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LATIN AMERICAN ENERGY ORGANIZATION

Uruguay: energy reform and integration

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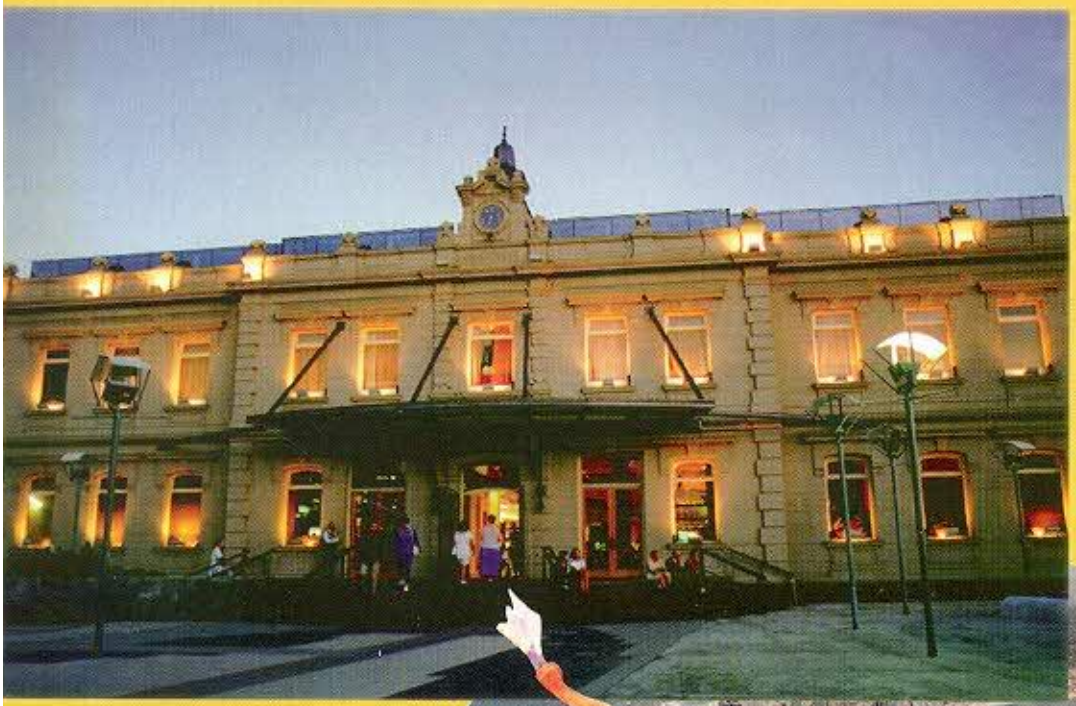

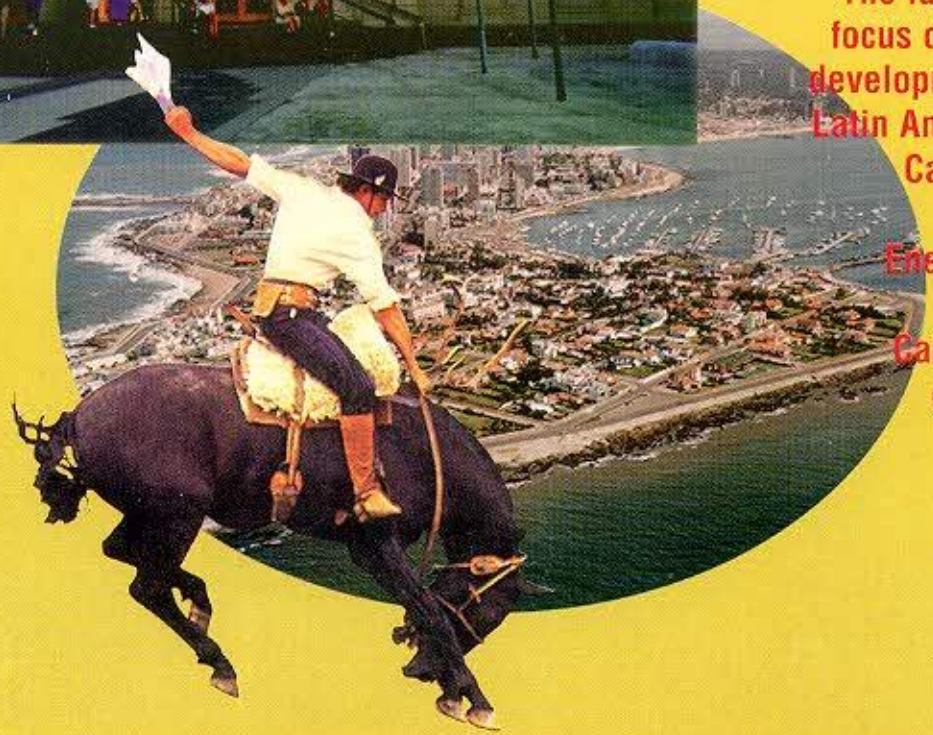

Promoting clean energy technologies in the hemisphere's electric power markets

Energy sector reforms in Latin America and the Caribbean

Enerlac ®: The ideal forum to focus on the energy development issues of Latin America and the Caribbean

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Editorial

The tight links between energy and global economic policies in Latin America and the Caribbean are of the utmost importance.

The seventies were affected by the so-called first energy crisis when hydrocarbons began to account for a major share of the external accounts of oil-importing countries.

This crisis affected importers and exporters differently: the former made a special effort to reduce their dependence on imports by applying substitution measures, implementing the efficient use of energy, and re-ordering their economies. The latter saw their foreign currency earnings rise dramatically but had no strategies to absorb this windfall, which ended up circulating in the international financial system and produced a liquidity situation that eventually led to the widespread indebtedness of the region's countries.

In the eighties, called the "lost decade", the foreign debt crisis determined the conditions of the economy and the world financial market. The region underwent economic setbacks and the social sector deteriorated. The region's per capita gross domestic product declined by 8%. During this decade, real oil prices began to fall, until reaching a record low in 1986.

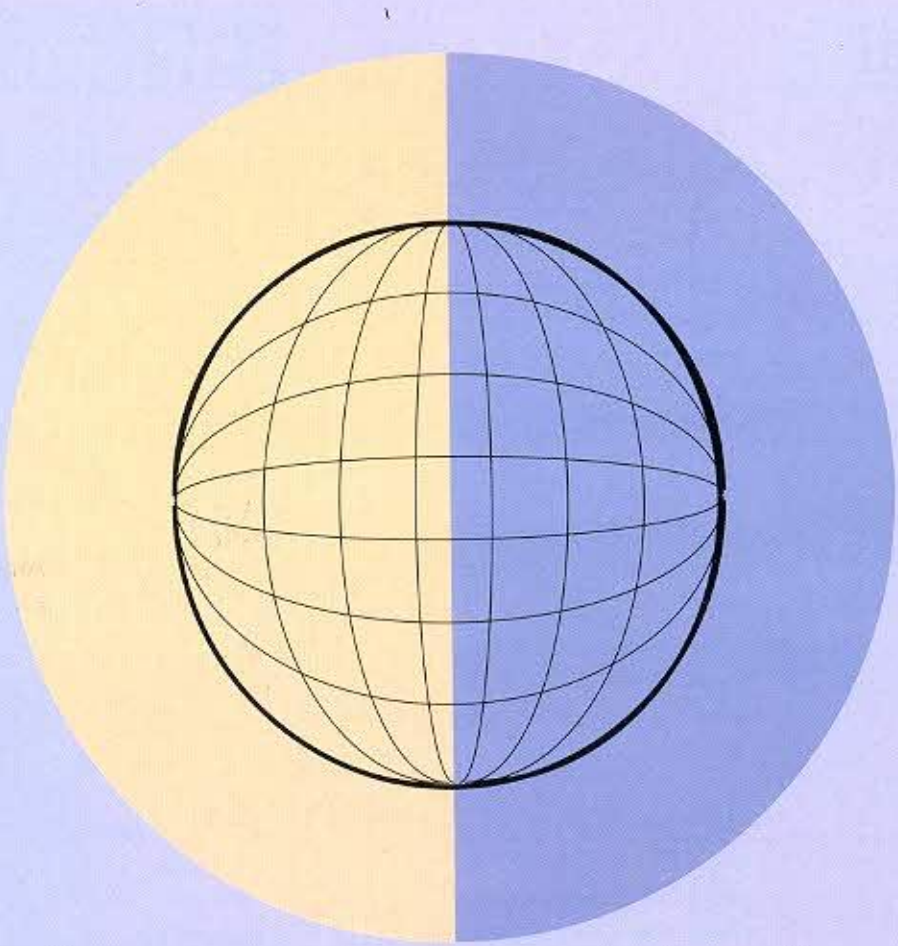
At the beginning of the nineties, however, another scenario became apparent as energy companies began to take up the challenge of coping with the pressures stemming from their debt burden by restoring energy prices, improving efficiency, eliminating subsidies, and finding new investment sources to finance' projects with the private sector. It was time to modernize the sector.

Within this context, the modernization process promoted by the State gathered momentum in the energy sector of the region's countries, and its actions and impacts are continuing.

The Central Topic of the XXVIII Meeting of Ministers of OLADE, held in Montevideo, Uruguay, on November 27-28, 1997 was precisely Energy Sector Modernization of Latin America and the Caribbean. An article on this topic is included in the present issue of the *Energy Magazine*.

In addition, the magazine, in its spotlight section, is focusing on the energy development of Uruguay. There is an article on promoting clean technologies in the energy markets of the hemisphere and a presentation of the Energy Conference of Latin America and the Caribbean (***Enerlac***®) as the ideal forum to analyze regional energy development issues and the announcement of the 1998 installment of the Conference.

Luiz A. M. da Fonseca
Executive Secretary



Background

On occasion of the Summit of the Americas, held in Miami in December 1992, 34 countries committed to adopting orientations to facilitate the use of sustainable energy processes. In October 1995, within the framework of the First Hemispheric Meeting of Energy Ministers, working groups were set up to ensure the following outcomes:

#1 Increase investment in the hemisphere's energy sector
#2 Promote clean energy technologies in electric power markets in the hemisphere
#3 Advance regulatory cooperation in the hemisphere
#4 Regional oil integration
#5 Submit proposals for new opportunities for natural gas
#6 Promote energy efficiency in the hemisphere
#7 Develop rural electrification strategies
#8 Share information about voluntary efforts to reduce the accumulation of greenhouse gases stemming from the energy sector

The Working Group of Outcome #2 (Promote clean energy technologies in electric power markets in the hemisphere) was comprised of the following members: the Latin American Energy Organization (OLADE) as the coordinating agency, the U.S. Department of Energy (DOE) through its Morgantown Energy Technology Center (METC) and Pittsburgh Energy Technology Center (PETC), the Electric Power Research Institute (EPRI), the National Renewable Energy Laboratory (NREL), the Energy Secretariat of Argentina, the National Energy Commission of Chile, the Energy Secretariat of Mexico through its National Commission for Energy Saving (CONAE), the Ministry of Energy and Mines of Venezuela, and the nongovernmental entity Renewable Energy in the Americas (REIA).

Promoting Clean Technologies in the Hemisphere's Electric Power Markets

Results

Since its establishment, the Working Group of Outcome #2 has achieved important results, especially the development of a report on the present situation and prospects identifying fast-track projects and creating a data base for the hemisphere's electric power subsector.

