FINAL REPORT OF THE ENERGY EFFICIENCY AND ACCESS FORUM
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I. INTRODUCTION

The Energy Efficiency and Access Forum was jointly organized by the Secretariat of Energy of Mexico, the World Bank and the Inter-American Development Bank, with the support of the Spanish Fund for Latin America and the Caribbean and the World Economic Forum. The Forum was held on September 28 and 29, 2010, in the Secretariat of Foreign Relations in Mexico City.

It was an international gathering focused on sharing experiences and best practices related to the implementation of energy efficiency and energy access programs and projects, public policies and technologies, focusing on three central themes: norms and standards, training and awareness, and successful programs.

It served as a platform for dialogue about a sustainable energy future, creating synergies with different initiatives, such as the Energy and Climate Partnership of the Americas, the International Partnership for Energy Efficiency Cooperation and UN Secretary General’s Advisory Group on Energy and Climate Change.

Objectives

1. Support the international dialogue on energy efficiency and access to modern energy services.

2. Present how energy efficiency measures are one of the most important instruments to deal with the global energy demand increase, and their ability to contribute to improving energy security, boost competitiveness, generate jobs, increase energy systems’ reliability, reduce vulnerabilities related to the rise and volatility of energy prices and ability to diminish greenhouse gas emissions.

3. Insist on the necessity to increase access to modern energy services, a key element to boost economic development, quality of life and productivity.

4. To showcase the energy sector’s commitment to sustainable development, highlighting the importance of energy efficiency measures for mitigation and adaptation to climate change.

5. Contribution of the Mexico’s and of the Latin America and the Caribbean region’s energy sector to addressing global climate change in the context of the 16th Conference of the Parties to the United Nations Framework Convention on Climate Change.

Participants

The audience was comprised of ministers and officials responsible for energy efficiency and access in Latin America and the Caribbean; specialized institutions, high-level representatives from the private sector, development banks, academia and international organizations.

There were 453 participants from the following countries:

- Antigua and Barbuda
- Argentina
- Austria
- Belize
- Bolivia
- China
- Colombia
- Costa Rica
- Dominica
- Dominican Republic
- Ecuador
- Egypt
- El Salvador
- France
- Guatemala
- Guyana
• Honduras
• India
• Italy
• Jamaica
• Japan
• Mexico
• Nicaragua
• Panama
• Paraguay
• Peru
• Saint Kitts and Nevis
• Saint Lucia

International Organizations present at the Forum were:

• Andean Development Corporation
• BUN-CA
• Caribbean Catastrophe Risk Insurance Fund
• CARICOM
• Collaborative Labeling and Appliance Standards Program
• Economic Commission for Latin America
• Inter-American Development Bank
• International Energy Agency
• International Finance Corporation
• International Partnership for Energy Efficiency Cooperation
• Latin-American Energy Organization
• Organization of American States
• UN Foundation
• United Nations Development Program
• United Nations Industrial Development Organization
• United Nations Organization
• World Bank
• World Economic Forum
• World Energy Council, Mexico Chapter

Sessions

• Opening Plenary Session
• Thematic Session 1 – Energy Efficiency Programs, Targets and Action Plans
• Lunch – The Role of Energy Efficiency to Increase Access and the Millennium Development Goals
• Thematic Session 2 – The Role of Standards, Labeling and Codes
• Thematic Session 3 – The Role of Institutions: Projects, Capacity Building and Public Awareness
• Thematic Session 4 – Innovative Financing Mechanisms
• Plenary Session – Energy Efficiency: The Path towards Low-Carbon Economies
• Thematic Session 5 – The Role of Regulators and Utilities Expanding Energy Efficiency and Access
• Thematic Session 6 – Energy Efficiency and Climate Change Planning
• Lunch – Policy Recommendations for Advancing the Energy Efficiency Agenda
• Thematic Session 7 – Energy Access: International Experiences and Programs
WEACT

In parallel to the Forum, the first “Regional Training Workshop on Design and Implementation of Energy Efficiency Policies” was organized to instruct specialized officials from Latin America and the Caribbean on energy efficiency issues. This event was prepared as part of Mexico’s collaboration with the International Partnership for Energy Efficiency Cooperation (IPEEC).
II. ACKNOWLEDGEMENTS:

The organizers would like to express their gratitude to the officials from the three institutions in charge of developing the event, whose efforts made the Energy Efficiency and Access Forum possible:

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Espen Mehlum  Associate Director, Energy & Head of Electricity Industry
Sandilya Vadapalli  Project Manager, Environmental Initiatives & Global Leadership Fellow
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The Energy Efficiency and Access Forum was also sponsored by the following institutions:
- Spanish Fund for Latin America and the Caribbean
- Federal Electricity Commission
- United Nations Industrial Development Organization
- United States Department of State
- UN Foundation

The organizers consider it important to mention that the EXECUTIVE NOTES ON ENERGY EFFICIENCY AND ACCESS POLICIES BY COUNTRY were developed based on reports by the Economic Commission for Latin America and the Caribbean, and were prepared by the Latin American Energy Organization (OLADE) and the Organization of American States (OAS) with support from the World Bank and the Inter-American Development Bank.

In addition to the previously mentioned officials, the following people worked on the organization of the Forum:

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### Research, Technological Development and Environment Office

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### Bioenergetics Office

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III. SESSIONS SUMMARIES

The following section presents a summary of the key issues discussed and main conclusions of the Energy Efficiency and Access Forum. A synopsis of the speakers’ who presented by order of presentation is also included at the end of this segment.

MAIN CONCLUSIONS

Introduction

Promoting energy efficiency on both the supply and demand side is critical from the standpoint of energy security, energy access and climate change mitigation. Energy Efficiency leads to a triple bottom line: economic and financial benefits (for countries, consumers, and utilities), climate benefits, and local pollution benefits. It also improves competitiveness and provides employment.

Given the expected growth in demand, a sense of urgency is required. US$20 to 30 trillion of investments in energy infrastructure across the spectrum (generation, transmission and distribution) will be needed to meet the expected demand over the next 20 years, and it is wise to take action now, given that future costs will be much higher.

A number of measures can be taken right now. Commercially-viable energy efficiency technologies are already available for efficient generation and efficient end use. The challenge is to deliver these technologies and realize the technical potential that does not get tapped in a Business as Usual context, due to market failures, and regulatory and other barriers.

Energy efficiency is everybody’s business, since every nation will gain from it. It is a win-win option, and the best andreadymade one in the short-term when compared to other options.

Barriers

Experience around the world (including exchanges and ideas presented at this Forum) shows that energy efficiency barriers can be overcome through innovative approaches and that market transformation is possible. However, effort is required in terms of financial tools, regulatory policy approaches, raising awareness, and setting up the right institutional mechanisms.

Rational pricing of energy, certainty of government incentives (tax incentives) and robustness of policies are means to attract private sector capital into the energy efficiency business, without which it will be impossible to attain the full potential.

Financing

Financing is important because there are sometimes incremental costs to implement energy efficiency projects and programs, at least in the initial stages. Innovative climate financing mechanisms, including carbon finance, are available at the global level, and other products, such as green mortgages in Mexico, can be used to leverage financing for energy efficiency.

There is a role for Government and the private sector, but development partners like the Multilateral Development Banks (MDBs) and UN organizations can also help countries pursue low carbon roadmaps through providing resources, capacity building, filling in knowledge gaps, better communication and sharing experiences and best practices.
It is important to highlight that simply having financial mechanisms does not solve the problem. Appropriate policies, as well as institutional and regulatory frameworks are required. Policies include measures such as standards and labeling for appliances (already implemented by developed countries), building codes or setting industry energy efficiency benchmarks and targets as China is doing.

**Conservation**

In addition to energy efficiency investments, there is also a role for energy conservation – behavioral changes – which governments could and should pursue. Consumer awareness and dissemination, along with smart meters and appliances can help in achieving this potential.

**Capacity Building**

Even if the financing barrier can be overcome, there will be a critical need for capacity building. MDBs can provide technical and financial support to interested countries, through existing capacity building funds.

**Climate Change**

Energy efficiency and climate change are inter-linked with practical synergies. It may be wise to think of standards and targets as a practical and economic means to climate change mitigation.

Energy efficiency is one of the most effective tools for energy security, enhancing energy access and mitigating climate change. It could happen anyway even if climate change risks are not considered. Aside of developments at Cancun (COP16), countries should work on Energy efficiency to achieve a sustainable development path.

Meaningful action in climate change mitigation will only come from a change in energy systems. And, within these, energy efficiency is the most viable option in the short-term (compared to renewables, clean coal and nuclear).

Energy efficiency also presents an opportunity to capture climate change financing resources. It would be a positive outcome to have some of the conclusions from this Forum feed into the climate change discussions in Cancun later this year.

Although energy ministries are not as involved in the climate change negotiations as they could be, given the relevance of the energy sector in this arena, it is important to make the case among negotiators.

**Universal Access**

Policymakers worldwide agree that increasing access to electricity is urgently needed. Access to electricity is a key condition necessary to improve the quality of life of individuals and to enable the economic development of nations as well as to achieve the Millennium Development Goals.

Currently, there are an estimated 34 million people in Latin America and the Caribbean (and 1.4 thousand million worldwide according to the International Energy Agency) that lack access to modern energy services. It is projected that the cost of achieving universal access will cost around 36 billion dollars per year from 2010 to 2030.

There are a number of policies and models that can be pursued to provide electricity services in an effective and sustainable manner. Moving forward, the challenge for policymakers is to identify and implement policies, innovative investment vehicles, financing tools to develop the necessary technology, increase capacity building, ensure that subsidies are well targeted and cost-effective and develop action plans and
goals in order to substantially increase the rate of access to electricity.
OPENING CEREMONY
September 28, 09:00 – 09:45 hrs.

Introduction

The presidium was composed of:

- Patricia Espinosa, Secretary of Foreign Relations, México.
- Rajendra K. Pachauri, Director-General, The Energy and Resources Institute.
- Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization.
- Richard Samans, Managing Director, World Economic Forum.
- Santiago Levy, Vice President Sectors & Knowledge, Inter-American Development Bank.
- Juan Rafael Elvira, Secretary of the Environment and Natural Resources, México.
- Sri Mulyani Indrawati, Managing Director, World Bank.
- Georgina Kessel, Secretary of Energy, México.

Summary of key ideas by order of presentation

Patricia Espinosa, Secretary of Foreign Relations, México.

- Energy efficiency presents a series of benefits: environmental, social and economic.
- All countries have to expand action on this matter.
- The United Nations Conferences on Climate Change to be held in Cancun by the end of the year may be the beginning of a new era on climate change action. Mexico will seek to bring positions closer and generate concrete and tangible agreements.
- Energy efficiency should be part of an emerging agenda in the framework of this multilateral process.

Santiago Levy, Vice President Sectors & Knowledge, Inter-American Development Bank.

- Energy efficiency has repercussions in two ways: climate change and countries’ productivity and efficacy in using their energy resources and comparative structural advantages.
- The lack of progress in energy efficiency issues would mean gradually losing the region’s competitive advantages.
- The Inter-American Development Bank is promoting this agenda in two ways: creation of an energy innovation center and channeling financial resources through loans and guarantees.

Juan Rafael Elvira, Secretary of the Environment and Natural Resources, México.

- The results of the event may have a positive effect moving towards COP 16.
- Solving climate change requires the participation of not only governments at all levels, but also the private sector.
- In August, 2009, President Felipe Calderon published the Special Program on Climate Change, which has the primary goal of reducing annual carbon dioxide emissions by 50 million tons by 2012.
- The Secretariat of the Environment and Natural Resources has sought to improve energy efficiency in the industry through voluntary national regulations in the public and private sector.

Sri Mulyani Indrawati, Managing Director, World Bank.
• The region will need to double electricity generation capacity over the next 20 years, which could require investing 20 billion dollars.
• The World Bank has created various instruments to support the development of energy efficiency measures in Latin America and the Caribbean.
• Other nations have been able to reduce their emissions through these provisions. It is still necessary to provide modern energy services to 30 million people in the region.
• The Bank is prepared to provide needed financial tools and technical assistance to support countries in the area.

Georgina Kessel, Secretary of Energy, México.

• The rational use of energy is an opportunity to strengthen the energy sector’s positive impact on various spheres of society, promoting economic growth and protecting the environment.
• Electricity demand in the region will grow on average 1.4 percent per year over the next decade and to meet this increase, countries will have to invest 53 billion dollars, although energy efficiency measures could reduce consumption by 10 percent, requiring investments of only 16 billion dollars.
• The energy sector contributes significantly to climate change and therefore it must become an important part of the solution to this problem.
• 1,500 million people in the world, 34 million just in Latin America and the Caribbean, do not have access to modern energy services.
• According to the Economic Commission for Latin America and the Caribbean, the region will need to invest 10 billion dollars over the next seven years to ensure access to energy to all inhabitants.
• Mexico is taking firm steps towards building a new energy efficiency culture.
• Forum participants should learn from different experiences, innovate, and have better coordination to establish more effective policies and strategies that allow the increase of energy savings.
OPENING PLENARY SESSION
September 28, 10:00 – 11:30 hrs.

Introduction

The Session was chaired by Georgina Kessel, Secretary of Energy of México. The keynote speakers were:

- Rajendra K, Pachauri, Director-General, The Energy and Resources Institute: *Energy Efficiency and Climate Change*.
- Pamela Cox, Regional Vice President, Latin America and the Caribbean, World Bank: *A Global View on Energy Efficiency*.
- Santiago Levy, Vice President Sectors & Knowledge, Inter-American Development Bank: *Energy Efficiency in the Americas*.
- Kandeh K. Yumkella, Chair, UN Secretary-General's Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization: *Energy Efficiency Roadmap and Perspectives*.

Summary of key ideas by order of presentation

Georgina Kessel, Secretary of Energy, México

- The goal is to present initial thoughts on the current situation and challenges associated with energy efficiency and the lack of access to modern energy services in Latin America and the Caribbean.

Rajendra K, Pachauri, Director-General, The Energy and Resources Institute: *Energy Efficiency and Climate Change*.

- The world should focus on energy efficiency and ensuring access to energy.
- The increase in greenhouse gases emissions (GHG's) in the twentieth century has led to an increment of 0.4 degrees Celsius in global temperatures and 17 centimeters in sea levels, as well as causing unpredictable weather events and having negative impacts on human and animal health.
- Tackling this problem will require major investments.
- Different projections set the increase in GHG's emissions from 8 to 30 gigatons by 2030.
- So far the market has not internalized climate change costs into the economy.
- The sectors in which emissions can be reduced and efficiency could be increased, buildings, followed by power generation, agricultural and industrial segments stand out; the appropriate capacities and incentives will need to be built in order to direct action to proper objectives.
- The solar panels program implemented by The Energy and Resources Institute in India has provided electricity to a million homes in areas without prior access.

Pamela Cox, Regional Vice President, Latin America and the Caribbean, World Bank: *A Global View on Energy Efficiency*.

- Electricity distribution losses alone in the region in 2005 were equal to the entire electricity consumption of Argentina, Chile, and Colombia combined. Reducing these in the next 20 years could satisfy about 6% of the initial energy required.
- Energy consumption in the region will grow 3% annually over the next 15 years, but since the region has a faster economic growth rate, electricity production should double, meaning that increasing efficiency will clearly have benefits.
• About 40 million people still lack access to electricity in the region.

• Various barriers halt increases in energy efficiency, such as technical, regulatory or financial issues, as well as it being politically difficult to carry out, especially in the long term.

• In recent years the World Bank has developed 360 projects in 90 countries on this issue and last year alone invested about three billion dollars in energy efficiency actions, around 10% of total investments.

• Funding is not enough; institutional and regulatory frameworks are necessary, as well as incorporating the private sector, because of its condition as major energy consumer and possible funding source.

• Mechanisms to finance technological innovations and those businesses that create them are also needed.

• Both the public and private sector should create financial instruments and incentives to work in this area.

• It is necessary to better communicate the benefits of energy efficiency.

• Over the last decade, the region has seen its greatest economic growth in the last 30 years. It should continue this development with more sustainable energy sources.

Santiago Levy, Vice President Sectors & Knowledge, Inter-American Development Bank: Energy Efficiency in the Americas.

• It is important to question why no greater actions on energy efficiency have been done, considering the fact that everyone is convinced of its benefits. This could be due to three key issues:
  1. Regulatory aspects. With proper regulations, 36 billion dollars could be saved in the region. This is a win-win situation in sectors such as transport, public lighting, and lighting. However, it is unlikely that regulation alone is the answer to the problem.
  2. The relative price of energy does not reflecting its true scarcity. There is a systemic market failure, so the second topic to work in is relative prices. The public policy challenge in this area is how to tell society that fossil fuel-intensive energy prices will be higher in the future, so they should start to be internalized today.
  3. Social problem. Many governments in the region have used energy prices as distributive mechanisms. There is an important opportunity for social programs that promote energy efficiency and solve access to credit problems for low-income families.

Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization: Energy Efficiency Roadmap and Perspectives.

• The industry represents one third of energy use.

• Energy demand in developing countries will continue growing as World Bank studies show, given that more energy is used to produce the same amount of goods as in developed countries.

• A study to be published next year will show that it will be necessary to improve energy efficiency to halve emissions of carbon dioxide.

• Some countries, such as China and India, are already acting, because of energy security issues.

• By 2030 universal access to energy must be provided, to two billion people, and energy intensity should be reduced by 40%, which represents an increase in efficiency of 2 to 5 percent per year.

• Some parts of the world are already thinking about low-carbon industrialization.

• Making these changes is complicated given the need for government policies. Society must also modify its behavior, as some figures suggest this may represent around 25 percent of necessary actions.
THEMATIC SESSION 1 – ENERGY EFFICIENCY PROGRAMS, TARGETS AND ACTION PLANS
September 28, 12:00 – 13:30 hrs.

Introduction

The Session was chaired by Leandro Alves, Chief of the Energy Division at the Inter-American Development Bank. The panel speakers were:

- Andrew Steer, Special Envoy for Climate Change, World Bank: Energy Efficiency in the context of Climate Change Negotiations.
- Emiliano Pedraza, Director-General, CONUEE, México: México’s National Program for the Sustainable Use of Energy.

Summary of key ideas by order of presentation


- China’s goals regarding energy efficiency and emissions reduction are:
  - Energy efficiency goals for 2010: Reducing the energy required by unit of gross domestic product (energy intensity) by 20% (base year: 2005).
  - Emissions reduction goal to 2020: Reducing the emissions of CO₂ of the GDP in 40-45% (base year: 2005).
- Concrete actions carried out by the Chinese government are:
  - Development of laws
  - Adjustments in the economic structure
  - Economic Incentives and marketing instruments
  - Fiscal subsidies
  - Development of capacities and energy savings conscience
  - Coordination between the central government and local governments
  - Monitoring energy consumption in the public and private sector
  - Certification to diminish energy consumption in the most intensive industries in the country (cement, steel, iron, ammonia, non-ferrous materials, electric generation, transportation, construction, real estate).

Andrew Steer, Special Envoy for Climate Change, World Bank: Energy Efficiency in the context of Climate Change Negotiations.

- The Stakes for energy efficiency are very high and the case for savings is also very high, of the 35 trillion dollars of investment needed to meet energy growth, energy efficiency could help save lots of money.
- It is possible to grow faster and save on energy costs and at the same time lower emissions.
- The negotiations on climate change present an opportunity to help us grow more efficiently. This could provide the motivation, measurement and money needed to mobilize support, to set and measure targets, and to make more resources available.
• It is necessary to have a different perspective in order to perceive links between climatic change and energy efficiency.
• If a country’s population believes that climate change is real, it can be useful for energy efficiency actions and results in saving resources and decreasing emissions.

Emiliano Pedraza, Director-General, CONUEE, México: México’s National Program for the Sustainable Use of Energy.

• Mexico analyzed the final energy consumption by 2030 in the transportation, industrial, agricultural and residential-commercial-public sectors.
• The transportation sector is the area of opportunity with greater energy consumption and has an extensive number of available technologies. Lighting, although is not such a big sector, is the area of opportunity with the greatest energy efficiency potential among the different technological options.
• Based on an abatement potential curve, Mexico identified 7 opportunity areas (lighting, transportation, appliances, cogeneration, buildings, industrial engines, water pumps) with specific courses of action (considering technological change and users’ behavior).
• Mexico is working on developing energy efficiency standards for vehicles, lighting and thermal insulation (residential, commercial and industrial), electrical appliances and buildings equipment; it is also promoting the replacement of light bulbs; supporting marginalized groups (refrigerators and air conditioners replacement); equipment and appliances certification so that these comply with high energy efficiency standards; certification of new residences, recognizing people/businesses pushing forward energy efficiency; disseminating the advantages of cogeneration; supporting programs for small and medium-sized companies; rehabilitating and providing water pumps in the agricultural sector.
• If all of these actions were to be implemented in the country, by 2030 the final consumption of the energy would drop by 18% and the aggregated result (more than 4,000 terawatts-hour) would be equivalent to more than 2 years of annual consumption.


• The initiative seeks to move forward world action on energy efficiency through the development of capacity building and training. It is integrated by 15 countries; some belong to the G-8.
• Its main objectives are to: a) share existing energy efficiency policies with decisions makers, b) develop institutions and tools for government officials, c) to support the identification and elimination of loopholes in current energy efficiency programs, d) promote agreements among countries to promote policies and programs.
• It is organized through six action groups with different tasks (plans and cross-sectorial issues, transport, construction, public lighting and appliances, industrial sector, essential public services).
• The expected results are the establishment of a global energy efficiency policy network, to share knowledge through action groups, organize sub-regional and regional workshops together with high-level political forums, identify and disseminate energy efficiency policies towards Cancun and beyond.
THEMATIC SESSION 2 – THE ROLE OF STANDARDS, LABELING AND CODES
September 28, 15:15 – 16:15 hrs.

Introduction
The Session was chaired by Emiliano Pedraza, Director-General of the National Commission for the Efficient Use of Energy (CONUEE) of México. The panel speakers were:


Summary of key ideas by order of presentation

Emiliano Pedraza, Director-General, CONUEE, México.

- Standards, labeling and codes are one of the most effective instruments that governments can use to implement energy efficiency policies.
- Standards and labeling can be even more effective when implemented along with other policies, such as economic incentives to promote new technologies, and strategies to educate consumers on the importance and need of more energy efficient services and products.


- To understand why greater energy efficiency is important, need to take a holistic approach and examine the global energy system.
- Major economies are projected to account for 70% of growth in energy demand and CO$_2$ emissions between now and 2030.
- Total primary energy supply of non-OECD countries is projected to increase at a disproportionate rate by 2030 and 2050. This in turn would result in greater gas and oil imports, and drastic price increases.
- When trying to achieve the targets of the IEA’s BLUE Map scenario (bring CO$_2$ emissions down to 14Gt), a portfolio of technologies is needed to achieve a global energy revolution. (i.e. CCS, renewable, nuclear, power generation efficiency and fuel switching, end-use fuel switching, end-use fuel and electricity efficiency)
- End-use efficiency can provide 38% of the reductions, but CCS, renewable and nuclear are needed in the power sector.
- In addition, there is a need to make the transport sector more efficient. Under the BLUE Map scenario, by 2050, coal, oil and gas demand levels are lower than today’s demand levels.
- Need to transform markets for clean energy products. This is where standards and labeling can play an important role.
- Benefits of Standards and Labeling (S&L) include:
  - Very cost effective
  - Require change in the behavior of a manageable number of manufacturers rather than all consumers
  - Treat all manufacturers, distributors and retailers equally
  - Provide large measurable energy savings that are comparatively easy to quantify and verify
There are many countries already applying S&L programs, and these have proven to be effective. Global cooperation is needed to accelerate market transformation. S&L policies offer one of the best prospects for global cooperation.

- Countries can jointly coordinate program design to send a clear, performance-based signal.
- Countries can use coordinated financial incentives to encourage manufacturers to scale-up production of super efficient products.
- Countries can work together in areas of monitoring, verification and enforcement, as this the most cost-effective option to unlock further economic potential existing within S&L schemes.


- Over 75 countries have energy standards and labeling. This growing trend is taking over Latin America and the Caribbean, as energy efficiency is going mainstream in the region.
  - Energy efficiency standards and labeling has played an important role in energy efficiency programs.
- With additional and more stringent S&L programs, Latin America has the potential to reach 141 annual metric tons of CO₂ reduction in 2030.
- There are two types of S&L programs in Latin America:
  - Primary focus on Minimum Energy Performance Standards (MEPS). This type of labeling is considered as a complementary instrument. Countries such as Mexico (following US model) and Venezuela (partially) have taken on this approach.
  - Initial focus on labeling (MEPS are implemented as a second step, based on an operational labeling program). In the case of Brazil, this started as a voluntary program which later became mandatory, and this model has been followed by many South American countries.
- Due to the fact that Latin American S&L programs are influenced by those of the US and EU, S&L alignment is still the rule today, whereas regional harmonization experiences have had limited success.
- Along with the trend of labeling programs starting from voluntary and moving to mandatory, labeling programs are shifting to MEPS. As labeling becomes mandatory, there is a greater range of appliances and equipment covered by energy efficiency S&L programs.
- As S&L programs become more mainstream, system standards are taking on more innovative approaches, such as taking into consideration human behavior. Additionally, many countries in Latin America are implementing inventive programs and/or replacement programs for appliances.
- Although more countries are implementing S&L programs, there is still vast room for improvement, which in turn can help maximize potentials. In addition to technical assistance, there are also ample opportunities for regional cooperation among national programs.
Introduction

The Session was chaired by Carlos Flórez, Executive Secretary of the Latin-American Energy Organization (OLADE). The panel speakers were:

- Joseph Williams, Manager, Energy Program, CARICOM: *Challenges of Small Island Economies*.
- Leandro Alves, Chief, Energy Division, Inter-American Development Bank: *IDB-ENE Innovation Center and the ECPA EE Centers*.

Summary of key ideas by order of presentation

Carlos Flórez, Executive Secretary, OLADE.

- Institutions (federal or local governments, energy efficiency certification centers or institutions, public service companies, manufacturers, NGOs, or international organizations) play a decisive role in the application and definition of energy efficiency frameworks.
- It is important to also consider ways to strengthen assistance capacities to these institutions, as well as ways to bolster institutional capacities to implement and apply energy efficiency policies.

