



Iberoamerican Ministerial Meeting Bulletin

A Summary Report of the Iberoamerican Ministerial Meeting on “Energy Security In Latin America: Renewable Energy as a Viable Alternative”

Published by the International Institute for Sustainable Development (IISD) in collaboration with UNIDO

ONLINE AT [HTTP://WWW.IISD.CA/YMB/SDIBE/](http://www.iisd.ca/YMB/SDIBE/)
VOLUME 128, No. 1, SATURDAY, 30 SEPTEMBER 2006



Secretaría General Iberoamericana



SUMMARY OF THE IBEROAMERICAN MINISTERIAL MEETING ON ENERGY SECURITY IN LATIN AMERICA: RENEWABLE ENERGY AS A VIABLE ALTERNATIVE: 26-27 SEPTEMBER 2006

The Iberoamerican Ministerial Meeting on “Energy Security In Latin America: Renewable Energy as a Viable Alternative” took place from 26-27 September 2006, in Montevideo, Uruguay. The meeting was organized by the United Nations Industrial Development Organization (UNIDO), in cooperation with the Secretariat for the Iberoamerican Summit (SEGIB), and Uruguay’s Ministry of Industry, Energy, and Mining. The meeting was convened to provide a forum for representatives from the region’s energy ministries to discuss energy security and agree on a regional cooperation programme to harness the potential of renewable energy technologies in meeting the region’s growing energy needs, especially in the Latin American socioeconomic context.

The two-day event featured over 40 speakers and 300 participants, with panel presentations and round tables, and included government representatives and ministers of energy and related issues from more than 15 countries, business, industry, international and intergovernmental organizations, academia, research institutes and non-governmental organizations.

The sessions explored the potential for renewable energy to meet the rising demand for energy in Latin America and covered, among others, the following key themes: current status and experiences on the use and applications of renewable energy technologies within the overall global energy scenario; issues and opportunities specific to Latin America; ongoing regional projects, networks and programmes; existing policy and institutional framework; and agreement on a regional cooperation programme to boost the wide-scale adoption of renewable energy technologies in the region.

One of the main achievements of the meeting was a Ministerial Declaration which highlighted the need to increase regional integration to improve the rational use of energy, increase the supply of renewable energy and promote research

and technological development in these fields. The Declaration also encourages governments to study the creation of a Regional Observatory on Renewable Energies and Rational Energy Use, proposed by UNIDO and to be located in Montevideo, Uruguay. There was also a general consensus among participants that, while hydroelectric power and bioethanol have achieved significant market share in some countries, much of the region’s renewable energy has yet to be tapped, and that further investment will require a predictable regulatory framework and financial incentives. Many also expressed a need to incorporate the full environmental and social costs of fossil fuels in order to demonstrate the competitiveness of renewable sources. Overall, the meeting fulfilled its objectives and has set the stage for further discussions through the Ministerial Declaration that will be forwarded to the meeting of the Iberoamerican Summit in November 2006.

A BRIEF HISTORY OF RENEWABLE ENERGY IN INTERNATIONAL PROCESSES

During the fuel crisis of the 1970s, many countries began exploring alternative sources of energy. The international community’s first major attempt to develop a strategy for the use of alternative fuels was the 1981 UN General Assembly Resolution A/RES/36/193 on the outcomes of the UN Conference on New and Renewable Sources of Energy. In this Resolution, the UN adopted the “Nairobi Programme of Action for the Development and Utilization of New and Renewable Sources of Energy.”

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The *Iberoamerican Ministerial Meeting Bulletin* is a publication of the International Institute for Sustainable Development (IISD) <info@iisd.ca>, publishers of the *Earth Negotiations Bulletin* © <[iisd.org](http://www.iisd.org)>. This issue was written and edited by Soledad Aguilar and Peter Wood. The Digital Editor is Angeles Estrada. The Editor is Pia M. Kohler, Ph.D. <pia@iisd.org>. The Director of IISD Reporting Services is Langston James “Kimo” Goree VI <kimo@iisd.org>. Funding for coverage of this meeting has been provided by the United Nations Industrial Development Organization (UNIDO). IISD can be contacted at 161 Portage Avenue East, 6th Floor, Winnipeg, Manitoba R3B 0Y4, Canada; tel: +1-204-958-7700; fax: +1-204-958-7710. The opinions expressed in the *Bulletin* are those of the authors and do not necessarily reflect the views of IISD. Excerpts from the *Bulletin* may be used in other publications with appropriate academic citation. Electronic versions of the *Bulletin* are sent to e-mail distribution lists (HTML and PDF format) and can be found on the IISD RS Linkages WWW-server at <<http://www.iisd.ca/>>. For information on the *Bulletin*, including requests to provide reporting services, contact the Director of IISD Reporting Services at <kimo@iisd.org>, +1-646-536-7556 or 212 East 47th St. #21F, New York, NY 10017, USA.