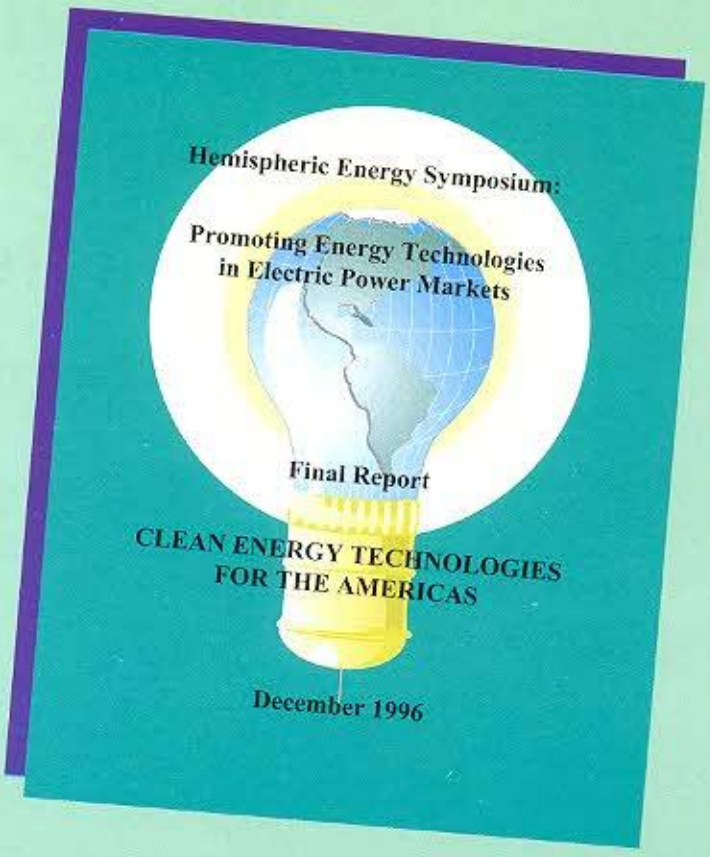
Report on the present situation and prospects

The electric power sectors of the hemisphere in general display a high correlation between the demand for energy and economic growth rates, steady growth of per capita electricity consumption (even during periods when the per capita income declined) and wider access to electricity.

The increasingly greater use of electricity as a source of primary energy comes from the efforts of the governments to increase industrialization and to improve the living conditions of the population, by providing electricity to households and ensuring the more widespread use of household appliances.

On the supply side, there is an apparent trend toward the rationalization of electric power sources. It is expected that this trend will continue to develop throughout the hemisphere. Renewable energy sources (biomass, geothermal energy, waste, solar, hydraulic, and wind energy) will become increasingly important as complements to conventional energy sources.

Between 1995 and 2010, the additional electric power generation capacity will be ensured by means of hydropower (94 GW), fossil fuels (39 GW), nuclear energy (4 GW), and geothermal energy (2 GW).



Technological options

There are many technologies for the clean generation of electricity, some of which are available commercially and others that are in different stages of research and development.

The report on the situation and prospects of the hemisphere's electric power sector, including the data base of the electric power systems, can be obtained from OLADE's Permanent Secretariat:
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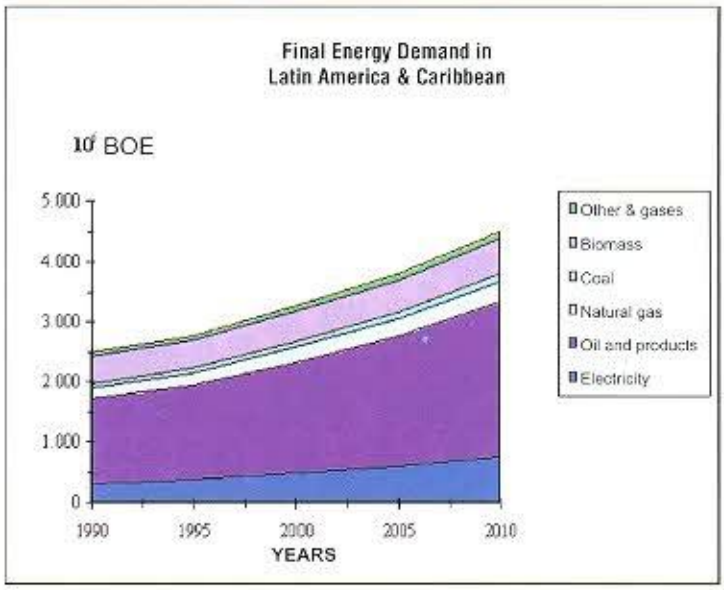
In the report, they are classified as *supply-side options, demand-side options, and environmentally clean options.* Nuclear options were not included.

Barriers to fast-tracking the use of clean technologies

As part of the report, a survey was conducted in 15 countries of the hemisphere focusing on those elements that they believe are decisive for the selection of electric power generation technologies and the barriers that must be overcome to use clean options.

The majority of the countries consulted consider that the basic elements for decision making in this direction are the availability and cost of these resources. The countries that have private-sector power generation schemes place the selection of technologies in the hands of private-sector investors, and therefore the cost of power generation in this situation ends up by being the decisive factor. Half of the countries include environmental factors as a decision-making element. Almost all the countries believe that technologies that harness solar and wind energy are not as yet cost-competitive and their major drawback is their financing, which is why they are generally reserved for remote areas.



In general, according to the survey, the barriers that have to be overcome are *economic* (as a result of the competitiveness of clean technologies compared to traditional alternatives and associated financial risk) and *regulatory* (as a result of the tariff and investment promotion schemes currently in force or operating restrictions). Various countries have highlighted other barriers such as the absence of a favorable national energy policy, the lack of an inventory of natural resources, or insufficient training in the application of new technologies.

Another highly important potential barrier may be the modernization of the energy sector if political and regulatory measures are not applied to create market conditions that promote and reward investments in clean energy options.

Fast-track projects

In an effort to promote the further development of clean energy technologies, the Meeting of Energy Ministers of the Americas in July 1996 agreed to develop in selected countries, on a priority basis, at least one project in the areas of energy efficiency, renewable energy, conventional clean energy, and rural electrification.

Within this context, the Working Group identified various typical clean technology and fast-track projects, which could serve as a reference for the remaining countries for the development of their own initiatives. The following table indicates their location and primary source used.

- Natural gas - Argentina
- Wind energy - Brazil
- Coal - Brazil
- Biomass - Colombia
- Hydroenergy - Guatemala
- Solar energy - Mexico
- Biogas - Mexico
- Wind energy - Mexico
- Hydroenergy - Mexico
- Energy efficiency - Peru
- Geothermal energy – St. Vincent
- Orimulsion – Venezuela oil company Petróleos de Venezuela (PDVSA)

Data base of the hemisphere's electric power system

A database on the electric power systems of the countries participating in the Hemispheric Energy Symposium was completed. The information that was gathered includes forecasting of electric power consumption to the year 2010, the technical characteristics and administrative modalities of the power generation projects considered in the expansion plans, and the technologies scheduled for generating power in rural areas.

Financing

Although some programs promoting research and development of clean technologies to produce electricity can be found in multilateral agencies, the majority of the financing must come from the private sector.

Conclusions and recommendations

The reliable and competitive incorporation of clean technologies into the hemisphere's electric power grids will bring with it significant economic, social, and environmental benefits. The challenge of the present is to ensure that policymakers apply suitable measures to attract commercial investors and develop power projects with clean options. In addition, the regulatory frameworks that are adopted should enable the developers of clean energy technologies to consolidate their position on the hemisphere's markets.

Energy Sector Reforms in Latin America and the Caribbean: Topic Analyzed by the XXVIII Meeting of Ministers of OLADE

Organización Latinoamericana de Energía

The conditions under which energy sector reforms are being conducted in Latin America and the Caribbean, especially with respect to the models used to manage the sector, the private-sector participation schemes, and the elements of economic development characterizing this process, were the focus of the central topic of the XXVIII Meeting of Energy Ministers of the member countries of the Latin American Energy Organization (OLADE), held in Montevideo, Uruguay on Thursday-Friday, November 27-28, 1997.

The Permanent Secretariat of OLADE prepared for the discussion of the ministers a paper that provides a wide-ranging and thorough assessment on the current status, at 1997, of the energy sector modernization processes in the 26 member countries of Latin America and the Caribbean of the Organization.

The document is entitled "Energy Sector Modernization: Regulatory Framework, Sale of Assets, and Free Trade." The six chapters review various perspectives of this process, which "requires coordination, development policies, follow-up and monitoring so that the decentralized decisions for the allocation of resources are not far removed from a politically desirable development. In some countries, market operations are not as yet duly regulated and therefore market forces are sometimes assigned functions that are beyond their scope and possibilities, which can give rise to the risk of obtaining unsuitable results in social terms."

The document states that the region's energy sector modernization is well on its way, and the transformations it has wrought over the last few years have been highly significant.

Regarding its assessment of the energy subsectors, it draws the following conclusions:

ELECTRIC POWER SUBSECTOR

Among the energy system transformation processes in the region, electric power reforms are those that have displayed the most variety, not only because of the initial context in which they started but also because of the sequence and intensity of the changes.

The situation of years prior to the reform was characterized, as a rule, by organizational structures that vertically and horizontally integrated the three basic activities of power generation, transmission, and distribution, with active participation of the State.

Except for Haiti, Barbados, Grenada, and Guyana, since the eighties, the region has experienced a trend toward liberalization (greater prevalence of market mechanisms), deregulation (elimination of several barriers to involvement in power activities), or the partial or total regulation of the chain.

The first reforms were rather aimed at the privatization of existing assets (Chile, Argentina, then Peru, and more recently Bolivia), with preference to the break-up or segmentation of the electric power industry and free access to grids, thus introducing open-market schemes. In other cases, the participation of private-sector capital was fostered by means of a partial liberalization process without the break-up of the electric power chain and keeping a more or less state control over assets, depending on the case.

As for private-sector participation in the ownership of power generation assets, there are high percentages of up to 80% in the cases of Bolivia, Peru, and Chile, as well as a significant degree of privatization, fluctuating between 50% and 65%, in Argentina, even though the nuclear power stations and binational hydropower stations have not as yet been sold. In Colombia and Guatemala, this share is being 20 and 35% and in El Salvador and Venezuela between 10 and 20%.

OIL SUBSECTOR

The reforms of the oil industry have been conducted in a complex situation of change in the world's energy market structure, technology, and trade, namely:

- A new prevailing world order as of the eighties where the large consumer countries predominate over the producer countries and considerable curtailment of OPEC's power, especially with respect to the setting of international oil prices.

- The emergence of new independent producers and geographical diversification of supply.

- An environment with important technological innovations, increasing productivity and efficiency of operations throughout the chain of the oil industry.

- Consolidation of new contracting schemes for the international purchase/sale of oil, the rise of spot prices, and the appearance of futures markets.

- The shift from oil viewed as a strategic asset to oil viewed as a tradable commodity.

Among the measures initially adopted by the countries to modernize the oil subsector, the following are noteworthy:

- Rationalization of subsidies.
- Reduction of transfers to state enterprises.
- Adjustments of fuel prices in order to cover costs and to bring them on par with international prices.
- Organizational reforms consisting of rationalization of expenses, identification of business units, downsizing, outsourcing, concentration in core business, creation of holdings, and others.

Later, far more profound structural transformations were made, including:

- Changes in contracting modalities for oil and gas exploration and production (upstream).
- Liberalization of barriers to participation in transport, refining, and marketing activities (downstream).
- Modernization of public sector enterprises.
- Privatization of state companies.