Lucio Monari, Sector Manager, Energy, World Bank: *A Global Perspective*.

- Given the importance of energy efficiency, regulatory, policy and market interventions have been created, as well as various financing mechanisms. Institutional entities play a fundamental role given that they can influence market transformation and policies.
- Some findings and lessons learned for enhancing the role of energy efficiency institutions are:
  - Many energy efficiency barriers are common across countries which could be addressed by similar policies and regulations, however due to the fact that there is a diverse range of institutional structures, governance can be difficult.
  - There is an increasing recognition of the importance of private sector participation in energy efficiency market transformation.
- There are several institutional determinants within each country (institutional framework, institutional structure, elements of governance), and depending on how well these factors come together, it will in turn affect energy efficiency performance.
- The primary motivation for implementing energy efficiency should be country-driven priorities:
  - Developed countries’ motivation tends to focus on energy security and climate change/emission targets, while developing countries tend to be motivated by the need to improve energy access, energy security, reduce energy import costs, etc.
- Top political commitment to energy efficiency policies is a key element.
  - Energy efficiency agencies created as an outcome of legislative processes provide the legal underpinning and necessary framework for their operation.
- Energy efficiency policies, laws and regulations should be developed based on a shared vision between stakeholders.
- Coordination and transparent collaboration between multiple energy efficiency institutions and
market players and between national/state/provincial agencies with private sector stakeholders can help enhance institutions and governance.

- There is a need to improve data availability and to count on appropriate energy efficiency metrics and indicators.
  - Together with credible monitoring and evaluation plans, institutions can more effectively formulate, prioritize, and assess the impact of energy efficiency policies.

Joseph Williams, Manager, Energy Program, CARICOM: Challenges of Small Island Economies.

- Most of the challenges being faced by the Caribbean region are related to energy efficiency.
- CARICOM Small Island Developing States (SIDS) face several challenges:
  - They are small states, separated by sea; each state has diverse/different resources and structures, have relatively high indebtedness, and are prone to natural disasters.
  - Need to keep these challenges in mind when thinking of energy efficiency in the Caribbean.
- Given Haiti’s current state, energy access in CARICOM has also become a challenge.
- Despite the challenges and hurdles, there have been successful cases in some countries in the region.
- In order to have more successful energy efficiency programs/policies in CARICOM, these countries need:
  - Successful energy efficiency projects in the building sector for case studies.
  - Improved regulatory framework (utility and market).
  - Region-wide appliance labeling program, standards for the transportation sector, energy efficiency building codes and standards.
  - Innovative financing.
  - More high-quality energy efficiency information.
  - Individual and institutional capacity building and strengthening.

Leandro Alves, Chief, Energy Division, Inter-American Development Bank: IDB-ENE Innovation Center and the ECPA EE Centers.

- Previous presentations have demonstrated the limitations or challenges when promoting energy efficiency in the energy and other sectors.
  - Some of the challenges/obstacles are: little transfer of knowledge/information, regulatory limitations, lack of government support for energy efficiency, financing and incentive structures, etc.
- Taking this into consideration, the US Department of Energy (US DOE) and the Inter-American Development Bank have been collaborating to address some of these challenges.
- Solid institutional frameworks can influence the sustainability and effectiveness of energy efficiency programs through:
  - Helping establish incentives for the efficient use of energy resources.
  - Creating financing mechanisms for the development and execution of energy efficiency projects.
  - Easing necessary conditions for private sector involvement.
  - Modifying energy planning processes to include energy efficiency.
  - Creating conditions for mandatory energy efficiency standards and codes.
- The main focus areas for energy efficiency institutional frameworks are:
  - Governance, supervision and legislation.
  - Program administration/management.
  - Provision of services and implementation, and evaluation.
• Keeping in mind the challenges and potential areas of improvement, the Bank and the US DOE created the IDB Energy Innovation Center to promote innovation for energy efficiency, renewable energy, and energy access.
• It will serve as a regional hub that will facilitate: interaction among experts, diffusion of knowledge and best practices of the energy sector, and project support through technical assistance and financing/co-financing opportunities.

Teófilo de la Torre, Minister of the Environment, Energy and Telecommunications, Costa Rica: *Costa Rica Energy Efficiency Training Center*

• Despite its small size, Costa Rica has come a long way in the field of energy. Access to energy is around 99.5%, 95% of its energy generation derives from renewable sources, and it also has very low transmission and distribution losses.
• The country has set high goals for 2021: it hopes to be carbon-neutral and expects to generate 100% of its energy from renewable sources.
• Energy efficiency is a very important element when endeavoring to attain these goals.
• Energy efficiency centers play an important role, and Costa Rica has started dialogues with the United States and the Inter-American Development Bank for their creation.
• When creating a center (whether for energy efficiency or renewable energy), it is important to combine the government’s decision making power with the private sector’s muscle and the participation of academia. It is this type of collaboration and coordination that will ensure effective and real energy efficiency measures.
  • With various stakeholders involved, it is important to also streamline and align goals and activities.
THEMATIC SESSION 4 – INNOVATIVE FINANCING MECHANISMS
September 28, 17:30 – 18:30 hrs.

Introduction

The Session was chaired by Shilpa Patel, Chief of the Climate Change, Environmental and Social Development Department at the International Finance Corporation and co-chaired by Dominic Waughray, Senior Director and Head of Environmental Initiatives of the World Economic Forum. The panel speakers were:

- Steven J. Puig, Vice President for the Private Sector and Non-Sovereign Guaranteed Operations, Inter-American Development Bank: Mobilizing Resources for a “Cleaner” Energy Matrix.
- Héctor Rangel Domene, Director-General, Nacional Financiera, México: Success Stories.

Summary of key ideas by order of presentation

Shilpa Patel, Chief, Climate Change, Environmental and Social Development Department, International Finance Corporation.

- The session seeks to present the financing experiences that have achieved a decrease in transaction costs and also, to show the benefits of the implementation of energy efficiency measures.
- It is relevant given that although the implementation of energy efficiency measures is a low-cost opportunity; this is not always a priority for clients. Innovative Financing Mechanisms aim to overcome this barrier, and thereby incentivize the implementation of those measures.

Steven J. Puig, Vice President for the Private Sector and Non-Sovereign Guaranteed Operations, Inter-American Development Bank: Mobilizing Resources for a “Cleaner” Energy Matrix.

- There are between 30 to 40 million people without electricity access in the region. Additionally, 85 million households use biomass for cooking and heating.
- By 2030, US$ 1.8 trillion (millions of millions) are required to provide infrastructure in the Latin American energy sector. 85% of the investment will be covered by the private sector.
- The Inter-American Development Bank offers a wide range of products for the private sector, from technical assistance in the first stage of the project cycle to different financing tools such as: loans; co-financing; credit lines; investment activities: equity, quasi-equity, investment funds; and guarantee programs.
- Examples of Innovative Solutions are: PlanetBanking, credit Lines for intermediaries, training to executive of commercial banks for the identification of renewable energy projects; GreenPYME, support to financing projects; among others; Scorecard to measure the impact of potential projects, aiming to assure the environmental and social sustainability of the projects. In energy efficiency, Óptima, an ESCO in Mexico that has implemented more than 100 projects with the Bank’s support.
- Among the innovative financing the funds of the Multilateral Organisms that stand out, are for example: Climate Investment Funds, GEF, IDB micro-carbon fund, etc.
- The Bank aims to designate 25% of its total activities to clean and renewable energy. This represents US$ 3 – 3.5 billion per year.
Héctor Rangel Domene, Director-General, Nacional Financiera, México: Success Stories.

- Among success cases in financing projects the following situations can be found: 1) without resources, the payback depends on the project only, the only resource of the bank is the flow and actives of the project, received as collateral; 2) with limited resources, besides project resources, the financing has a third party guarantee, as a percentage of the total investment.
- Other success cases are: Wind Energy projects with support of the Inter-American Development Bank, the World Bank, KfW and other multilateral agencies; in energy efficiency: (NAFIN-FIDE) replacement of electric appliances with NAFIN credit (program with CFE); assistance to the tortilla industry, which consists in the equipment’s replacement, a 4 years credits with a fixed rate of 6%, subsidized by the Secretariat of Economy, which pays $30,000 mexican pesos for the change and destruction of old equipment.
- Currently NAfin is designing credits for small and medium-sized companies.
- It is also important to talk about FOMECAR, a Bancomext trust fund established in 2006, as a joint initiative with the Secretariat of the Environment and the Centro Mario Molina. The trust fund aims to provide technical assistance for feasibility studies regarding CO2 emissions in carbon finance projects (with assistance from KfW and the World Bank).


- The objective is to propose innovative financing mechanisms that mobilize CERs (certified emission reduction) resources for the financing of current energy efficiency and renewable energy activities.
- Its core principle is that a ton of CO2 emitted anywhere in the world, has the same impact on climate change. Therefore, it must be reduced or mitigated where the cost is the lowest.
- What is on sale are the tons of CO2 reduced or mitigated by an specific project (AAUs, CERs, ERUs, EUAs, VERs, etc.)
- In COP15, countries agreed to mobilize US$ 100 Billion per year until 2020 for the mitigation of emissions. The challenge consists on how to mobilize future revenues
- The idea is to obtain financing in the present, based on potential revenues that will be obtained in the future through CERs.
- This can be done through the creation of a Guaranteed CERs (GuaCER) to monetize future CERs. GuaCER is a financing product with which developing countries can sell their reduction in CO2 emissions to Annex 1 countries, through a transaction in an open market.
- GuaCER provides funds today, in exchange of a future flow of investments in energy efficiency and renewable energy (CERs). GuaCER’s proposal is still in a preliminary stage
- There are potential problems and risks, for instance, transaction costs, buyers and sellers must feel comfortable with the size of the guarantee and other details.
- In spite of the potential problems, GuaCER is an appealing innovative product to mobilize resources in energy efficiency investments.
PLENARY SESSION – ENERGY EFFICIENCY: THE PATH TOWARDS LOW-CARBON ECONOMIES
September 29, 09:00 – 10:00 hrs.

Introduction

The President of México, Felipe Calderón gave the keynote speech. Other session speakers were:

- Mario Molina, President, Centro Mario Molina: *The Role of Technology to address the Challenges of Climate Change.*
- Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization: *Recommendations for a Sustainable Energy Future.*

Summary of key ideas by order of presentation

Mario Molina, President, Centro Mario Molina: *The Role of Technology to address the Challenges of Climate Change.*

- Energy plays a fundamental role in the economic development of society. The use of fossil fuels has resulted in a change in the chemical composition of the planet's atmosphere, affecting its thermal balance and climate.
- Although any specific event cannot be attributed to climate change, it can be observed that the frequency of floods and extreme events has increased.
- Tackling climate change is a huge challenge that could cost around 1 or 2 percent of global gross domestic product.
- Mexico has played an important leadership role to advance a solution of this problem; it is essential for countries to change their way of producing energy, through low-emission economic development plans.
- The experts’ consensus is to develop various measures simultaneously, including renewable energies, carbon capture and storage and nuclear energy.
- Besides these, the efficient use of energy stands out for two main reasons: appropriate technologies are already available and the associated cost is negative.

Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization: *Recommendations for a Sustainable Energy Future.*

- During the Copenhagen summit an agreement was made, which has been signed by over 100 countries, to establish a very clear commitment to save the forests, in addition to produce a four billion dollar budget.
- 80% of carbon dioxide emissions result from the production, distribution and use of energy and the construction sector.
- COP16 might be the space to decide to act on energy issues.
- The world cannot be saved from climate change without changing existing energy systems.
- Reducing poverty requires competitive economies that create jobs and provide access to electricity.
- The United Nations will launch a global campaign on energy efficiency.

- Energy efficiency increases companies’ competitiveness, creates jobs, and allows governments to reduce subsidies and invest available resources to promote access to energy services.
- Latin America and the Caribbean countries are starting their energy transition, rationally exploiting traditional fuels and diversifying primary energy sources.
- The Energy Efficiency and Access Forum should become a space to deepen in the construction of a sustainable energy future.
- Energy efficiency is one of the most important and effective instruments to move towards low-carbon economies; without progress in this area countries will have to double their electricity generation capacity over the next 15 years.
- While economies will continue depending to a significant degree on fossil fuels, extracting these resources must be done in an environmental friendly manner.
- This would increase efficiency in all production processes, maximize hydrocarbons use, particularly associated gas, and minimize possible emissions of greenhouse gases in the sector’s production chain.

Felipe Calderón, President, México.

- Climate change and global warming are real, they affect the poorest people and although they have been caused mainly by developed countries, everyone has to contribute, under the established premise of common but differentiated responsibilities.
- Saving energy is not only necessary but also profitable.
- Mexico is convinced that energy efficiency measures are an indispensable and an ideal tool to address the increasing global energy demand, while ensuring sustainable development.
- The efficient use of energy must be cross-sectorial, in all economic activities.
- 10 action areas to work on:
  1. Promote the use of renewable energy;
  2. Programs to encourage a massive shift in consumer behavior;
  3. Sustainable designs for buildings and homes;
  4. A transition in lighting technology;
  5. Cleaner fuels and standards to increase their performance;
  6. Rural electrification to achieve universal energy access;
  7. Encourage co-generation;
  8. Foster the use of public transport;
  9. Move towards the implementation of tax incentives for renewable energy, and
  10. Alignment of energy prices with their actual costs.

- At COP16 it is needed that the parties to assume a sense of urgency on climate issues, as well as a real commitment, political will, and above all practical, pragmatic, financial and operational schemes to further enable development and clean technology transfer for both climate change mitigation and adaptation.
THEMATIC SESSION 5 – THE ROLE OF REGULATORS AND UTILITIES EXPANDING ENERGY EFFICIENCY AND ACCESS
September 29, 10:15 – 12:00 hrs.

Introduction

The Session was chaired by Alfredo Elías Ayub, Director-General of the Federal Electricity Commission (CFE) of México. The panel speakers were:

The Role of Technology:
- Mark Spelman, Global Head of Strategy, Accenture: *Accelerating Efficiency Through Smart Grids - How to Create Successful Pilot Projects*.
- Chris Curtis, CEO, Schneider Electric North America: *Successful Experiences in Energy Management*.

The Role of Utilities: Challenges for Increasing Energy Efficiency and Access.
- Germán Fatecha, ANDE, Paraguay.
- Ángel Larraga, México Country Manager, Grupo Gas Natural Fenosa.

The Role of Regulators:

Summary of key ideas by order of presentation

Mark Spelman, Global Head of Strategy, Accenture: *Accelerating Efficiency Through Smart Grids - How to Create Successful Pilot Projects*.

- The first key message that pilot projects teach is the need to optimize the service supply chain, from the generation of electricity to its distribution. It is necessary to analyze how demand and supply should be met, how demand alters consumers’ behavior to use less energy, and how to develop more flexible supply. To introduce new energy sources, such as renewable energy or electric vehicles, it is necessary to include greater flexibility in the networks.
- Intelligent networks should integrate the intelligence of two-way flows and the facility to accommodate new trends. Demand increases gradually, therefore it is necessary to build systems of networks that can handle urban growth.
- Cities may develop competitive advantages by introducing high-tech networks and reducing costs and emissions. These networks will make it possible to pinpoint existing defects.
- Pilot projects have helped determine: the ability to administer new technologies in accordance with their evolution, the convergence between public services and asset management, proper management of consumer behavior in light of new technologies, and how businesses must go beyond immediate service.
- Those who develop public policies must also analyze the status of networks, generation and consumer behavior. They must provide the necessary incentives at an early stage to allow the services to manage risks under updated, consistent regulations. Pilot plans will help determine and confirm the proposed objectives.

Chris Curtis, CEO, Schneider Electric North America: *Successful Experiences in Energy Management*.
Global demand will double by 2030, but at the same time the world faces the paradox of decreasing carbon emissions by 50 percent. It is necessary to understand not only how to properly administer energy but also about its safety, productivity and impact, distancing from the traditional idea of electricity networks for public service by only one mean.

Although many countries, such as China, have invested heavily in renewable energy, this at best represents only 15 to 20 percent of the solution. Many governments have created incentives aimed at private enterprise, but unfortunately these are not consistent from one year to another, and thus these enterprises’ response capacity varies.

One of the major challenges is the lack of storage capacity for energy generated. In the short term there is no more representative opportunity than that of energy efficiency. The role of governments is extremely important for the implementation of energy efficiency policies. It is necessary to implement standards and regulations for the establishment of efficiency programs, since it is risky for private enterprises to bet on which standards will prevail in the future.

We will never have an intelligent network without intelligent buildings; this is a two-way relationship and has unparalleled potential because consumers may become small producers.

Germán Fatecha, ANDE, Paraguay.

- The reason why trends for improvement in the area of energy efficiency are not progressing quickly is mainly the lack of political will to carry out projects related to this issue. The limited communication between energy companies and consumers on energy efficiency matters causes problems. Credit conditions imposed by banks hinder projects, thus, a greater cooperation is necessary.
- In terms of energy access, it is important to understand the social reality of a country in order to implement policies. For this reason, many governments, and specifically Paraguay, understand energy services as a human right because many populations live in extreme poverty.
- Although Paraguay consumes only 25 percent of the total energy it produces (the rest is exported to Brazil and Argentina), its network system is outdated, which reduces its efficiency.

Ángel Larraga, México Country Manager, Grupo Gas Natural Fenosa.

- The Gas Natural Fenosa has presence in over 23 countries, serving 20 million customers. Its most important activities include gas distribution networks, electricity distribution networks, and power generation (16 million megawatts installed). The Group is also working in the area of wind, thermal-solar, hydraulic and biomass energy.
- One of Fenosa’s’s most important functions is the construction of efficient networks that respond to the parameters of service quality, adaptability to growth, and maximum operation.
- The collaboration between the public and private sectors is essential in the development of new efforts in the field of energy efficiency. In many countries, the Group has worked with the key objective of operating power plants more efficiently, reducing emissions as much as possible and optimizing consumption.
- The use of vehicular natural gas is also important because of the economic advantages it offers in comparison to traditional fuels. It also has the ecological advantage of reducing CO₂ emissions, not to mention the safety that this gas offers.
- High-yield gas equipment (water heaters and stoves) must also continue to be developed. Another course of action proposed by the Group is solar gas, which offers the possibility of maximizing the use of solar energy, since it does not function at all hours.

The current development model in developed countries is based on mass consumption of fossil fuels and also on the limited availability of energy resources. It is important to highlight the impacts stemming from energy use and transformation: negative effects on the environment that will have a negative effect on future generations; all of this shows a lack of inter-generational responsibility in terms of energy consumption by developed countries.

One-third of humankind lacks access to modern forms of energy; poor countries have an additional deficit because they cannot consume modern fuels. The current model is not sustainable.

Regulation is essential for developing a more sustainable model, since it will make it possible to establish a wide range of measures to internalize social and environmental costs, safety and supply in the price of energy, so that they fall on those who provoke them and not on society. It is also important that these measures make it possible to provide the consumer with information on energy and on its true value as a natural resource.

In terms of tools, it is clear there are two essential ones: the development of renewable energies and the improvement of energy efficiency.

Efficiency is a key element of energy policy, since consuming less energy for the same purpose is essential. This assumes a lower cost in the energy bill, a reduction in greenhouse gas emissions, an improvement in safety in terms of actual provision, and an increase in industrial competitiveness.

Another important point is the implementation of regulatory instruments, such as the certification of buildings and homes, and efficiency requirements for consumer equipment and vehicles.

It is necessary to use economic instruments that enable the adoption of new and efficient equipment, fuel changes, and consumer habits. These range from economic incentives through investment subsidies, fiscal mechanisms, tax reductions, taxes on energy consumption, taxes on CO₂ emissions, and market mechanisms.

It is also necessary to significantly modify traditional patterns for the production and use of energy. The technical, economic and political challenges of safety in energy provision must also be addressed.


Regulation is understood in general terms as a State intervention in the market, through certain restrictions issued by agencies that administer this market, to achieve certain social objectives. These social objectives may include resolving market failures or some other type of common interest existing in society.

Regulation is the most concrete means of carrying out public policies. The purpose of having an economic regulator is that in those sectors where there is a lack of competition, the regulator should establish a series of clear rules that allow the investment to be made and users to have access to it. The regulator lays the foundation for universal access.

Regulatory instruments include the following: Subsistence tariffs that ensure the provision of energy service to the neediest sectors. The tariffs are also based on cross-subsidies, allowing the user with greater purchasing power to finance the interconnection of poorer users. Subsidized tariffs are a more efficient means of achieving universal access.

The economic instruments available to the State include budget resources, electrical infrastructure or resources that can be implemented directly by energy service providers. These regulatory or public policy instruments may be used, depending on the circumstances. In Mexico, access to electricity service has basically been conducted by means of budget resources, through electrification programs.
It is also important that economic regulation is not separated from social regulation. Technical regulation is a key tool of the economic regulator.
THEMATIC SESSION 6 – ENERGY EFFICIENCY AND CLIMATE CHANGE PLANNING
September 29, 12:00 – 13:30 hrs.

Introduction

The Session was chaired by Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization. The panel speakers were:

- Laura Tuck, Sector Director, Sustainable Development Department, Latin America and the Caribbean Region, World Bank: Energy Efficiency and Climate Change.
- Reid Detchon, Vice-President for Climate and Energy, UN Foundation: Towards a Climate Change Agreement.
- Juan Rafael Elvira, Secretary of the Environment, México: The Environmental Aspects towards Climate Change Negotiations.
- Mario Molina, President, Centro Mario Molina: Viability of NAMAS.
- Leandro Alves, Chief, Energy Division, Inter-American Development: Climate Change and Energy Efficiency.

Summary of key ideas by order of presentation

Laura Tuck, Sector Director, Sustainable Development Department, Latin America and the Caribbean Region, World Bank: Energy Efficiency and Climate Change.

- All countries collectively have the power to mitigate climate change through increased energy efficiency measures. By replacing 45 million incandescent light bulbs, Mexico will save 1.6 million tons of carbon emissions per year equal to what a combined cycle power plant of 350 MW (running all day) would emit and it would defer installing some additional 1,100 MW of new peak load capacity. Actions like replacing light bulbs or changing people’s behaviors are cost effective measures that could have a huge effect on energy savings.
- Energy generation is susceptible to the effects of climate change. Climate change can cause the inconsistency of hydro plants and the patterns of wind for energy, and could damage transmission lines. Smaller generation options are less vulnerable to the effects of climate change.
- Prior to the Copenhagen commitment, there were already global examples of climate finance, such as the CTF. There are many uncertainties about how the Copenhagen commitment or the fast-start resources will come to pass and the mechanism by which they will be distributed, especially given the fiscal difficulties of the governments in recession.
- It is important to have these funds and to prepare today for when these are available, either through setting up guarantee programs or by participating in NAMAs.

Reid Detchon, Vice-President for Climate and Energy, UN Foundation: Towards a Climate Change Agreement.

- It is important to prioritize energy efficiency implementations over reaching a climate change agreement. By effectively implementing energy efficiency operations, there is an opportunity to prove its use; which could lead to successful negotiations, rather than the other way around.
- Although investments in energy efficiency are important, this needs to be complemented by effective policies. Funding by itself will not be enough to deal with the barriers to energy efficiency.
• It is the hope that organizations and countries that are working in energy efficiency will begin to share experiences and best practices rather than re-inventing the wheel. By collaborating, these groups could essentially create a joint action plan for energy efficiency that could inform the negotiations at Cancun and beyond.

Juan Rafael Elvira, Secretary of the Environment, México: The Environmental Aspects towards Climate Change Negotiations.

• Mexico presented a national climate change strategy through the National Development Plan in 2007 which included adaptation, mitigation, financing and technology transfer options. Mexico has proposed 144 initiatives that could potentially reduce between 110 and 130 million tons of emissions.
• There are five ministries in Mexico that are responsible for reaching emissions reductions targets: 1) Energy, 2) Communications and Transport, 3) Agriculture, 4) Environment and 5) Social Development. The reduction of subsidies in Mexico is a major issue and potential barrier to development and environmental performance.
• Mexico also has two programs that are geared towards energy efficiency in small and medium enterprises. Although the result may currently be small, it is a good model for how to reach the private sector.
• If other countries begin to develop their own economic development models that include energy efficiency, then globally nations can begin to put pressure on the climate change negotiations.

Mario Molina, President, Centro Mario Molina: Viability of NAMAS.

• Energy efficiency measures should be the first actions taken for low carbon economic development plans like the abatement cost curve plans. Efficiency standards for fuel use in the transport sector would be a start for energy savings in this sector.
• Comprehensive policy regulations will be needed in order to mitigate climate change, not just reducing subsidies on fossil fuels. There should be climate change planning for urban development. There should be policies in place to deter excessive driving, such as heavy ticket fees and increased public transportation, such as bus rapid transit systems.
• Countries should create urban development and economic development plans from the point of view of reducing emissions. What will be needed are plans that take into account mobility, balance of energy services, water, etc.

Leandro Alves, Chief, Energy Division, Inter-American Development: Climate Change and Energy Efficiency.

• Data is particularly important because information drives the formation of policies. Countries should participate in the NAMAs so that they will be better equipped to access funding for climate change when it becomes available.
• The Inter-American Development is helping countries in the region to gather such information and develop such plans.
• Smaller countries as well as larger countries will benefit from emissions reductions. Although much of the focus has been on larger emitters, it is important to include the 26 countries of the Bank and the entire Latin America and the Caribbean region.
THEMATIC SESSION 7 – ENERGY ACCESS: INTERNATIONAL EXPERIENCES AND PROGRAMS
September 29, 15:30 – 17:30 hrs.

Introduction

The Session was chaired by Philippe Benoit, Sector Manager of the Energy Unit, Latin America and Caribbean, at the World Bank. The panel speakers were:

- Pedro E. Sánchez Gamarra, Minister of Energy and Mines, Perú: Lessons Learned from the Peruvian Rural Electrification Program.
- Milo Pearson, Executive Chairman of the Board of Directors, Caribbean Catastrophe Risk Insurance Fund: Response to Disasters.
- Arnaldo Vieira de Carvalho, Senior Energy Specialist, Coordinator, Energy Efficiency and Access Programs, Inter-American Development: Sustainable Energy for All.

