Centre for Energy Research, New Zealand

The availability of a potentially large-scale negative emissions energy system means that carbon dioxide levels can be brought down over a few decades to much lower levels than has previously been thought possible, given only zero emissions energy technology and increased energy efficiency. This negative emissions system includes Bio-Energy, the production of high value liquid fuels and electricity from biomass, as well as Carbon Capture and Safe Storage. Putting these two technology types together, we have BECS – Bio-Energy with Carbon Storage.

The 2001 National Academy of Science Report 'Abrupt Climate Change: Inevitable Surprises', and the novel concept of Bio-Energy with Carbon Capture and permanent Storage (BECS) that yields a negative emissions energy system, together create a new situation. From the first comes bad news that the threat of abrupt climate change (ACC) due to cumulative anthropogenic emissions is real. From the second comes good news that responding to this threat can be taken out of the 'too hard' basket, to which it was consigned during the negotiation of Kyoto. Not only can it be brought out of the 'too hard' basket, but so it should be, since the 1992 Rio Climate Convention calls for cost-effective precautionary measures in response to such threats, without delay on account of scientific uncertainty.

The Bad News: very low CO_2 levels may be needed

Unfortunately, the unstable dynamic processes that have caused ACC in previous epochs are poorly understood. Climate science has so far succeeded in modelling only one mechanism of abrupt climate change – the possible slowing or stoppage of the Thermo-Haline Circulation. Other mechanisms have been described that, prima facie, could provoke warming above some threshold including:

- release of methane from thawing Arctic tundra
- enhanced solar absorption following the loss of Arctic summer sea ice
- reversal of natural biotic sinks to become net emitters at higher temperatures

Any of these, alone or in a complex cascade interaction with the others, might initiate an irreversible process towards radical regime change in the climate system. The eventual triggering of climate catastrophe (disappearance of snow and ice cover on Greenland and Antarctica, or the onset of a new deep ice age, respectively leading to a raising or lowering of the ocean surface by around 30 meters) cannot be ruled out, with transitions possibly rapid on the evidence of paleo-climatological studies.

At best, reducing emissions to zero can cause atmospheric carbon dioxide (CO_2) only gradually to approach equilibrium with the level in earth's natural surface sinks. But that level has been raised over the last two centuries by absorption from the atmosphere of human induced emissions. The threshold for precipitating one or other of the several processes that might trigger a catastrophic abrupt climate change event may be below the level reached already, with the very substantial inertia of the climate system all that lies between us and such an event, and hopefully giving time to put effective measures in place. Note that non-CO_2 greenhouse gases, for which we currently have no control technologies, will likely add about 100 ppm CO_2-equivalent by the end of the century. So if climate scientists eventually discover that only a small increase above the pre-industrial level of 285 ppm is safe, CO_2 would need to be reduced to below 300 ppm, which can't be done with zero emissions technologies.

The Good News: negative emissions energy systems

The availability of a potentially large-scale negative emissions energy system means that carbon dioxide levels can be brought down over a few decades to much lower levels than has previously been thought possible, given only zero emissions energy technology and increased energy efficiency. Three years ago, talk of approaching pre-industrial CO_2 levels in a few decades would have been regarded as fantasy. However, the IPCC's Third Assessment Report did not link two types of carbon technology that it reviewed separately. These are Bio-Energy, the production of high value liquid fuels and electricity from biomass, as well Carbon Capture and Safe Storage, already being rapidly driven ahead by USDOE research programmes.

Putting the two technology types together, we have BECS – Bio-Energy with Carbon Storage – in which biomass is processed into electricity, or hydrogen-rich transportation fuel, and carbon dioxide wastes are compressed at the processing plant for safe storage underground. BECS is therefore a negative emissions energy system. With reasonably foreseeable advances in the constituent technologies, and success in motivating a very large number of land-owners and land-occupiers to engage in biomass-for-energy cropping, BECS offers the prospect of rapidly reducing greenhouse gas levels towards the pre-industrial, should investigation of ACC show this to be needed.

Most of the land available and suitable for growing the biomass raw material needed for bio-energy exists in the many developing countries that are not blessed (or cursed) with oil reserves. Thus dealing with the threat of ACC needs to be outward looking, rather than focused on 'domestic action' like Kyoto. Establishing a new world order in energy markets, with a broad-based bio-energy supply side, confers both enhanced energy security globally and prospects of sustainable economic growth with rural development for many land-rich but otherwise impoverished developing countries. By providing additional impetus to bio-energy it would also enhance the effectiveness of Kyoto in response to gradual climate change.