Finally, the classification of the process permits the oil reform in Latin America and the Caribbean to be broken in the following four models:

- The State model, which continues to prevail in Mexico
- Limited liberalization and the option for strategic partnerships, as in Brazil, Chile, and Venezuela.
- Predominance of the State but promotion of private-sector investment, as in Colombia and Ecuador.
- Privatization, which is apparent especially in Argentina, Bolivia, and Peru.

NATURAL GAS SUBSECTOR

The present decade is noteworthy for its transition toward a new energy situation where natural gas is acquiring special importance to ensure long-term energy supply by means of a diversification strategy that displays different intensities in the region's countries.

The determining factors for this strategy are: the lag in investments in hydropower generation due to financial constraints and the technological breakthroughs that are cutting power generation costs by means of gas-fired thermal systems.

As in the other subsectors, the first steps for the transformation of the natural gas industry in the region involved putting the subsector's companies on a sound footing.

These transformations include, to a lesser or greater degree, the opening up to private-sector players, in some cases by the mass sale of assets, vertical and horizontal breakup of the gas chain, segmentation of the market by supplier and demander, and finally the installation of regulatory frameworks.

The different modalities adopted by the region's countries, each of which requires a separate analysis, include the following:

Upstream (exploration and production):

- Systems where the product is not freely available to independent producers (Colombia, Mexico, and Venezuela).
- Systems where the product is freely available to independent producers (Argentina, Bolivia, Brazil, and Peru).

Downstream (transport and distribution):

- Systems that are vertically and horizontally broken up with closed access (Colombia and Venezuela).
- Systems that are vertically and horizontally broken with open access (Argentina, Brazil, Chile, and Mexico).

COAL SUBSECTOR

Coal in Latin America and the Caribbean accounts for hardly 5% of final energy consumption, with the highest share of almost 15% in Chile. There is only commercial production of coal in the following countries (by decreasing order of importance): Colombia, Mexico, Venezuela, Brazil, Chile, Argentina, and Peru.

As a rule, electric power generation and the steel and iron industry are the two markets, especially the former, that have specialized in using coal in the region, although the importance of coal in the cement industry of several countries should not be ignored.

In coal producing countries in Latin America and the Caribbean, the share of this energy product in electric power generation is quite low, since they have generated a large part their electricity using hydro resources, oil, and natural gas, which are available in abundance.

In those countries that have important proven natural gas reserves or reserves that are being assessed, such as Venezuela, Mexico, Colombia, Ecuador, Peru, Bolivia, and Argentina or in those where decisions have been taken to import natural gas from their neighbors such as in Brazil, Chile, and Uruguay, the probabilities for coal are not as important.

It can be observed that the major reforms promoted in the coal industry have been predominantly aimed at promoting clean technologies and improving energy sector production conditions. This subsector has not been the target of a wider process of liberalization.

Without ignoring the breakthroughs made in clean coal technologies, it is undeniable that private companies, faced with the alternative of generating electricity with natural gas or coal, will be probably opt for the former, unless conditions arise that would justify the use of coal.

The paper "Energy Sector Modernization in Latin America and the Caribbean: Regulatory Framework, Sale of Assets, and Free Trade" can be purchased from the Permanent Secretariat of the **Latin American Energy Organization** at the following address:

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The six chapters of OLADE's extensive document are:

- Modernization: society, the State, the economy, and the energy sector.
- Energy sector modernization: theoretical and preferred options for sector coordination and ownership scheme.
- Subsector reforms in the energy systems of Latin America and the Caribbean.
- Business strategies
- The role of the State in the energy sector modernization process.
- Results and impacts of energy sector modernization

On the basis of the contents of this paper, the XXVIII Meeting of Ministers of OLADE took the decision to adopt the subject "Results of Modernization Processes and Outlook for Energy Integration in Latin America and the Caribbean" as the central topic for the XXIX Meeting of Ministers, scheduled to be held in October 1998 in Caracas, Venezuela.

VIEWPOINTS OF DR. ENRIQUE IGLESIAS, PRESIDENT OF THE INTER-AMERICAN DEVELOPMENT BANK (BID) ON THE DOCUMENT "ENERGY SECTOR MODERNIZATION IN LATIN AMERICA AND THE CARIBBEAN"

The Secretariat presented an excellent document, which deserves our congratulations. In my opinion, it is essential and for us at the Bank it is a major contribution. We are facing a great challenge, involving all the reforms that are being implemented by the governments in energy sector reform. I would say that the central condition for sector reforms is sustainability, in other words, its capacity to reduce to a minimum its dependence on multilateral financing, including the State, and attempt to find a system of integral sustainability that will enable it to be as independent as possible. When I say this, I would like to be very clear: I do not believe that the State should not keep very important responsibilities in the sector beyond its regulatory role. As long as there are huge social deficiencies in Latin America there will always be a role for the State, at least in coming decades. Therefore, sustainability does not imply the complete removal of the public sector from the energy sector because there will also be compensatory elements, especially in countries and regions that have very high levels of critical poverty, that the State will have to provide where the market is unable to enter or is unwilling to participate. The State cannot neglect this important task.

(Quote from the address delivered to the XXVIII Meeting of Ministers of OLADE, Montevideo, Uruguay, November 27, 1997)

Uruguay: Energy Reform and Integration

Energy sector reforms being implemented in each country should take into account the situation prevailing in the country at the time, not only specifically with regard to the energy sector but also concerning its social, political, and economic situation.

Uruguay is a small country of 3.2 million inhabitants with a stable economy and a per capita GDP of over US$6,000. Its annual cumulative demographic growth rate is 0.5%, and its life expectancy is the highest in the region. It also displays the most equitable distribution of income in all of Latin America.

From 1985 to the present, Uruguay's economic growth has been quite considerable: productivity has grown by 50%, whereas the population has increased by only 7%. As a result,

per capita GDP has risen substantially, but the population's composition has remained the same. Population is growing slowly, and therefore the inclination to accept structural changes is not too marked, although it has picked up over the last few years.

How does the energy sector fit in this country, that is, energy viewed as a basic input for the competitiveness of the production sectors and the quality of living of the population?

Uruguay relies on three essential inputs to meet its energy consumption needs: oil and products, all of which are imported and account for more than 58% of final consumption; firewood and biomass waste which account for more than 20%; and hydropower, which accounts for 19%.

Moreover, Uruguay is the only country of the region that has fully tapped its hydropower resources. This means that hydropower, which currently accounts for 19% of the total energy mix will, in a context of growing consumption, gradually account for an increasingly smaller share of the total mix because current hydropower supply has reached its ceiling.

Uruguay has no fossil fuels; therefore, it is forecast that final energy consumption, which currently depends on oil in the amount of 60%, will continue to depend increasingly on oil in coming years unless some corrective action is taken to diversify the energy mix.

These are the outstanding features of Uruguay's energy sector scenario.

From 1985 to the present, Uruguay's economic growth has been quite considerable: productivity has grown by 50%, whereas the population has increased by only 7%. As a result, per capita GDP has risen substantially, but the population's composition has remained the same.

Dr. Julio Herrera, Minister of Industry, Energy and Mining of Uruguay, leader of energy sector reforms in his country. Dr. Herrera, as Chairman of the XXVIII Meeting of Ministers of OLADE, is currently President of the Organization.

In addition, Uruguay is effectively involved in a regional integration process with Argentina, Brazil, and Paraguay and has entered into free trade agreements with Chile and Bolivia.

It is a regional integration process that has made great strides and has significantly changed the country over the last few years. As a result, production has grown considerably.

How is it possible to maintain this growth and to ensure the competitiveness of the production sectors in order to guarantee economic growth?

In view of the fact that Uruguay's energy sector has already completely tapped its natural and renewable resources, depleted its hydroenergy, and holds no fossil fuels, regional integration emerges as the suitable course to take to complement the country's energy requirements.

With partners such as Argentina, which has a wealth of oil and gas resources and electricity, or Paraguay, which has abundant hydropower resources, or Brazil that has a huge untapped hydropower potential, Uruguay cannot be expected to compete in this regional integration process if effective energy integration is not fostered; this means that integration must involve the mutual access of each country's energy players to the region's markets.

For Uruguay, the effective participation of energy in the regional integration process of MERCOSUR is not merely a desirable element; it is in fact indispensable. The reforms that are being implemented in Uruguay's energy sector are aimed at benefiting from integration and determining the minimum conditions of reciprocity and symmetry to facilitate the free trade of energy products.

In the electric power subsector, there is enough hydropower to

meet demand, but in the future, as hydropower production reaches its limit and demand grows by 5 or 6% per year, it will not be enough. Uruguay has an important element in its power system: its power interconnection with Argentina, involving 2,000 MW of power capacity. The Uruguayan electric power system's peak amounts to 1,300 MW. It involves an interconnection built 18 years ago and that successive generations of Uruguayans and Argentineans have been paying through their electricity bills. One of the measures implemented by the Uruguayan Government, in terms of reforms, is the establishment of an institutional organization for the power sector to set up a power market in which the large users can be free to go out and look for their supply sources in the region, specifically in Argentina through this interconnection. To do this, the same kind of reforms as those being processed in other countries, such as vertical breakup and an open scheme for free access to transport capacity and transmission and distribution installations, are being implemented. These are basic principles for the establishment of minimum symmetries.

As of the beginning of 1998, once the tolls are set for the use of transmission lines in the Uruguayan electric power system, which will operate on the basis of an open-access scheme, the large users of Uruguay will begin to draw up supply contracts in this market. From this point of view, the production and industry sectors, which are being required by the government to perform the leading role in boosting economic growth in their respective countries and generating employment opportunities that the State no longer has the capacity to provide, are being given free rein to select the inputs they need, as well as the supply sources of these inputs.

Thus, this is the first key element in the electric power sector's reform. Afterwards, there will be a more finely tuned regulation governing the natural monopolies of transmission and distribution in order to effectively protect the end-user and the captive customer from these monopolies.

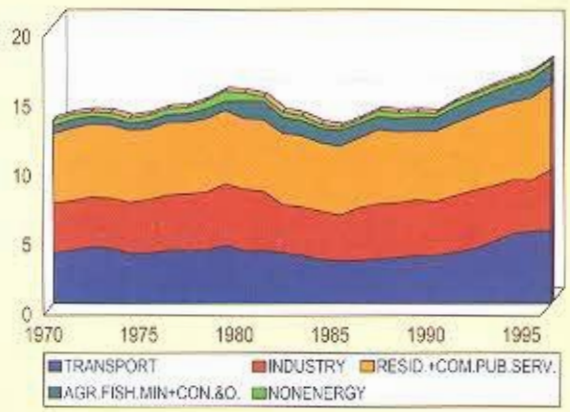
There is high-quality electric power service in Uruguay. The country in general has not had any outages. It has even conducted important re-engineering processes over the last few years, improving service delivery, although not reaching the efficiency levels that are desirable, that is, efficiency levels where final end-user tariffs are in keeping with production costs and with the efficiency required of the service suppliers.

With the new regulations, schemes to keep tariffs in line with costs of efficient and economically adjusted utilities, as applied throughout the region and the world, will be gradually established so that the final consumer can benefit from this structure and so that quality standards, and penalties for failure to comply with them, can also be independently set.