Summary of key ideas by order of presentation


- The situation today is alarming, 1.4 million people do not have access to electricity and 1.7 million do not have access to modern cooking devices. 80% of those who lack electricity live in rural areas. This is an issue concerning human well-being and thus it is important to reduce these percentages.
- According to the World Health Organization, 1.45 million people die prematurely each year from indoor air pollution due to inefficient consumption of biomass for cooking and lighting. The millennium development goals to halve poverty by 2015 will not be achieved unless countries double their efforts.
- Achieving universal access to modern services will cost around 36 billion dollars per year from 2010 to 2030.
- There are 3 key steps to achieve universal electricity access:
  1. Recognize at the high policy level that the current situation is unacceptable and a change is needed and developing a strategy to achieve this transformation;
  2. Need for a commitment to make the necessary changes; external support will have to play an important role as well as innovative financing mechanisms;
3. Capacity will be crucial for scaling-up modern energy systems and national goals will be necessary.

Veerle Vandeweerd, Director of the Environment & Energy Group, United Nations Development Program: *International Experiences.*

- The European Union is convinced it is possible to provide energy access to those lacking access to modern services. Some positive ideas to consider in a strategic plan to combat poverty and to achieve sustainable development are: 1) technology to provide access; 2) financing needs (around 3.8% of total investment) 3) political will to set objectives; 4) capacity building—at the individual, institutional, and government level; 5) action plans and policies and regulations that support the commercialization of access to energy; 6) target the poorest people since the economic benefits will be high.
- An action plan to confront the problems of energy access would need to strengthen the capacity of individuals and institutions, provide funds for capital investments to increase access, and communities that operate them on a self-sustaining basis.
- Climate change presents an opportunity. Part of the government financing for promoting sustainable energy could be used also to provide access to modern energy services.

Pedro E. Sánchez Gamarra, Minister of Energy and Mines, Perú: *Lessons Learned from the Peruvian Rural Electrification Program.*

- Everyone agrees on the urgent need to provide electricity to each countries population. In Perú, energy systems are self-sustainable and do not require consumer subsidies, because Perú has a mechanism based on economic growth and that private sector investment is leading.
- In Perú, nearly 25% of the population lacks electricity services, which is mainly due to the large dispersion of localities. Overcoming these issues will require growth and high quality and effective social policy. Perú has a program called “Luz para todos” (light for all) that aims to bring the electrification coefficient up to 92%.
- The main financing mechanism is a cross-subsidy where end-users who consume under 100 kWh/month, have a 20% discount, which is financed by the consumers that consume above this amount. As for the connections in the concession zones of the private distribution companies, an incentive mechanism has been established where a connection bond is given to the company as a concessional loan that has to be repaid in 10 years, which will be given as a donation if they finance the required connections.
- Increased access is sustained by economic growth and energy efficiency programs, which have allowed Perú to generate the necessary resources for rural electrification programs.


- Tanzania has been involved in the promotion of different technologies to increase energy access as well as energy efficiency measures to ensure sustainable development.
- Only 14% of the population in Tanzania has access to electricity, and only 2% of the population has access in rural areas, where the majority of the population lives.
- Tanzania has established a plan to increase access from 14% to 35% by 2025. It is trying to develop standardized technical specifications, especially for small grids and has created a special organization and new laws and regulations to help carry out rural electrification.
- It is also promoting energy efficiency in diverse sectors since the savings from these measures will help Tanzania to reduce energy demand and stimulate economic growth. Energy Efficiency standards could contribute to save 25% of energy, which would postpone the need to invest 1.5M
in generation.

- Although there is no doubt about the importance of energy efficiency and access in society today, the challenge for developing countries is that these technologies are very expensive in comparison to the purchasing power of people in developing countries.
- The challenge is how to employ these costly technologies so that people can reduce CO₂ emissions.

Milo Pearson, Executive Chairman of the Board of Directors, Caribbean Catastrophe Risk Insurance Fund: *Response to Disasters.*

- Caribbean countries are extremely vulnerable to disasters, which results in high losses, approximately 2% of GDP since 1997 and only 3% of potential losses are currently insured. The CRIF is attempting to implement a program to transfer risks for its member governments.
- There are initiatives by the Caribbean Services Corporation to find a parametric solution for electricity transmission and distribution, given the potential losses from hurricanes.
- Within the Caribbean T&D systems are not generally insured and a study has begun to help establish a program for insuring this type of infrastructure.
- Over its short existence, the CCRF has charged low premiums and the pool has been beneficial, transparent and fair.

Arnaldo Vieira de Carvalho, Senior Energy Specialist, Coordinator, Energy Efficiency and Access Programs, Inter-American Development: *Sustainable Energy for All.*

- Haiti and Nicaragua have the lowest electricity coverage in the region. In terms of the number of people without access, Mexico, Brazil, Haiti and Peru account for more than half of all inhabitants without electricity in Latin America. There are 40 million people without access to electricity in Latin America.
- The most critical barrier is that people are more and more remote and dispersed and this increases the costs of provision, operation, management and the profitability for distribution companies, where ability to pay is also low.
- Lessons learned are that connection to the grid is the best solution, but other options should not be discarded either. The construction of and operation of systems should be the responsibility of the distributor when possible to ensure sustainability.
- When incentives are needed for companies to enter these markets, the government could fully or partially subsidize the capital cost of the project. The process should also include community participation to make sure they are willing to pay for the connection and tariffs.
- It is also important that the internal home wiring/connection costs are also considered to make sure that households are really energized. Finally, if subsidies are provided for investment, they should be well designed based on the specific parameters of each project to ensure cost-effectiveness.
- The Inter-American Development has a sustainable energy program for all that provides grant money to help countries develop electrification schemes based on these lessons to increase coverage. Experiences in countries like Nicaragua illustrate that integration by the World Bank and other donors is needed to achieve increased electricity coverage.
CLOSING SESSION – FINAL REMARKS
September 29, 17:30 – 18:00 hrs.

Introduction

The Session speakers were:

- Laura Tuck, Sector Director, Sustainable Development Department, Latin America and the Caribbean Region, World Bank.
- Leandro Alves, Chief, Energy Division, Inter-American Development Bank.
- Richard Samans, Managing Director, World Economic Forum.
- Georgina Kessel, Secretary of Energy, México.

Summary of key ideas by order of presentation

Laura Tuck, Sector Director, Sustainable Development Department, Latin America and the Caribbean Region, World Bank.

- Six key ideas regarding energy efficiency:
  1. Benefits it presents.
  2. Availability of technologies.
  3. Importance of funding mechanisms, without forgetting the development of appropriate regulatory environments, public policies, and awareness.
  4. Climate change funding, which allows the incorporation of energy efficiency and therefore enlarge access to resources.
  5. The energy sector can get more involved in climate change discussions.
  6. The World Bank is prepared to work on the development of financing and capacity building and new instruments.
- Thanks to the Secretary of Energy, her team and everyone involved in the organization of the event have done a terrific job.

Leandro Alves, Chief, Energy Division, Inter-American Development Bank.

- The Mexican Government has showed a real leadership in the field of energy efficiency.
- This issue is one of the most important pillars on which the Bank should invest.
- The Bank is interested in participating in this unified effort and to contribute through the Energy Innovation Center.
- Thanks to organizers for the Forum’s successful development.

Richard Samans, Managing Director, World Economic Forum.

- In recent years the private sector’s interest in the topics discussed at the Forum has increased.
- Current business models can be successfully applied for energy efficiency.
- There is need for developing parallel strategies on climate change: existing negotiations and a new mechanisms architecture which can outline private sector participation.
- The private sector’s participation in the International Partnership for Energy Efficiency Cooperation (IPEEC) has already been proposed, as it is necessary.

Georgina Kessel, Secretary of Energy, México.
The sustainable use of energy must meet higher goals as part of a broader vision on the future of our civilization.

The dialogue that led to the Forum is a step towards consolidating a regional agenda on energy efficiency; summarized in the 10 action areas proposed by President Calderon while participating in the morning plenary session.

It is desirable to have a statement that considers the importance of energy efficiency during the Ministerial Meeting of the Latin American Energy Organization to be held in Nicaragua in late October 2010.

Closer cooperation ties are needed, to promote the expansion of energy efficiency in the region.

Thanks to the World Bank, the Inter-American Development Bank and the World Economic Forum, as well as the Secretariat of Foreign Affairs for their hospitality during the event; all participating countries’ delegations, and members of Mexico’s energy sector for their active participation in promoting a common regional agenda.
IV. AGENDA

OPENING CEREMONY
September 28, 09:00 – 09:45 hrs.

Presidium:

- Patricia Espinosa, Secretary of Foreign Relations, México.
- Rajendra K. Pachauri, Director-General, The Energy and Resources Institute.
- Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization.
- Richard Samans, Managing Director, World Economic Forum.
- Santiago Levy, Vice President Sectors & Knowledge, Inter-American Development Bank.
- Juan Rafael Elvira, Secretary of the Environment and Natural Resources, México.
- Sri Mulyani Indrawati, Managing Director, World Bank.
- Georgina Kessel, Secretary of Energy, México.
OPENING PLENARY SESSION
September 28, 10:00 – 11:30 hrs.

- Chair: Georgina Kessel, Secretary of Energy, México.

Keynote Speakers:

- Rajendra K, Pachauri, Director-General, The Energy and Resources Institute: Energy Efficiency and Climate Change.
- Pamela Cox, Regional Vice President, Latin America and the Caribbean, World Bank: A Global View on Energy Efficiency.
- Santiago Levy, Vice President Sectors & Knowledge, Inter-American Development Bank: Energy Efficiency in the Americas.
- Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization: Energy Efficiency Roadmap and Perspectives.

Objectives:

- Present the Energy and Climate Partnership of the Americas and the opportunities to create synergies amongst other initiatives, such as the International Partnership for Energy Efficiency Cooperation and the UN Secretary-General’s Advisory Group on Energy and Climate Change.
- Learn from successful energy efficiency programs.
- Move forward the energy efficiency agenda in Latin America and the Caribbean.
- Discuss the links between energy efficiency and climate change.
THEMATIC SESSION 1 – ENERGY EFFICIENCY PROGRAMS, TARGETS AND ACTION PLANS
September 28, 12:00 – 13:30 hrs.

- Chair: Leandro Alves, Chief, Energy Division, Inter-American Development Bank.

Panel Speakers:

- Andrew Steer, Special Envoy for Climate Change, World Bank: Energy Efficiency in the context of Climate Change Negotiations.
- Emiliano Pedraza, Director-General, CONUEE, México: México’s National Program for the Sustainable Use of Energy.

Objectives:

- Present successful energy efficiency programs, targets and action plans being implemented around the world.
- Learn from best practices and key elements to scale-up energy efficiency programs.
- Discuss lessons from the design, implementation and oversight of programs, action plans and targets.
- Present reports on energy efficiency across different countries, companies and International Organizations.
- Discuss the context of the Climate Change negotiations.
LUNCHEON KEYNOTE SPEECH – THE ROLE OF ENERGY EFFICIENCY TO INCREASE ACCESS AND THE MILLENNIUM DEVELOPMENT GOALS
September 28, 13:30 – 15:00 hrs.

- Chair: Georgina Kessel, Secretary of Energy, México.

Speaker:

- Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization.

Objectives:

- Discuss the rationale for promoting Energy Access (Welfare & Economic Benefits).
- Present the status of energy access in the continent and progress towards meeting in the year 2015, the Millennium Development Goal 7: “Ensure Environmental Sustainability – Response to Climate Change”.
- Exchange ideas about the initiatives being implemented to increase delivery of energy services.
- Talk about the contribution of energy efficiency to promote access to modern energy services by reducing affordability barriers.
- Interchange viewpoints on how to increase affordability of efficient technologies/products for low income populations.
THEMATIC SESSION 2 – THE ROLE OF STANDARDS, LABELING AND CODES
September 28, 15:15 – 16:15 hrs.

- Chair: Emiliano Pedraza, Director-General, CONUEE, México.

Panel Speakers:


Objectives:

- Present best practices on energy efficiency measures such as standards, labeling and codes.
- Discuss a framework for harmonizing standards within the region.
- Confer on when to use standards as means towards better energy efficiency and when to use other types of regulation/mandatory measures/incentives.
- Agree on key topics to advance the regional energy efficiency agenda through the development of:
  i. Regional or a Global Energy Efficiency Certification Center;
  ii. Implementation of Regional Energy Efficiency Standards (or bilateral standards);
  iii. Harmonization of standards in Latin America and the Caribbean (along free trade agreements lines); and
  iv. Promotion of regional trade of energy efficiency products based on the existing framework in free trade agreements.
THEMATIC SESSION 3 – THE ROLE OF INSTITUTIONS: PROJECTS, CAPACITY BUILDING AND PUBLIC AWARENESS
September 28, 16:15 – 17:15 hrs.

- **Chair:** Carlos Flórez, Executive Secretary, OLADE (Latin-American Energy Organization).

**Panel Speakers:**

- Joseph Williams, Manager, Energy Program, CARICOM: *Challenges of Small Island Economies*.
- Leandro Alves, Chief, Energy Division, Inter-American Development Bank: *IDB-ENE Innovation Center and the ECPA EE Centers*.

**Objectives:**

- Learn about best practices for capacity building and public awareness.
- Discuss case studies.
- Confer on institutional design and compliance mechanisms.
THEMATIC SESSION 4 – INNOVATIVE FINANCING MECHANISMS
September 28, 17:30 – 18:30 hrs.

- Chair: Shilpa Patel, Chief, Climate Change, Environmental and Social Development Department, International Finance Corporation.
- Co-Chair: Dominic Waughray, Senior Director, Head of Environmental Initiatives, World Economic Forum.

Panel Speakers:

- Steven J. Puig, Vice President for the Private Sector and Non-Sovereign Guaranteed Operations, Inter-American Development Bank: Mobilizing Resources for a “Cleaner” Energy Matrix.
- Héctor Rangel Domene, Director-General, Nacional Financiera, México: Success Stories.

Objectives:

- Learn about new developments in financing mechanisms.
- Discuss the role of financial institutions in promoting energy efficiency.
- Present success stories.
- Hear about domestic and international funding sources.
PLENARY SESSION – ENERGY EFFICIENCY: THE PATH TOWARDS LOW-CARBON ECONOMIES
September 29, 09:00 – 10:00 hrs.

Speakers:

- Mario Molina, President, Centro Mario Molina: The Role of Technology to address the Challenges of Climate Change.
- Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization: Recommendations for a Sustainable Energy Future.

Keynote Speaker:

- Felipe Calderón, President, México.
THEMATIC SESSION 5 – THE ROLE OF REGULATORS AND UTILITIES EXPANDING ENERGY EFFICIENCY AND ACCESS
September 29, 10:15 – 12:00 hrs.

- Chair: Alfredo Elías Ayub, Director-General, CFE, México.

Panel Speakers:

The Role of Technology:
- Chris Curtis, CEO, Schneider Electric North America: Successful Experiences in Energy Management.

The Role of Utilities: Challenges for Increasing Energy Efficiency and Access.
- Germán Fatecha, ANDE, Paraguay.
- Ángel Larraga, México Country Manager, Grupo Gas Natural Fenosa.

The Role of Regulators:

Objectives:

- Present a report on the key elements needed for the deployment of Smart Grid projects.
- Identify options to produce and consume energy more efficiently.
- Acknowledge the opportunities and challenges faced by utilities to improve their efficiency.
- Define the role of utilities to provide universal energy services.
THEMATIC SESSION 6 – ENERGY EFFICIENCY AND CLIMATE CHANGE PLANNING
September 29, 12:00 – 13:30 hrs.

- Chair: Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization.

Panel Speakers:

- Georgina Kessel, Secretary of Energy, México: *The Energy Sector’s Perspective Regarding the Climate Change Process*.
- Laura Tuck, Sector Director, Sustainable Development Department, Latin America and the Caribbean Region, World Bank: *Energy Efficiency and Climate Change*.
- Reid Detchon, Vice-President for Climate and Energy, UN Foundation: *Towards a Climate Change Agreement*.
- Juan Rafael Elvira, Secretary of the Environment, México: *The Environmental Aspects towards Climate Change Negotiations*.
- Mario Molina, President, Centro Mario Molina: *Viability of NAMAS*.
- Leandro Alves, Chief, Energy Division, Inter-American Development: *Climate Change and Energy Efficiency*.

Objectives:

- Acknowledge the role of the energy sector in international climate change negotiations.
- Discuss the potential of a regional energy efficiency agenda to contribute to a global climate change agreement.
- Identify countries in the region interested in capacity building and knowledge sharing to support the development of NAMAS based on EE measures.
LUNCHEON KEYNOTE SPEECH - POLICY RECOMMENDATIONS FOR ADVANCING THE ENERGY EFFICIENCY AGENDA

- Chair: Francisco Santoyo, CFO, CFE, México.

Speaker:

- Richard Jones, Deputy Executive Director, International Energy Agency.

Objectives:

- Present energy efficiency policies pursued by different countries, international organizations and companies.
- Exchange ideas about programs being implemented to advance the energy efficiency agenda.
- Confer on the role of public-private partnerships and the role of business.
- Discuss the challenges in executing and implementing best practices.
THEMATIC SESSION 7 – ENERGY ACCESS: INTERNATIONAL EXPERIENCES AND PROGRAMS
September 29, 15:30 – 17:30 hrs.

- Chair: Philippe Benoit, Sector Manager, Energy Unit, Latin America and Caribbean, World Bank.

Panel Speakers:

- Pedro E. Sánchez Gamarra, Minister of Energy and Mines, Perú: Lessons Learned from the Peruvian Rural Electrification Program.
- Milo Pearson, Executive Chairman of the Board of Directors, Caribbean Catastrophe Risk Insurance Fund: Response to Disasters.
- Arnaldo Vieira de Carvalho, Senior Energy Specialist, Coordinator, Energy Efficiency and Access Programs, Inter-American Development: Sustainable Energy for All.

Objectives:

- Present the status of energy access on the continent and main challenges.
- Learn about best practices.
- Discuss the development of productive economic activities in rural areas, through increased access to electricity.
- Confer about the importance of social aspects and indigenous people while developing energy access projects.
- Identify the main technologies to utilize in energy access programs.
- Talk about the international experience and programs to meet the adaptation and sustainability challenges, including risk prone disaster areas.
CLOSING SESSION – FINAL REMARKS
September 29, 17:30 – 18:00 hrs.

- Laura Tuck, Sector Director, Sustainable Development Department, Latin America and the Caribbean Region, World Bank.
- Leandro Alves, Chief, Energy Division, Inter-American Development Bank.
- Richard Samans, Managing Director, World Economic Forum.
- Georgina Kessel, Secretary of Energy, México.
V. OUTLOOK OF ENERGY EFFICIENCY AND ACCESS POLICIES IN LATIN AMERICA AND THE CARIBBEAN

DISCLAIMER: This section was prepared by the World Bank and the Inter-American Development Bank. Its contents are the sole responsibility of the authors.

Definitions: 1 billion = 1 thousand million; 1 trillion = 1 million million.

ENERGY EFFICIENCY AND ACCESS – GLOBAL EXPERIENCES AND OPPORTUNITIES

Energy efficiency (EE) is one of the most cost-effective and important instruments to help meet the global growth in energy demand. Countries in the Latin America and the Caribbean (LAC) will need approximately 40% more energy between 2010 and 2020 – an increase from 1.2 to 1.7 million GWh. It is estimated that in order to reduce LAC’s electricity consumption by 10% over the next decade, governments would only need to invest around US$16 billion in the implementation of EE measures (i.e., savings equal to an amount equivalent to satisfy the region’s energy needs). Otherwise, governments would have to spend around US$53 billion in conventional generating capacity, to meet this growth in energy demand (10% of LAC’s electricity consumption). In addition to these financial benefits, improvements in EE have been shown to contribute to enhanced energy security, increased competitiveness, increased employment generation, higher reliability of energy systems, reduced vulnerability to high and volatile energy prices, and decreased contributions to GHG emissions.

Even though the deployment of EE measures has been shown to be cost-effective in the short and medium-term, the rate of implementation of EE technologies lags well behind the opportunities for energy savings. Among the main barriers that inhibit the scaling up of EE are the absence of effective EE institutions, the lack of adequate regulatory policies, the lack of awareness about EE activities and their benefits, and the difficulties associated with financing large EE projects. The challenge for policymakers and the international community is to help put in place effective policies, implementation mechanisms, and financing strategies to ramp up the delivery of energy savings.

Access to electricity is a key component to improving the quality of life of individuals and enabling the economic development of nations. Increasing access to electricity has been shown to contribute to enhanced productivity as well as long run economic growth, and can have a positive impact across many areas of life, including education, health, gender equality, employment, and household welfare. Expanding access is challenging, however, given the large size of the population without electricity; there are an estimated 1.5 billion people worldwide without electricity and approximately 34.1 million people in the LAC region, or 6% of the region’s population. It is estimated that the cost of providing universal electricity access in urban areas and extending access to 95% of the rural population in LAC will cost approximately US$10 billion over the next seven years. From the demand side, affordability is a key issue when seeking to increase access to energy services because both the urban poor and the rural populations are often unable to afford the initial connection costs and are unlikely to be able to cover the recurring operation and maintenance expenses.

There are a number of policies and business models that can be pursued to provide electricity services in an effective and sustainable manner. Moving forward, the challenge for policymakers is to identify and implement policies, innovative vehicles, and financing tools to increase the rate of expansion for sustainable electricity access.

1 World Bank, Challenges to Meet Long Run Electricity Requirements for Latin America and the Caribbean, 2010.
2 Source: EE Forum, São Paulo, Brazil, IDB Regional Analysis, September 2008.
THE OPPORTUNITY

1. The world’s primary energy needs are expected to grow rapidly over the next two decades, with the largest incremental increase derived from developing countries. It will require over US$25 trillion in energy supply infrastructure investments by 2030\textsuperscript{4}, or 36 percent of 2008 global GDP\textsuperscript{5}, to meet this need. Meeting the growth in energy demand through traditional energy generation models is unsustainable from both an environmental and energy security perspective. Experience shows that EE is one of the most promising and least cost options for meeting energy demand; its use provides benefits to governments, industries, consumers, and the environment.

Government and industry. EE project economics, generally, have positive financial returns and are cheaper than installing new supply; therefore EE has the potential to ease infrastructure bottlenecks and/or delay capital-intensive investments in new power supply. Other benefits include:

- Contributing to energy security;
- Reducing generation costs by reducing peak load through load management;
- Lowering import dependence, therefore, reducing import bills;
- Improving the competitiveness of the economy by reducing overall generation costs, thereby reducing fuel imports (primarily oil and gas); and
- Mitigating the burden on the Government budget in sectors with energy subsidies.

Consumers. EE allows lower energy consumption for the same end-use energy services which, in turn, lowers energy costs for consumers. This leads to higher affordability, which is particularly important for low-income groups. In addition, EE:

- Reduces energy demand leading to higher system reliability;
- Lowers outage costs increasing productivity and income; and
- Generates employment from additional business activities in the manufacturing and service sectors, such as appliance substitution, public lighting, and other EE programs.

The Local and Global Environment. It is estimated\textsuperscript{6} that under a baseline scenario, the implementation of key EE policies could result in avoiding as much as 50 percent of the energy-related emissions reduction needed to stabilize CO\textsubscript{2} atmospheric concentrations at 450 parts per million by 2050 (See Figure A).

- Approximately 60 percent of GHG globally comes from energy use across sectors (including transport).
- The reduction in fossil fuel consumption from EE will result in lower local and regional environmental pollution, which in turn reduces human health impacts.

\textsuperscript{4} IEA, World Energy Outlook, 2008.
\textsuperscript{5} 2008 global GDP (PPP Current International $) was equal to approximately 70 trillion, according to the World Development Indicator Database.
\textsuperscript{6} Source: IEA, World Energy Outlook, 2009.
2. EE consists of three pillars of action. Together, and even separately, these activities can significantly reduce the growth in energy demand without inhibiting robust GDP growth. Examples of activities under each pillar include:

- **Demand-side EE**: switching to higher-efficiency lighting (CFLs, LEDs); promoting a change to more efficient appliances; installing high-performance electric motors and pumps in industry; enacting more pro-energy efficiency building codes; expanding industrial heat recovery; and adjusting tariff structures to smooth consumption across peak and non-peak periods.

- **Supply-side EE**: rehabilitating and refurbishing generating plants; expanding the use of cogeneration, and IGCC; installing efficient and low-loss transformers and high-voltage transmission lines; rehabilitating substations; optimizing power systems and promoting smart grids, district heating/cooling systems; increasing the efficiency of oil and gas extraction processes and equipment; improving refinery efficiency; and reducing gas flaring.

- **Energy conservation**: turning off lights and equipment when not in use; taking shorter showers; using mass transit rather than individual cars; adjusting thermostats to lower heating and air conditioning consumption.
MARKET BARRIERS TO DEPLOYING EE ACTIVITIES

3. Despite the enormous benefits of energy efficiency, achieving significant and sustained efficiency gains has proven challenging in countries throughout the world. Experience shows that to achieve larger deployments of EE programs more quickly, it is necessary to overcome a number of technical, policy, and financial barriers and market imperfections, including, but not limited to the following:

- Energy pricing and collection policies favor lowest cost
- Procurement policies favor lowest cost
- Import duties on EE equipment
- Unclear or underdeveloped institutional framework for EE
- Lack of appliance standards and building codes, lack of testing, poor enforcement
- High project development costs
- Limited demand for EE goods and services
- Diffuse/diverse markets
- New contractual mechanisms (ESCOs)
- Limited technical, business, risk management skills
- Limited financing/equity
- Lack of awareness of EE and high disconnection rates
- Higher project development and upfront costs
- Ability/willingness to pay incremental cost
- Low EE benefits relative to other costs
- Perceived risks of new technology/systems
- Concept of energy savings is “virtual” – cannot “see” savings
- Mixed incentives
- Behavioral biases
- Lack of credible data
- New technologies and contractual mechanisms
- Smaller sizes/dispersed widely → high transaction costs
- High perceived risks as these are not traditional, asset-based projects
- Higher return, low risk projects are more attractive
- Behavioral biases


4. In addition, EE expansion is hampered by weak institutions and enforcement. The delivery of EE results is driven by the ability of the public agencies to organize, transform and develop new and nascent markets for EE goods and services, and for local private sectors to adopt state-of-the-art EE technologies and practices. Regulatory mechanisms can be the least-cost way to transform markets but require effective local institutions, which can take years to cultivate. Additionally, weak institutions can undermine government policy frameworks and initiatives, including the ability to enforce EE regulations or to coordinate different levels of government, the private sector and civil society in a concerted effort.