It is planned to organise a conference on 'Greenhouse Gas Emissions and Abrupt Climate Change - Positive Options and Robust Policy', to be held in 2004. Please contact Peter Read pread2@attglobal.net with copy to oberstei@iiasa.ac.at.

Socio-economic Impacts of the New Colombian Bio-ethanol Programme

by Dr. David Cala-Hederich
Executive Director CORPODIB, Colombia

The New Colombian Bio-ethanol Programme, mandating the use of 10% bio-ethanol blends in gasoline from the year 2006, will require an additional area of 150.000 hectares harvested with sugar cane and it will generate 170.000 new employments, mainly for farmers in rural areas of Colombia.

The Colombian bio-ethanol programme from sugar cane is based on a new law approved by the Colombian Congress which mandates the use of 10% ethanol blends in gasoline, starting in the year 2006. The production of bio-ethanol will be between 2.0 and 2.5 million liters per day (900 million litres per year) to be produced in nine agro-industrial complexes, located in nine different regions near main Colombian cities.

This project will require an additional area of 150.000 hectares harvested with sugar cane and it will generate 170.000 new employments, mainly for farmers who will benefit from higher salaries. In this project each farmer family will earn between 2 to 3 minimum salaries (Colombian minimum salary is about 1.500 US$ per year), thereby increasing the opportunity for a better quality of life, compared with present situation.

Bio-ethanol sales will be of the order of 400 million dollars per year and the cash flow for sugar cane business will be of 240 million dollars per year, increasing the agro-GDP by about 3% and generating a “cluster” for regional development. Within this program, the Corporation for the Industrial Development of Biotechnology and Clean Production (CORPODIB) has been playing a very important role during the last eight years.

Presently, there is another new law under negotiations in the Columbian Congress which is concerned with the introduction of biodiesel from palm oil and other vegetable oils to be blended with diesel fuel oil, probably by the year 2008. The environmental benefits of both projects (bio-ethanol and bio-diesel) will be of great importance for the country, especially with carbon dioxide savings which through Kyoto Protocol Clean Development Mechanism will generate additional income by the commercialisation of CO_2.

In this way Colombia enters into the very important new industry of renewable fuels, for preservation of the environment and for generating a significant number of new employments.

Sugar Ethanol for the Mexican Fuel Market

by Lic. Isabel Gómez Macias
Fundación Emisión, México,
Coordinator Mexican Ethanol Project

Over-production and large surplus sugar stocks currently create great pressure on the Mexican sugar industry. One possiblity to solve this problem is to diversify the Mexican sugar sector through the production of bio-ethanol transport fuel from sugar cane. Presently, an initiative to promote bio-ethanol has been started by the cities of Jalisco and Mexico City in order to stimulate nation-wide activities.

At present, the population directly depending on the Mexican sugar agricultural industry represents 2.424.969 people. According to the National Sugar Cane and Alcohol Chamber of Industry (CNIAA) the total cultivated sugar cane area in Mexico was 715.000 acres in 2003. During the harvest season 2002-2003, the 60 Mexican sugar mills processed 47.400.000 tons of cane and produced 5.171.000 tons of sugar.

These figures show the great potential to designate surplus sugar to diversified production such as the production of ethanol. An initiative on pollution reduction, the ‘*Mexican Ethanol Project*’, has been started by the cities of Jalisco and Mexico City and other cities are expected to join this important activity in order to create a nation-wide project. In order to ensure sufficient economic revenues for the Mexican sugar industry, the demand for bio-ethanol can be guaranteed through the use as substitute for MTBE in gasoline and as oxygenated fuel for public transportation vehicles. Currently, the Mexican transportation union is considering to purchase vehicles running on 100% bio-ethanol from the Swedish company Scania.

Today, the Mexican sugar agricultural industry is facing a difficult situation due to liberalisation and privatisation policies adopted by the National Government. Additionally, the Free Trade Agreement NAFTA between the United States, Canada and Mexico causes strong competition on the Mexican sugar market through imported fructose. Therefore, the national sugar industry encounters difficulties to place the registered 151 million tons of surplus sugar in a good market and at a decent price. A possibility to face this current over-production of sugar is the diversification of the activities of the sugar agricultural industry such as the production of ethanol as fuel.

In order to introduce alternative fuels in national transportation fuel markets, it is essential to closely cooperate with the main actors involved. In Mexico, the national petrochemical industry is under monopoly of the semi-state company PEMEX. At the beginning of the negotiations with PEMEX to allow the use of ethanol as transport fuel, they were reluctant to accept. But, after favourable results were obtained by the Mexican Petroleum Institute regarding properties and applications of ethanol-diesel and ethanol-gasoline mixtures, PEMEX finally has accepted to collaborate within the Mexican bio-ethanol initiative.