UNCED: In 1992, the UN Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil, addressed renewable energy issues, which began to feature more prominently on the international environment and development agenda. At UNCED, delegates adopted Agenda 21, an action plan for implementing sustainable development that contains many elements of a sustainable energy strategy. Chapter 9 of Agenda 21, on protecting the atmosphere, notes that much of the world's energy is currently produced and consumed in an unsustainable manner. It recognizes that the need to control atmospheric emissions of greenhouse gases and other substances will increasingly require efficiency in energy production, transmission, distribution and consumption, and a growing reliance on environmentally sound energy systems, particularly new and renewable sources of energy. The chapter also calls on governments and other stakeholders to, *inter alia*: promote the research, development, transfer and use of technologies and practices for environmentally sound energy systems, with particular attention to developing countries; review current energy supply composition to determine how the contribution of environmentally sound energy systems could be increased in an economically efficient manner; examine and implement measures to overcome barriers; and coordinate energy plans regionally and subregionally.

WSSD: Ten years after UNCED, the World Summit on Sustainable Development (WSSD) convened in Johannesburg, South Africa. One of the major outcomes of the WSSD was the adoption of the Johannesburg Plan of Implementation, which addresses renewable energy in several of its chapters. For example, governments agreed to improve access to reliable and affordable energy services for sustainable development, so as to facilitate the achievement of the Millennium Development Goals (MDGs), including actions to:

- improve access to reliable, affordable, economically viable, socially acceptable and environmentally sound energy services and resources through various means, such as enhanced rural electrification and decentralized energy systems, and increased use of renewables;
- improve access to modern biomass technologies and fuel-wood sources and supplies, and commercialize biomass operations; and
- promote the sustainable use of biomass and other forms of renewable energy through improved patterns of use.

Regarding sustainable consumption and production patterns, governments agreed to substantially increase the global share of renewable energy sources, with the objective of increasing the contribution of renewable energy to total energy supply. They recognized the role of national and voluntary regional targets and initiatives, and the need to ensure that energy policies support developing countries' efforts to eradicate poverty. They also agreed to, *inter alia*: develop and disseminate alternative energy technologies with the aim of giving a greater share of the energy

mix to renewable energy; combine the increased use of renewable energy resources, more efficient use of energy, and greater reliance on advanced energy technologies; and develop and utilize indigenous energy sources and infrastructures for local use and promote rural community participation in the development and utilization of renewable energy technologies.

CSD-14: In May 2006, the fourteenth session of the Commission on Sustainable Development (CSD-14) took place at UN headquarters in New York. CSD-14 was tasked, among other issues, with reviewing progress in energy for sustainable development, and evaluate progress in implementing Agenda 21, the Programme for the Further Implementation of Agenda 21, and the Johannesburg Plan of Implementation, while focusing on identifying barriers and constraints, lessons learned and best practices in implementation in the thematic cluster.

CSD-14 demonstrated that energy is increasingly perceived as critical for sustainable growth and that if the world is to tackle poverty and gender equity effectively and ensure the realization of the MDGs, efficiency, conservation and provision of affordable energy services will be regarded as overriding concerns.

REPORT OF THE MEETING

OPENING SESSION

Jorge Lepra, Minister of Industry, Energy and Mining (Uruguay), opened the meeting on Tuesday, 26 September. He highlighted that energy issues in the region require innovative policies to coordinate the interests of society, States and the market to ensure sustainable development and equity in access to energy. He also emphasized that countries in the region must work together to enhance intraregional energy markets, and develop renewable energy sources, reducing dependency on foreign oil, increasing energy security and diminishing vulnerability of States.

Kandeh Yumkella, UNIDO Director General, noted that although similar energy issues were present 30 years ago, new ones have emerged, and that the "energy divide" and the inability to attract investment has resulted in economic marginalization of more than two billion people and prevented this region from benefiting from globalization. He cautioned that foreign investment in Africa's energy resources has not resulted in local development. He noted that renewables can provide access to energy prior to the extension of a national grid, and recognized the region's progress in this field, highlighting Mercosur cooperation. He said that humanitarian assistance is insufficient, and that true development requires job creation.