OPTIONS FOR PROMOTING EE

5. There are a wide range of approaches, interventions and programs for promoting EE across all major sectors and end-uses that address the demand, supply and conservation dimensions of EE. Many programs were pioneered in OECD countries beginning in the 1970s and have since been replicated and adapted in developing countries. Each EE market transformation practice and model comes with its own strengths and shortcomings, and fall under three broad categories: (1) incentive-based market driven approaches; (2) regulatory policy interventions; and (3) informational programs. Examples of programs in each category include:

(1) Incentive-based market driven approaches
   - Incentive-based Programmatic Deployment of EE Appliances and Equipment
   - Incentive-based EE through Utility Demand Side Management (DSM)
Innovative Financing Mechanisms for EE Implementation
EE Market Transformation through Energy Service Company (ESCO) Development

(2) Regulatory policy interventions
Market Transformation through Regulation and Policy Actions
Supply-side EE Improvements

(3) Informational programs
Behavioral Change/Education

GLOBAL ACTIONS FOR SCALING UP EE: LESSONS LEARNED AND FUTURE ACTIONS FOR IMPLEMENTATION

6. Experience with EE market transformation efforts in OECD and developing countries indicates that EE implementations require a long-term, dedicated focus, with various actions on multiple fronts.

7. Governments can promote the scaling-up of EE by taking actions on four fronts:
   - Develop EE legislation and supporting regulations
   - Develop EE programs and set targets
   - Build capacity
   - Incentivize program replication and scale-up

8. On the global level, collective efforts of various institutions have to be mobilized, and their convening force amongst member countries needs to be utilized to push the EE agenda further. Key international efforts can include:
   - Increase international cooperation and coordination
   - Harmonize and streamline international financing procedures
   - Transition to programmatic and sectoral approaches
   - Support improved certification of EE equipment
   - Support voluntary nation pledges for energy savings

9. To accelerate the trajectory of current efforts, EE needs to be understood as a critical tool to enhance energy security, reduce vulnerability to energy prices, increase industrial and commercial competitiveness, and increase employment. With a strong push from the international community, in conjunction with individual actions on the local and national level, it is possible to significantly increase the rate of EE implementations, thereby increasing economic prosperity and security.

ENERGY ACCESS: INTERNATIONAL EXPERIENCE, PROGRAMS AND THE SUSTAINABILITY CHALLENGE

10. Access to electricity is a key component necessary to improve the quality of life of individuals and to enable economic development of nations as well as to achieve the Millennium Development Goals. Increasing access to electricity has been shown to contribute to enhanced productivity and output as well as long-run economic growth, especially when combined with other infrastructure investments. Electricity can be used for productive purposes such as milling, crop processing, water pumping, battery charging, carpentry, refrigeration, and incubation purposes. Other welfare benefits derived from access to electricity include improved lighting services and the ability to use electronic devices in clinics, schools, and shops. Overall, increasing access to electricity can have a positive impact across many areas, including education, health, gender equality, employment, and household welfare.

11. The high costs associated with providing electricity are a major barrier to increasing access. It is estimated that the cost of providing universal electricity access in urban areas and extending access to 95
percent of the rural population in LAC will cost US$10 billion over the next seven years, which represents almost 0.25 percent of the 2009 GDP of the region.\footnote{According to ECLAC, the GDP of LAC Region in 2009 was approximately US$4 trillion.}

12. There are a number of policies/business models that can be pursued to provide electricity services in an effective and sustainable manner. These include, but are not limited to, national electrification planning, the use of grid extension as well as mini-grids or off-grid renewable energy-based technologies in dispersed or isolated areas, rationalization of subsidies for grid-connected and off-grid consumers, and incentive mechanisms for service provision. Moving forward, the challenge for policymakers is to identify and implement policies, innovative vehicles, and financing tools to increase the rate of electricity access.

13. The objective of this Forum is to facilitate a dialogue among high level experts in their respective fields to address many of the barriers listed above as well as means to promote EE implementations, primarily in the developing world, through our thematic sessions, as follows:

- Session 1 – Energy Efficiency Programs, Targets and Action Plans
- Session 2 – The Role of Standards, Labeling and Codes
- Session 3 – The Role of Institutions: Projects, Capacity Building and Public Awareness
- Session 4 - Innovative Financing Mechanisms
- Session 5 - The Role of Regulators and Utilities in Energy Efficiency and Access
- Session 6 - Energy Efficiency and Climate Change Planning
- Session 7 - Energy Access: International Experiences and Programs
Session 1 – Energy Efficiency Programs, Targets and Action Plans

Governments can promote EE by setting targets to convert broad policies into concrete actions with lines of accountability.

Pilot projects can be used to test institutional arrangements and market responsiveness. Moreover, incorporating EE into key planning functions (e.g., power sector and urban development plans) can foster the development of EE markets and of public capabilities.

To design effective Action Plan targets and objectives for EE by sector, specific market barriers must be identified. The careful selection of the sectors with the most cost-effective EE potential does not guarantee the cost-effectiveness of an overall program. Other considerations need to be taken into account, such as: (i) the adequacy of the program given the market barriers; (ii) incentives to be provided (subsidizing an EE program might not be necessary); (iii) efficiency of the delivery mechanism (process); (iv) identification of key stakeholders to ensure successful implementation of the proposed activities; and (v) development of adequate financing mechanisms.

In addition to well-defined incentives and financing schemes, an Action Plan must articulate a monitoring and evaluation plan in order to determine whether the activities carried out are meeting the objectives in a cost-effective way or to make changes if required. This includes the definition of adequate EE indicators, the required data, and the data acquisition process.

In order to advance the EE agenda in Latin America and the Caribbean, it is vital for countries to share information on successful policies and programs, and to analyze and discuss best practice experiences from around the globe.
Session 2 – The Role of Standards, Labeling and Codes

Standards\(^8\) and labels\(^9\) (S&Ls), and even associated voluntary programs, are some of the most effective policy tools, if designed and implemented properly, to increase the effectiveness of EE measures and to move towards market transformation. S&Ls have high potential to influence development and manufacturing, supply distribution and wholesale or retail purchasing, and a more moderate potential to stimulate new technology that either has better performance or lower costs.

Labels can increase the distribution of energy efficient models by providing the information necessary for consumers to make informed decisions and by incentivizing manufacturers to develop more efficient products. For example, since the use of labels began over 30 years ago, the average use of energy by new refrigerators has dropped by over 75 percent even though new refrigerators have larger capacities and enhanced features\(^10\). EE standards and labels are not only a tool of industrialized countries, but have become an increasingly popular policy tool and are now used in nearly 60 countries worldwide.

International coordination and knowledge transfers regarding the design, implementation, and enforcement of standards and labels will be essential to reduce energy intensity and thereby strengthen economic activity and enhance competitiveness in the Americas.

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\(^8\) There are generally three types of EE standards: 1) prescriptive standards, 2) minimum energy performance standards (MEPS) and 3) class average standards. Prescriptive standards specify that a certain feature or device has been installed in all products, whereas performance standards refer to the energy performance, not the technology, of a product. Class-average standards determine the average efficiency of a product.

\(^9\) There are two types of EE labels: 1) endorsement labels and 2) comparative labels. Endorsement labels are used to signify that a product meets a certain quality criteria, whereas a comparative label rates the efficiency of one product to others.

Session 3 – The Role of Institutions: Projects, Capacity Building and Public Awareness

Institutions play a decisive role in enforcing and defining the framework for EE and are critical for the design, implementation, and enforcement of EE policies and regulations needed to promote the adoption of new technologies. Depending on the capacity of these institutions, they can be responsible for providing incentives to encourage efficient energy use, setting the regulations needed to reduce the intensity of energy use and providing information to the market to balance supply and demand needs and generate public awareness. These institutions consist of actors such as Federal, State or Local Governments, EE Centers and Certification Institutes, Utilities, Appliance Manufacturers and Suppliers, International Organizations and NGOs.

It is important to focus capacity building programs on helping institutions to: (i) develop a sound policy and regulatory framework, (ii) train and educate different stakeholders and organizations involved in the sector, (iii) collect data and conduct policy research to improve knowledge, and (iv) strengthen institutional capacity to implement and enforce EE policies and norms.

A variety of countries have undertaken efforts to create EE institutions, laboratories and regional EE centers and to strengthen the capacity of these organizations. It is important for the institutions tasked with enforcing EE norms to have both the capacity and power to do so.

Increasing public knowledge and awareness about the benefits of EE is also a key ingredient to encouraging wide-scale adoption of EE technologies. International experience has shown that a purely technical approach, particularly for labeling programs is not enough. For standards and labeling programs to be effective and accepted in the marketplace, program implementers must communicate with stakeholders such as industry, retailers, and consumers. An awareness campaign is therefore an essential part of a longer-term strategy to save energy.
Session 4 – Innovative Financing Mechanisms

The main barriers to the advancement of EE are the high initial capital cost and the insufficient level of information on EE projects and investments available to banks and other financiers. Innovative financing mechanisms can address these challenges by either providing upfront financial resources and information directly to consumers or working through utilities to influence consumer behavior.

A wide range of public financing mechanisms, including credit lines, revolving funds, special purpose funds (including equity and mezzanine), partial credit guarantees, loss reserves, and special purpose vehicles, have been used, often in conjunction with multilateral financing through the GEF and carbon markets, to improve the attractiveness of EE investments. However, none of these measures have reached the necessary scale to significantly increase EE investments to date. The private sector has a vital role to play in climate finance as the originator of over 85 percent of global investments, but the low expected returns on climate investments relative to the perceived levels of risk has not incentivized new investments. New instruments are therefore needed to offer appropriate incentives, guarantees and risk-reward balances to appeal to this financial community.

There is no silver bullet to address the EE financing gap. Instead, the clever structuring of various products is necessary to enlarge the pool of low-cost financing available and address several of the barriers associated with EE investments, simultaneously. If correctly structured and implemented, these products can help unlock significant amounts of private resources, which together with public financing, will allow developing nations to grow on a low carbon path. For example, regulatory, project and other risks can be mitigated by public guarantees backed by multilaterals.

The Clean Technology Fund (CTF)\(^{11}\) is an example of a financing instrument designed to support low-carbon and climate-resilient development through scaled-up financing channeled through the multilateral and regional development banks.

ESCOs are also designed to address a number of the existing barriers to EE investments while taking on project performance, and sometimes also credit risks. However, international experience has also indicated that long-term government support, and strong legal and financial policies are necessary in order to increase the acceptance of and to enforce the ESCO model; capacity building might also be needed to aid the development of new ESCOs.

\(^{11}\) The Clean Technology Fund (CTF) is one of the Climate Investment Funds (CIFs) created to provide scaled-up resources to invest in projects and programs that contribute to the demonstration, deployment and transfer of low-carbon technologies with a significant potential for long-term greenhouse gas reductions. The CIFs, approved by the World Bank’s Board of Directors on July 1, 2008, are a collaborative effort among the Multilateral Development Banks and countries to bridge the financing and learning gap between now and a post-2012 global climate change agreement.
Session 5 – The Role of Regulators and Utilities in Energy Efficiency and Access

Utilities and regulators will be at the heart of the transition to greater energy efficiency given the key role played by electricity and gas utilities. The IEA estimates that around US$13 trillion of investment is needed alone to upgrade electrical infrastructure worldwide by 2030. These investments present both a challenge and opportunity to modernize electricity systems and to apply state of the art technology with the intent of increasing efficiency and broader access to energy. A range of supply and demand side efficiency solutions are called for, as well as programmatic deployment efforts.

The IEA estimates that between 21 and 29 Exajoules (EJ) per year can be saved worldwide by improving the efficiency of coal, natural gas, and oil-fired power plant. Over half of this potential is in developing countries, which on average, have lower power plant efficiencies. The use of combined-cycle natural gas turbines (CCGT), cogeneration or combined heat and power systems (CHP), which use excess heat from power plants for industrial or district heating needs or excess heat from industry for power generation, present significant EE improvement potential. On the transmission and distribution side, both technical and non technical losses can be reduced through more efficient transmission lines, reducing electricity theft, and increasing electricity metering.

Even though incentive-based EE through Utility Demand Side Management (DSM) was conceived in North America and California has had one of the most successful programs13, many developing countries – ranging from Argentina, Brazil, India, México, Pakistan, Philippines, South Africa, Sri Lanka, Thailand, Uruguay, to Vietnam – have implemented DSM programs in local electric utilities. Regulators traditionally mandate utilities to undertake DSM, with EE costs recovered through utility bills.

The penetration of residential EE end-use appliances, such as refrigerators and light bulbs, has often relied on large-scale incentive-based programmatic interventions by Governments, primarily implemented through utilities. Dozens of countries (e.g., Bangladesh, Bolivia, China, Cuba, Ethiopia, India, México, Philippines, Rwanda, South Africa, Sri Lanka, Thailand, Uganda, Vietnam) have promoted efficient light bulbs, mostly CFLs, through bulk procurement and distribution. Bulk purchases, utility financing, and negotiated bulk discounts have been successful at bringing down incremental costs. Other programs have focused on chillers (Thailand, India, Philippines), motors (China), refrigerators (Brazil, EU, U.S., México) and air conditioners (Thailand). All of the successful programs were based on strong upfront market research and had effective public campaigns.

Momentum is increasing globally for the Smart Grid concept; major players from the utility, IT and Telecom industries are developing investment plans while stimulus funding is increasingly becoming available to pilot projects. Smart grids could enable a systematic integration of a range of efficiency solutions, but may also prompt a rethinking of the role of utilities in energy delivery. Regulations will be essential to encourage utilities to implement rural electrification and EE programs, to define the necessary standards and specifications required to ensure the provision of quality EE equipment and to guide the development of the industry.

12 CCGT allows power plants to reach efficiencies of 60 percent.
13 California has been one of the most successful US states at implementing DSM programs. Its program led to annual savings of US$772 million and 1,300 GWh between 1990 and 1992 which represented approximately 11 percent of total production.
Session 6 – Energy Efficiency and Climate Change Planning

The 15th Conference of the Parties to the United Nations Framework Convention for Climate Change (UNFCCC), COP15, that took place in December 2009 resulted in the Copenhagen Accord, an agreement that was negotiated by approximately 30 Heads of States and Governments whose countries are collectively responsible for more than 80 percent of global GHG emissions. The Copenhagen Accord has pledged to channel US$100 billion per annum by 2020 to decrease global emissions. The reality of a post-recession developed world, however, is more debt and less overall spending, so it is unlikely that government resources alone will suffice to tackle the climate financing challenge, particularly in developing countries.

The private sector has a vital role to play in climate finance as the originator of over 85 percent of global investments, but given the unprecedented level of scale-up required, the private sector will need to access funds that go well beyond the tradition public and private resources. There will be a need to reach out to the institutional investors whose engagement is currently limited and furthermore, who are not enticed by the expected returns on climate investments, relative to the perceived levels of risk. One means for countries to decrease the perceived risk to the private sector and to tap into Copenhagen Accord public funding is through the Nationally Appropriate Mitigation Actions (NAMAs).

NAMAs are voluntary emission reduction measures undertaken by developing countries that are reported by national governments to the UNFCCC. They are expected to be the main vehicle for mitigation action in developing countries under a future climate agreement, and can be policies, programs or projects implemented at national, regional, or local levels. NAMAs are a relatively new concept, and consequently opportunities for developing countries to develop NAMAs to support low carbon development and mobility have not yet been realized.

Globally, it is estimated14 that under a baseline scenario, the implementation of key EE policies could result in avoiding as much as 50 percent of the energy-related emissions reduction needed to stabilize CO2 atmospheric concentrations at 450 parts per million by 2050. Furthermore, EE can be one of the least-cost ways to mitigate greenhouse gas emissions, even potentially offering negative costs.

Access to electricity is a key condition necessary to improve the quality of life of individuals and to enable economic development of nations as well as to achieve the Millennium Development Goals. It can have a positive impact across many areas, including education, health, gender equality, employment, and household welfare. Increasing access to electricity has also been shown to contribute to enhanced productivity and output as well as long run economic growth, especially when combined with other infrastructure investments.

According to the UN Secretary-General’s Advisory Group on Energy and Climate Change, more than 1.5 billion people have no access to electricity and a billion more lack reliable power supply. The UN has called all its members to ensure universal access to modern energy services by 2030.

The high costs associated with providing electricity are a major barrier to increasing access. It is estimated that the cost of providing universal electricity access in urban areas and extending access to 95 percent of the rural population in LAC will cost US$10 billion over the next seven years, which represents almost 0.25 percent of the 2009 GDP of the region.  

The individual cost can average around US$1,200 per connection, but could also be much higher in remote areas. Affordability is an issue because both the urban poor and the rural population are often unable to afford the initial connection costs. Furthermore, the cost of service provision generally increases as coverage increases because the next unserved household is typically further away from the existing grid. In rural areas, the ability to pay monthly electricity bills is also low, given the fact that income is generally seasonal, mainly coming from agriculture sources. Consequently, the consumption of electricity in rural areas is low and primarily used for lighting. High costs combined with low or dispersed demand makes distribution companies unwilling to serve remote areas.

In terms of sustainable access planning, there is a rising need to plan, not only for “last-mile” access, but also for repairing and maintaining affected power lines. Given the negative effects of climate change, many countries are increasingly susceptible to larger and more frequent weather-related disasters which hamper electricity access efforts. Funding for both infrastructure recovery and adaptation efforts are often limited in comparison to the many competing needs during disaster recovery situations. The Caribbean Catastrophe Risk Insurance Fund (CCRIF), the first and only multi-nation catastrophe risk fund, is an example of a tool that could be used to meet future climate adaptation needs, but more such vehicles need to be created with infrastructure specific allocations.

There are a number of policies/business models that can be pursued to provide electricity services in an effective and sustainable manner. These include, but are not limited to, national electrification planning, the use of grid extension as well as mini-grids or off-grid renewable energy-based technologies in dispersed or isolated areas, rationalization of subsidies for grid-connected and off-grid consumers, and incentive mechanisms for service provision. Moving forward, the challenge for policymakers is to identify and implement policies, innovative vehicles, and financing tools to increase the rate of electricity access.

15 According to ECLAC, the GDP of LAC Region in 2009 was approximately US$4 trillion.
16 CCRIF is the first multi-country risk pool in the world, and is also the first insurance instrument to successfully develop a parametric policy backed by both traditional and capital markets. It is a regional insurance fund for Caribbean governments designed to limit the financial impact of catastrophic hurricanes and earthquakes to Caribbean governments by quickly providing financial liquidity when a policy is triggered. Sixteen countries are currently members of the fund (all but three are members of the Small States Forum and all but six are members of the Small States Network for Economic Development): Anguilla, Antigua & Barbuda, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Grenada, Haiti, Jamaica, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines, Trinidad & Tobago and the Turks & Caicos Islands.
Generalized access to this essential service can also be accomplished through cooperation between the public and private sectors.
VI. EXECUTIVE NOTES ON ENERGY EFFICIENCY AND ACCESS POLICIES BY COUNTRY

DISCLAIMER: This section was prepared by the Latin American Energy organization (OLADE) and the Organization of American States (OAS) with the support of the World Bank and the Inter-American Development Bank and is based on reports completed by the Economic Commission for Latin America and the Caribbean (ECLAC). Its contents are the sole responsibility of the authors.

LESSONS LEARNED IN LATIN AMERICA AND THE CARIBBEAN

Energy Efficiency Programs and Actions

The analysis conducted in Latin America and the Caribbean shows significant progress. In recent years nearly all of the region’s countries have undertaken energy efficiency programs: national programs, projects and initiatives that are evidently very different, in response to factors such as the size and design of each country’s economic structure, population distribution, access to technology and information, regional and global integration, access to (or lack of) financing, development of regulatory instruments, climate, cultural and social aspects.

For many of the same reasons listed above, regulatory and institutional contexts are also very different for various countries within the region, and due to the need for adaptation to each situation they cannot be standardized; this does not mean that one should ignore successful cases and not evaluate possible adaptations to each context. Nor do these variations mean that uniform bases cannot be established to facilitate the development of energy efficiency, a space where multilateral institutions could significantly contribute.

In most of the countries, the efforts to develop energy efficiency are individual/specific, with little continuity and that in extreme cases have led to expensive consequences. For example, in an extreme case, due to the lack of monitoring programs, there was a need to re-issue mass compact fluorescent lamp exchange campaigns because at the end of the lamps’ life most customers reverted to using cheaper incandescent bulbs. In other words, State energy efficiency policies have generally not been constituted as they should be. The mere existence of laws, decrees or regulations that make energy efficiency efforts mandatory does not ensure the success of a nationwide program.

The lack of continuity in energy efficiency policy creates the risk of fragmenting the use of high-capacity technical equipment. Training national experts in energy efficiency programs takes many years of ongoing work. One of the reasons is that there is still an excessive dependence on international cooperation to promote energy efficiency programs, even though energy price signals have begun to reflect the shortage of and increasingly greater needs for investment to increase energy supply; more consistent national incentives should be promoted with regard to the rational use of and efficient decrease in consumption.

In most of the countries analyzed, there are no (or very few) national sources of specific financing for energy efficiency programs, and thus the sustainability of national programs has not been achieved.

The quality and reliability of available information in most of the countries are far from satisfactory and thus are not a sufficient basis for monitoring the results of energy efficiency programs. The absence of key indicators of the success (or failure) of a national energy efficiency program is a significant deficiency in this regard. Based on these observations, more in-depth studies are beginning to be conducted, aimed at the design of results indicators for energy efficiency programs.

Lessons Learned

Experience in the development of energy efficiency programs and efforts makes it possible to establish the following set of “lessons learned,” which do not refer to any country in particular, but their concepts are basically applicable, in general terms, to numerous countries in the region.

- Energy efficiency is still not supported by a State policy in many countries of the region, although the potential energy savings remain high. In general, 20–25% of energy consumption can be avoided through the use of rapid repayment measures.

- For the achievement of concrete results in matters of the rational, efficient use of energy, there must be institutions that design, implement and operate national programs in a stable and ongoing manner.

- Institutional architecture is key to the success (or failure) of an energy efficiency program, since the hierarchy in terms of who leads the energy efficiency program(s) and his or her degree of influence on the rest of the government administration has a major influence on results. Ideally, those institutions that are already in operation should be strengthened, rather than creating new ones, and their management skills should be improved (capacity building).

- The institutional structure should actively promote the incorporation of decentralized institutional capacities for the development of energy efficiency programs (regions, states or provinces, municipalities).

- Institutional development must be able to quantify opportunity, without spending more on efforts to quantify them than to actually use them, and results monitoring should be undertaken from the start of program implementation.

- At the same time, it is necessary to forcefully continue working on energy efficiency from the supply side (generation, transportation and distribution of electrical energy; petroleum refining and natural gas processing; biofuel generation, etc.).

- In the same context, regulatory frameworks to incentivize the promotion of energy efficiency should be designed (if there are none) and strengthened (if they exist). For example, many countries have not taken advantage of the interesting potential that exists for energy co-generation for industries and large-scale facilities of the tertiary sector because regulation is not favorable. To achieve this, it is necessary to promote the involvement of electricity and fuel providers in the design and operation of energy efficiency programs.

- Energy policy signals have generally been insufficient for encouraging energy-saving behavior and actions among users. It is necessary to increase the public information effort by establishing a dissemination policy aimed at smoothing out the information imbalances existing in the market with regard to energy use. The user must know what to do, where to obtain advice, what and where to buy, how to buy (financing), who can help him with projects (ESCOs, consultants), etc.

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18 In this work, ESCO is understood as a private firm or company that provides energy assessment services, whose task for a given project includes: technical-economic assessment of the project, determination of energy-saving measures with an indication of the investment needed and its repayment period, implementation of recommended measures, provision of the necessary engineering and financing, and charges for its services through a performance contract. If it does not comply with this complete cycle, it will not be considered an ESCO but rather a consulting firm.
• The State policy must include the implementation of efficiency regulations and standards, and information must be provided to consumers.

• National energy efficiency programs require the establishment of financial mechanisms designed specifically to respond to and coordinate the enormous number of investment decisions involved in these programs, improving the linkage of private financing with opportunities for energy saving.

• It is necessary to increase the number of national/regional technical staff dealing with energy efficiency, and to actively and simultaneously support market development for energy service companies (empresas de servicios energéticos [ESCOs]) that make the best use of trained staff.

Access to Energy Services

Based on an analysis of programs implemented in recent years to improve access to energy for peri-urban and/or rural areas, a list of “lessons learned” can be prepared. These lessons, if appropriately internalized, will greatly contribute to optimizing the process of improving access to energy.

Social benefits and improved quality of life, rather than the generation of income and economic benefits, have been the drivers of rural electrification processes.

The use of renewable energy for productive uses is still at an early stage and merits greater attention. Although development agencies, donor organizations and governments recognize the importance of this issue, the proper tools that allow quick implementation have not yet been found.

The economic benefit of energy use from renewable sources is more likely in areas where there have been prior efforts aimed at economic development, and the energy dimension can be incorporated in activities such as the provision of water, health and education services, agriculture, etc.

The number of studies that relate the generation of income and economic benefits to rural electrification through renewable energy is very limited.

In addition, it can be observed that:

• Historically, access to electricity services in decentralized rural sectors has been supported by means of subsidies, aid programs and price reductions for small systems in order to reduce the initial investment.

• New strategies have been developed to facilitate access to rural electrification. These include credits for direct purchasing, microcredits, equipment leasing and rental, but these ideas either have not been fully tested or have had limited success in terms of their implementation.