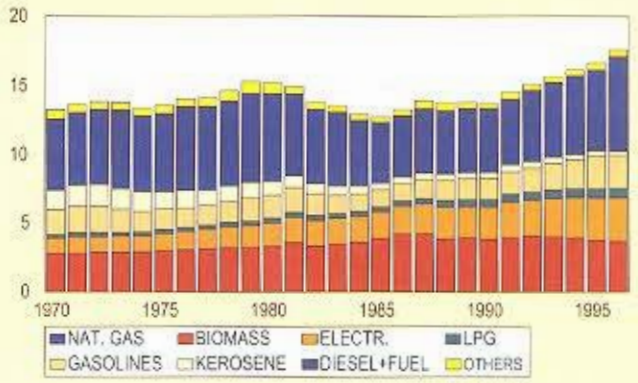
Uruguay's electric power sector reform is also accompanied by the

FINAL ENERGY CONSUMPTION IN URUGUAY
(million BOE)

BY SECTOR



BY ENERGY PRODUCT



incorporation of natural gas into the energy mix. In order to avoid increasing dependence on oil, it is expected that natural gas will be incorporated into several sectors of activity, especially the electric power sector.

The oil subsector

There is still a very closed scheme for the fuel sector, with monopolies for the import and refining of an oil product that the country does not have, oligopolies for the distribution and marketing of fuels based on oil products, and, as natural result of all of the above, high prices.

Of course, all these legal constraints were instituted by Uruguay at a time when the entire world felt that refining capacity had an important strategic value and all the legal restrictions to curtail free trade were imposed.

The current reforms are aimed at progressively eliminating, at a pace allowed by society and its demographic composition, the constraints to free trade, beginning with the liberalization of distribution and marketing and following with those legal reforms that will eventually lead to the elimination of monopolies and the obstacles to free trade.

In addition, Uruguay fortunately has no economic difficulties to invest and, in contrast to other Latin American countries, in terms of electricity, its growth is vegetative because the power sector's coverage is between 95% and 96% and fuels are able to reach the entire country because the geographical conditions facilitate their distribution.

Within this context, it can be said that energy is a fundamental element for the growth of Uruguay's economy and, at the same time, it will contribute to consolidating the consumer's right to receive high-quality products and services.

Note: The present article has been provided by the Ministry of Industry, Energy, and Mining of Uruguay, on the basis of the presentation made by Mr. Pedro Antmann at the XXVIII Meeting of Ministers of OLADE.

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Background to the Energy Conference of Latin America and the Caribbean--Enerlac

After overcoming the so-called lost decade of the eighties and curtailing the impacts of the foreign debt crisis, there was a marked recovery of economic growth in Latin America and the Caribbean, which was accompanied by a rapid expansion of energy consumption. The region not only was noteworthy for its energy production and exports but also became, without a doubt, one of the most dynamic markets in the world, with the highest potential in terms of energy production and demand. This has led to a vast potential for expansion, as well as huge challenges in planning, logistics, and financing, owing to the magnitude of the investments required.

At the start of the nineties, the countries of Latin America and the Caribbean, for the most part, opened up major opportunities for national and foreign private-sector investment for energy sector development. The debate over the role that should be adopted by both the State and the private sector in energy production, development, and utilization, as well as in the management of related public services, therefore became important.

In the early nineties, the linkage between energy and environmental protection was also studied more thoroughly. Since then the interest in studying the impact of the different energy development schemes on the planet's environmental health has grown. This is a central element in international relations and the source of controversies in North-South relations.

All these aspects, in addition to the changes taking place in the international and regional economy and the constantly fluctuating and sensitive international energy market, led to a scenario that encourages in-depth strategic thinking about the energy future of Latin America and the Caribbean.

It was within this context that the idea of organizing an Energy Conference of Latin America and the Caribbean (***Enerlac***) was born. It

was conceived as a forum to present and discuss the new orientations and options of the region's energy sector before the world and to expound the efforts being made to materialize the region's own proposals for change.

Alongside the Conference, it was also considered advisable to organize an industrial technology exhibition of energy sector goods and services, at which industries and business could display their products directly to a strategically select audience.

Likewise, it was considered advisable to take advantage of this special occasion to conduct business meetings and promote trade ties within the region's energy sector.

The organization of ***Enerlac*** also provides an excellent opportunity for the region's energy sector authorities and professionals to come together.

Objectives

The objective is to transform ***Enerlac*** into a technical and trade conference, aimed at bringing together all the players of the energy sector of Latin America and the Caribbean. It intends to do the following:

- Present OLADE's overview of the region's energy sector, especially its development and the restructuring, modernization, and privatization of energy companies.
- Promote cooperation agreements and mechanisms between the region's countries and those from outside the region, public and private enterprises, and other entities involved in the region's energy sector development.

The first three versions of Enerlac

The Energy Conference of Latin America and the Caribbean (***Enerlac***) has been successfully held three times, namely:

- ***Enerlac '93,*** which took place in Bogotá, Colombia, on June 15-18, 1993, under the auspices of the Ministry of Mines and Energy of Colombia and the Colombian Association of Engineers (ACIEM). Its main heading was "Energy and Development in an Interdependent World."
- ***Enerlac '95***, which was held in Quito, Ecuador, host country for OLADE, on June 19-22, 1995. It was supported by the Ministry of Energy and Mines of Ecuador and was organized under the heading "Energy Integration and Private-Sector Participation."
- ***Enerlac '96***, which was held in Rio de Janeiro, Brazil, took place on June 24-27, 1996 and was supported by the Ministry of Mines and Energy of Brazil, as well as the Brazilian state oil company Petróleo Brasileiro S.A. (PETROBRAS) and Centrais Elétricas Brasileiras S.A. (ELETROBRAS), under the heading "Competitiveness: A Strategy for Energy Development."

On all three occasions, there were about 400 participants attending.

Enerlac'98

The Latin American Energy Organization (OLADE), in view of the successful experiences of the first three ***Enerlacs*** and the need to discuss once again the most relevant issues of the region's energy sector development, has decided to organize the Fourth Energy Conference of Latin America and the Caribbean (***Enerlac '98***).

The Conference will take place at a time and place to be defined shortly. In any case it is being scheduled for the last quarter of 1998.

Sponsorship of international organizations and private and public enterprises

The three previous installments of the Energy Conference of Latin America and the Caribbean were supported by various international agencies and private and public companies and institutions involved in the energy sector, both in the region and in the world, including the following:

- European Commission
- German Technical Cooperation Agency (GTZ)
- Colombian oil company (ECOPETROL)
- Colombian coal company (CARBOCOL)
- National Energy Financing Corporation of Colombia (FEN)
- Interconexión Eléctrica S.A. (ISA)
- Petroecuador
- Ecuadorian Electrificacion Institute (INECEL)
- Venezuelan oil company (PDVSA)
- Brazilian oil company (PETROBRAS)
- Brazilian Electric Power Stations (ELETROBRAS)
- Energy Secretariat of São Paulo
- British Petroleum Exploration (BPX)
- CMS Energy
- ENRON Corp.
- Asea Brown Boveri (ABB)
- Siemens
- Iberdrola of Spain
- New York Mercantile Exchange (NYMEX/COMEX)
- Norberto Obedrecht Construction Company
- Bonner & Moore Associates, Inc.
- AMOCO
- KMR Power
- Stock Exchange of São Paulo (BOVESPA)
- Basque Energy Entity -EVE Group of Spain
- SEBRAE Rio de Janeiro
- Engenharia Ltda. PROMON
- Avianca (Colombian airline)
- Metropolitan Touring of Ecuador

Objectives

The fourth installment, for 1998, wil keep the fundamental objectives established for the previous conference.

Specifically ***Enerlac '98*** will focus on the following:

- Analysis of the energy modernization and integration process in Latin America and the Caribbean, especially the results obtained from this process and its prospects for the future: current trends and possible future scenarios.
  - Financial aspects
  - Pricing systems
  - Private-sector business performance
  - Efficiency in energy use
  - Market supply
  - Energy coverage and access to the poorest sectors of the population
- Analysis of the results from efforts to overcome the electric power sector crisis in Latin America and the Caribbean during the present decade.

Expected participation

Invitations to ***Enerlac '98*** will be forwarded to the following: Ministers and governmental officials involved in the energy, economic, and financial sectors of the region and the world; private-sector businessmen of the member countries of OLADE and from outside the region; executives and officials from international cooperation agencies and credit institutions; executives of international commercial banks; congressmen and senators from the region's countries; representatives of universities and research centers; leaders of public opinion; and representatives of international media.

Industrial Technology Exhibition

Alongside the formal sessions of ***Enerlac '98***, there will be a Technology, Industry, and Services Exhibition, where companies and institutions will display to potential customers the products and services they sell on the energy market.

Business meetings

During ***Enerlac '98***, the participants will be given the opportunity to learn about and promote projects, as well as establish trade relations and do business. For this purpose, private appointments will be organized at the request of the participants.

The business meetings will provide a magnificent opportunity to establish contacts with both the private and public sector, government representatives, international organizations and agencies, and financing institutions.

The Fourth Energy Conference of Latin America and the Caribbean comes at a special turning point in the debate and development of energy policies in the region. It will be an ideal forum to analyze what has been achieved to date, as well as assess current problems and focus on the region's energy future.

MEXICO: Clarification

In the preceding issue of the *Energy Magazine*, the article "Turning Point for the Upstream Oil Sector of Latin America and the Caribbean," includes the following assertion: "It should be mentioned, however, that Mexico has liberalized its natural gas industry, secondary petrochemical activities, and contracting of specialized oil drilling and reservoir development services, **by means of in-kind payments**."

Regarding this, it should be clarified that the Regulations of Article 27 of the Constitution in the Oil Sector indicates, in Article 6, that "Petróleos Mexicanos [Mexican state oil company] shall be empowered to enter into project and service delivery contracts with physical or moral persons as required by the optimal implementations of its activities. The fees that are established in these contracts will always be paid **in cash** and, in no case, will percentages of earnings or shares in production be granted in return for any services provided or projects implemented."

ARGENTINA: Energy integration in MERCOSUR

The Energy Secretary of Argentina, Mr. Alfredo Mirkin, emphasized the importance of regional integration and informed about the projects being promoted in his country.

At the XXVIII Meeting of Ministers of OLADE, he stated that "Today, Argentina is connected to Chile by means of two gas lines in the south and central zone of the country, and there will be two more gas lines within two years. With Uruguay we have a historical electric power interconnection. With Brazil there will shortly be a 1,000-MW interconnection, which I have just visited. There is a gas line project with Uruguay and with the south of Brazil. In addition we have an electric power project between Argentina and Chile in the north. In other words, interconnection projects are already materializing. The process is being conducted using schemes involving bilateral agreements between the countries that ensure minimum conditions of symmetry, conditions that provide free access to power capacity, the nonexistence of subsidies, and nondiscrimination between national and foreign companies. This phenomenon already has its own momentum."

COLOMBIA: A million barrels of oil per day in 1998

The Vice-Minister of Energy of Colombia, Dr. Carlos Conte, asserted in Montevideo, Uruguay, during the XXVIII Meeting of Ministers of OLADE, held in November 1997, that his country will possibly reach a

peak in its oil production in 1998.

He said: "Colombia is a country that currently holds oil reserves of more than 3.5 billion barrels, which does not convert us into a large oil producer, but in a country that has a high probability of finding oil."

"At present, Colombia's production is 700,000 barrels per day, of which slightly more than 50% is for export. In the sector's analyses, it is forecast that, possibly in 1998, we will reach a peak in our production, that is, one million barrels per day. After attaining this peak, we will begin a decline which, along with the growth of domestic demand, leads us to believe that the country will be self-sufficient in terms of oil up to the year 2005."

CHILE: Electric power sector reforms triggers a fall in prices

A current assessment of the reform process in the Chilean electric power sector is highly positive, asserted the Minister-Chairman of the National Energy Commission of Chile, Alejandro Jadresic, at the XXVIII Meeting of Ministers of OLADE, held in November 1997 in Uruguay.