Kandeh Yumkella, UNIDO Director General

Enrique Iglesias, Secretary-General of the Iberoamerican Summit, noted the region's privileged position regarding energy resources. He recalled that the energy crisis 30 years ago provided the impetus to develop renewables, and noted progress achieved in solar, biomass, and wind energy. He drew attention to the emergence of India and China as major consumers of energy, and said that climate change concerns bring a new importance to the use of renewables, including ethanol and biodiesel. He noted that in order for renewables to be competitive, conventional fuels must internalize their true costs. He highlighted the creation of the Regional Observatory and the importance of cooperation. Noting the potential of hydroelectric power, he said that conflict with environmental interests must be reconciled in order to attract investment. Finally, he highlighted the creation of the Regional Observatory by UNIDO, in cooperation with SEGIB and governments of the region, and the importance of cooperation.

DAY ONE

On Tuesday, panels were convened on the following topics: the current global energy perspective; energy security and potential of renewable energy technologies in Latin America; and market conditions for renewable energy in the region. A closed meeting of government representatives and ministers of energy and related issues was held in parallel with the last panel, and government officials agreed on first steps towards the establishment of a Regional Observatory to act as a coordination mechanism in enhancing renewable energy investments, and that demand-driven projects in the region will be implemented with the support of UNIDO and SEGIB.

GLOBAL ENERGY PERSPECTIVE

Martín Ponce de León, Undersecretary for Industry, Energy and Mining (Uruguay), moderated the first panel on the "Global Energy Perspective."

Carlos Magariños, Oxford University and former UNIDO Director-General (Argentina), highlighted the role of public policy in enhancing the potential for renewable energy resources to tap into the US\$17 trillion investment in energy supply expected in the next three decades. He noted that the sectors expected to grow the most are transport, followed by industry and household consumption, and that renewable energy sources should thus be targeted at these sectors, especially in developing countries, where the greatest share of increase in demand is expected to take place.

Jean-Paul Carteron, Chairman and Founder of the Crans Montana Forum and Monaco World Summit, noted that 80% of global energy consumed comes from fossil fuels from a small number of countries, which causes global injustice, price



Carlos Magariños, Oxford University and former UNIDO Director-General (Argentina)

volatility, energy insecurity and presents obstacles for the development of the poorest nations. He highlighted the need for governments to support renewable resources, ensuring that a more diverse use of renewable energy sources becomes a vehicle for peace and equity in the world.

Antonio Pflüger, International Energy Agency (IEA), noted that strong growth in emerging economies raises major questions regarding energy supply and climate change. He discussed the role of the IEA in ensuring energy supply stability and providing policy advice to member countries, elaborating on its programmes on renewables energy development and deployment. He presented future energy scenarios, stating that in the absence of energy alternatives, demand will double by 2050 along with CO₂ emissions and dependence on imports. He suggested that sustainability is achievable without drastic changes, and noted the importance of renewables in reducing natural and political risks associated with dependence on foreign oil. He lamented that only a small number of countries have harnessed the potential of wind and photovoltaic energy.

Maite Costa, President of the Iberoamerican Association of Energy Regulatory Entities –ARIAE– (Spain), noted the current energy model does not allow a path of growth for many countries, due to disequilibrium between energy supply and demand, as well as price volatility. She underscored the need for international coordinated approaches, through international cooperation and through regulatory harmonization at the regional and global levels, adding that both markets and environmental challenges are interconnected. From the perspective of energy regulators, she highlighted the need to foster research and development in renewable sources and to promote consumer savings and efficiency in order to achieve a new energy model.

José Sergio Gabrielli de Azevedo, President of Petrobras (Brazil), noted the rise of the importance of Latin America in energy provision, and its wealth of renewables, particularly hydroelectric. He profiled Petrobras as a large transnational corporation founded on growth, profit, and sustainability, with a strong financial outlook. He hoped for a negotiated solution for the conflict with Bolivia over natural gas. He highlighted the competitiveness of biodiesel, which requires less refining, and noted the benefits of sugarcane-based ethanol over that produced from corn. He also presented the benefits of cars able to use any combination of ethanol and gas.