• Credit risk is a problem that is perceived as serious by financial entities and by equipment vendors, making sales through credits very difficult. The scattered rural population generally lacks stable income that is conventionally verifiable. As a result, credits are very expensive or nonexistent. Even with credits or leasing, the poorest sectors still need subsidies in order have access to electricity.

Other highlights with reference to access to energy:

• Effective communication with local community representatives is essential (language, involvement of local authorities, and access to media).
• Making use of the community's organizational culture (community enterprise, community leaders) assists the project.

• To select a project beneficiary community with strong self-management components, a prior socioeconomic diagnostic should be conducted to detect strengths, weaknesses, opportunities and threats that may affect the project.

• The role of women is highly relevant in projects, especially for the execution of productive activities. In general, they initiate the projects.

• The adjustment of regulatory frameworks to the rural and/or peri-urban context is crucial.

• The training of users is essential to ensure the operation and sustainability of projects.

• Lighting is not a productive project and people did not request a subsidy for it; they did request it for productive projects.

• The community should “take ownership” of the project and equipment.

• When a project is highly subjected to deadlines, it is very risky to depend on the pace of work by beneficiaries who are very vulnerable because they sometimes live in survival conditions.

• In peri-urban areas, a significant number of low-income households lack access to electricity services. As in the case of families in rural communities, projects that support the interconnection process through subsidies should be executed.

• Densification projects in peri-urban areas require different, more detailed treatment than those in rural areas.

• The countries’ large electricity companies are an important means of reaching low-income households; however, a considerable number of small cooperatives are operating and constitute an efficient alternative for reaching distant, needy populations.

• The companies and/or cooperatives are able to identify beneficiaries who need subsidies; however, public institutions and civil society organizations can more directly recognize the demand.

• When projects with the co-participation of local governments are developed, it is essential to generate interest among the leading executive authorities with regard to project execution, since this is a determining factor for project conclusion.

• Once electricity is introduced in a household, it is very unlikely that its members will go back to using burners and/or candles, for example; this is an important aspect for project sustainability.
1. Existing Regulations

Currently, there is no national energy policy that regulates or serves as a framework for energy issues in general. For the time being, the country only has an electricity law that also deals with drinking water and telephone services.

Presently, the Government is actively working to establish a national energy policy, supported by the Sustainable Development Department of the Organization of American States through the Caribbean Sustainable Energy Program (CSEP).

Energy is currently the responsibility of the Office of the Prime Minister.

2. Institution responsible for Energy Efficiency

Currently, there is no institution responsible for Energy Efficiency (EE). For now, with the aid of the Sustainable Development Department of the Organization of American States, through the Caribbean Sustainable Energy Program (CSEP), an Energy Office has been created, which is the responsibility of the Prime Minister. This is the step prior to the establishment of a government unit or institution responsible for this issue.

3. Organization and definition of national programs: programs under execution

CSEP: Caribbean Sustainable Energy Program

The program is implemented by the energy and climate change section of the Sustainable Development Department of the Organization of American States. This program seeks to increase the sustainability of the energy sector in the Caribbean by improving governance and management.

The program’s main objective is to accelerate the transition toward cleaner types of energy and their more sustainable use. Its specific objective is to take into consideration market conditions for the development and use of renewable energy and energy efficiency systems through the mitigation of current barriers to their introduction.


LCCA: Low-Carbon Communities of the Americas

Project supported by the United States Department of Energy and the Organization of American States. This project will make it possible to expand the development and use of renewable energy and energy efficiency systems, helping to increase the sustainability of energy supply and reduce carbon emissions.

The project’s objective is local training through technical programs on how to conduct an energy efficiency audit and evaluate the modernization that is needed. It will also place emphasis on strengthening communities’ capacities; in particular, local renewable resources will be evaluated and studied.

Efficient Light Bulb Program: a program developed and implemented by Cuba

In 2006, the Government of Antigua and Barbuda and the Government of Cuba agreed on an energy efficiency project under which Cuba provided 215,000 efficient light bulbs. These bulbs were used to exchange the same number of incandescent bulbs in Antigua and Barbuda. The project’s objective was to
demonstrate the usefulness of direct measures that fully benefited the island’s population, with consequent energy savings.

CWP: Caribbean Wind Power Project

A program aided by GTZ, aimed at determining the wind power potential of the island. The ultimate objective is to promote the use of wind power by estimating the potential of this resource on the island and determining the most favorable points for generating electricity through the use of wind turbines.

CREDP: Caribbean Renewable Energy Development Programme

This program is financed by UNDP and GEF, technically supported by the OAS and implemented by CARICOM. The program seeks the promotion and adoption of renewable energy technologies by removing and overcoming commercial barriers in order to reduce the costs of these emerging technologies.

The project’s objective is to eliminate obstacles to the use of renewable energy in the Caribbean. Through concrete efforts to overcome policy, financing, and capacity barriers and barriers to raising awareness, it is estimated that the contribution of renewable energy to the region’s energy balance will be significant.

4. Schemes or mechanisms to finance Energy Efficiency efforts

Currently, there are no official mechanisms for the financing of energy efficiency efforts in Antigua and Barbuda. It is expected that, through the implementation of a national energy policy, the country will be able to develop clear, transparent mechanisms to support these types of efforts.

5. Access to energy

In Antigua and Barbuda, nearly 100% of the population has access to electricity. In this regard, access to energy is not a problem on the island. Unfortunately, the use of fossil fuels makes energy in general very expensive because the island is 100% dependent on petroleum, whose price variations and constant price increases make it unsustainable to generate energy in the medium term, due to the high prices that this type of fuel can have.
ARGENTINA

1. Existing regulation

Decree 140/07 by the National Executive Authority (December 21, 2007). Launched the National Program for the Rational and Efficient Use of Energy (Programa Nacional de Uso Racional y Eficiente de la Energía [PRONUREE]).
Ref.: http://energia.mecon.gov.ar

2. Institution responsible for Energy Efficiency

In order of institutional agency: National Government, Ministry of Federal Planning, Public Investment and Services, Secretariat of Energy, Under-Secretariat of Electricity, Bureau of Promotion, Energy Efficiency (EE) Coordination Office. It has been operating with the latter name (EE Coordination Office) since 2002.


3. Organization and definition of national programs: programs under execution


At regional level, the Inter-American Development Bank (IDB) is providing technical assistance to the provinces of Salta and Buenos Aires in the design and implementation of Energy Efficiency, Renewable Energy and Biofuel Programs.

4. Schemes or mechanisms for the financing of Energy Efficiency efforts

Secretariat of Energy: national budget contribution. For the development of the GEF/World Bank Energy Efficiency Program (six years), financial assistance is provided by the Global Environment Facility (US$15,155,000) through the World Bank.

5. Fiscal, economic or tariff incentives

The free distribution of compact fluorescent lamps (CFLs) imported from Cuba and Venezuela through electricity distribution companies could be considered an incentive (promotion of efficient elements).

6. Market for efficient equipment

The following exist in Argentina’s market for efficient elements and equipment: CFLs, refrigerators and freezers, air conditioners, three-phase electrical induction motors.

7. Equipment labeling
Labeling is mandatory to provide information on the efficiency of the following classes of electricity-consuming equipment: refrigerators and freezers, CFLs, incandescent lamps\(^{19}\) and air conditioners. Labels were issued voluntarily for the time being, for household washing machines, three-phase induction motors, ballasts, cooking devices (portable stoves, ovens) and new buildings (heating).

8. Access to energy

Argentina has a high degree of electricity coverage. According to the 2001 national census (the latest conducted to date), service is provided to 96% of occupied homes and the remaining 4% lack electricity. Of the 400,000 urban and rural homes that lacked access to the electricity grid, 80% are homes scattered throughout the rural area; this represents 30% of the rural population.

Argentina, as well as Chile, Costa Rica, Uruguay and Mexico, have the highest levels of access to electricity in the Region.

To the rural population’s lack of electricity access, the Secretariat of Energy is conducting the Project for Renewable Energy in Rural Markets (Proyecto de Energías Renovables en Mercados Rurales [PERMER]), financed by a World Bank loan (US$30 million), a Global Environment Facility grant (US$10 million), Electricity Funds or other provincial funds, contributions by provincial concessionaires and by beneficiaries.

The Project is currently being executed in the provinces of Jujuy, Salta, Tucumán, Santiago del Estero, Chaco, Chubut, Catamarca, Misiones, Río Negro, Neuquén and San Juan.


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\(^{19}\) Although its commercialization will be prohibited from 1/1/2011 onwards.
BAHAMAS

1. Existing regulation

Currently, there is no national energy policy that regulates or serves as a framework for energy issues in general.

Presently, the Government is working actively to establish a national energy policy, supported by the Inter-American Development Bank (IDB) and the Sustainable Development Department of the Organization of American States (OAS) through the Caribbean Sustainable Energy Program (CSEP).

Energy is currently the responsibility of the Ministry of Energy and Environment.

2. Institution responsible for EE

Currently, there is no institution responsible for Energy Efficiency (EE). For the time being, with the aid of the Sustainable Development Department of the Organization of American States, through the Caribbean Sustainable Energy Program, an Energy Office has been created, for which is the responsibility of the Prime Minister. This is a step prior to the establishment of a government unit or institution responsible for this issue.

3. Organization and definition of national programs: programs under execution

CSEP: Caribbean Sustainable Energy Program

The program is implemented by the energy and climate change section of the Sustainable Development Department of the Organization of American States. This program seeks to increase the sustainability of the energy sector in the Caribbean by improving governance and management.

The program’s main objective is to accelerate the transition towards cleaner types of energy and their more sustainable use. Its specific objective is to take into consideration market conditions for the development and use of renewable energy and energy efficiency systems through the mitigation of current barriers to their introduction.


IDB: Implementation of Sustainable Energy Projects in the Bahamas

The project’s aim is to provide technical assistance on EE matters in public buildings and in the residential and commercial sectors, and to implement demonstration projects, particularly the replacement of incandescent bulbs with CFLs and the installation of solar collectors in residential houses. It also aims to explore alternatives for Renewable Energy (RE) and to implement RE pilot projects, particularly a demonstration project using solar panels.

It also seeks to strengthen the energy sector and to support the Government through the revision of its energy legislation, regulations and policies to promote sustainable energy and institutional strengthening in the areas of RE and EE.

IDB-GEF Collaboration: GEF funds will be used to finance solar collector and solar panel pilot projects under the IDB initiative.

LCCA: Low-Carbon Communities of the Americas
Project supported by the United States Department of Energy and the Organization of American States. This project will make it possible to expand the development and use of renewable energy and energy efficiency systems, helping to increase the sustainability of energy supply and reduce carbon emissions.

The project’s objective is local training through technical programs on how to conduct an energy efficiency audit and evaluate the modernization that is needed. It will also place emphasis on strengthening communities’ capacities; in particular, local renewable resources will be evaluated and studied.

**CREDP: Caribbean Renewable Energy Development Programme**

Program financed by UNDP and the GEF, technically supported by the OAS and implemented by CARICOM. The program seeks the promotion and adoption of renewable energy technologies by removing and overcoming commercial barriers in order to reduce the costs of these emerging technologies.

The project’s objective is to eliminate obstacles to the use of renewable energy in the Caribbean. Through concrete efforts to overcome policy, financing, and capacity challenges and barriers to raising awareness, it is estimated that the contribution of renewable energy to the region’s energy balance will be significant.

4. Schemes or mechanisms to finance EE efforts

Currently, there are no official mechanisms for financing EE efforts. It is expected that, through the implementation of a national energy policy, the country will be able to develop clear, transparent mechanisms to support this type of efforts.

5. Access to energy

In the Bahamas, nearly 99% of the population has access to electricity. Unfortunately, the use of fossil fuels makes energy in general very expensive because the island is 100% dependent on petroleum, whose price variations and constant price increases make it unsustainable to generate energy in the medium term, due to the high prices that this type of fuel can have.
1. Institution responsible for Energy Efficiency

Barbados has no laws, decrees or regulations specifically aimed at promoting energy efficiency.

In the area of energy, there is an Energy Efficiency Committee in the Ministry of Investments, Finance and Energy.

2. Organization and definition of national programs: programs under execution

A Sustainable Energy Program was launched in March 2009 with the objective of promoting and supporting energy efficiency efforts to limit the country’s dependence on fossil fuels. The program’s development is assisted by the Inter-American Development Bank (IDB) and includes energy efficiency activities in Caribbean hotels. The program is aimed at institutional strengthening in the areas of energy efficiency, bio-energy, carbon bonds and dissemination of successful projects. It is a joint GEF-IDB operation to support energy efficiency and renewable energy pilot projects, totaling US$1 million. The pilot projects are based on the results of studies conducted in these two areas through the IDB technical cooperation program “Sustainable Energy Framework for Barbados” (BA-T1007).

3. Schemes or mechanisms to finance Energy Efficiency efforts

The budget resources allocated by the Government of Barbados for the promotion of energy efficiency are scarce. IDB is contributing funds for the program cited in paragraph 2 above and for the hotel efficiency project. The Caribbean Tourism Organization is monitoring this project.

The document “Development Strategy 2010–2014” of the Government of Barbados mentions the intention to create a “Smart Energy Fund” to aid the implementation of energy efficiency projects.

4. Fiscal, economic or tariff incentives

The Government grants companies and businesses a tax exemption corresponding to 150% of the investment made in projects dealing with energy efficiency. It allows individuals to request a tax exemption for money spent on energy diagnostics to evaluate ways to improve energy use in their homes or businesses, as well as for money spent on energy improvements (retrofitting) in their homes or businesses.

5. Market for efficient equipment

There is no developed market for highly energy-efficient equipment. The document “Development Strategy 2010–2014” of the Government of Barbados mentions the intention to develop schemes that encourage the implementation of energy-efficient equipment. The labeling of energy-consuming equipment has not been implemented.

6. Access to energy

According to the Inter-American Development Bank, electricity coverage in Barbados is over 90% (as of 2007).

The Bank has approved over US$2 million in technical assistance to promote the Sustainable Energy Framework for Barbados (SEFB), which is a key element in the Government’s strategy to reduce dependence on fossil fuels. IDB, through GEF financing, will also provide US$1 million in grants aimed at pilot projects in
the areas of energy efficiency, promotion of compact fluorescent lamps (CFLs) and energy meters, as well as photovoltaic systems and the generation of wind-based micro-energy.
BELIZE

1. Existing regulations

Currently, there is no national energy policy that regulates or serves as a framework for energy issues in general. At this time, there is only an electricity law. A project aimed at developing a national energy policy, supported by the Sustainable Development Department of the Organization of American States, is currently in the development phase.

The Ministry of Communications, Transportation and Public Services and its Public Utilities Commission (PUC) are responsible for the electricity sector. In addition, the Ministry of Natural Resources, Environment, Commerce and Industry are involved in the topic of Renewable Energy.

2. Institution responsible for EE

Presently, no institution is officially responsible for EE. Electricity is the responsibility of the Public Utilities Commission.

3. Organization and definition of national programs: programs under execution

OAS: A National Energy Policy for Belize

This project aims to provide technical assistance and support from relevant stakeholders in the region. The project seeks to develop a sustainable national energy policy.

CREDP: Caribbean Renewable Energy Development Programme

Program financed by UNDP and GEF, technically supported by the OAS and implemented by CARICOM. The program seeks the promotion and adoption of renewable energy technologies by removing and overcoming commercial barriers in order to reduce the costs of these emerging technologies.

The project’s objective is to eliminate obstacles to the use of renewable energy in the Caribbean. Through concrete efforts to overcome policy, financing, and capacity barriers and barriers to raising awareness, it is estimated that the contribution of renewable energy to the region’s energy balance will be significant.

4. Access to energy

In Belize, approximately 93% of the population has access to electricity. Unfortunately, the use of fossil fuels makes energy in general very expensive, because Belize is highly dependent on petroleum. It has large potential for the use of renewable energy and has four hydro-energy plants which at present have serious maintenance problems.

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20 Due to space limitations, only the two most important ones are cited.
BOLIVIA

1. Existing regulations

In 2008 the National Energy Efficiency Program (Programa Nacional de Eficiencia Energética [PNEE]) was approved by means of Supreme Decree D.S. Nº 29.466, under the framework of the program “Electricity for living with dignity” (“Electricidad para vivir con dignidad”). Its purpose is to establish policy actions and carry out projects aimed at incorporating the rational and efficient use of energy. Previously, the 2007 National Development Plan mentioned the issue of energy efficiency solely in the context of environmental services and the reduction of greenhouse gas emissions, indicating “changes in the energy matrix and efficiency in energy use” as the corresponding measures.

2. Institution responsible for Energy Efficiency

The Vice Ministry of Electricity and Alternative Energy, through the General Bureau of Electricity and Alternative Energy, is responsible for implementing the National Energy Efficiency Program. The Vice Ministry is an agency of the Ministry of Hydrocarbons and Energy, under the Executive Authority of Bolivia (http://hidrocarburos.gob.bo).

3. Organization and definition of national programs: programs under execution

The National Energy Efficiency Program (which began in March 2008) is currently under execution. The program began its activities with the optimization of electricity demand, promoting the displacement of electricity consumption outside of peak hours. This was done in coordination with the Office of the Superintendent of Electricity and with distribution companies.

Another aspect of the Energy Efficiency Program was the replacement of incandescent bulbs with compact fluorescent lamps. Publicity and educational campaigns were conducted throughout the country. As a result of the program, a reduction in demand, totaling around 240 MW (not verified) was expected in 2009.

4. Support to ESCOs

In Bolivia, no energy service companies meet the ESCO definition. There are individual consultants and entities such as CINER (Center for Research on Renewable Energy [Centro de Investigación en Energías Renovables]) and the Center for the Promotion of Sustainable Technologies, an agency of the National Chamber of Industries, that have conducted works and/or studies related to energy efficiency and clean production.

5. Schemes or mechanisms to finance Energy Efficiency efforts

Energy efficiency activities receive support from the national budget. The change from incandescent bulbs to CFLs included financing from the Peoples’ Trade Agreement – Bolivarian Alternative for the Americas (Alternativa Bolivariana de las Américas [ALBA]). Bolivian banking institutions have no credit lines specifically aimed at energy efficiency projects.

6. Fiscal, economic or tariff incentives

Those incentives stemming from the Agreement cited in paragraph 5 are in effect.

7. Market for efficient equipment
To date, the market for efficient lamps has been (partially) developed. The only regulations existing in Bolivia (issued by IBNORCA, the Bolivian Institute of Standardization and Quality (Instituto Boliviano de Normalización y Calidad – www.ibnorca.org) refer to efficient lamps. No regulations are in effect for other types of energy-consuming equipment.

8. Equipment labeling

This applies solely to CFLs imported from China (the label is printed in the place of origin).

9. Access to energy

Bolivia has 9.2 million inhabitants, with scattered populations in rural areas that are home to 4.2 million people (45% of the total population), characterized by high levels of poverty, limited access to and provision of basic services, geographic, cultural, economic and organizational diversity, and a high rate of internal migration.

Access to electricity (in %)

- 2001 Urban: 89 – Rural: 24 Total: 64

Programs or strategies implemented, under implementation or planned to facilitate access to sources in end-uses (social objective):


The program assists in extending electricity networks and the use of renewable sources, placing emphasis on the end-use of electricity. It receives cofinancing from KfW, EUROSOLAR, GTZ, UNDP GEF, International Development Association (IDA), GPOBA (Global Partnership on Output-Based Aid) and the United Kingdom’s Agency for Development Cooperation, and has the following targets:

- By 2010: To increase electricity service coverage from 39% to 53% in rural areas and up to 97% in urban areas
- By 2015: To make service universal in all urban areas and increase coverage to 70% in rural areas
- By 2020: Rural area 87%
- By 2025: To achieve universal service throughout the entire country
BRAZIL

1. Existing regulations

Federal Law No. 9.991 (2000) and its Regulatory Decree which states that 1% of the gross revenue of electricity distribution companies must be used for energy efficiency projects and research and development or R&D (this percentage has varied over time). A positive effect of this law is the emergence of ESCOs\textsuperscript{21} in Brazil.

Federal Law No. 10.295 (called the Energy Efficiency Law), approved in October 2001, and its Regulatory Decree, which dealt with the National Policy for Conservation and Rational Use of Energy. This Law stemmed from Brazil’s energy supply crisis in that year.

It established “the maximum levels of specific energy consumption, or the minimum levels of energy efficiency of machines and energy devices produced and sold in Brazil”; compliance is under the responsibility of the Management Committee for Energy Efficiency Indexes (Comitê Gestor dos Índices de Eficiência Energética, CGIEE).

2. Institutions responsible for Energy Efficiency

The Ministry of Mines and Energy (Ministério de Minas e Energia [MME] (www.mme.gov.br), through its Secretariat of Energy and Development Planning, is responsible for defining and implementing the national energy efficiency policy in Brazil.

Other institutions involved: Agência Nacional de Energia Elétrica (ANEEL – www.aneel.gov.br); Agência Nacional do Petróleo, Gás Natural e Biocombustíveis (ANP – www.anp.gov.br); Eletrobras through its PROCEL Program (www.eletrobras.gov.br/procel); Petrobras through its CONPET Program (www.conpet.gov.br).

3. Organization and definition of national programs: programs under execution

PROCEL: National Electrical Energy Conservation Program (Programa Nacional de Conservação da Energia Elétrica). It has energy efficiency subprograms for the sectors of industry, commerce, housing, public buildings, lighting, energy management in municipalities and household electricity savings. (More information at Web page indicated in paragraph 2.)

CONPET: National Program for the Rationalization of Petroleum and Natural Gas By-products (Programa Nacional da Racionalização do Uso dos Derivados do Petróleo e do Gás Natural), for the transportation, industrial (including Petrobras itself) and residential sectors.

PEE – Energy Efficiency Programs of Distribution Concessionaires (Programas de Eficiência Energética das Concessionárias Distribuidoras): through this program, electricity distribution concessionaires annually allocate 0.25% of their net operating revenue to energy efficiency programs. These resources are mainly allocated to the following areas:

- Replacement of instant electric water heaters (“chuveiros”) with solar energy water heaters
- Replacement of refrigerators and lighting systems
- Adjustment of residential installations, performance contracts, etc.

\textsuperscript{21} See note for definition of ESCOs in the introduction.
4. Support to ESCOs

The National Development Bank of Brazil (Banco Nacional de Desenvolvimento do Brasil (BNDES) has launched a program of "Support to Energy Efficiency Projects ["Apóio a Projetos de Eficiência Energética–PROESCO"], whose key recipients are: a) energy service companies (empresas de serviços energéticos [ESCOs]); b) energy generation, transportation and distribution companies; and c) end-users of energy. The scope, explanations and contacts are available at: http://inter.bndes.gov.br/espanol/proesco_es.asp.

The number of ESCO companies in Brazil, as well as their principal activities, can be viewed at: www.abesco.com.br.

5. Schemes or mechanisms to finance EE efforts

PROCEL’s financing basically comes from Eletrobras’s budget and the Global Reversion Reserve (Reserva Global de Reversão [RGR]), which are federal funds of electricity distribution companies, proportionate to the investment of each company. In 2007, the total investment in PROCEL activities was R$ 52.8 million (74% from Eletrobras).

Considering the 1986–2007 period, the total investment in PROCEL was R$1.02 billion, constituted by the Global Reversion Reserve (R$628 million), Eletrobras (R$359 million) and the Energy Efficiency Program (R$37.5 million, a joint initiative by Eletrobras and GEF). This investment was highly relevant, making it possible to postpone investments in new electric power plants, estimated at R$19.9 billion in the same period.

Another important source of resources for energy efficiency in Brazil, the ANEEL Energy Efficiency Program, applied a total of R$1.4 billion from 2000 to 2007, ensuring that each year about R$300 million, under ANEEL’s supervision, should be used to increase energy efficiency and reduce electricity losses in projects carried out mainly by ESCOs. The investment in CONPET has generally not been revealed in detail, but according to information from MME, it was approximately R$4.0 million in 2008; these resources mostly come from the Petrobras budget.

In addition, there is the Program for Support to Energy Efficiency Projects (Programa de Apóio a Projetos de Eficiência Energética [PROESCO]), a financial mechanism created by the National Bank for Economic and Social Development (Banco Nacional de Desarrollo Económico y Social [BNDES]) to promote and support energy efficiency projects, with preference for those proposed by or associated with the execution of ESCOs. In 2009, the Inter-American Development Bank approved a guarantee instrument to support energy efficiency projects that are carried out by ESCOs in buildings. The amount of this program is US$25 million, of which US$15 million are from IDB and US$10 million from GEF.

At state level, in 2009 and 2010 IDB approved technical cooperation resources for the States of São Paulo, Minas Gerais and Pará for US$1 million each, to support energy efficiency projects for, respectively, the Secretaria de Estado de Saneamento e Energia (SSE) of the State of São Paulo, Cemig Distribuição S.A., Centrais Elétricas do Pará S.A. – CELPA of the Grupo Rede Energia.

For projects carried out by end-users (large-scale industrial, commercial and residential), there are two ways to obtain financing:

- Directly, through official credit institutions of the Federal Government, as well as from international financiers such as the Banco Nacional de Desenvolvimento Econômico e Social (BNDES), the Financiadora de Estudos e Projetos (FINEP), the Caixa Econômica Federal do Brasil (CEF), the World Bank, the IDB and the Banco do Brasil;
• Through Energy Service Companies (Empresas de Servicios Energéticos [ESCOs]) that carry out the necessary investments, being reimbursed based on the savings achieved in the projects.

In turn, the World Bank has financed a study on economic development with low carbon emissions. This study will contribute to the evaluation of long-term development options and strategies with low carbon intensity.

In addition, the World Bank, through Eletrobras, will finance a project to improve the quality of distribution services in six state distribution companies, for US$495 million.

6. Fiscal, economic or tariff incentives

Law 9.991/2000 established the financial mechanisms for energy efficiency projects and for R&D (in EE) by electricity distribution companies. There are no specific contributions from Brazil’s federal budget for energy efficiency projects, other than those allocated by the PROCEL, CONPET and PBE programs, plus the activities of the Electrical Energy and Petroleum Agencies (ANEEL and ANP).