There have been large amounts of investments that have helped to meet the country's new energy requirements. There is much competition for investment among private-sector companies, which want to be the first in supplying the customers.

Along with this process, prices have dropped and customer service has improved. Over the last four years, the bulk price of electricity declined by 32% in the central zone of the country and by 44% in the northern zone.

ECUADOR: New hydropower project

The Ecuadorian Government requested 10 consortiums that have prequalified for the San Francisco hydropower project to submit their bids before May 4. The bids will be for financing, designing, building, operating, maintaining, and later transferring to the State this project, which will provide a power generation capacity of 230 MW and whose civil works will cost about US$230 million. The maximum term for building the project is 1,800 days, and the concession period is being granted for 30 years.

HAITI: Toward charcoal substitution

Studies conducted by the Bureau of Mines and Energy of Haiti have demonstrated the technical and economic feasibility of substituting the charcoal currently being used for cooking food. It is important that this policy be adopted owing to the negative impacts of this energy consumption on the environment in a country where forests cover less than 2% of the territory's surface. The key focus of this energy and environmental policy is to reduce, as of the year 2002 and over the 10 ensuing years, the pressure on national wood resources by about 50%, compared to the level of 1996, and at the same time meet 80% of demand with renewables by the year 2020. This goal will be attained by means of

the following: improved stoves, energy-economic technologies, expansion of the market for LPG, kerosene, and other oil-derived fuels, coal and charcoal imports, and the tapping of renewables. In addition, fiscal and economic norms and incentives to facilitate liberalization of the market for imported energy sources will be established.

PERU: Canadian and Peruvian companies will be building electric power projects

The Canadian company Hydro-Quebec and the Peruvian construction company Graña and Montero were awarded the winning bid to implement the project for the Mantaro-Socabaya power line in Peru, with a tender of US$179.2 million. The two firms also obtained the concession to operate the line for 30 years.

All the subregions of Latin America and the Caribbean are represented on the executive staff of the Permanent Secretariat of OLADE

The new executive staff and consultants of the Permanent Secretariat of OLADE are comprised of professionals coming from 13 different member countries of the Organization. Thus, there is a wide range of technical and human resources to handle more efficiently the requirements of the subregions of Latin America and the Caribbean.

The photo shows the executive staff of the Permanent Secretariat from 10 countries:

Sitting, from left to right: Luiz A. M. da Fonseca (Brazil), Executive Secretary; Ana Lorena León (Costa Rica), Cooperation and Integration Project Coordinator.

Standing, from left to right: Mark Bender (Guyana), Training Coordinator; Armando Meleán (Venezuela), Director of Planning and Energy Projects; Vicente Solano (Mexico), OLADE Project Coordinator; Ramiro León (Cuba), Head of the Executive Secretary's Office; Elvia Ortega de Andrade (Ecuador), Coordinator of Administration and Finance; Gabriel Hernández (Colombia), Coordinator of Informatics and Documentation; Juan José Castro (Uruguay), Head of Internal Monitoring; Gustavo Martínez (Ecuador), Head of Public and Institutional Affairs; and Juan Luis Guzmán (Guatemala), Director of Training and Informatics.

INTERNATIONAL ENERGY EFFICIENCY CONFERENCE
EFICIEN '98

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Cancún, Mexico, June 18-19, 1998

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Attend commercial presentations by manufacturers and suppliers of specialized energy efficiency equipment and services.

Participate in meetings with international cooperation agencies, aimed at generating technical and financial collaboration initiatives with countries of Latin America and the Caribbean.

Find out about energy efficiency policies, programs, and experiences in Latin America and the Caribbean and other regions of the planet.

Participate in plenary sessions and panels with energy authorities, representatives of cooperation agencies, entrepreneurs, and well-known experts.

There are various options to sponsor the Conference. For further details, please contact OLADE or FIDE, at the e-mail addresses or fax numbers indicated below.

Registration fees:

Participants outside of Mexico	US$500 up to May 15
	U$600 as of May 16
Participants from Mexico	US$400 up to May 15
	US$330 as of May 16

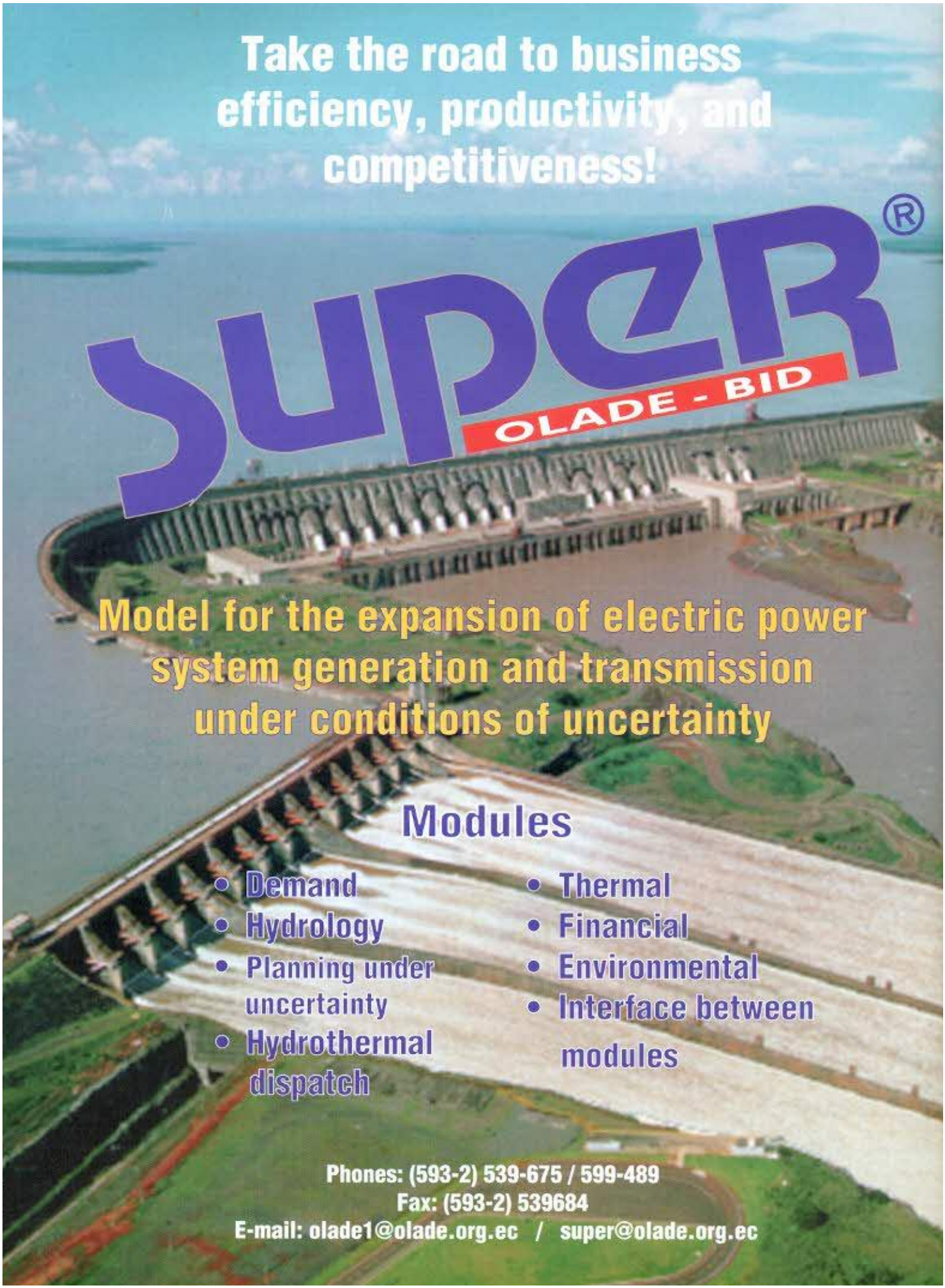
To request further information on the event, sponsorship options, and registration, please contact:

Latin American Energy Organization (OLADE), Quito, Ecuador

E-mail:	eficien98@olade.org.ec
Fax:	(593-2) 539-684, 539-679, 595 674
Phones:	(593-2) 539-675, 598-122, 598-280, 597-995

Fideicomiso para el Ahorro de Energía (FIDE), Mexico City, Mexico

E-mail:	jaurteaga@cfe.gob.mx
Fax:	(525) 254-2036
Phones:	(525) 254-2200, 254-3044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Energy
Statistics

ENERGY BALANCES
LATIN AMERICA AND THE CARIBBEAN (thousand BOE)

		PRIMARY ENERGY										SECONDARY ENERGY											
	YEAR 1996	OIL	NATURAL GAS	COAL	HYDRO-ENERGY	GEO-THERMAL	NUCLEAR	FIRE-WOOD	SUGAR CANE PROD.	OTHER	TOTAL PRIMARY	ELEC-TRICITY	LIQUID GAS	GASO-LINE/AL-COHOL	KERO SENE JET	DIESEL OIL	FUEL OIL	COKE	CHAR-COAL	GASES	OTHER	NON-ENERGY	TOTAL SECOND-ARY	TOTAL
SUPPLY	PRODUCTION	3364156	956429	228439	363208	15482	23094	405153	259464	71428	5686853	494478	174535	618977	125633	543128	528744	7061	40815	451876	24070	120081	3129398	5686853
	IMPORT	412648	17864	93787			9966	11	0	0	534276	26230	43460	80493	13790	94588	72036	11834	51		1099	4176	353817	888093
	EXPORT	1749458	15915	132266			0	0	0	1592	1899231	26440	28416	84266	38888	86101	170708	106	15		5902	25059	465901	2365132
	INVENTORY VARIATION	34490	-1358	2904	-615		-9966	0	-15	-1159	24281		1430	-9626	-3728	729	-4048	1844	42		640	-3853	-16570	7711
	UNUSED	0	104294	309	8287	2205	0	0	388	87	115570		0	0	0	0	0	246	0	1414	0	0	1660	117230
	TOTAL SUPPLY	2061836	852726	192555	354306	13277	23094	405164	259061	68590	4230609	494328	197009	605578	96807	552344	426024	20387	40893	450462	19907	95345	2999084	4100295
TRANSFORMATION	REFINERY	-2034664	-14867							3387	-2046144		63614	529050	125633	543128	527685	1015		48532	13136	101431	1953224	-92920
	POWER STATIONS	-6226	-62339	-64394	-349690	-13276	-23094	0	0	0	-519019	468197				-23507	-172328			-88874	0	0	468197	-335531
	SELF-PRODUCERS	-175	-12685	-10210	-5887			-3193	-15284	-6050	-53484	26281				-8236	-21204			-12326	-945	0	26281	-69914
	GAS CENTERS		-488279							-24340	-512619		109903	41765		0				387185	3510	16539	558902	46283
	COAL BUNKER							-84795		0	-84795								40815		0	0	40815	-43980
	COKING PL./FURNACES			-82897						0	-82897							6046	-337	15443	2	166	21657	-61577
	DISTILLERIES								-54391	-231	-54622			48162							0	1895	50057	-4565
	OTHER CENTERS	-1134	-37097	0				0	0	757	-37474		1018	-8119	0	0	1059	-716	0	716	7422	50	10265	-36044
	TOTAL TRANSFORMATIO	-2042199	-615267	-157501	-355577	-13276	-23094	-87988	-69675	-26477	-3391054	0	0	-8119	0	-31743	-193532	-716	-337	-101200	-945	0	-336592	-598248
FINAL CONSUMPTION	OWN CONSUMPTION	1128	91186	34				0	55615	0	147964	16306	16717	21292	5412	17843	39043	1358		116448	683	2186	237288	385252
	LOSSES (TR,ST,DI)	6520	9006	497	0	0	0	114	136	0	16273	79950	650	1189	131	1945	120	530	1235	7952	7	334	94043	110316
	ADJUSTMENT	1830	-1864	3093	-1271	1	0	-3344	1	7991	6437	-1169	732	-965	1297	190	-5004	-3572	-2	-9757	2705	334	-15211	-8774
	TRANSPORTATION	0	636	5				60		0	701	2322	4139	505656	64345	365113	14902				3	210	956690	957391
	INDUSTRIAL	9369	118332	28965	0			57455	124955	30083	369159	187760	11712	712	3000	45632	157903	20256	28420	165637	14844	1968	637844	1007003
	RESIDENTIAL	0	10774	1107				244085		2871	258837	123535	156282	1379	19827	2761	7635		9717	42197	0	0	363333	622170
	COMMERCIPUBLISERV	57	2222	0				736		0	3015	63695	2692	1640	921	7631	5200		956	8273	115	0	91123	94138
	AGRI,FISHING,MINING	41	815	1343	0			17896	4990	1049	26134	18642	273	582	800	78092	12328	195	163	0	14	0	111089	137223
	CONSTRUCTION & OTHE	692	24	10				174		119	1019	3287	232	2190	795	1392	360		10		0	2552	10818	11837
	ENERGY CONSUMPTION	10159	132803	31430	0	0	0	320406	129945	34122	658865	399241	175330	512159	89688	500621	198328	20451	39266	216107	14976	4730	2170897	2829762
	NONENERGY CONSUMPT		6328					0	3688	0	10016	0	3580	63784	279	2	5	904	57	18512	591	87761	175475	185491
	FINAL CONSUMPTION	10159	139131	31430	0	0	0	320406	133633	34122	668881	399241	178910	575943	89967	500623	198333	21355	39323	234619	15567	92491	2346372	3015253