Silas Rondeau Cavalcante Silva, Minister of Energy and Mines (Brazil), noted his country has achieved self-sufficiency in energy production and highlighted that investments in renewable energy sources should come hand in hand with social inclusion and a commitment to improve quality of life. He noted the



Maite Costa, President of the Iberoamerican Association of Energy Regulatory Entities –ARIAE– (Spain)

largest energy demands in the next decades will come from the US, China and Brazil, considering their large geographic area, population and gross domestic product, and underscored Brazil's achievement of 44.6% renewable resource energy use, comparing it to a 13.5% global average. He said Brazil's target is to reach a 50% use of renewable energy sources and emphasized his country's leadership in the use of ethanol to fuel cars, and in the research and development of energy production sources through small hydroelectric plants, biomass, biodiesel and tidal power.

Ponce de León summarized the morning's statements and invited participants to an exhibition on renewable energy technologies.

ENERGY SECURITY IN THE REGIONAL CONTEXT: POTENTIAL OF RENEWABLE ENERGY SOURCES

Pablo Serra, Executive Secretary of the National Energy Commission (Chile), moderated the session and introduced the panelists.

Álvaro Ríos Roca, Executive Secretary, Organización Latinoamericana de Energía – OLADE, described activities his organization has undertaken in order to foster regional cooperation, and noted that governments have an important role to ensure that energy investments generate social benefits. He described a recently introduced proposal on enhancing regional integration, which offers significant benefits, but that will require the development of an appropriate legal framework. He noted that only four percent of Latin America's renewable energy potential is currently harnessed, and that significant opportunities for energy efficiency improvements exist. He suggested that complementarity and efficiency could be enhanced through further regional integration.

José Martínez Martín, Director General, Spanish Energy Club, argued that energy is a strategic good, pivotal to security, and that it must be used to create the greatest value for society. He encouraged addressing the energy issue in a cohesive manner



The panel on "Energy security in the regional context" emphasized the vast potential of untapped renewable energy resources. L-R: Wilfredo Jara, Endesa (Chile); Mark Lambrides, Organization of American States; Álvaro Ríos Roca, Executive Secretary, Organización Latinoamericana de Energía - OLADE-; Pablo Serra, Executive Secretary of the National Energy Commission (Chile); José Martínez Martín, Director General, Spanish Energy Club; and Daniel Bouille, Bariloche Foundation (Argentina)

in order to avoid institutional overlap. He called for enabling investment in energy, and decreasing risks through legal certainty, while supporting an integrated approach to maximizing energy cooperation in Latin America and beyond. Lamenting that most countries have not followed through with their commitment to increase the use of renewables, he questioned whether this may require subsidization. He cautioned against following the fossil-fuel intensive development path that China and India have taken, noting Latin America's great potential for renewable energy sources.

Mark Lambrides, Organization of American States, presented the programme for renewable energy in the Americas, noting projects in Central America and the Caribbean. He highlighted that future developments in this sector will need to consider demand growth, provide access to all, and draw upon diverse sources of energy to reduce risks of price fluctuation and service interruptions. He said projects must be tailored to the specific characteristics of different energy markets, and that a diversified and efficient future energy market requires specific incentives.



Daniel Bouille, Bariloche Foundation (Argentina)

Daniel Bouille, Bariloche Foundation (Argentina), cautioned that the correlation between renewables and sustainability must be examined on a case-by-case basis. He said multiple options for the deployment of renewable technologies are possible and countries must define their priorities, including whether investments will have societal benefits or solely productive ends and their scale and time frames. For example, he noted access needs in Latin America are mostly urban and peri-urban, which allows for a potentially larger role of renewables connected to energy grids. Regarding participation in the Kyoto Protocol's CDM mechanism he emphasized the need to move from a project-by-project approach to a sectoral and programmatic approach.

Wilfredo Jara, Endesa (Chile), noted that constraints to renewable energy deployment include lack of technical and financial capacity, regulatory barriers and environmental and social requirements. For example, he noted that hydroelectric projects can have both positive and negative environmental impacts which must be considered. He emphasized the need to generate new maps on available renewable resources, such as wind, and to provide incentives for start-up companies using renewable energy sources.

MARKET CONDITIONS FOR RENEWABLE ENERGY IN THE REGION

Celia Barbato, Director of the Technological Laboratory of Uruguay (LATU), moderated the session.

Antonio Baena, Garrigues (Spain), discussed key factors in the development of renewable energy in Spain. He said that biomass currently accounts for most of the production, but that photovoltaics and wind energy offer the greatest potential for growth.



Celia Barbato, Technological Laboratory of Uruguay

He described enabling factors, including: natural conditions; connection costs; technical capacity; socioeconomic factors; and predictable legal frameworks, and noted the pros and cons of encouraging investment in renewables via price regulation as opposed to via quotas for quantity purchased.