7. Market for efficient equipment

Brazil has implemented policies aimed at energy efficiency for a long time, with particular intensity since the 2001 electricity supply crisis. An important component of these policies has been the energy efficiency labeling programs. The size of the Brazilian market has made it possible to develop local laboratories that support these labeling programs. The Brazilian laboratories are modern, have highly skilled human resources, and are included in worldwide accreditation systems. In addition, Brazil is aligned with international standardization and is an important promoter of standardization at regional level.

The principal efficient equipment in the Brazilian market is cited in paragraph 8.

8. Equipment labeling

PBE (Brazilian Labeling Program -- Programa Brasileiro de Etiquetado): The PBE’s objective is to encourage the production and use of safer, more efficient equipment. The PBE’s efforts, under the scope of the Federal Government’s energy efficiency programs, are coordinated by Inmetro – National Institute of Metrology, Standardization and Industrial Quality (Instituto Nacional de Metrologia, Normalização e Qualidade Industrial [www.inmetro.gov.br]), with the collaboration of the Brazilian Association of Technical Standards (Associação Brasileira de Normas Técnicas [ABNT] – www.abnt.org.br), as well as that of commercial associations or professional associations of the various sectors, in terms of the type of equipment labeled.

The products already labeled under the scope of the Brazilian Labeling Program are:

• Refrigerators, combined cold storage units, vertical and horizontal freezers;
• Electric hot water heaters and hydro massage heaters;
• Household and split air-conditioning devices;
• Three-phase electric motors;
• Washing machines;
• Compact fluorescent, incandescent and decorative lamps;
• Electromagnetic reactors for sodium vapor lamps and compact fluorescent lamps;
• Flat solar collectors for bathrooms and swimming pools, thermal boilers and coupled collectors;
• Household gas stoves and ovens;
• Immersion heaters and hot water heaters;
9. Access to energy

There are currently around 1,000 energy plants supplying electricity to cities and isolated villages in Amazonia, using diesel oil as a fuel. Nearly 700 units form an installed capacity of slightly less than 500 kW.

In particular, there was a lack of incentives and obligations to implement rural electrification programs, especially in Amazonia, as well as to improve the supply to low-income consumers and to maintain existing off-grid projects.

Rural electrification in Brazil

Rural electrification through connections to the grid is generally not economically viable (or affordable); the provision of energy in these cases must be decentralized, and this is an excellent opportunity to introduce energy from renewable sources. The provision of electricity plays an important role in increasing the standard of living through high-quality lighting, drinking water, medical care, and communications. A frequently mentioned figure for a minimum level of consumption is 600 kWh per family per year (or 50 kWh per household per month).

The current rural electrification programs in Brazil are:

**Luz no Campo (Light in the Countryside)**

The major rural electrification program under way since 1999: 2,235,025 kVA installed, 560,000 families assisted, 2.8 million people

**PRODEEM (Program for Energy Development in States and Municipalities [Programa para o Desenvolvimento Energético de Estados e Municípios]) – Started in 1994**

Principal off-grid electrification program sponsored by the government

- 1996–1999: 3 MW installed in photovoltaic energy for 3,050 villages, 604,000 people benefited
- 2000: 1,050 household solar systems, 104,000 people benefited
- 2001: 1,086 SHS (solar heating systems), 3,000 community systems

PRODEEM’s objective was to generate energy for isolated localities that were not served by the conventional grid, using local renewable energy. Since 2003, it was incorporated in the “Luz para Todos” Program. PRODEEM had positive results in the installation of photovoltaic systems in isolated communities, but despite these achievements the impact of the abovementioned experiences has been relatively limited.

**Luz para Todos (Light for All) – Under way since October 2003**

- Access to energy for 12 million inhabitants by 2008
- Required investment of R$7 billion: R$5.3 billion from the Federal Government and R$1.7 billion from state governments and public utilities.

**Access to liquefied petroleum gas (LPG)**

- Distribution network throughout the country
- Accessible by 98% of Brazilian households and 93% of rural households [2002 Census].
Replaced firewood
From 1950 to 2001, the Federal Government of Brazil regulated the end-prices of LPG to consumers
Subsidized leveled prices administered throughout the country.

As of 2000, around US$100 million was spent each year to subsidize LPG in Brazil. In 2002, subsidies were eliminated and the international prices of the product were passed on to the consumer.

Law 10.453/02 created a program called Auxílio-Gás (literally, “assistance for the use of liquefied gas”), which transferred subsidies to low-income families for residential LPG. The subsidies are currently included in the "Bolsa Família", but the previous policy appeared to be better suited for encouraging the use of LPG, since it reached all consumers.

Amazonia – access to energy – Current status

High consumption of diesel oil in isolated communities: 810,000 m$^3$ per year. Brazil imported 2.7 million m$^3$ of diesel (for about US$827 million). High fuel costs, not affordable for the local population.
CHILE

1. Institution responsible for Energy Efficiency

Chile has no laws or decrees that deal specifically with the promotion of energy efficiency.

The entity responsible for the development of energy efficiency in Chile is the Chilean Agency for Energy Efficiency (Agencia Chilena de Eficiencia Energética), officially created in April 2010. It is the institutional continuation of the Energy Efficiency Country Program (Programa País de Eficiencia Energética [PPEE]), www.ppee.cl, launched in March 2005, which began operating under the scope of the Ministry of Economy, Development and Reconstruction (Ministerio de Economía, Fomento y Reconstrucción).

2. Schemes or mechanisms to finance Energy Efficiency efforts

The principal efforts conducted to date were supported financially by the government budget, which has increased more than thirty-fold since its start in 2005. Another source of financing for energy efficiency projects is the Chilean Development Agency (Agencia Chilena de Desarrollo), CORFO – Corporation for Production Development ( Corporación de Fomento de la Producción, www.corfo.cl), whose credit lines include the “CORFO Credit for Energy Efficiency. The IDB has also provided support for designing carbon finance schemes related to energy efficiency.

3. Fiscal, economic or tariff incentives

Several efforts may be interpreted as incentives for the promotion of energy efficiency. These are: a) incentives for truck replacement; b) light bulb exchange (“Lighting with good energy” Program [Programa “Iluminate con buena energía”]); c) subsidy for thermal reconditioning in new and used homes; d) incentive for the introduction of efficient motors (from 1 to 10 HP) in its “Use efficient motors” (“Usa motores eficientes”) program for industry; e) efficient lighting program in municipalities; and f) tax exemption for the installation of solar collectors.

4. Market for efficient equipment

The market for efficient equipment in Chile refers to compact fluorescent lamps (called “ampolletas” in Chile) and to household refrigerators and freezers. There is a regulation for the efficiency of the latter two.

5. Equipment labeling

A study is currently under way to measure the impact of labeling, but initial results already show how the supply of lamps and refrigerators/freezers has changed, increasing the use of more efficient products.

6. Access to energy

Rural Electrification Program

This is a decentralized program that began in 1994, executed by the Under-Secretariat of Regional Development (Subsecretaría de Desarrollo Regional [SUBDERE]) and the National Energy Commission (Comisión Nacional de Energía [CNE]), with the following sources of financing:

- Rural electrification budget under the National Fund for Regional Development (Fondo Nacional de Desarrollo Regional [FNDR-ER])
- 2001–2008 IDB Credit
2009 subsidy for the consumption and operation of isolated systems
Financing Structure: 70 to 90% subsidy on investment, 10% contribution by users, 20 to 10% electricity companies or cooperatives.

Targets of the PER:

- 1994–2000: 75% National Coverage
  90,000 home Subsidies US$115 million (national budget)
- 2000–2006: 90% National and regional
  46,000 home Subsidies US$135 million (BID)
  22,000 houses Coverage 95%
- 2010–2014: Maintain 96% and improve the quality of provision in isolated systems


Rural and Social Energy Program (Programa de Energización Rural y Social [PERS])

To increase access to energy, favoring the use of ERNC (non-conventional rural electrification [electrificación rural no convencional]).

- Component 1: houses and public establishments with ERNC solutions
- Component 2: users and decision makers trained in and informed about ERNC
- Component 3: development of credit lines and instruments to support energy projects

Coverage of electrification at regional level in Chile
COLOMBIA

1. Existing regulations

Law 697 of October 2001: promotes the rational, efficient use of energy and the generation of energy through renewable resources; in its Article 4 it decreed that the Ministry of Mines and Energy is the entity in charge of promoting, organizing and ensuring the development and monitoring of programs for the rational use of energy; its Article 5 decreed the creation of the Program for the Rational and Efficient Use of Energy (Programa de Uso Racional y Eficiente de la Energía [PROURE]). Decree 3683 of 2003 regulated Law 697 and created the Intersectoral Commission for the Rational and Efficient Use of Energy and Non-conventional Sources of Energy (Comisión Intersectorial para el Uso Racional y Eficiente de la Energía y Fuentes No Convencionales de Energía [CIURE]). In 2006, the subprograms that form part of PROURE were defined. In 2007, Decree 2501 of the Office of the President of the Republic was enacted; it stated provisions for promoting practices for the efficient use of energy. With regard to regulations to promote the co-generation of energy, there is a Legal and Regulatory Framework (Law 1215 of 2008).

2. Institution responsible for Energy Efficiency

The Mining and Energy Planning Unit (Unidad de Planeación Minero-Energética [UPME]) (www.upme.gov.co), under the Ministry of Mines and Energy (Ministerio de Minas y Energía) is one of the key stakeholders at the government level. Since 2004, through a presidential decree, it has been assigned the duty of preparing, on a priority basis, programs and projects related to energy saving in all fields of economic activity and to carry out all necessary dissemination efforts.

3. Organization and definition of national programs: programs under execution

The Program for the Rational and Efficient Use of Energy (Programa de Uso Racional y Eficiente de la Energía [PROURE]) is under execution. This program was prepared with technical assistance from the Inter-American Development Bank (IDB) in 2008. The subprograms that form it (since 2006) are:

1) Culture, research and promotion of URE and prospective analysis of new technologies for energy transformation related to it;
2) Promotion and development of projects with non-conventional energy sources and energy efficiency, including clean or renewable energy projects, with priority given to non-interconnected zones;
3) Architectural buildings and associated equipment for URE;
4) Control of energy losses;
5) Climate change and initiatives for a methane market and carbon sequestration and capture;
6) Encouragement and incentives for URE technologies, products and projects for the full or partial use of non-conventional energy;
7) Cleaner production and energy saving and efficiency projects or activities that require equipment, elements and machinery aimed at reducing energy consumption and/or energy efficiency;
8) Promotion of URE in the official, commercial, transportation, residential (including housing of social interest), and industrial (Medium and Small Businesses [Medianas y Pequeñas Empresas—Mypimes] and Energy Service Companies [Empresas de Servicios Energéticos—ESCOs]) sectors;
9) Replacement of traditional fuels with other, potentially cleaner fuels, and specifically the promotion and use of biofuels;
10) Updating and/or technological conversion of industrial equipment in terms of URE.
4. Support to ESCOs

Point 8) of the PROURE Program mentions support for the creation of ESCOs but there is no record of positive outcomes in this regard.

5. Schemes or mechanisms to finance Energy Efficiency efforts

PROURE is carried out with budget resources from the Ministry of Mines and Energy, through the Mining and Energy Planning Unit. An additional source of financing for energy efficiency activities is FINDETER (Financiera de Desarrollo Territorial SA) (www.findeter.gov.co), an entity that, among other things, supports the energy sector and financed activities related to all types of energy from traditional, alternative or non-conventional renewable and non-renewable sources. It finances:

- Loss management and reduction programs, and
- Pre-investment and investment in all stages of the project cycle until commercialization (including co-generation and self-generation).

The energy sector is ranked fourth in terms of magnitude within FINDETER disbursements, and represents 8% of the total of all of them.

6. Fiscal, economic or tariff incentives

UPME, together with the Institute for Industrial Development (Instituto de Fomento Industrial [IFI]) and the Bank for Business Development and Foreign Trade of Colombia (Banco de Desarrollo Empresarial y de Comercio Exterior de Colombia [BANCOLDEX] – www.bancoldex.com), has designed a indirect incentive scheme to support the incorporation of efficient technologies and the optimization of the use of energy in productive sectors through credit lines.

7. Market for efficient equipment

Decree 2501 of the Office of the President of the Republic stated with regard to the subject of efficient equipment:

- Article 1. Objective and field of application. The measures indicated in the present Decree to promote the rational and efficient use of electrical energy, in the following products and processes:
  1. In the products used in the transformation of electrical energy, both nationally produced and imported, for commercialization in Colombia: a) Transformers for electrical power and distribution; and b) Generators of electrical energy.
  2. In products aimed at the end-use of electrical energy, both nationally produced and imported, for commercialization in Colombia, in the following processes: a) Lighting; b) Refrigeration; c) Air conditioning; d) Power; f) Water heating for household use; g) Heating for cooking.
  3. Buildings where public agencies operate
  4. Housing of social interest
  5. Public lighting systems
  6. Traffic light systems

8. Equipment labeling

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22 See note on the definition of ESCOs in the introduction.
Article 2 of Decree 2501 “Technical regulation for the purposes of energy efficiency” (“Reglamento técnico con fines de eficiencia energética”) mentions that the Ministries of Mines and Energy, and of Commerce, Industry and Tourism will issue technical regulations for the design and placement of labeling for the purpose of rational and efficient use of electrical energy, applicable to the products cited in paragraph 7.

9. Access to energy

General statistics:

- Population with access to electricity nationwide: total 97.2%, urban 99.4%, rural 89.4%.
- Population with access to natural gas nationwide: total 47.4%, urban 59.8%, rural 3.4%.
(Source: Quality of Life Survey [Encuesta de Calidad de Vida])

In the rural sector, over 55% of households use firewood for cooking, which indicates that a significant gap remains to be covered. This occurs in the poorest regions of the country, despite the high level of electricity coverage.

There is a wide gap between the urban and rural sectors in terms of access to modern equipment.

Policies with regard to access to energy and payment capacity

Distributive mechanism:

- Contributions and subsidies on electricity and natural gas.
- Stratification (E1 poorest to E6 richest)
- Subsidies on E1: up to 60%
- Subsidies on E2: up to 40%
- Subsidies on E3: up to 15%
- Contributions 20% E5, E6, commercial sector and industrial sector
- Subsidy limit: subsistence consumption (130 kWh in cold zones and 160 kWh in hot zones)
COSTA RICA

1. Existing regulations

Law 7447. Regulation on the rational use of energy, 1994. This law granted incentives to high-cost projects or investments for the efficient use of energy. These investments had to be greater than 15% of the company’s annual electricity cost, with a prior determination of national interest and profitability. Once they complied with the above, the companies had the right to the following benefits:

- Cofinancing of 50% of the total amount of the investment of “high-cost investment measures” or discounts in the billing of electricity or petroleum by-products, 20% of the amount equivalent to annual energy savings, resulting from the application of such measures, for a period of two years.

- Awards to companies whose technological adaptation, assimilation and innovation generate economic and social benefits for the country.

This law authorized the following to execute programs for the rational use of energy by themselves or by means of other public or private agencies:

MINAE (Ministry of Environment and Energy [Ministerio de Ambiente y Energía]); National Power and Light Company (Compañía Nacional de Fuerza y Luz [CNFL]); Costa Rican Petroleum Refinery (Refinadora Costarricense de Petróleo S.A. [RECOPE]); Costa Rican Electricity Institute (Instituto Costarricense de Electricidad [ICE]); National Electricity Service (Servicio Nacional de Electricidad [SNE]); Public Utilities of Heredia (Empresa de Servicios Públicos de Heredia [ESPH]); Administrative Committee for Electricity Services of Cartago (Junta Administrativa de Servicios Eléctricos de Cartago [JASEC]).

These incentives were later repealed in 2001 through a new Tax Efficiency Law.

2. Institution responsible for Energy Efficiency

The Sectoral Bureau of Energy (Dirección Sectorial de Energía [DSE]) under MINAE (www.dse.go.cr) is the leading organization in comprehensive energy planning for decision making in the Energy Sector. During 2009, DSE carried out a series of initiatives related to the subject of energy efficiency:

- A consultancy was conducted, entitled “Technical and Economic Assessment of Technological Options for Using Biomass as an Energy Source” (“Evaluación Técnico Económica de Opciones Tecnológicas para el Aprovechamiento de la Biomasa como Fuente Energética”).

- Together with INTECO (Institute for Technical Regulations of Costa Rica [Instituto de Normas Técnicas de Costa Rica, www.inteco.or.cr]), at least three regulations are being formulated for efficient vehicles with cleaner technologies: the study is entitled “Preparation of regulations for energy efficiency and environmental performance of automobiles using internal combustion” (“Elaboración de Normas de Eficiencia Energética y desempeño ambiental de vehículos automotores de combustión interna”).

Other institutions dealing with energy efficiency:

Costa Rican Electricity Institute (Instituto Costarricense de Electricidad [ICE]) (www.grupoice.com)

The Instituto Costarricense de Electricidad forms part of the Grupo ICE, together with the Compañía Nacional de Fuerza y Luz (CNFL) and the area of telecommunications. Among activities related to more
efficient use of energy by Costa Rican consumers, ICE’s Web site presents “Savings Advice” (“Consejos de Ahorro”) for the residential and business sectors.

National Power and Light Company (Compañía Nacional de Fuerza y Luz [CNFL]) (www.cnfl.go.cr)

The Compañía Nacional de Fuerza y Luz S.A. is a Costa Rican state enterprise that distributes electricity in the country’s most densely populated area, the central region or Greater Metropolitan Area.

The Bureau of Innovation and Energy Efficiency (Dirección de Innovación y Eficiencia Energética) operates in the CNFL, offering to citizens interested in learning about and implementing programs on efficient use of energy a series of services that range from educational programs to technical studies in order to identify alternatives that involve energy conservation. The CNFL offers Efficient Use of Energy services, advisory services and promotion of measures for the efficient use of energy.

3. Organization and definition of national programs: programs under execution

ICE’s energy efficiency activities: Efficient Lamp Program: 3x2 promotion of compact fluorescent lamps.

In turn, CNFL has been carrying out various activities specially aimed at its customers, such as:


4. Schemes or mechanisms to finance Energy Efficiency efforts

The economic resources available to the key stakeholders cited in paragraph 2) come from their respective institutional budgets.

BAC International Bank will carry out a program with small and medium businesses (pequeñas y medianas empresas [pymes]) of Central America so that they can use energy more efficiently.

Examples of initiatives that could be carried out include: replacement of lighting equipment and motors, and solar, wind and water projects. This plan will be carried out with the support of an agreement that BAC International Bank signed with the Inter-American Investment Corporation (IIC), the financial arm of the Inter-American Development Bank. BAC International Bank will offer lines of financing for pymes interested in conducting energy efficiency projects.

The Corporation will provide financing for this project as part of its corporate social responsibility objective. In Costa Rica, BAC has loaned $40 million to these companies.

5. Fiscal, economic or tariff incentives

In the Draft of the General Electricity Law, Chapter 10, “Energy efficiency projects. Exemptions”, it is stated that:

“The equipment, machinery or electrical elements that compose electrical energy efficiency systems under the conditions specified in the present Law and that are contained in the catalog of technologies for electrical energy efficiency administered by the Market Administration Authority, are exempted from all taxes.”
This Draft Law proposed the creation of the Fondo Nacional de Electricidad (FONAE), in the public interest and exempt from tariff taxes, taxation, and surcharges for purchases and sales of goods and services, as well as investments and revenue obtained for compliance with its purposes.

6. Market for efficient equipment

The Institute for Technical Regulations of Costa Rica (Instituto de Normas Técnicas de Costa Rica [INTECO]) is developing a methodology for the implementation of the Energy Efficiency Standardization Project (Proyecto de Normalización de Eficiencia Energética) and for labeling. The steps to be taken for this implementation are: (more information at www.comccanor.org/CTN_Eficiencia Energética):

- Analyze political, institutional and cultural factors.
- Establish political legitimacy.
- Consider regional harmonization.
- Investigate information needs.
- Select products and set priorities.

INTECO’s role with regard to energy efficiency is very important and highly dynamic. Progress in the past two years has been very significant in terms of the process of generating energy efficiency standards.

The electricity-consuming equipment, for which work is being conducted to generate energy efficiency standards in Costa Rica, includes: self-contained commercial refrigeration devices; alternating current three-phase induction engines; household refrigerators and freezers; lighting equipment (compact fluorescent lamps); air conditioning equipment; food cooking equipment.

7. Equipment labeling

The equipment with informational labeling on energy consumption in Costa Rica includes:

Commercial refrigeration devices; household refrigerators and freezers; compact and circular fluorescent lamps; alternating current three-phase induction engines, squirrel-cage rotor type, with nominal power ranging from 0.746 to 373 kW.

8. Access to energy

Energy policy: the objective of the universal access policy is “that access to energy for the entire population becomes a reality”.

General Electricity Law: “Develop a transparent system of Universality and Solidarity with regard to contributors and beneficiaries (National Electricity Fund [Fondo Nacional de Electricidad–FONAE]), for the purpose of ensuring universality and solidarity in service, as well as rural electrification and public lighting projects.”

The Fondo Nacional de Electricidad (FONAE): is created as an instrument aimed at financing compliance with the objectives of universal access, universal service and solidarity in the provision of electrical service, established in the Law. This Fund is administered by the Office of the Superintendent of Energy

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23 From Nobeltiy Sánchez’s presentation from the Dirección Sectorial de Energía in the Latin America and Carribean workshop “Poverty and Access to Energy” – CEPAL, Santiago de Chile, October 2009
(Superintendencia de Energía [SUEN]), under the conditions stipulated in the Law and its regulations.

Projects:

a) Electrification of geographic areas or provision of electricity in isolated systems not connected to the SEN.

b) Lighting of city zones, vehicular traffic routes or public areas.

Evolution of national electricity coverage in Costa Rica

- 1970: 47.3%
- 2009 (May): 98.9%

ICE-UNDP Rural Electrification Program (Programa de Electrificación Rural)

1.2% of the population lacks access to the conventional electrical grid. This population lives in rural, isolated and geographically scattered areas. ICE, in accordance with the law that created it, has brought electricity service to this population through the establishment of photovoltaic systems. These systems were placed in 7,273 households and 329 small rural communities, and serve 33,000 people who were without electricity.
CUBA

1. Existing regulations

Issuance of Resolutions on the Efficient and Rational Use of Energy

- 2005 Resolution 190 MINBAS (Ministry of Basic Industry [Ministerio de la Industria Básica]) /MINCEX (Ministry of Foreign Trade [Ministerio de Comercio Exterior]) Prohibition on the importation of incandescent bulbs.
- 2007 Resolution 328 MINBAS Creation of the Bureau for the Supervision of Energy Carriers (Dirección de Supervisión de los Portadores Energéticos).
- 2008 Resolution 316 MICONES (Ministry of Construction [Ministerio de la Construcción]) Mandatory implementation of compliance with Cuban Regulation NC 220 Construction. Design requirements for energy efficiency.
- 2009 Resolution 136 MINBAS Implementation of the Technical Regulation on energy efficiency in equipment for end-use of electrical energy, imported or nationally produced.

2. Institution responsible for Energy Efficiency

The key entity responsible for energy efficiency in Cuba is the Bureau for the Rational Use of Energy (Dirección de Uso Racional de la Energía), under the National Electrical Union (Unión Nacional Eléctrica) which in turn is under the authority of the Ministry of Basic Industry (Ministerio de la Industria Básica). Energy issues are handled through the following institutional scheme:

The Ministry of Economy and Planning (Ministerio de Economía y Planificación) is responsible for defining national energy policies. Provincial and municipal governments and agencies of the State’s Central Administration have the chief responsibility for implementing them.

The Ministry of Basic Industry (Ministerio de la Industria Básica [MINBAS]) sets general energy policy guidelines, and approves the set and level of tariffs proposed by UNE (National Electricity Union (Unión Nacional Eléctrica), and then submits them to the Council of Ministers for ratification.

The National Electricity Union (Unión Nacional Eléctrica [UNE]), under the authority of the Ministry of Basic Industry, is the national agency in charge of the generation, transmission, distribution, commercialization and rational and efficient use of electrical energy throughout the country.

The following operate under UNE: (i) the Bureau for the Rational and Efficient Use of Energy (Dirección de Uso Racional y Eficiente de la Energía), and (ii) nine Administrative Bureaus, under which 15 distribution companies operate throughout the island. Each of them has Grassroots Business Units for the Rational and Efficient Use of Energy (Unidades Empresariales de Base de Uso Racional y Eficiente de la Energía), with a total of 300 specialists who work directly in each municipality, implementing the country’s guidelines on the subject of Energy Efficiency, and 103 energy supervisors who conduct audits.

National Group for Energy Saving and Efficiency (Grupo Nacional para el Ahorro y la Eficiencia Energética)

In 2007, a consultative group was created in Cuba with the objective of comprehensively coordinating and executing all actions related to energy efficiency in the country. It is composed of specialists from the State’s Central Agencies (consumers), Project Companies, Energy Service Companies, Cuba Energía (an enterprise
specializing in the management of energy information), equipment testing laboratories, the Bureau for the Rational Use of Energy (Dirección de Uso Racional de la Energía) under the Electrical Union (Unión Eléctrica), and the Energy Efficiency Network (Red de Eficiencia Energética), formed by all of the country’s technical universities.

3. Organization and definition of national programs: programs under execution

National programs 2006–2009:

- 2,400 MW of generation, distributed using high-efficiency engines, were synchronized. This made it possible to increase generating efficiency due to the low cost of inputs and indexes of fuel consumption. In 2011, the installation of 120 MW using these technologies is planned.
- Replacement efforts conducted in distribution networks: 80,000 improvement efforts will be carried out in 2010, and 23 (110kV) substations will be put into service.
- 9.4 million (100%) incandescent light bulbs were replaced with compact fluorescent lamps, and 4.4 million inefficient appliances were replaced.
- Work is being conducted to replace kerosene cook stoves with electric ones, through the delivery of electric cooking modules.
- Over 2,500 inefficient water pumps were replaced with efficient ones in aqueducts and sewers.
- Over 807,000 (32 W) fluorescent lamps were installed, and electronic ballasts replaced 40 W ones and electromagnetic ballasts.
- Carry Out Energy Supervisions
- Implementation of a work system to control electricity consumption

4. Schemes or mechanisms to finance Energy Efficiency efforts

Resources allocated to carrying out energy efficiency programs and projects come from the National Budget.