Source: OLADE-EC, Energy-Economic Information System (SIEE)

ENERGY BALANCE
CENTRAL AMERICA (Thousand BOE)

		PRIMARY ENERGY										SECONDARY ENERGY												
	YEAR 1996	OIL	NATURAL GAS	COAL	HYDRO-ENERGY	GEO-THERMAL	NUCLEAR	FIRE-WOOD	SUGAR CANE PROD.	OTHER	TOTAL PRIMARY	ELEC-TRICITY	LIQUID GAS	GASO-LINE/AL-COHOL	KERO SENE JET	DIESEL OIL	FUEL OIL	COKE	CHAR-COAL	GASES	OTHER	NON-ENERGY	TOTAL SECOND-ARY	TOTAL
SUPPLY	PRODUCTION	5292	66	0	10626	5075	0	50912	6715	801	79487	12648	549	5543	1578	8813	11147	0	518	780	19	1151	42746	79487
	IMPORT	31601	0	337			0	0	0	0	31938	203	2943	8236	2276	14873	6813	10	0		0	319	35673	67611
	EXPORT	4658	0	0			0	0	0	0	4658	137	10	323	139	99	2051	0	0		0	408	3167	7825
	INVENTORY VARIATION	327	0	-42	13		0	0	0	0	298		102	-138	-729	1853	-639	0	0		0	-64	385	683
	UNUSED	0	66	0	1001	2205	0	0	289	0	3561		0	0	0	0	0	0	0	0	0	0	0	3561
	TOTAL SUPPLY	32562	0	295	9638	2870	0	50912	6426	801	103504	12714	3584	13318	2986	25440	15270	10	518	780	19	998	75637	136395
TRANSFORMATION	REFINERY	-32003	0							0	-32003		549	5543	1578	8813	11147	0		780	19	1151	29580	-2423
	POWER STATIONS	-394	0	0	-9625	-2869	0	0	0	0	-12888	12493				-3978	-5003			0	0	0	12493	-9376
	SELF-PRODUCERS	0	0	0	-14			0	-2211	-33	-2258	155				-310	-1329			0	0	0	155	-3742
	GAS CENTERS		0							0	0		0	0		0				0	0	0	0	0
	COAL BUNKER							-1493		0	-1493								518		0	0	518	-975
	COKING PL./FURNACES			0						0	0							0	0	0	0	0	0	0
	DISTILLERIES								-18	0	-18			0							0	0	0	-18
	OTHER CENTERS	0	0	0				0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL TRANSFORMATIO	-32397	0	0	-9639	-2869	0	-1493	-2229	-33	-48660	0	0	0	0	-4288	-6332	0	0	0	0	0	-10620	-16534
FINAL CONSUMPTION	OWN CONSUMPTION	0	0	0				0	0	0	0	176	13	1	0	26	752	0		780	0	0	1748	1748
	LOSSES (TR,ST,DI)	0	0	0	0	0	0	0	0	0	0	2215	0	10	1	2	9	0	0	0	0	2	2239	2239
	ADJUSTMENT	5	0	0	-1	1	0	-3320	0	0	-3315	-2	0	-18	-5	-24	16	0	-1	0	0	-3	-37	-3352
	TRANSPORTATION	0	0	0				0		0	0	52	7	12898	1860	15579	0				0	0	30396	30396
	INDUSTRIAL	160	0	295	0			3511	3756	768	8490	2825	497	122	118	3766	7926	10	0	0	19	0	15283	23773
	RESIDENTIAL	0	0	0				49228		0	49228	4837	2731	1	744	23	11		383	0	0	0	8730	57958
	COMMERC/PUBLI/SERV	0	0	0				0		0	0	2135	317	218	250	1072	175		126	0	0	0	4293	4293
	AGRI,FISHING,MINING	0	0	0	0			0	8	0	8	179	17	53	16	680	37	0	10	0	0	0	992	1000
	CONSTRUCTION & OTHE	0	0	0				0		0	0	297	2	0	0	28	12		0		0	0	339	339
	ENERGY CONSUMPTION	160	0	295	0	0	0	52739	3764	768	57726	10325	3571	13292	2988	21148	8161	10	519	0	19	0	60033	117759
	NONENERGY CONSUMPT		0					0	433	0	433	0	0	33	2	0	0	0	0	0	0	999	1034	1467
	FINAL CONSUMPTION	160	0	295	0	0	0	52739	4197	768	58159	10325	3571	13325	2990	21148	8161	10	519	0	19	999	61067	119226

Source: OLADE-EC, Energy-Economic Information System (SIEE)

ENERGY BALANCE
ANDEAN ZONE (Thousand BOE)

		PRIMARY ENERGY										SECONDARY ENERGY												
	YEAR 1996	OIL	NATURAL GAS	COAL	HYDRO-ENERGY	GEO-THERMAL	NUCLEAR	FIRE-WOOD	SUGAR CANE PROD.	OTHER	TOTAL PRIMARY	ELEC-TRICITY	LIQUID GAS	GASO-LINE/AL-COHOL	KERO SENE JET	DIESEL OIL	FUEL OIL	COKE	CHAR-COAL	GASES	OTHER	NON-ENERGY	TOTAL SECOND-ARY	TOTAL
SUPPLY	PRODUCTION	1565697	359740	159396	87919	0	0	69128	20687	7323	2269890	90660	52041	193012	50112	149082	173947	1545	990	10451	502	39402	761744	2269890
	IMPORT	20753	0	2887			0	0	0	0	23640	102	3921	8159	512	11326	204	1124	0		0	208	25556	49196
	EXPORT	977887	13247	132185			0	0	0	1592	1124911	95	14819	52780	25759	65774	129875	0	0		0	14164	303266	1428177
	INVENTORY VARIATION	41011	0	-1757	-628		0	0	0	-769	37857		-236	-5024	-1418	-1165	118	-819	0		0	-154	-8698	29159
	UNUSED	0	44064	309	0	0	0	0	0	0	44373		0	0	0	0	0	246	0	0	0	0	246	44619
	TOTAL SUPPLY	649574	302429	28032	87291	0	0	69128	20687	4962	1162103	90667	40907	143367	23447	93469	44394	1604	990	10451	502	25292	475090	675449
TRANSFORMATION	REFINERY	-640217	-11795							0	-652012		9854	181712	50112	149082	172786	0		8409	502	39385	611842	-40170
	POWER STATIONS	-466	-51959	-2773	-86784	0	0	0	0	0	-141982	85099				-7622	-17995			0	0	0	85099	-82500
	SELF-PRODUCERS	-106	-8029	-1325	-1777			0	-1067	-112	-12416	5561				-3946	-3137			-2103	0	0	5561	-16041
	GAS CENTERS		-51581							0	-51581		42187	11300		0				1011	0	17	54515	2934
	COAL BUNKER							-3915		0	-3915								990		0	0	990	-2925
	COKING PL./FURNACES			-4857						0	-4857							1545	0	513	0	0	2058	-2799
	DISTILLERIES								0	0	0			0							0	0	0	0
	OTHER CENTERS	-1134	0	0				0	0	0	-1134		0	0	0	0	1161	-716	0	518	0	0	1679	-171
	TOTAL TRANSFORMATIO	-641923	-123364	-8955	-88561	0	0	-3915	-1067	-112	-867897	0	0	0	0	-11568	-21132	-716	0	-2103	0	0	-35519	-141672
FINAL CONSUMPTION	OWN CONSUMPTION	690	73690	0				0	0	0	74380	2760	10736	16595	236	9046	2900	0		7221	502	942	50938	125278
	LOSSES (TR,ST,DI)	482	7747	225	0	0	0	0	0	0	8454	17117	92	0	0	4	5	48	0	354	0	206	17826	26280
	ADJUSTMENT	-6	2	2282	-1270	0	0	1	0	0	1009	-1168	0	1	1	2	-1	-2	0	0	0	475	-692	317
	TRANSPORTATION	0	339	5				0		0	344	411	0	122070	13218	46381	4167				0	210	186457	186801
	INDUSTRIAL	6291	87986	15519	0			4170	13714	1251	128931	29619	3118	277	2017	14132	10756	647	52	541	0	73	61232	190163
	RESIDENTIAL	0	8866	1046				56570		2871	69353	22220	26187	868	6483	0	2		881	232	0	0	56873	126226
	COMMERC/PUBLISERV	57	411	0				0		0	468	13587	548	1307	573	4266	158		0	0	0	0	20439	20907
	AGRI,FISHING,MINING	41	0	0	0			4472	4982	609	10104	3507	17	383	181	7575	5125	195	0	0	0	0	16983	27087
	CONSTRUCTION & OTHE	96	24	0				0		119	239	2614	209	1906	738	495	150		0		0	2552	8664	8903
	ENERGY CONSUMPTION	6485	97626	16570	0	0	0	65212	18696	4850	209439	71958	30079	126811	23210	72849	20358	842	933	773	0	2835	350648	560087
	NONENERGY CONSUMPT		0					0	924	0	924	0	0	0	0	0	0	0	57	0	0	20834	20891	21815
	FINAL CONSUMPTION	6485	97626	16570	0	0	0	65212	19620	4850	210363	71958	30079	126811	23210	72849	20358	842	990	773	0	23669	371539	581902

Source: OLADE-EC, Energy-Economic Information System (SIEE)

ENERGY BALANCE
SOUTHERN CONE (Thousand BOE)