Carmen Fernández Rozado, ARIAE, noted that renewable energy projects are not achieving the necessary volume to impact development in Latin America due to, among other causes, transaction costs, capacity limitations, and difficulty accessing distribution grids. She highlighted the need to find new finance sources, and noted the CDM's potential to provide this. She explained the way Europe, and Spain in particular, are implementing the Kyoto Protocol, highlighting opportunities for participation in renewable energy projects under the new European National Allocation Plans.

Manlio Coviello, Economic Commission for Latin America and the Caribbean - ECLAC/CEPAL, presented a report on renewable energy as a follow-up to the region's commitment to reach the goal of renewable energy representing 10% of total energy consumption. He noted that notwithstanding existing efforts, the share of renewables within energy supply in the region has diminished from 2000 to 2004, while highlighting that the only country that substantially increased the share of renewables in the energy mix is Brazil through its use of bioethanol in transport. However, he cautioned that this example may not be replicable due to Brazil's low sugar cane production costs and noted the potential for Latin America to promote renewable energy sources through the CDM mechanism.

Pablo Rosenthal-Brendel, Interamerican Development Bank (IDB), said that IDB is currently developing a programme, to be launched in November, aiming to significantly increase funding for sustainable renewable energy. The programme includes a special fund for renewables and a study aimed at identifying barriers and opportunities for progress. He said that emerging

markets such as India and China may soon become the main energy markets, and cautioned that costs and availability of photovoltaics and windmills may pose a barrier as demand soars. He encouraged taking environmental impacts into consideration, and urged transparency and sustainability in policy making and regulation. Noting that sustainability can be achieved, he added that energy security is a global problem and must be addressed at this level.

Xabier Viteri Solaun, Iberdrola (Spain), stated that from a business point of view, renewables are now a viable reality, but that price volatility and infrastructure vulnerability still need to be addressed. He noted that although wind energy has increased tenfold over the last decade, most of this has occurred in Europe, and lamented that its market share in Latin America is negligible. He described conditions conducive to investment, including access to energy markets, guaranteed and adequate price premiums, and stability in regulation, and encouraged establishing support mechanisms based on regulatory and pricing predictability.

DAY TWO

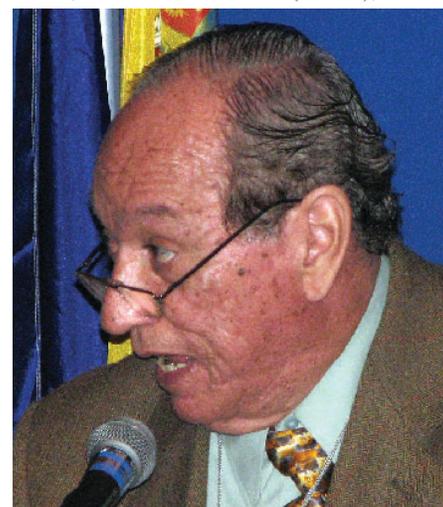
On Wednesday, four round tables addressed technical and market characteristics in different renewable energy resources, followed by discussions on some of the key issues such as barriers for investment in renewables, problem areas and potential opportunities for renewable energy in Latin America.

POTENTIAL OF BIOMASS AND BIO-FUELS: SUCCESSFUL EXPERIENCES IN THE REGION

This panel was moderated by Daniel Martínez, President of the National Administration for Fuels - ANCAP (Uruguay).

Expedito José de Sá Parente, Director of Tecbio (Brazil),

discussed technologies developed to transform vegetable and animal oils into fuels, including biokerosene, a fuel capable of powering aircraft. Presenting the case study of an agricultural product used to make biodiesel, he noted that the process produces silk as a by-product. He described a consistent historical reduction in the price of ethanol,



Expedito José de Sá Parente, Director of Tecbio (Brazil)

made possible through research in production methods and increased sugarcane productivity. Noting agreements with German and Brazilian universities to develop technology able to convert forest and agricultural residues into fuel, he described how



Panel on "Potential of Biomass and Bio-Fuels: Successful Experiences in the Region". L-R: H. S. Mukunda, Bangalore Science Institute (India); Jaime Baeza Hernández, University of Concepción (Chile); Daniel Martínez, President of the National Administration for Fuels - ANCAP (Uruguay); Expedito José de Sá Parente, Director of Tecbio (Brazil); and Márcio Zimmermann, Secretary for Planning and Energy Development (Brazil)

remote communities in the Amazon stand to benefit from small scale biodiesel "green wells", and how large-scale operations are capable of producing 360,000 litres of biodiesel per year.