Finally, for the success of the bio-ethanol initiative it is important to create a favourable public opinion towards the ethanol program in Mexico to make available sufficient technological, financial and human resources. This will only be possible through rising public consciousness in Mexico for the issues of sustainable development and environmental protection in order to face the challenges of the 21st century such as the conservation of land and water and the improvement of air quality in Mexican cities.

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CDM Projects in Chile

by Dr. Germán Aroca
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Clean Development Mechanism (CDM) projects in Chile have the potential for revenues of US$ 5-8 per ton of CO_2, which is higher than the current world-wide average of US$ 3.5 per ton. This fact is due to an advantageous investment climate in Chile and the existence of a national productive sector interested in participating in CDM project implementation.

In 2003, participation of Chile in the world carbon market was 7 % of the total of US$ 106 million at a world-wide level. The first CDM project approved in the country is the installation of the hydroelectric plant Chacabuquito, located near the city of Los Andes, 45 km northeast of Santiago in Chile. This project is implemented in cooperation with the Japanese company Mitsubishi and it involves a total transaction of around US$ 7 million worth of carbon bonds. The Company "Guardia Vieja" which is responsible for the installation received an amount of US$ 950.000 from the Prototype Carbon Fund (PCF) of the World Bank. This amount is equivalent to 112.607 tons of carbon dioxide, avoided by replacing coal and gas electric plants by a renewable resource.

In Chile, the National Commission for the Environment (CONAMA, www.conama.cl), a governmental agency devoted to the country's environmental issues, is in charge of the promotion and certification of projects that could accede to Clean Development Mechanisms. Currently, CONAMA is preparing a portfolio of projects, such as solar energy production, improvement of the urban transport system in Santiago including the extensions of the subway transport, reforestation, control of methane from landfills and others. This portfolio is scheduled to be completed by the end of 2003.

In average one ton of CO_2 is sold for US$ 3.5. But, CONAMA authorities have indicated that for Chilean projects it would be possible to achieve revenues between US$ 5 to US$ 8. This higher price is due to investment advantages in comparison with other developing countries. These advantages include the internationalisation of Chile's economy (ranked "low risk"), the control of the fulfillment of bonds contracts as well as the existence of a productive sector interested in participating in this market.

Chile has initiated contacts for promoting CDM projects with several countries like Japan, Holland, Canada, Denmark and the United Kingdom. In the case of Denmark, a meeting promoted by both governments was carried out this year with the purpose of connecting Chilean opportunities of supplying carbon bonds with potential demand of Danish companies. Denmark already offered to finance feasibility studies for future CDM projects. In the case of Germany, the main interest lies in renewable energy projects, which could serve to finance transfer of technology, taking advantage of the recently established commercial agreements between Chile and the European Union.

Through the implementation of CDM projects Chile will experience large benefits in the areas clean energies, transport and forestation. Today, several projects are in the process of approval:

- The Company Metrogas, a distributor of natural gas to domestic networks, has applied for ten co-generation projects.
- Agrosuper, one of the main companies in the poultry industry, has applied for a methane emission reduction project.
- A potential CDM project is concerned with the forestation of 5000 hectares in an eroded zone.

Preliminary evaluations have shown that forestation projects of 100 hectares could accede to CDM. These projects would allow rural families to mainly earn their living from the forest during a period of 20 years. If this experience is successful, this mechanism would be an important promoter for the forestation of eroded countryside with a consequent delay in the desertification process in vast areas of Chile's continental territory.

Launch of Mexican Network on Bioenergy (Red Mexicana de Bioenergía)

by Dr. Omar Masera, Director Bioenergy Laboratory, Centro de Investigaciones en Ecosistemas (CIECO), UNAM, México

The newly established Mexican Network on Bioenergy (Red Mexicana de Bioenergía) has been launched on the occasion of the International Seminar on Bioenergy and Sustainable Rural Development, 26-28 June 2003 in Morelia (Mexico). This network will provide the first national forum to catalise projects, information exchange and activities in the field of bioenergy in Mexico.

The International Seminar on Bioenergy and Sustainable Rural Development was organized jointly by the Global Thematic Network on Bioenergy (LAMNET), the Center for Ecosystem Research (CIECO) from the National Autonomous University of Mexico (UNAM), the Food and Agriculture Organization of the United Nations (FAO), the National Association for Solar Energy (ANES) and the State Government of Michoacán, Mexico.