		PRIMARY ENERGY										SECONDARY ENERGY											
	YEAR 1996	OIL	NATURAL GAS	COAL	HYDRO-ENERGY	GEO-THERMAL	NUCLEAR	FIRE-WOOD	SUGAR CANE PROD.	OTHER	TOTAL PRIMARY	ELEC-TRICITY	LIQUID GAS	GASO-LINE/AL-COHOL	KERO SENE JET	DIESEL OIL	FUEL OIL	COKE	CHAR-COAL	GASES	OTHER	NON-ENERGY	TOTAL SECOND-ARY	TOTAL
SUPPLY	PRODUCTION	293998	222353	6962	72625	0	10050	48439	5565	14139	674131	96597	19787	69496	16706	98637	32975	0	2971	196607	10789	15639	560204	674131
	IMPORT	79436	12679	18651			0	0	0	0	110766	2461	5264	4949	2006	16517	6483	282	5		6	913	38886	149652
	EXPORT	120269	419	0			0	0	0	0	120688	25404	4588	12451	281	7340	5756	106	15		4901	2097	63339	184027
	INVENTORY VARIATION	-19	0	-111	0		0	0	0	0	-130		-604	339	-648	-510	-1351	551	42		785	-1309	-2705	-2835
	UNUSED	0	23969	0	7286	0	0	0	0	85	30940		0	0	0	0	0	0	0	58	0	0	58	30998
	TOTAL SUPPLY	253146	211044	25502	65339	0	10050	48439	5565	14054	633139	73654	19459	62333	17783	107304	32351	727	3003	196549	6679	13146	532988	605923
TRANSFORMATION	REFINERY	-254479	0							0	-254479		9743	67378	16706	98637	32975	0		7277	7279	10689	250684	-3795
	POWER STATIONS	0	0	-4170	-64551	0	-10050	0	0	0	-78771	31005				-2050	-6325			-52990	0	0	91005	-49131
	SELF-PRODUCERS	0	-610	-8522	-788			-2242	-254	-503	-12919	5592				-515	-2875			-8780	-130	0	5592	-19627
	GAS CENTERS		-202055							-259	-202314		10044	2118		0				185197	3510	2889	203758	1444
	COAL BUNKER							-5467		0	-5467								2971		0	0	2971	-2496
	COKING PL./FURNACES			-8875						0	-8875							-1050	-337	4133	-1859	166	4299	-7822
	DISTILLERIES								-144	0	-144			0							0	1895	1895	1751
	OTHER CENTERS	0	-6028	0				0	0	0	-6028		0	0	0	0	0	0	0	-140	0	0	0	-6168
	TOTAL TRANSFORMATIO	-254479	-208693	-21567	-65339	0	-10050	-7709	-398	-762	-568997	0	0	0	0	-2565	-9200	-1050	-337	-61910	-1989	0	-77051	-85844
FINAL CONSUMPTION	OWN CONSUMPTION	202	748	34				0	0	0	984	2295	11	331	0	181	5557	1069		31041	102	0	40587	41571
	LOSSES (TR,ST,DI)	0	0	9	0	0	0	0	0	0	9	12698	313	7	0	1716	6	0	0	6809	0	0	21549	21558
	ADJUSTMENT	-1535	0	729	0	0	0	1	1	0	-804	0	20	-547	1369	-7	-2460	-3610	0	6873	2176	152	3946	3142
	TRANSPORTATION	0	54	0				60		0	114	425	69	56541	11245	71801	3739				0	0	143820	143934
	INDUSTRIAL	0	84	3102	0			10739	5166	12852	31943	29535	1081	52	378	7684	15432	2218	701	44133	2412	1895	105521	137464
	RESIDENTIAL	0	0	61				29880		0	29941	19263	14310	0	4787	2052	422		1965	36076	0	0	78905	108846
	COMMERC/PUBL/SERV	0	1465	0				50		0	1515	9150	88	0	2	870	475		0	7942	0	0	18527	20042
	AGRI,FISHING,MINING	0	0	0	0			0	0	440	440	288	0	76	0	20376	0	0	0	0	0	0	20740	21180
	CONSTRUCTION & OTHE	0	0	0				0		0	0	0	0	20	0	34	0		0		0	0	54	54
	ENERGY CONSUMPTION	0	1603	3163	0	0	0	40729	5166	13292	63953	58661	15548	56689	16412	102847	20068	2218	2666	88151	2412	1895	367567	431520
	NONENERGY CONSUMPT		0					0	0	0	0	0	3567	5853	2	2	0	0	0	1765	0	11099	22288	22288
	FINAL CONSUMPTION	0	1603	3163	0	0	0	40729	5166	13292	63953	58661	19115	62542	16414	102849	20068	2218	2666	89916	2412	12994	389855	453808

Source: OLADE-EC, Energy-Economic Information System (SIEE)

ENERGY BALANCE
THE CARIBBEAN (Thousand BOE)

		PRIMARY ENERGY										SECONDARY ENERGY												
	YEAR 1995	OIL	NATURAL GAS	COAL	HYDRO-ENERGY	GEO-THERMAL	NUCLEAR	FIRE-WOOD	SUGAR CANE PROD.	OTHER	TOTAL PRIMARY	ELEC-TRICITY	LIQUID GAS	GASO-LINE/AL-COHOL	KERO SENE JET	DIESEL OIL	FUEL OIL	COKE	CHAR-COAL	GASES	OTHER	NON-ENERGY	TOTAL SECOND-ARY	TOTAL
SUPPLY	PRODUCTION	60078	58676	0	3013	0	0	24972	45061	73	191873	20895	3476	17965	10964	18809	44533	78	4251	1953	273	1527	124724	191873
	IMPORT	78286	0	1503			0	0	0	0	79789	9	3141	7040	4986	17871	30039	157	10		292	666	64211	144000
	EXPORT	21900	0	0			0	0	0	0	21900	0	2309	4039	3227	5582	17880	0	0		309	280	33626	55526
	INVENTORY VARIATION	-470	0	0	0		0	0	-15	0	-485		339	-1193	-1343	-990	-205	0	0		-95	24	-3463	-3948
	UNUSED	0	9207	0	0	0	0	0	0	0	9207		0	0	0	0	0	0	0	0	0	0	0	9207
	TOTAL SUPPLY	115994	49469	1503	3013	0	0	24972	45046	73	240070	20904	4647	19773	11380	30108	56487	235	4261	1953	161	1937	151846	257192
TRANSFORMATION	REFINERY	-107025	-3072							0	-110097		1665	16831	10964	18809	44533	78		1615	273	1527	96295	-13802
	POWER STATIONS	-5366	-10321	-358	-2081	0	0	0	0	0	-18126	15829				-3075	-24069			0	0	0	15829	-2944
	SELF-PRODUCERS	-69	-2364	0	-932			-47	-7598	0	-11010	5066				-2609	-10942			0	0	0	5066	-19495
	GAS CENTERS		-1411							0	-1411		1811	700		0				0	0	0	2511	1100
	COAL BUNKER							-9746		0	-9746								4251		0	0	4251	-5495
	COKING PL./FURNACES			0						0	0							0	0	0	0	0	0	0
	DISTILLERIES								-849	0	-849			434							0	0	434	-415
	OTHER CENTERS	0	-30261	0				0	0	0	-30261		0	-118	0	0	-102	0	0	338	0	0	338	-30143
	TOTAL TRANSFORMATIO	-112460	-47429	-358	-3013	0	0	-9793	-8447	0	-181500	0	0	-118	0	-5684	-35113	0	0	0	0	0	-40915	-97691
FINAL CONSUMPTION	OWN CONSUMPTION	10	2809	0				0	0	0	2819	851	63	11	30	154	1030	73		1107	0	2	3321	6140
	LOSSES (TR,AL,DI)	7	871	0	0	0	0	114	136	0	1128	3181	7	45	44	39	19	0	0	436	0	3	3774	4902
	ADJUSTMENT	3	-1867	666	0	0	0	-26	0	0	-1224	2	-3	86	0	-1	0	44	0	0	0	0	128	-1096
	TRANSPORTATION	0	0	0				0		0	0	2	558	17143	4274	14158	1770				3	0	37908	37908
	INDUSTRIAL	2918	191	469	0			1909	34582	73	40142	8274	398	261	156	4475	16218	108	35	36	0	0	29961	70103
	RESIDENTIAL	0	12	0				12868		0	12880	5591	3234	510	6723	336	19		3714	267	0	0	20394	33274
	COMMERC/PUBLI/SERV	0	24	0				18		0	42	2366	345	115	90	360	296		403	107	0	0	4082	4124
	AGRI,FISHING,MINING	0	0	0	0			122	0	0	122	261	11	70	6	4068	1819	0	99	0	0	0	6334	6456
	CONSTRUCTION & OTHE	596	0	10				174		0	780	376	21	264	57	835	198		10		0	0	1761	2541
	ENERGY CONSUMPTION	3514	227	479	0	0	0	15091	34582	73	53966	16870	4567	18363	11306	24232	20320	108	4261	410	3	0	100440	154406
	NONENERGY CONSUMPT		0					0	1881	0	1881	0	13	1150	0	0	5	10	0	0	158	1932	3268	5149
	FINAL CONSUMPTION	3514	227	479	0	0	0	15091	36463	73	55847	16870	4580	19513	11306	24232	20325	118	4261	410	161	1932	103708	159555

Source: OLADE-EC, Energy-Economic Information System (SIEE)

ENERGY BALANCE
THE GROUP OF THREE (Thousand BOE)