Jaime Baeza Hernández, University of Concepción (Chile), presented on biomass-related energy production, explaining the market structure for bioethanol. Highlighting the potential for cellulose-based ethanol he emphasized its benefits in terms of reducing greenhouse gas emissions, and predicted that lignocellulosic ethanol production will surpass corn-based ethanol production by 2010, when technologies developed are widely deployed. He also underscored the potential for biorefineries to generate diverse products including fuels, plastic, oils and artificial sweeteners.

H. S. Mukunda, Bangalore Science Institute (India), said fuels should be used according to their optimum utility, for example, alcohols should be used for transport but not for heat generation; and biodiesel for heavy vehicle transport, but not for industry or household heating. He also noted the potential for research in the use of solid biofuels like *Julifora*, *Prosopis* and coconut shells.

Márcio Zimmermann, Secretary for Planning and Energy Development (Brazil), provided Brazil's perspective on biofuels. Emphasizing the importance of a long-term approach, he highlighted the country's success in developing ethanol (44.7% of the country's total energy mix). He observed that Brazil's hydroelectric potential is huge, with approximately 30% of this currently exploited. Regarding ethanol, he described how the strategic programme initiated by the 1970's oil crisis has been supported by a legal framework and has surpassed all goals set, outlined regions with strong sugarcane growing potential, and described a project with Petrobras to produce "H-Bio", derived from the hydrogenization of diesel cracking and vegetable oils.

Discussion: Participants discussed a range of topics concerning biofuels, including: ethical questions regarding substituting food-growing potential for fuel production; legal frameworks developed to encourage ethanol production and use; increasing productivity of biofuel sources; and the cost of converting solid fuels into liquid form.

HYDRO ENERGY POTENTIAL IN THE REGION: ANALYSIS OF SMALL HYDRO POWER PLANTS AS AN INSTRUMENT OF RURAL ELECTRIFICATION AND PRODUCTIVE USES

Jhonny Yáñez, Governor of Cojedes State and Vice-President of the Latin American Organization of Intermediate Governments –OLAGI– (Venezuela), moderated the session, and noted that 70% of his country's electricity is derived from hydroelectric power.

Tong Jiandong, Director International Centre on Small Hydro Power (China), discussed hydroelectric development in Latin America, noting that this makes up 18.3 % of the world's, and 33% of the region's, total supply of electricity, mostly from medium to large operations. He discussed barriers to the development of small hydro, including limited infrastructural capacity and a lack of knowledge and equipment. Offering a look at China's experience in developing small hydro, he suggested that this can provide a decentralized solution to rural electrification, stimulated by need. He presented the benefits of hydroelectric projects such as technology transfer, capacity building, and preventing deforestation through reducing fuel-wood consumption.

Otto Leonel García, Finnish Alliance for Environment and Energy - Central America, presented on cooperation projects being undertaken to enhance cooperation between Finland and Central America to promote wind-power energy and noted the region's eolic potential. He also described benefits for local communities achieved through small hydroelectric projects as well as others on biodiesel and geothermal energy.

Luis Héctor Valdez Báez, Valdez Ingenieros (Mexico), reported on a study undertaken to evaluate the renewable energy potential of Veracruz State, concluding that a further potential for generation of 250 MW in 62 viable sites was identified. He highlighted that mini hydroelectric plants may save up to 30% of electricity costs for municipalities and industry.

Rafael de Ureña Francés, General Director Union Fenosa Generadora de la Joya - Costa Rica, stated that present hydroelectric development in Spain is limited to the rehabilitation of existing capacity. He conceded that at 8% of total electricity



L-R: Luis Héctor Valdez Báez, Valdez Ingenieros (Mexico); Tong Jiandong, Director International Centre on Small Hydro Power (China); Jhonny Yáñez, Governor of Cojedes State and Vice-President of the Latin America Intermediate Government Organization Council –OLAGI– (Venezuela); Otto Leonel García, Finnish Alliance for Environment and Energy - Central America; and Rafael de Ureña Francés, Director General, Union Fenosa Generadora de la Joya - Costa Rica

demand, hydroelectric power may have reached the limits of its potential in Spain, but added that this still plays an important role in reducing emissions. He observed that for most of human history, water and wind have been sufficient to meet energy demands. He highlighted that Costa Rica has developed its hydroelectric potential more fully than other Latin American countries and noted associated benefits provided, including microclimate regulation, development of tourism, and decreased catastrophic flooding.