5. Market for efficient equipment

Cuba has a technical regulation on energy efficiency with regard to the end-use of electrical equipment; it has been in effect since 2009, in accordance with MINBAS Resolution No-136. It establishes and controls technical requirements for energy efficiency, electrical safety and tropicalization of the principal equipment for End-use of Electrical Energy, manufactured or assembled in the country, in order to allow it to be commercialized.

Equipment included in the regulation: refrigerators, fans, CFLs, microwave ovens, irons, air conditioners, washing machines, rice cookers.

There are four laboratories authorized by the Bureau for the Rational Use of Energy where trials and tests are conducted on equipment, in accordance with regulations approved by the Cuban Electro-technical Committee (Comité Electrotécnico Cubano [CEC]. www.cubaenergia.cu publishes the equipment that has been accepted, rejected or is in the process of obtaining the technical acceptance endorsement.

6. Equipment labeling

Refrigerators require the inclusion of the energy efficiency label, a mandatory requirement so that they can be commercialized in the country.

7. Access to energy
96% of the population receives electricity from the National Electrical Energy System (Sistema Electroenergético Nacional [SEN]). The zones without access to this service are more remote, mountainous areas where the level of rural electrification through all means and sources is 81%.

Cuba’s mountainous zones represent 17% of the country’s territory and are home to 6.5% of the total population. Prior to 1990, isolated communities in mountainous zones received minimum electricity service supplied by diesel-powered generating plants.

The electrification of rural residents’ homes through solar energy constitutes a sustainable, ecologically friendly solution. Due to these communities’ location far from the SEN, it is also the most economical solution.

An electrification project is in place to progressively resolve the needs of some 100,000 families in the country’s remote and isolated rural zones.
DOMINICA

1. Existing regulations

Dominica currently has no national energy policy that regulates or serves as a framework for energy issues in general.

At present, the Government is working actively to establish a national energy policy, supported by the Sustainable Development Department of the Organization of American States through the Caribbean Sustainable Energy Program (CSEP).

The electricity sector is regulated by the Electricity Supply Act (2006), which specifies that the regulatory agency will be the Independent Regulatory Commission (IRC), under the authority of the Ministry of Public Works, Energy and Ports.

2. Institution responsible for Energy Efficiency

At present, there is no institution responsible for Energy Efficiency. For now, under the Ministry of Public Works, Energy and Ports, a renewable energy program is being conducted.

3. Organization and definition of national programs: programs under execution

CSEP: Caribbean Sustainable Energy Program

The program is implemented by the energy and climate change section of the Sustainable Development Department of the Organization of American States. This program seeks to increase the sustainability of the energy sector in the Caribbean by improving governance and management.

The project’s main objective is to accelerate the transition toward cleaner types of energy and their more sustainable use. Its specific objective is to take into consideration market conditions for the development and use of renewable energy and energy efficiency systems through the mitigation of current barriers to their introduction.


LCCA: Low-Carbon Communities of the Americas

Project supported by the United States Department of Energy and the Organization of American States. This project will make it possible to expand the development and use of renewable energy and energy efficiency systems, helping to increase the sustainability of energy supply and reduce carbon emissions.

The project’s objective is local training through technical programs on how to conduct an energy efficiency audit and evaluate the modernization that is needed. It will also place emphasis on strengthening communities’ capacities; in particular, local renewable resources will be evaluated and studied.

The European Union is financing a project entitled “Preparation of a Geothermal based Cross-Border Electrical Connection in the Caribbean” in which Dominica, due to its potential, will be one of the countries that provide energy to the inter-island network.

CREDP: Caribbean Renewable Energy Development Programme
This program is financed by UNDP and GEF, technically supported by the OAS and implemented by CARICOM. The program seeks the promotion and adoption of renewable energy technologies by removing and overcoming commercial barriers in order to reduce the costs of these emerging technologies.

The project’s objective is to eliminate obstacles to the use of renewable energy in the Caribbean. Through concrete efforts to overcome policy, financing, and capacity barriers and barriers to raising awareness, it is estimated that the contribution of renewable energy to the region’s energy balance will be significant.

Geo-Caraïbes – OAS and UNEP

OAS, UNEP and other partners promoted the use and exploration of Dominica’s geothermal resources through the Caribbean Geothermal Development Project (Geo-Caraïbes). This project was launched in 2005 and was financed by the Global Environment Facility (GEF). Its objective was to create a favorable framework for the commercial development of geothermal energy in the Eastern Caribbean. Work was conducted on technical aspects (for example, the quantification of potential), the legal framework (for example, legislative and policy reforms and the strengthening of local institutions), and financial considerations (for example, the launch of a risk capital fund for geothermal energy drilling).

4. Access to energy

Nearly 99% of Dominica’s population has access to electricity.
DOMINICAN REPUBLIC

1. Existing regulations

General Electricity Law, No. 125-01, modified by Law No. 186-07 of August 2007. This Law establishes the new legal and institutional framework that governs the activities of the sectors of Electricity, Hydrocarbons, and Alternative Sources and Rational Use of Energy, that is, the Energy Sector in general.

With regard to energy efficiency, Law 125-01, which creates the National Energy Commission (Comisión Nacional de Energía) and assigns it the responsibility of regulating and creating policies, regulations and programs dealing with energy efficiency, and other legal initiatives that promote energy efficiency, such as customs duty exemptions on compact fluorescent lamps. Article 14, paragraph of said Law states: “Promote the rational use of energy.”

The Dominican Republic has no law that deals specifically with promoting energy efficiency. However, the Action Plan cited in 3) contains the point entitled “Preparation of the Draft Energy Efficiency Law.”

2. Institution responsible for Energy Efficiency

The National Energy Commission (Comisión Nacional de Energía [CNE]) is an institution of the Dominican Government that was created through General Electricity Law (Ley General de Electricidad [LGE]) No. 125-01, indicated in article 7. The Law was enacted on July 26, 2001.

3. Organization and definition of national programs: programs under execution

The Dominican Republic has an Action Plan on the subject of energy efficiency and development. This Plan, in Axis (Eje) 1 – Energy Saving and Efficiency, has the objective of developing actions and measures aimed at producing results in terms of energy saving and efficient use of energy in the residential, transportation, commercial, government and industrial sectors.

Energy Efficiency Program in Public Buildings

- Formation of Institutional Committee for the Rational Use of Energy (Comité Institucional para el Uso Racional de Energía [CIURE]);
- Training on Energy Efficiency for CIURE and General Personnel of the Institution;
- Carry out Energy Audits.

Training for Private Sector Companies (Industries)

- Talks on the importance of adopting measures for the rational use of energy;
- Seminars-Workshops.

Preparation of Draft Energy Efficiency Law

- Implementation of traffic lights with timers and Light Emission Diode (LED) lamps in the principal avenues and cities of the country; synchronization of traffic lights to streamline traffic.

4. Schemes or mechanisms to finance Energy Efficiency efforts
With the financial assistance of the Inter-American Development Bank, technical cooperation is approved in the total amount of US$400,000 (75% from IDB, 25% from the Dominican Government). The Executing Agency is CNE.

This IDB technical cooperation will finance the contracting of (a) consulting firm(s) recognized in the energy sector and in accordance with Terms of Reference approved by the Bank, as well as with the hiring policies that govern the SECCI (Sustainable Energy and Climate Change Initiative) fund.

5. Fiscal, economic or tariff incentives

Under the framework of the draft Energy Efficiency Law cited in 1), CNE is analyzing the following mechanisms:

- Public Finance Programs
- Tax Incentives
- Reduction in Import Tariffs
- Exchange of old equipment for new ones/Discount options
- Establishment of Efficient Loans with Banks

6. Market for efficient equipment

The Action Plan cited in 3) is working on the preparation of regulations, in coordination with DIGENOR (General Bureau of Regulations and Quality System of the Dominican Republic [Dirección General de Normas y Sistema de Calidad de RD, www.digenor.gov.do]) for the development of:

a) A regulation for the labeling of self-ballasted compact fluorescent lamps;

b) A regulation for the method to test self-ballasted compact fluorescent lamps;

c) A regulation for the efficiency of electric motors.

7. Access to energy

Article 138 of Law 125-01 creates the Dominican Corporation of State Electricity Companies (Corporación Dominicana de Empresas Eléctricas Estatales [CDEEE]) and assigns it the duty of carrying out State programs for rural and suburban electrification that aid low-income communities. Paragraph II of Article 138 creates the Rural and Suburban Electrification Unit (Unidad de Electrificación Rural y Suburbana [UERS]) (www.uers.gov.do), which is regulated by a Presidential Decree.

The Corporation is conducting the “Strategic Plan for Territorial Electrification” (Plan Estratégico de Electrificación Territorial”), which promotes the launching and expansion of conventional electricity network systems, micro-hydroelectric plants (micro centrales hidroeléctricas [MCH]), photovoltaic solar panels, and the Light Bulb Replacement Program (Programa de Sustitución de Bombillas [PSB]), under which approximately 10 million bulbs were exchanged.

24 Source: presentation by Julián Despradel of CNE at the workshop “Access to Energy and Poverty Reduction to Achieve Millennium Objectives in Latin America and the Caribbean, CEPAL, Santiago de Chile, October 2009.
**Rural Electrification Program based on Renewable Energy Sources (Programa de Electrificación Rural basado en Fuentes Renovables de Energía [PERenovables])**

Five-year period/Budget €5 million; 57 rural communities (benefiting a population of 150,000); 34 Micro-Hydroelectric Plants (5 kW–150 kW); a wind-energy generation system (50 kW); a system for the integrated use of renewable energy sources (biofuels and solar energy) in 4 communities; creation of Community Cooperatives; creation of a National Association of Cooperatives.
ECUADOR

1. Existing regulations

Under Executive Decree No. 1681, signed by the President of the Republic and by the Minister of Electricity and Renewable Energy, all government institutions must form an Energy Efficiency Committee that will be in charge of implementing energy-saving measures, in coordination with the Bureau of Energy Efficiency (of the Ministry of Electricity and Renewable Energy [MEER]) (www.meer.gov.ec).

The Resolution is included in the consideration by the Political Constitution of Ecuador which stipulates in its Article No. 413 that “the State shall promote energy efficiency, the development and use of environmentally clean and friendly practices and technologies...” In addition, Article No. 414 stipulates that “the State shall adopt adequate, cross-cutting measures for the mitigation of climate change, through the limitation of greenhouse gas emissions...”

The Executive Decree became effective in May 2009, whereby a 12-month deadline was established for compliance with all provisions.

An Energy Efficiency Development Law is currently being studied, according to information on the Web page of the Ministry of Electricity and Renewable Energy of Ecuador.

2. Institution responsible for Energy Efficiency

In 2007 the Ministry of Energy and Mines of Ecuador was divided into two Ministries: the Ministry of Mines and Petroleum (now the Ministry of Non-renewable Natural Resources) and the Ministry of Electricity and Renewable Energy. Since then, the latter, through its Under-Secretariat of Renewable Energy and Energy Efficiency, is responsible for developing and monitoring energy efficiency projects in Ecuador.

The Ministry of Electricity and Renewable Energy was created by Executive Decree Nº 475 dated July 23, 2007. In its Article 6, the Decree stated that “the current Under-Secretariat of Electrification and the Bureau of Renewable Energy, which were part of the Ministry of Energy and Mines, will become direct agencies of the Ministry of Electricity and Renewable Energy.”

3. Organization and definition of national programs: programs under execution

“Energy-saving Light Bulbs” Project: The project for the mass replacement of six million incandescent light bulbs with energy-saving bulbs, promoted by the Government and the Ministry of Electricity and Renewable Energy, became a reality with the arrival of six million energy-saving bulbs which are being delivered for free, nationwide, in order to reduce residential electricity consumption for lighting, which represents 24% of total consumption.

Energy Efficiency Program in Public Buildings: The Ministry of Electricity and Renewable Energy, through the Under-Secretariat of Renewable Energy and Energy Efficiency, is promoting energy savings in public buildings. This project is being carried out with the participation of the College of Electrical and Electronic Engineers of Pichincha (CIEEPI) (www.cieepi.ec). The project was launched in March 2009 in the Office of the President of the Republic. The basic objective was to analyze indexes of energy consumption in buildings and identify savings opportunities for a subsequent implementation of systems with low energy consumption.

About 50 public sector institutions are participating in the program and have formed an Energy Management Committee to coordinate ongoing training efforts for the purpose of turning staff into energy
efficiency promotion agents. Public sector workers also receive technical and professional assistance from CIEEPI to achieve efficient use of energy.

The institutions that improve their energy efficiency indicators are awarded a Certificate of Excellence and receive an energy efficiency manual with the guidelines and procedures to be followed for sustained, responsible use of the nation’s energy and of the natural resources used to generate it.

4. Support to ESCOs

In the presentation of Ecuador’s 2008–2020 Energy Policies, one of the policies mentioned is to promote the creation and consolidation of energy services companies. At present, ESCONSULT Ecuador is an energy services company that operates in accordance with the definition of ESCOs in Ecuador.

5. Schemes or mechanisms to finance Energy Efficiency efforts

The projects that are being developed by the Under-Secretariat of Renewable Energy and Energy Efficiency, under the Ministry of Electricity and Renewable Energy, receive funds from said Ministry’s regular budget. The Inter-American Development Bank (IDB) is financing, with grant resources, the Sustainable Energy Action Plan (Plan de Acción de Energía Sostenible [PAES]) which supports energy efficiency, renewable energy and biofuel initiatives.

Through the Power and Communications Sectors Modernization and Rural Services Project (PROMEC) project, the World Bank issued a loan for US$23 million and grants for US$2.84 million for the implementation of a project aimed at promoting energy efficiency and electrification in rural sectors of Ecuador.

6. Fiscal, economic or tariff incentives

The application of this type of incentives to energy efficiency projects, under the framework of a future law to promote the efficient use of energy, is currently being studied.

7. Market for efficient equipment

The Ecuadoran National Institute of Standardization (Instituto Nacional Ecuatoriano de Normalización [INEN]) approved the Standard for Energy Efficiency in Buildings, which was developed by MEER. The document stipulates the conditions with which a building must comply in order to optimize its energy consumption.

Other equipment and elements of the market for efficient equipment include CFLs and refrigerators.

8. Equipment labeling


This Ecuadoran Technical Regulation stipulates the minimum energy efficiency and the features of informational labeling with regard to the energy efficiency of compact fluorescent lamps (modular construction) for use with electronic or electromagnetic ballasts, and of compact fluorescent lamps (integrated construction) for use with electronic ballasts. It also specifies the content of energy consumption

25 See note for definition of ESCOs in the introduction.
labels to prevent risks to safety, health, the environment and practices that may lead to error by electricity consumers.

9. Access to energy

The Ministry of Electricity and Renewable Energy, together with the National Electrification Council (Consejo Nacional de Electrificación [CONELEC] – www.conelec.gov.ec), manages the Program for Energy in Rural Areas and Electrification in Disadvantaged Urban Areas (Programa de Energizació Rural y Electrificación Urbano Marginal [FERUM]), which is being carried out in the country’s municipalities with the objective of providing electricity service to areas distant from the national interconnected system (for more information on the program and its level of progress, see: http://sisgesi.conelec.gov.ec/ferum/)

FERUM’s general objective is to expand national electricity coverage, with emphasis on the development of disadvantaged rural and urban areas through the provision of electrical energy.

Since its creation, FERUM has increased total electricity coverage in rural areas by 6%. According to 2001 census and housing statistics, electrification reached 79% in rural areas and 91.5% in the urban sector; national coverage totals 89%.

Estimated coverage for 2009 is: 85.7% rural sector, 92.7% urban sector, and 90.4% national coverage.

Coverage in the rural sector and in the disadvantaged urban sector

![Coverage in the rural sector and in the disadvantaged urban sector]({attachment:coverage.png})

Source: CONELEC

Rural electrification programs (through renewable energy sources) – Euro-Solar Program

The Euro-Solar Program stems from a regional agreement signed in December 2006 by the European Union and 8 Latin American countries (4 in Central America and 4 in South America), including Ecuador.

Its objective is to contribute toward improving living conditions in the areas of health, education and telecommunications in 91 rural communities in Ecuador through access to a source of renewable electrical energy strictly for community use.

It provides a technology kit to each community, composed of:

- An 1,100 Wp photovoltaic system
- Access to Internet and IP telephony through a V-SAT satellite connection
- Lighting of community facilities
- Computer equipment (5 portable computers, 1 multi-function device, 1 projector)
- Refrigerator for medicines
- Water purifier
- Battery charger

Progress of activities:

- Identification of regions and beneficiary communities (finalized)
- Installation and start-up of infrastructure that will house computer and health equipment (finalized and in process of work liquidation)
- Provision and installation of technology kits for the implementation of educational, cultural, productive/social, and communication services, and applications in the area of health (contracted and execution initiated by the European Union)
- Program implementation, conduction of training, and process of monitoring and evaluation (actions initiated by the EU and MEER for this objective)

The Program has received 4,360,000 Euros in financing, with a contribution of 3,450,000 from the EU and 910,000 from the national counterpart. The Program’s duration is 48 months (42 months for the operational phase and 6 months for closing) in accordance with the financial agreement.

- Starting date: 1-18-2007
- Closing date: 9-18-2011
- Percentage of progress: 43%

1. Existing regulations

In August 2007, the Legislative Assembly of El Salvador issued legislative decree Nº 404, concerning the Law for the Creation of the National Energy Council (Consejo Nacional de Energía [CNE]. CNE, presided by the Head of the Ministry of Economy (Ministerio de Economía [MINEC]), “shall be the leading, guiding and regulatory authority in matters of policy and strategy that promote the efficient development of the energy sector”.

The purpose of creating the Council is to establish strategic policies that promote the efficient development of the energy sector, ensuring that citizens will be provided with services that are essential to the community, and encouraging the proper use and rational consumption of energy sources.

For this reason, CNE will work on designing guidelines for the comprehensive development of a National Energy Policy. The objective of this effort is to develop a policy that promotes the rational use of energy, the optimization of infrastructure, the increase in rural electricity coverage, and regional integration.

2. Institution responsible for Energy Efficiency

The institution responsible for carrying out the policy for efficient use of energy in El Salvador is the National Energy Council, as cited in paragraph 1.

OLADE is developing the institutional framework for Energy Efficiency, with the PALCEE Project, financed by the Austrian Development Cooperation agency.

3. Organization and definition of national programs: programs under execution

El Salvador’s Ministry of Economy (Ministerio de Economía [MINEC]), through the Electrical Energy Bureau (Dirección de Energía Eléctrica [DEE]), in coordination with the National Energy Council (Consejo Nacional de Energía [CNE]), through Technical Cooperation No. ATN/OC-11265-ES, is executing the Energy Efficiency Program whose objective is to design, evaluate and implement a series of energy efficiency (EE) measures, including pilot projects, the identification of necessary information, and the preparation of proposals for potential loans to implement EE measures in addition to pilot projects. The project’s overall objective is to improve socioeconomic and environmental conditions in El Salvador, as well as to contribute to improving the competitiveness of productive sectors that consume energy.

4. Schemes or mechanisms to finance Energy Efficiency efforts

The Energy Efficiency Program, which is under development, has the financial support of the Inter-American Development Bank (IDB). The Bank’s contribution totals US$670,000 and the local contribution is US$170,000. A two-year period of execution is expected.

Likewise, the World Bank, through its “Programmatic Study on the Energy Sector of the Central American Region,” is exploring available options for the implementation of energy efficiency measures in countries of said region.

5. Fiscal, economic or tariff incentives
The Energy Efficiency Program, under development with IDB, contains Component III: “Sources of financing for the procurement of energy-efficient equipment and systems,” in which mechanisms for the creation of incentives of this nature, applicable to energy efficiency projects and/or programs, will be studied.

6. Market for efficient equipment

Legal status of standardization in El Salvador: Law of the National Council for Science and Technology (Consejo Nacional de Ciencia y Tecnología [CONACYT]), approved in accordance with Legislative Decree Nº 287 of July 1992, which creates the National Council for Science and Technology, the government agency that deals with issues related to standardization. The regulations on energy efficiency use those of Mexico as a reference.

There are two mandatory regulations on energy efficiency: two-pin base fluorescent lamps (requirements for energy performance and labeling) and electrical components of efficient high-intensity discharge (HID) lamps for operation in lamps for public lighting (requirements for energy performance and labeling).

7. Equipment labeling

Energy-consuming equipment currently with labeling in El Salvador includes:

- Compact fluorescent lamps
- Lamps for public lighting
- Alternating current motors
- T-8 tube fluorescent lamps

8. Access to energy

With a total of approximately 88.4% of Salvadoran households having access to electrification, El Salvador has the second-highest index of electrification in Central America, after Costa Rica. Of the 163,000 families that lack access to electricity, 120,000 live in rural areas.

The Salvadoran Government, through the “Social Investment Fund for Local Development” (“Fondo de Inversión Social para el Desarrollo Local [FISDL]”), is increasing electricity coverage in rural areas.

El Salvador has launched FOMILENIO, a mega-development project in the northern part of the country. FOMILENIO started up with the energy project that will increase electricity coverage to 97% in the next three years, benefitting over 30,000 families in the 94 municipalities integrated in the region.

The work, which will construct 1,385 km of energy distribution lines in order to connect them to existing networks, will have a cost of US$33 million. In terms of consumption, this represents a consumption of 15 MWh, with an estimated average consumption of 75 kWh by consumers. The design of El Salvador’s rural electrification program included non-reimbursable resources from IDB totaling US$750,000 through the ATN/JF-7918-ES project “Development of a Sustainable National Market for Rural Energy Services,” which constructed a series of sustainable projects using solar panels.

26 Source: Ministry of Economy of El Salvador, September 2009
1. Regulations and Institutions Responsible for Energy Efficiency

Grenada has no specific regulations on the subject on energy efficiency.


Its current effective role with regard to the promotion and development of energy efficiency is very limited. The Government of Grenada proposes the creation of an Energy Efficiency Unit within the Energy Division of the ministry in charge of energy.

OLADE is developing the institutional framework for Energy Efficiency with the PALCEE Project, financed by the Austrian Development Cooperation.

2. Organization and definition of national programs: programs under execution

Incandescent light bulb replacement program

In 2007, Grenada, as part of Cuba’s International Cooperation Program implemented in several Caribbean countries (all of these beneficiaries are members of PETROCARIBE), replaced 133,200 incandescent light bulbs with energy-saving lamps.

The results show the following indicators:

- Incandescent bulbs effectively replaced: 133,253
- Reduction in the country’s maximum demand by 1,891 kW; in energy terms, this would represent 10,150 MWh/year.
- The economic benefits from savings in generation capacity are around US$2,270,000; from fuel savings, 23,440 tons of imported fuel per year would equal US$ 1,182,700. This represents an annual total of US$3,452,700 in 2007.
- In environmental terms, the replacement allows a reduction in CO2 emissions of about 6,690 tons per year, valued at about US$28,100 in 2007.

3. Schemes or mechanisms to finance Energy Efficiency efforts

The program to replace incandescent light bulbs with compact fluorescent lamps was financed with resources from the PETROCARIBE Program, aimed at paying for Cuba’s technical assistance and for the purchase of low-consumption lamps.

4. Market for efficient equipment

In order to promote the development of a market for efficient equipment, the Government of Grenada proposes to:

- Develop and execute an energy efficiency program in the public sector.
- Create energy efficiency standards for mechanical ventilation, air conditioning, lighting, water heating devices and systems within institutions, commerce and industry. These standards will be applied to the design of buildings and well as to internal equipment. Separate standards will be used for houses.
- Issue mandates to regulate controls on vehicles in order to ensure a greater level of energy efficiency.
- Create a labeling system for equipment with reference to their level of energy efficiency.
- Comply with efficiency conditions for the importation of certain vehicles.

5. Access to energy

GRENLEC is the company in charge of generating, transporting and distributing electrical energy in Grenada. Since 2005, it has been steadily increasing the number of customers with access to electricity: a) in the residential sector, from 29,119 customers in 2005 to 37,256 at the end of 2009 (+28%); b) in the commercial sector, from 4,250 to 5,636 (+32.6%); c) in the industrial sector, from 33 to 36 (+9%).
GUATEMALA

1. Institution responsible for Energy Efficiency

Guatemala currently has no regulations specifically aimed at promoting energy efficiency.

The entity responsible for this subject is the Energy Efficiency Unit of the National Electrical Energy Commission (Comisión Nacional de Energía Eléctrica [CNEE]) (www.cnee.gob.gt), under the authority of Guatemala’s Ministry of Energy and Mines (Ministerio de Energía y Minas [MEM]) (www.mem.gob.gt).

2. Organization and definition of national programs: programs under execution

The technical cooperation with the Inter-American Development Bank (IDB) includes four components:

- Component 1: Design of the Energy Efficiency Incentives Program
- Component 2: Definition and Financial Schemes of the Comprehensive Energy Efficiency Plan (Plan Integral de Eficiencia Energética [PIEE])
- Component 3: Institutional strengthening of MEM/CNEE and training of specialists
- Component 4: Creation of the National Technical Agency for Energy Efficiency (Órgano Técnico Nacional de Eficiencia Energética)

Other aspects of the cooperation:

a) Campaign to disseminate, publicize and raise awareness about energy efficiency.

b) Establishment of pilot projects in municipalities, the residential sector, industry, transportation and firewood.

c) Institutional strengthening of MEM/CNEE and training.

3. Support to ESCOs

An ESCO-type mechanism is under way for energy efficiency projects in municipal public lighting.

4. Schemes or mechanisms to finance Energy Efficiency efforts

Based on the project that is receiving IDB cooperation, cited in paragraph 2), a component will be developed to define schemes to finance the Comprehensive Energy Efficiency Plan (Plan Integral de Eficiencia Energética [PIEE]).

Likewise, the World Bank, through its “Programmatic Study on the Energy Sector of the Central American Region,” is exploring available options for the implementation of energy efficiency measures in countries of said region.

5. Market for efficient equipment

The Guatemalan Standards Commission (Comisión Guatemalteca de Normas [COGUANOR]) deals with technical standards that contribute to improving the competitiveness of Guatemalan national companies and increasing the quality of products and services. A government initiative aims to establish, in support of COGUANOR, a package of technical standards for energy efficiency.