		PRIMARY ENERGY										SECONDARY ENERGY												
	YEAR 1996	OIL	NATURAL GAS	COAL	HYDRO-ENERGY	GEO-THERMAL	NUCLEAR	FIRE-WOOD	SUGAR CANE PROD.	OTHER	TOTAL PRIMARY	ELEC-TRICITY	LIQUID GAS	GASO-LINE/AL-COHOL	KERO SENE JET	DIESEL OIL	FUEL OIL	COKE	CHAR-COAL	GASES	OTHER	NON-ENERGY	TOTAL SECOND-ARY	TOTAL
SUPPLY	PRODUCTION	2519966	577899	208796	91595	10407	13044	84904	32110	32772	3571493	166781	115552	339838	64377	224892	306144	14409	384	220935	0	75841	1529153	3571493
	IMPORT	338	5185	12273			0	0	0	0	17796	961	14930	32426	42	4261	16987	2321	0		0	0	71928	89724
	EXPORT	1501397	2249	132266			0	0	0	1592	1637504	892	21109	63600	29579	70577	110345	0	0		0	21012	317114	1954618
	INVENTORY VARIATION	40337	-1358	1548	-628		0	0	0	-1159	38740		1795	-3868	271	2965	-252	1863	0		0	-2162	612	39352
	UNUSED	0	43036	309	0	0	0	0	99	2	43446		0	0	0	0	0	246	0	0	0	0	246	43692
	TOTAL SUPPLY	1059244	536441	90042	90967	10407	13044	84904	32011	30019	1947079	166850	111168	304796	35111	161541	212534	18347	384	220935	0	52667	1284333	1702259
TRANSFORMATION	REFINERY	-1045281	-11795							-609	-1057685		22511	301602	64377	224892	304983	937		19997	0	62208	1001507	-56178
	POWER STATIONS	-466	-49496	-51466	-92074	-10407	-13044	0	0	0	-216953	163599				-5133	-127204			-35884	0	0	163599	-221575
	SELF-PRODUCERS	-106	-8011	-1325	-162			0	-613	-112	-10329	3182				-2107	-1172			-1613	0	0	3182	-12039
	GAS CENTERS		-271839							-27319	-299158		93041	38236		0				200025	0	13633	344935	45777
	COAL BUNKER							-1294		0	-1294								384		0	0	384	-910
	COKING PL./FURNACES			-19474						0	-19474							13472	0	395	0	0	13867	-5607
	DISTILLERIES								0	0	0			0							0	0	0	0
	OTHER CENTERS	-1134	0	0				0	0	0	-1134		0	0	0	0	1161	-716	0	518	0	0	1679	-171
	TOTAL TRANSFORMATIO	-1046987	-341141	-72265	-92236	-10407	-13044	-1294	-613	-28040	-1606027	0	0	0	0	-7240	-128376	-716	0	-37497	0	0	-173829	-250703
FINAL CONSUMPTION	OWN CONSUMPTION	226	77769	0				0	0	0	77995	7168	16552	20836	5145	15179	20511	216		66185	0	2165	153957	231952
	LOSSES (TR,ST,DI)	5552	7586	225	0	0	0	0	0	0	13363	28059	92	0	0	4	5	48	0	354	0	206	28768	42131
	ADJUSTMENT	-6	-1	2033	-1269	0	0	1	0	0	758	-1166	2	-2	2	0	-1	0	0	-16630	0	475	-17320	-16562
	TRANSPORTATION	0	339	5				0		0	344	1063	3505	268300	24507	95972	574				0	210	394131	394475
	INDUSTRIAL	6291	98919	14502	0			158	26731	1251	147852	66434	6040	163	1877	24458	55866	16473	52	113663	0	73	285099	432951
	RESIDENTIAL	0	10283	1012				78979		0	90274	45503	84366	533	2817	320	7181		332	9088	0	0	146140	236414
	COMMERC/PUBL/SERV	57	405	0				0		0	462	11963	398	43	154	2328	7		0	0	0	0	14893	15355
	AGRI,FISHING,MINING	41	0	0	0			4472	4217	609	9339	5244	211	57	594	15913	15	0	0	0	0	0	22034	31373
	CONSTRUCTION & OTHE	96	0	0				0		119	215	2582	2	464	0	127	0		0		0	2552	5727	5942
	ENERGY CONSUMPTION	6485	109946	15519	0	0	0	83609	30948	1979	248486	132789	94522	269560	29949	139118	63643	16473	384	118751	0	2835	868024	1116510
	NONENERGY CONSUMPT		0					0	450	0	450	0	0	14402	15	0	0	894	0	14778	0	46986	77075	77525
	FINAL CONSUMPTION	6485	109946	15519	0	0	0	83609	31398	1979	248936	132789	94522	283962	29964	139118	63643	17367	384	133529	0	49821	945099	1194035

Source: OLADE-EC, Energy-Economic Information System (SIEE)

ENERGY BALANCE
MERCOSUR (Thousand BOE)

		PRIMARY ENERGY										SECONDARY ENERGY											
	YEAR 1996	OIL	NATURAL GAS	COAL	HYDRO-ENERGY	GEO-THERMAL	NUCLEAR	FIRE-WOOD	SUGAR CANE PROD.	OTHER	TOTAL PRIMARY	ELEC-TRICITY	LIQUID GAS	GASO-LINE/AL-COHOL	KERO SENE JET	DIESEL OIL	FUEL OIL	COKE	CHAR-COAL	GASES	OTHER	NON-ENERGY	TOTAL SECOND-ARY	TOTAL
SUPPLY	PRODUCTION	3364156	956429	228439	363208	15482	23094	405153	259464	71428	5686853	494478	174535	618977	125633	543128	528744	7061	40815	451876	24070	120081	3129398	5686853
	IMPORT	412648	17864	93787			9966	11	0	0	534276	26290	49460	80493	13790	94588	72036	11834	51		1099	4176	353817	888093
	EXPORT	1749458	15915	132266			0	0	0	1592	1899231	26440	28416	84266	38888	86101	170708	106	15		5902	25059	465901	2365132
	INVENTORY VARIATION	34490	-1358	2904	-615		-9956	0	-15	-1159	24281		1430	-9626	-3728	729	-4048	1844	42		640	-3853	-16570	7711
	UNUSED	0	104294	309	8287	2205	0	0	388	87	115570		0	0	0	0	0	246	0	1414	0	0	1660	117230
	TOTAL SUPPLY	2061836	852726	192555	354306	13277	23094	405164	259061	69590	4230609	494328	197009	605578	96807	552344	426024	20387	40893	450462	19907	95345	2999084	4100295
TRANSFORMATION	REFINERY	-2034664	-14867							3387	-2046144		63614	529050	125633	543128	527685	1015		48532	13136	101431	1953224	-92920
	POWER STATIONS	-6226	-62339	-64394	-349690	-13276	-23094	0	0	0	-519019	468197				-23507	-172328			-88874	0	0	468197	-335531
	SELF-PRODUCERS	-175	-12685	-10210	-5887			-3193	-15284	-6050	-53484	26281				-5236	-21204			-12326	-945	0	26281	-69914
	GAS CENTERS		-488279							-24340	-512619		109903	41765		0				387185	3510	16539	558902	46283
	COAL BUNKER							-84795		0	-84795								40815		0	0	40815	-43980
	COKING PL./FURNACES			-82897						0	-82897							6046	-337	15443	2	166	21657	-61577
	DISTILLERIES								-54391	-231	-54622			48162							0	1895	50057	-4565
	OTHER CENTERS	-1134	-37097	0				0	0	757	-37474		1018	-8119	0	0	1059	-716	0	716	7422	50	10265	-36044
	TOTAL TRANSFORMATIO	2042199	-615267	-157501	-355577	-13276	-23094	-87988	-69675	-26477	-3391054	0	0	-8119	0	-31743	-193532	-716	-337	-101200	-945	0	-336592	-598248
FINAL CONSUMPTION	OWN CONSUMPTION	1128	91186	34				0	55616	0	147964	16306	16717	21292	5412	17843	39043	1358		116448	683	2186	237288	385252
	LOSSES (TR,ST,DI)	6520	9006	497	0	0	0	114	136	0	16273	79950	650	1189	131	1945	120	530	1235	7952	7	334	94043	110316
	ADJUSTMENT	1830	-1864	3093	-1271	1	0	-3344	1	7991	6437	-1169	732	-965	1297	190	-5004	-3572	-2	-9757	2705	334	-15211	-8774
	TRANSPORTATION	0	636	5				60		0	701	2322	4139	505656	64345	365113	14902				3	210	956690	957391
	INDUSTRIAL	9369	118332	28965	0			57455	124955	30083	369159	187760	11712	712	3000	45632	157903	20256	28420	165637	14844	1968	637844	1007003
	RESIDENTIAL	0	10774	1107				244085		2871	258837	123535	156282	1379	19827	2761	7635		9717	42197	0	0	363333	622170
	COMMERCIPUBLISERV	57	2222	0				736		0	3015	63695	2692	1640	921	7631	5200		956	8273	115	0	91123	94138
	AGRI.FISHING.MINING	41	815	1343	0			17896	4990	1049	26134	18642	273	582	800	78092	12328	195	163	0	14	0	111089	137223
	CONSTRUCTION & OTHE	692	24	10				174		119	1019	3287	232	2190	796	1392	360		10		0	2552	10818	11837
	ENERGY CONSUMPTION	10159	132803	31430	0	0	0	320406	129945	34122	658865	399241	175330	512159	89688	500621	198328	20451	39266	216107	14976	4730	2170897	2829762
	NONENERGY CONSUMPT		6328					0	3688	0	10016	0	3580	63784	279	2	5	904	57	18512	591	87761	175475	185491
	FINAL CONSUMPTION	10159	139131	31430	0	0	0	320406	133633	34122	668881	399241	178910	575943	89967	500623	198333	21355	39323	234619	15567	92491	2346372	3015253

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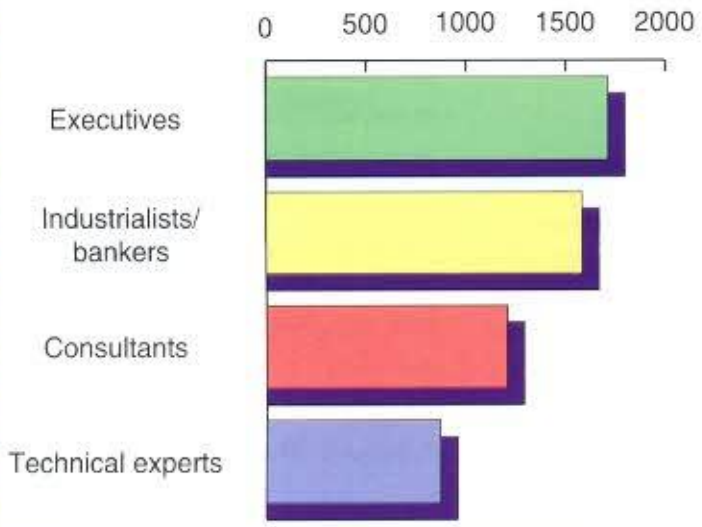

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Notes

COLOMBIAN COAL: ON THE WAY TO INCREASING PRODUCTION

The world, at the threshold of the 21st century, is facing major challenges. Along with the economic growth that is expected for the coming decades, there will be growth of international energy demand, including demand for power generation and industrial transformation sources that are economical, competitive, safe, and clean and that will help to meet the needs of future generations in a timely and environmentally sound fashion.

By the year 2010, Colombia could become the world's third largest coal exporter. It should be noted that the Colombian Government, in full compliance with the principles of the World Trade Organization, is not involved in this market; on the contrary it is promoting competition between coal producing and exporting companies, whose trading activities are governed exclusively by market forces.

Coal provides an abundant, economical, and clean source of energy and offers a wide variety of power generation and industrial use options. This is how Colombian coal can be characterized. Measured reserves have been calculated at 6.59 billion tons, including thermal coal with high calorific content and low ash and sulfur content, such as the coal from the country's Caribbean and Pacific regions, as well as the metallurgical coal from the interior, which has measured reserves of 550 million tons, especially in the Departments of Cundinamarca, Boyacá, and Santanderes.

Colombia's efforts to attract foreign investment in order to explore and produce new areas are well known throughout the world. To do this, first of all the tax legislation was amended; it provides for a stabilization scheme whereby investors that are governed by it can maintain the same tax conditions that are applicable at the time of their investment for a 10-year period. They must also make a commitment to pay an additional 2% to the State on the tariff applicable during this period. Second, the amendments to the mining legislation clearly outline the functions and jurisdictions of the State and the private sector and determine the rules of the game that are applicable to this activity so as to make administrative mechanisms and procedures more flexible and provide consistency to the variety of standards that are in force for the mining and environmental sector.

Colombia also benefits from the development of large projects in the northern part of the country, which have attained a production level of 21,031,000 tons per year and which include the multinational companies INTERCOR (Cerrejón Zona Norte), Drummond (La Loma), and Glencore (Cerrejón Central), for a national total of 30,065,000 tons per year. Therefore, the Colombian Government has announced an international public bidding process for contracting four new coal zones that are expected to benefit from the guarantees that are envisaged therein.

Finally, the linkage of international investors to privatization processes being conducted by the Government is being promoted on two fronts: electric power generation assets and the state's participation in coal production in El Cerrejón Zona Norte. In the latter, it should be underscored that the Colombian State is interested in progressively diversifying its power generation sources to include thermal resources such as coal, in order to ensure greater reliability in the interconnected system and promote the domestic consumption of this energy product. It is expected that, by the year 2010, thermal generation will account for 50% of total generation, with a coal component of about 12%. The privatization of El Cerrejón Zona Norte will become a reality with the participation of national and foreign investors, which are invited to submit bids.

Text provided by the Ministry of Mines and Energy of Colombia