SOLAR ENERGY: OVERALL POTENTIAL WITH SPECIFIC FOCUS ON PRODUCTIVE APPLICATIONS IN OFF-GRID RURAL AREAS

Jorge García, Vice-Minister of Energy and Mines (Guatemala), moderated the panel.

Jorge M. Huacuz Villamar, Energy Research Institute (Mexico), alerted participants to the fact that 5 million Mexicans do not have access to electricity, adding that extending the national grid is currently prohibitively costly. He described several previous efforts at introducing renewable technologies, including solar-powered water pumps and ice production, and noted lessons learned, including the importance of using proven technology, and adapting to local conditions. Describing his government's progress in renewables, he showed how these energy sources now enjoy widespread application, but noted that local training needs to be augmented. He said that while renewable energy hardware and technology are prerequisites to production, political and institutional support are crucial factors.



Jorge M. Huacuz Villamar,
Energy Research Institute
(Mexico)

Jan Kai Dobelmann, International Solar Energy Society, claimed that photovoltaics will soon become as successful as the Brazilian ethanol programme, once it has overcome cost and accessibility barriers. He noted that photovoltaics have not generated much investment as it is the rural poor that are the main beneficiaries, but they could become a pillar for off-grid development. He proposed ways to improve photovoltaics, including AC coupling, which regulates energy flow and stores excess production in reserve batteries, and highlighted the expandable nature of this technology. He noted that cheap equipment and production errors as well as lack of interagency communication is currently hindering uptake of this technology. Recalling the Renewables 2004 meeting in Bonn, Germany, he called for the adoption of the international standards for renewable energy technology resulting from that meeting.

Ernesto Macías Galán, President of the European Association of Photovoltaic Industry (Spain), said electricity demand will

continue to grow in both Latin America and Europe creating a parallel demand for renewable energies. He noted that off-grid photovoltaic systems should not be regarded as transitional solutions, but may be constructed to provide complete access to energy for all relevant rural needs, including water pumps, telecommunications and even desalination. He provided an overview of a private-public initiative to install 34,500 solar systems in individual households in Morocco, noting positive impacts in terms of quality of life and employment in rural villages.

Lubna Razia Ijaz, Virginia Tech University (USA), explained the success of solar energy in the USA, noting different solar technologies, ranging from silicon to parabolic concentrators. She noted market prices depend on the payback period, number of sun hours, and government support, and provided an overview of US energy policies related to solar energy.

WIND ENERGY: BEST EXPERIENCES AND OFF-GRID OVERALL POTENTIAL

The panel was moderated by Jerges Mercado, Vice-Minister for Electricity and Alternative Energies (Bolivia).

Stefan Hantsch, Windkraft (Austria), said that interest in wind power in Austria was triggered by a backlash against nuclear power in 1978, and that the initiative spread via a grassroots "do-it-yourself" movement using simple equipment. He cautioned against trusting experts and relying upon large investors, and suggested starting wind-power education at an early age.

Melchor Ruíz, Acciona Energía (Spain), emphasized that there is no magical recipe for encouraging renewable energy, but noted that an appropriate regulatory framework must be developed, and tailored to each country's needs in order to attract investment. He noted that the important first step in securing political will has already been taken in most of Latin America. He described his company's success using vertical integration to avoid market vulnerability associated with production components.



Melchor Ruíz, Acciona Energía (Spain)

Manuel Fuentes, IT Power (UK), examined the reasons why wind energy lags behind other energy sources, noting that the main barrier is created by subsidies to conventional fuels and lack of internalization of fossil fuels' social and environmental costs. He noted that additional barriers are created by regulations that increase transaction costs, and the lack of access to credit by smaller renewable energy firms.

Teodoro Monzón, GAMESA Energía (Spain), explained the development of wind energy and its promotion by the Spanish Government, noting a consistent growth in wind

power technology production. He provided an overview of his company's work, including the construction of more than eighty wind power parks all around the world, and CDM projects in Mexico amounting to the generation of 700 MW.

César Farrell, University of Minnesota (USA), presented lessons learned during the development of Minnesota's wind energy sector, from 25 MW in 1994 to present day capacity of 1000 MW. He stressed the importance of mapping windfarm site locations based on the average airspeed at the altitude of the turbine blades. He said the Minnesota government required that utility companies build several wind parks in exchange for providing a site to bury radioactive waste from their nuclear reactors.