The Seminar was attended by 160 people from over 30 countries. Participants represented the academic, non-governmental, official, social, and private sectors. Seminar activities were organized in plenary presentations and five working groups focusing on the topics of: electricity generation from biomass, liquid fuels, gasification, biomass resources and small scale applications.

This Seminar had a high political impact. The Governor of Michoacán State gave the opening address and underlined the State's strategic interest in the development of bioenergy as a source of local sustainable rural development and technology innovation. Several other high-level officials from Mexico also attended the sessions.

A major outcome from the Seminar was the creation of the **Mexican Network on Bioenergy** (Red Mexicana de Bioenergía), which will provide a forum to catalise projects, information exchange and activities in the field of bioenergy. The coordination of the network will be initially organized by Dr. Omar Masera from CIECO-UNAM, and the network will be based within the National Solar Energy Association of Mexico (ANES). Seminar contributions, the final list of participants and all information about the Mexican Network on Bioenergy are available at the following websites:

http://www.anes.org/bioenergia/index.html

http://www.bioenergy-lamnet.org

Logo of the newly established Mexican Network on Bioenergy

LAMNET Latest News

Global Network on Bioenergy wins CTO Award for 'Best Renewable Energy Partnership with Developing Countries' of the Year 2003

The Campaign for Take-Off (CTO) was initiated by the European Commission in May 1999. It encourages public and private institutions and organisations to promote renewable energy by means of 'Renewable Energy Partnerships', and it includes a competition to reward model RE Partnerships.

Under the patronage of the European Biomass Industry Association, the Global Network on Bioenergy succeeded to WIN the YEAR 2003 ROUND of the *CTO Award* as 'Best Renewable Energy Partnership with Developing Countries'.

The CTO Award Ceremony for the year 2003 will be held in the framework of the 'European Conference for Renewable Energy – Intelligent Policy Options' in Berlin, 19-21 January 2004.

More information on the European Commission's Campaign for Take-Off, including a brochure describing the CTO Award winners, is available at www.bioenergy-lamnet.org/cto.

LAMNET Activities in 2004

Conference on Bioenergy Resources and Utilisation, Beijing, P.R. China, April 2004

This LAMNET project workshop will be organised in close collaboration with the European Biomass Industry Association (EUBIA) and it will focus on cooperative efforts in the field of bio-energy between China, the EU and supporting countries.

LAMNET Workshop in Rome, Italy, 9th May 2004

This workshop will be jointly organised by ETA-Florence and WIP-Munich on the occasion of the 2nd World Conference and Technology Exhibition on Biomass for Energy, Industry and Climate Protection, Palazzo dei Congressi, Rome, 10-14 May 2004. More information on the scientific programme of this important international event are available at www.conference-biomass.com.

LAMNET Workshop on Ethanol Production and Use, São Paulo, Brazil, 14-17 September 2004

This workshop will be jointly organised by the LAMNET project and the Brazilian National Reference Center on Biomass (CENBIO) on the occasion of the international industrial fair FENASUCRO 2004, one of the largest technological events in the sugar and alcohol sector world-wide.

LAMNET Workshop in Chile, November 2004

This workshop will be jointly organised by the LAMNET project and the School of Biochemical Engineering at the Catholic University of Valparaiso, Chile. Details on the scientific programme of this event will be provided as soon as possible.

Two further LAMNET workshops are under planning for the year 2004.

LAMNET Thematic Leaflets

In the framework of the LAMNET project, Dr. Giuliano Grassi, Secretary General of the European Biomass Industry Association (EUBIA), edited the technical contents of the following bioenergy technology leaflets:

- Modern Bioenergy Village Complex
- Microdistillery – Decentralised Bioethanol Production
- Refined Biofuels – Pellets and Briquettes

These thematic leaflets focus on the identification of relevant bioenergy technologies and systems, selected on the basis of maturity of the technology, cost-effectiveness, simplicity of maintenance, social acceptability and the impact on development. The thematic leaflets can be downloaded at www.etaflorence.it under 'Publications/Online Brochures' and at www.bioenergy-lamnet.org/leaflets.html.

This Newsletter is intended to provide information on the LAMNET activities.
Please visit our Website for the latest news on the LAMNET project:

http://www.bioenergy-lamnet.org

This publication has been produced with support of the European Commission, DG Research. LAMNET-NEWS is the newsletter of LAMNET - The Global Network on Bioenergy and is published by WIP-Munich and ETA-Florence.

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This Thematic Network is funded by the European Commission, DG Research, in the framework of the programme 'Confirming the International Role of Community Research' (Project No. ICA4-CT-2001-10106).