Joan Clos i Matheu, Minister of Industry, Tourism and Trade of Spain, closed the session, stressing the importance of entrepreneurs in promoting renewables. He noted that renewable energy in Latin America was borne out of necessity and to achieve economic autonomy. Recognizing that some countries are more endowed with renewable potential than others, he encouraged integration, and the creation of the Regional Observatory.

CLOSING SESSION

The meeting was closed by Tabaré Vázquez, President of Uruguay, Enrique Iglesias SEGIB Secretary-General, Jorge Lepora, Minister of Industry, Energy and Mining (Uruguay), and Kandeh K. Yumkella, UNIDO Director-General.

Enrique Iglesias highlighted the results of the meeting, noting the great potential for renewable energy in Latin America, and reviewed the efforts by SEGIB to promote renewable resources, share successful experiences, and enhance regional cooperation.

President Tabaré Vázquez noted Latin America's historic link between energy and politics, where resources were exploited by foreign companies and later nationalized as a strategy for national development. He highlighted that the main objectives of energy policies should be twofold: managing resources rationally, and ensuring access to secure, reliable and environmentally sustainable energy for all people. Noting that energy consumption doubled in the region during the past 25 years while poverty levels have remained stagnant, he emphasized that social development should be a primary concern of energy production. He also noted the strategic importance of regional integration to ensure access to energy for all.



President Tabaré Vázquez, thanked SEGIB, UNIDO and LATU for their effort in hosting the meeting

UPCOMING MEETINGS

FIRST INTER-AMERICAN MEETING OF MINISTERS AND HIGH-LEVEL AUTHORITIES OF SUSTAINABLE DEVELOPMENT: This meeting will take place in Santa Cruz de la Sierra, Bolivia, from 5-6 October 2006, and is organized by the Organization of American States (OAS). Participants will identify and advance concrete partnerships at the regional and hemispheric level to integrate environmental considerations into development, poverty alleviation, and social and economic policies. For more information, contact: Joaquin Tamayo, OAS; tel: +1-202- 458-3506; fax: +1-202-458-3560; e-mail: JTamayo@oas.org; internet: http://www.oas.org/dsd/MinisterialMeeting/ReunionInterAm_eng_v1.htm

IBEROAMERICAN MINISTERIAL MEETINGS: In preparation for the 2006 Iberoamerican Summit to be held in Montevideo in November 2006, Ministerial meetings will be held on the following issues: Health (5-6 October); Childhood (6-7 October); Youth (19-20 October); Cooperation (1-2 November 2006); and Foreign Affairs (3 November). For more information contact: SEGIB; tel: +34 915901980; e-mail: info@segib.org; Internet: <http://www.segib.org>

RENEWABLE ENERGY 2006: This conference will take place in Makumahari Messe, Chiba, Japan, from 9-13 October 2006. The meeting will focus on "Advanced Technology Paths to Global Sustainability" through the utilization of renewable energy resources. For more information, contact: Renewable Energy 2006 Conference Secretariat; e-mail: inquiry@re2006.org; internet: <http://www2.convention.co.jp/re2006/index.html>

XVI IBEROAMERICAN SUMMIT: The Summit will take place on 4-5 November, 2006, in Montevideo, Uruguay. Heads of State from the region will adopt the results of the Iberoamerican ministerial meetings. For more information contact: SEGIB; tel: +34 915901980; e-mail: info@segib.org; Internet: <http://www.segib.org>

UNITED NATIONS CLIMATE CHANGE CONFERENCE 2006: The annual UN Framework Convention on Climate Change and Kyoto Protocol meetings will take place in Nairobi, Kenya, from 6-17 November 2006. For more information, contact: UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; Internet: <http://www.unfccc.int>

FIFTEENTH SESSION OF THE COMMISSION ON SUSTAINABLE DEVELOPMENT: CSD-15 will take place at UN headquarters in New York from 30 April - 11 May 2007. A preparatory meeting will take place from 26 February - 1 March 2007. CSD-15 will be a "Policy Year" to decide on measures to speed up implementation and mobilize action to overcome obstacles and constraints for implementation of actions and goals on energy for development, air pollution/atmosphere, climate change and industrial development. For more information, contact: UN Division for Sustainable Development; tel: +1-212-963-8102; fax: +1-212-963-4260; e-mail: dsd@un.org; Internet: <http://www.un.org/esa/sustdev>