27 See note for definition of ESCOs in the introduction.
The current market for efficient equipment refers to compact fluorescent lamps, which are steadily replacing incandescent light bulbs.

6. Access to energy

In Guatemala, MEM and the National Institute for Electrification (Instituto Nacional de Electrificación [INDE]) are the institutional agencies responsible for programs to expand electricity coverage.

The country’s electricity coverage increased from 59.1% in 1996 to 85.4% in 2005, that is, at a rate of 4.3% per year. In 1998, with a significant portion of funds from the privatization of electricity distributors and from the government, an Electrification Trust Fund was established for US$333.6 million, of which 45% was allocated to transmission works and 55% to rural distribution and electrification.

The target specified in the Trust Fund was the connection of 280,000 new users in 2,633 communities, benefiting around 1.7 million inhabitants, all located in communities and villages in the interior of the country, in all cases outside the boundary of mandatory service provision, in accordance with the Electricity Industry Law (Ley de la Industria Eléctrica).

Currently, 8 of the 21 departments have electrification indexes below 50%, 7 between 50% and 80%, 4 between 80% and 90% and 2 with electrification indexes over 90%.

**Evolution of electricity coverage in Guatemala to 2005**

![Bar chart showing electricity coverage from 1980 to 2005](image)


The Trust Fund was established in the amount of US$333.6 million, of which US$182.7 million were allocated for rural distribution works and US$150.9 million for the transmission works required to support the growth in distribution networks. INDE has contributed US$209.4 million to the Trust Fund; it has
US$40.1 million from a loan by the Central American Bank for Economic Integration (Banco Centroamericano de Integración Económica [BCIE]) and US$55 million from an IDB loan (GU-L1018).
GUYANA

1. Institution responsible for Energy Efficiency

Guyana has no specific regulation in effect to promote the efficient use of energy.

The following institutions deal with the subject of energy efficiency:


Companies: Guyana Power and Light Inc. (GPL) (www.gplinc.com), the electricity company, promotes programs to raise awareness about the efficient and rational use of electricity.

2. Organization and definition of national programs: programs under execution

In 2009, GEA launched a campaign to promote energy efficiency. Four brochures were designed: transportation, lighting, appliances and design of buildings and houses; the lighting system in the GEA Agency’s own building was modernized.

GPL is considering the implementation of a prepaid electricity metering system and is conducting campaigns to raise awareness about the efficient use of energy.

3. Schemes or mechanisms to finance Energy Efficiency efforts

Energy efficiency efforts have the financial support of the Government and the Inter-American Development Bank, the latter for rural electrification projects.

GEA estimates that, to conduct a nationwide energy efficiency program, around US$100,000 will be needed.

Three institutions are currently handling funds: the Office of the Prime Minister (OPM) (www.gina.gov.gy), Guyana Power & Light Inc., and the Guyana Energy Agency.

The programs are monitored by the Office of the Prime Minister, through the Ministry of Finance, which oversees disbursements.

4. Market for efficient equipment

Under development, beginning with the replacement of light bulbs.

5. Access to energy

It is estimated that the electricity system in Guyana provides service to only 60% of the total population, far below the level achieved by many of the country’s regional peers. Around 20% of Guyana’s population lives in the country’s interior.

For the areas not served, an Unserved Areas Electrification Programme (UAEP) is financed by a loan from the Inter-American Development Bank.

OLADE Rural Electrification Project for Paraguay, Guatemala, Bolivia and Guyana
In the Wowetta Community, an indigenous population located in Region 9, Upper Takatu-Upper Essequibo, with 49 families, a program is being carried out with emphasis on productive aspects and with the following components:

- Community store
- Initiatives by women and adolescents
- Participation by an NGO for financial sustainability

Five projects defined by the population:

- Carpentry shop (support with tools)
- Community garden–water pumping (FV).
- Household lighting system (FV)
- Community store–freezer (FV)–Cassava processing unit
- Diesel generator and mill
HAITI

1. Institution responsible for Energy Efficiency

Haiti has no legislation or regulation that supports the efficient use of energy, nor is it known whether any draft legislation is being studied in this regard.

The energy stakeholder is the Ministry of Public Works, Transportation and Communications (Ministère des Travaux Publics, Transport et Communications [MTPTC]) but it is not involved in energy efficiency issues. The Bureau of Mines and Energy (Bureau des Mines et de l’Energie), which acts as the coordinator of initiatives and international support on energy issues, is the other relevant actor in the sector.

2. Organization and definition of national programs: programs under execution

In 2007, Haiti, as part of Cuba’s International Cooperation Program in countries that are members of PETROCARIBE, replaced about 2,400,000 incandescent light bulbs with energy-saving lamps.

The results were as follows:

- Incandescent light bulbs effectively replaced: 2,366,768.
- An 18 kWh monthly reduction in energy consumption per household.
- An 86.3 MW reduction in the country’s peak demand; in energy terms this would represent 334,186 MWh/year.
- The economic benefits from savings in generation capacity will be around US$100 million; from fuel savings 110,000 tons of imported fuel per year; valued at US$48 million. This comes to an annual total of US$148 million in 2007.
- In environmental terms, the replacement enabled a reduction in CO2 emissions of about 220,000 tons per year, valued at about US$925,000.

3. Schemes or mechanisms to finance Energy Efficiency efforts

In 2008, the Inter-American Development Bank approved a US$12.5 million grant to Haiti to support the rehabilitation of the Peligre hydroelectric plant and improve the reliability of energy supply to the capital, Port-au-Prince.

For the program’s preparation, studies were conducted with resources from the IDB’s Infrastructure Fund (InfraFund) and the Sustainable Energy and Climate Change Initiative (SECCI). The latter is also financing an energy efficiency plan for Haiti and the preparation of proposals on biofuels and other renewable sources.

The Ministry of Public Works and EDH are responsible for the program, whose execution will take five years.

Resources from PETROCARIBE are also available.

4. Market for efficient equipment

The market for efficient equipment refers only to low-consumption lamps (installed in accordance with the program cited in 2).

5. Access to energy

Electricity coverage in Haiti is the lowest in the Latin American and Caribbean Region: less than 40% in 2006.
Nearly 6 million people lack access to the electrical grid. Most of these people are located in isolated areas where the situation is even more critical. More than 67% of the rural population lacks access to electrical energy. This lack of access, besides accentuating poverty conditions in rural areas, often acts as a barrier that keeps families from improving their situation. Focusing on rural areas, the technical assistance program, entitled the Bio-energy Action Plan, cofinanced by the IDB and the Organization of American States (OAS) through a Grant Cofinancing Contribution (COFAB), seeks to promote the development of biomass and biofuels for use in transportation and electricity generation, as an alternative in: the diversification of the energy grid, the reduction in external dependence on fuel supply, the increase in demand for agricultural products, and employment generation in rural areas. In turn, it hopes to understand the potential of industry in Haiti and the mechanism to access, through industry, carbon credits and opportunities stemming from the Kyoto Protocol.

For now, the principal barriers that hinder expansion of the use of renewable energies as a viable option for rural areas in Haiti are: the scarcity of appropriate technology, the absence of adequate financial mechanisms, the incipient development of rural areas and the lack of decentralized models for the management of basic services. Added to these circumstances are the unfortunate consequences of the January 2010 earthquake, which had a very negative influence on the development of Haiti’s infrastructure. To mitigate the damages caused by this event in terms of electrical infrastructure, the IDB expanded financing from US$18 million to US$32 million, from a previous loan for the Rehabilitation of the Port-au-Prince Electricity Distribution Network, in order to: (i) re-establish the coverage and quality of electricity service in the metropolitan area; (ii) reduce technical and commercial losses of electricity in the system; and (iii) expand the bases for the technical, administrative and financial re-establishment of Haiti’s electricity company, Électricité d’Haiti (EDH) in the short, medium and long term. In turn, the IDB financed, through a US$1 million investment grant, added to a US$500,000 GEF project coordinated with the World Bank, the provision of solar electricity generators and solar refrigerators to refrigerate vaccines in emergency centers and camps during the reconstruction stage.

With a contribution of approximately US$6.0 million in grants, the World Bank is seeking to support the Government of Haiti in reducing losses from the national electricity system. This project will enable the installation of an efficient administrative and technical service system and the improvement of service quality.

As part of the Clean Development Mechanism Study in low-income countries, the World Bank financed the training of local consultants in Haiti to prepare several energy efficiency projects. One of these projects seeks to replace nearly 2.6 million incandescent light bulbs with compact fluorescent lamps.


HONDURAS

1. Existing regulations

The Government of Honduras, in its Executive Decree dated May 6, 2006, Article 1, stated that “the rational use of energy is of national interest, and its application is considered a national priority”. Draft Law for the Rational Use of Energy: now in the process of approval in the National Congress. The Law creates, within the Secretariat of Natural Resources and Environment (Secretaría de Recursos Naturales y Ambiente), the Institute for the Rational Use of Energy (Instituto para el Uso Racional de la Energía [IURE]), hereafter referred to as “the Institute,” which will be managed by a Management Board presided by the Secretary of State in the Offices of Natural Resources and Environment and composed of the Director-General of Energy and a representative of Secretariat of Industry and Commerce, the Honduran Council on Private Enterprise, the National Electrical Energy Company and the Autonomous National University of Honduras.

2. Institution responsible for Energy Efficiency

Since 2007, the subject of the rational use of energy in Honduras has been under the responsibility of GIURE (Inter-institutional Group for the Rational Use of Energy [Grupo Interinstitucional para el Uso Racional de la Energía]). It is composed of the Secretariat of Natural Resources and Environment (Secretaría de Recursos Naturales y Ambiente [SERNA]) which has a Department for the Rational Use of Energy, the National Electrical Energy Company (Empresa Nacional de Energía Eléctrica [ENEE]), the Autonomous National University of Honduras, the Secretariat of Education, the Energy Efficiency Commission of the College of Mechanical, Electrical and Chemical Engineers of Honduras, and the Honduran Council on Private Enterprise (Consejo Hondureño de la Empresa Privada [COHEP]).

3. Organization and definition of national programs: programs under execution

Autonomous Generation and Rational Use of Electrical Energy Project (Proyecto Generación Autónoma y Uso Racional de la Energía Eléctrica [GAUREE]), of ENEE: aimed at promoting the rational use of electrical energy.

GAUREE II Project: this module is carrying out concrete actions to improve the load curve (management of demand) and optimize the Rational Use of Electrical Energy (Uso Racional de Energía Eléctrica [UREE]).

Project for the Implementation of Compact Fluorescent Lamps in the Residential Sector (Proyecto Implementación de Lámparas Fluorescentes Compactas en el Sector Residencial): six million units of CFLs were delivered, making it possible to replace bulbs, in a short period of time, among ENEE’s residential subscribers.

National Campaign “Learning about the Rational Use of Electrical Energy” (“Aprendiendo el Uso Racional de la Energía Eléctrica [AURE]”). This is a training campaign on the Rational Use of Electrical Energy. It is conducted in the National Educational System; elementary and secondary students from at least 250 schools carry out activities that involve measures to save electrical energy in their homes.

Project for Energy Efficiency in the Industrial and Commercial Sectors (Proyecto de Eficiencia Energética en los Sectores Industrial y Comercial [PESIC]). This project is in charge of promoting energy efficiency in the above mentioned sectors and creating a trust fund for investment in the private sector. It is executed by the Honduran Business Council for Sustainable Development (Consejo Empresarial Hondureño para el Desarrollo Sostenible [CEHDES]), with supervision by the United Nations Development Program (UNDP) and a multisectoral committee that includes State representatives such as the Secretariat of Natural Resources and Environment (Secretaría de Recursos Naturales y Ambiente [SERNA]), the Technical Secretariat for
Cooperation (Secretaría Técnica de Cooperación [SETCO]), and donor institutions such as the Global Environment Facility (GEF) and the Canadian International Development Agency (CIDA).

Energy Efficiency and Biofuel Programs, financed by the ATN/SF-10719-HO technical cooperation of the Inter-American Development Bank (IDB), which, in its energy efficiency component, is providing assistance in the design, evaluation and implementation of energy efficiency measures, including pilot projects and the preparation of energy efficiency investment plans.

The Energy Efficiency Project (Proyecto de Eficiencia Energética [PROMEF]), financed by the World Bank, has the objective of strengthening the distribution network, reducing losses and increasing cost recovery by the state electricity company, Empresa Nacional de Energía Eléctrica de Honduras (ENNE).

4. Schemes or mechanisms to finance Energy Efficiency efforts

Support for energy efficiency initiatives and projects in Honduras comes from State budget resources, ENEE funds, and international cooperation, depending on the project in question. In addition, under the framework of the PESIC Project, one of the projects under way is the Financial Mechanism (FOPESIC).

Likewise, the World Bank, through its “Programmatic Study on the Energy Sector of the Central American Region,” is exploring available options for the implementation of energy efficiency measures in countries of said region.

5. Equipment labeling

Energy efficiency standards are under the direction of the Honduran Standardization Agency (Organismo Hondureño de Normalización [OHN]) and involve the government and the private sector. The aim is create a standard for compact fluorescent lamps which will become effective beginning in 2010 and will be aimed at restricting the importation, manufacture and marketing of incandescent light bulbs.

In the future, standards will be developed for electric motors, refrigerators and appliances.

6. Access to energy

Electricity coverage is 69%. In rural areas it is only 45%, in contrast to 94% coverage in urban areas. The following table shows access data by number of households and consumers.

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>%</th>
<th>Nº households</th>
<th>%</th>
<th>Nº customers</th>
<th>%</th>
<th>Access rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>3,350,081</td>
<td>45.5%</td>
<td>700,507</td>
<td>49.0%</td>
<td>661,582</td>
<td>66.9%</td>
<td>94.4%</td>
</tr>
<tr>
<td>Rural</td>
<td>4,016,940</td>
<td>54.5%</td>
<td>729,611</td>
<td>51.0%</td>
<td>327,114</td>
<td>33.1%</td>
<td>44.8%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>7,367,021</td>
<td>100%</td>
<td>1,430,118</td>
<td>100%</td>
<td>988,696</td>
<td>100%</td>
<td>69.1%</td>
</tr>
</tbody>
</table>


Electrification was planned under the 1994 Framework Law for the Electricity Subsector, through the creation of the Social Fund for Electricity Development (Fondo Social de Desarrollo Eléctrico [FOSODE]). The government has made it an objective to increase national electricity coverage to 80% by 2015, assigning the same priority to urban and rural areas. To date, the result has been positive, with national coverage increasing from 43% in 1994 to 69% in 2006.

By 2015, it is expected that 400,000 new connections will be made. However, the lack of financing has delayed the network’s development, making it lag behind demand.
JAMAICA

1. Institution responsible for Energy Efficiency

Currently, Jamaica has no specific regulations regarding the promotion of energy efficiency (EE); these initiatives are included in the “2008–2011 Energy Conservation and Efficiency Policy” (draft).

The Ministry of Energy and Mines (www.men.gov.jm) is the entity responsible for initiatives to promote energy efficiency in Jamaica.

PCJ, the Petroleum Company of Jamaica, has an Energy Efficiency Unit (see 2).

OLADE is developing the institutional framework for Energy Efficiency, with the Energy Efficiency Program for Latin America and the Caribbean (PALCEE) Project, financed by the Austrian Development Cooperation agency.

2. Organization and definition of national programs: programs under execution

In an effort to consolidate and support the work of the Government of Jamaica (GOJ) in matters of energy efficiency, the Petroleum Company of Jamaica established the National Energy Efficiency Unit (NEEU) in 2003. Its broad mandate calls for the development and coordination of the government’s EE program and facilitates private investment in sources of renewable energy. NEEU focuses its efforts on four key programs: Residential Program; Program for Small Businesses; Program for Industrial and Commercial Users; Program for the Public Sector and Government.

Other initiatives in the public sector: a) carrying out energy audits and implementation of ESCOs; b) energy efficiency in hospitals: retrofitting of water chillers; c) project to replace 4 million inefficient lamps; projects for efficiency in police stations, in the National Water Commission and in schools.

3. Schemes or mechanisms to finance Energy Efficiency efforts

Energy Fund (proposed for the private sector)

The PCJ’s National Energy Efficiency Unit has been promoting a public awareness and education program, as well as facilitating the establishment of an Energy Efficiency Fund. It is hoped that the Fund (still under discussion) can offer special financing to users and private sector operators, at low interest rates.

In June 2009, the Inter-American Development Bank approved a non-reimbursable Technical Cooperation operation aimed at supporting the Government of Jamaica in the development of energy efficiency projects and assisting it technically in the preparation of a loan for this purpose. The amount of this Cooperation is US$350,000, added to which is the local counterpart contribution of US$87,000. The executing agency is the Ministry of Energy and Mines of Jamaica.

In addition, in March 2009 the Inter-American Investment Corporation (IIC) launched the GREENPYME Program. This program promotes the adoption of energy efficiency measures, the use of renewable energy and clean technologies for small and medium enterprises (pequeñas y medianas empresas [PYME]) in Latin America and the Caribbean.

PETROCARIBE of Venezuela and a bilateral agreement with Cuba are two additional technical cooperation initiatives for Jamaica with regard to the efficient use of energy.
4. Fiscal, economic or tariff incentives

For the private sector, there are initiatives for tariff (Customs Duty Waiver) and fiscal incentives such as GCT (General Consumption Tax) exemptions.

5. Market for efficient equipment

The Jamaica Bureau of Standards (JBS) introduced a mandatory label for refrigerators in 1990. In practice, this label, similar to that used in the United States, is generally not applied and consumers are unaware of its meaning.

6. Equipment labeling

The Jamaica Bureau of Standards is currently involved in two key areas of energy efficiency:

- Application and Labeling Tests
- Overhaul and promotion of the Energy-efficient Building Code.

A Solar Energy Laboratory was established in the mid-1980s, stemming from a USAID/GOJ project, which implied the participation of a large number of GOJ agencies to improve the country’s capacity for developing energy efficiency and renewable energy projects in Jamaica. The laboratory is able to evaluate the operation of most components, including collectors and storage tanks associated with solar water heaters. After its launch, JBS undertook a random testing program for water heaters from local manufacturers or distributors, and made subsequent recommendations.

The Energy-efficient Building Code (EEBC) in Jamaica was implemented by JBS as a professional code in Jamaica in 1994.

7. Access to energy

Under the framework of the Rural Electrification Program, 7,000 km of low-tension distribution lines were installed and approximately 70,000 rural households were electrified. Approximately 90% of households on the entire island have access to electricity.

The prices of electricity now reflect their real cost. However, the Government’s policy continues to offer a minimum lifeline, which benefits consumers who use less than 100 kWh per month. This cross-subsidy is provided by consumers who use more than 101 kWh per month.
1. Existing regulations

Since November 2008, the date of the publication of the Law for the Sustainable Use of Energy, the National Commission for the Efficient Use of Energy (Comisión Nacional para el Uso Eficiente de la Energía [CONUEE]) was formed, where it is stated that all human and material resources of the National Commission for Energy Saving (Comisión Nacional para el Ahorro de Energía [CONAE]) will be understood as being allocated to this new Commission. The new Law gave a mandate for the preparation of the National Program for the Sustainable Use of Energy (Programa Nacional para el Aprovechamiento Sustentable de la Energía [PRONASE] - see 3) which was published in November 2009.

CONUEE, in accordance with this Law’s publication, is constituted as a decentralized administrative agency of the Secretariat of Energy, with technical and operational autonomy, and its objective is to promote energy efficiency and become a technical agency dealing with the sustainable use of energy.

In addition, within the same package of reforms, the Law for the Use of Renewable Energy and the Financing of the Energy Transition was also published, under the framework of the National Strategy for the Energy Transition and the Sustainable Use of Energy, under which the Mexican Government will promote:

- Energy efficiency and sustainability (in the context of financing for the Energy Transition)
- The reduction in dependence on hydrocarbons as a primary source of energy.

See [http://www.energia.gob.mx/webSener/res/0/Fideicomiso_2145.pdf](http://www.energia.gob.mx/webSener/res/0/Fideicomiso_2145.pdf)

2. Institution responsible for Energy Efficiency


CONUEE is the body designated by the Federal Government to promote energy efficiency and constitute as a technical body on the issue of sustainable use of energy.

Secretariat of Energy of the Government of Mexico (Secretaría de Energía del Gobierno de México [SENER]) (www.sener.gob.mx)

SENER’s mission is to conduct the country’s energy policy, under the current constitutional framework, to ensure the competitive, sufficient, high-quality, economically viable and environmentally sustainable supply of types of energy required for the development of the nation’s life.

Trust Fund for Electricity Saving (Fideicomiso para el Ahorro de Energía Eléctrica [FIDE]) (www.fide.org.mx)

FIDE is a private, with mixed participation, nonprofit institution, which has the mission to promote and encourage through actions and results the efficient use of electricity, by developing programs and projects that link technological innovation and demand to produce a natural market for efficient technologies.

It is intended that FIDE develops a comprehensive culture of saving and efficient use of electricity in Mexican society through the dissemination, awareness and education at all levels, offering programs and projects of high quality and innovation, generating economic, social and environmental benefits for the country.
3. Organization and definition of national programs: programs under execution


This program defines a comprehensive strategy to address and capture impact through actions identified in the end-consumption of energy, assigning priority to measures that concentrate the bulk of potential impact. In 2008, end-consumption of energy represented 56% of national energy consumption. 90% of this consumption was concentrated in the transportation, industrial, residential and commercial sectors.

The program identifies seven areas of cost-effective opportunities for increasing energy efficiency and reducing energy consumption in the medium and long term.

1. Transportation: addresses energy consumption in both light- and medium-weight automotive transportation, as well as heavy cargo.
2. Lighting: includes lighting needs throughout the residential, commercial, service and industrial sectors, as well as within Federal Public Administration agencies and within state and local governments.
3. Household and building equipment: refers to energy consumption stemming from the use of electric appliances, electronic devices and higher energy consumption equipment in households, including air conditioning, refrigeration, ventilation and water heating.
4. Co-generation: identifies the possibility for energy saving in industries with a latent co-generation potential.
5. Construction: addresses opportunities for energy saving stemming from improvements in construction practices.
6. Industrial motors: deals with energy consumption in three-phase engines (less than 75 HP), because these represent the large majority of motors and their consumption in the country.
7. Water pumps: includes energy consumption for purposes of agricultural and municipal pumping.

Stemming from the analysis of objectives and strategies of the seven areas of opportunity and the identified leverages of energy efficiency, 26 courses of action were defined for inclusion in the program, which are contained in the following areas:

1. Guidelines for the public sector (guidelines for the adoption of efficient technologies, information programs and dissemination of best practices, among others).
2. Programs focused on end-users of energy (such as regulation and support to disadvantaged groups).
3. Skills development in the subject of energy efficiency (for example: conduction of promotional campaigns, professional development).

FIDE Programs

FIDE has implemented diverse programs, some of the most important are:

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28 Due to space limitations, only the two most important ones are cited.
a) Savings and Efficient Use of Electricity Programs - FIDE has concentrated its efforts on four main areas: Industrial, Trade, Services and Municipal Services, in which it has conducted more than 4,000 energy efficiency demonstration projects in all production branches in Mexico.

b) Program to Finance Electric Energy Savings (PFAEE) - This program was developed from 2002 to 2006, under which 778,550 equipment replacement actions were done, (80% refrigerators, 17% Air Conditioners, 3% thermal insulation applications).

c) Efficient lighting program - This program includes promoting the replacement of conventional lamps by compact fluorescent light bulbs (CFL’s) nationwide. As of October 2010, 12,367,687 light bulbs were replaced in programs directly supported by FIDE.

d) Program to Support the Tortilla and Masa Industry ("My Tortilla") - The program was created to modernize the tortilla sector, replacing obsolete machinery and equipment saving electricity and gas. By September 30, 2010, the program has already started, installing the first four equipments.

e) Equipment Replacement Program to Save Electricity in Households - The Federal Government program, known as "change your old one for a new one" is operated by FIDE since 2009, obtaining significant results in power savings, reduced emissions and has shown a significant benefit to the economies of thousands of Mexican families.

4. Schemes or mechanisms to finance Energy Efficiency efforts

All energy efficiency programs currently under way in Mexico are financed by the respective operational budgets of the public and private entities and organizations mentioned in 2).

For the case of FIDE, it also received technical and economic assistance from the Inter-American Development Bank (IDB) for the execution of the Energy Efficiency in Mexico Project (ME-0204) in operations between 1997 and 2005. The IDB granted a loan of US$23,400,000 and the local counterpart contributed an equal amount. The project’s objective was to develop the market for energy-efficient equipment (3-phase motors, compressors, T8 efficient linear lamps). The IDB also financed the design of PRONASE with resources from the ATN/OC-11716-ME technical cooperation.

The World Bank, through the large-scale energy efficiency project in the residential sector (appliances and lighting), will finance the replacement of 45.6 million incandescent light bulbs with compact fluorescent lamps (CFLs) and the replacement of 1.7 million refrigerators and air conditioners. The technical assistance component will also enable the institutional strengthening and financing of the activities scheduled under PRONASE. This is the first project of its kind in that it combines the use of various sources of financing in a single initiative, with resources from climate investment funds (CTF), the Global Environment Facility (GEF) and the World Bank.

The MEDEC study (Low-Carbon Development for Mexico), financed by the World Bank, will allow Mexico to explore its potential for low-carbon-intensity energy options.

5. Fiscal, economic or tariff incentives

The Federal Government through the Secretariat of Energy (SENER), to implement the National Agreement on Behalf of the Family Economy and Employment, signed by the President on January 7, 2009, has developed the Program to Replace Electrical Appliances for Electrical Energy Saving (Programa de Sustitución de Equipos Electrodomésticos para el Ahorro de Energía Eléctrica).

In this program, SENER is the policy-maker and is empowered to answer questions about the operation guidelines and their implementation, while FIDE was designated as the program’s operator.
The program provides direct support and funding for Mexican families to replace their more than 10 years old refrigerators and air conditioners with new, more efficient appliances. ([Http://www.energia.gob.mx/webSener/pse/index.html](http://www.energia.gob.mx/webSener/pse/index.html)).

a) A free voucher that partially covers the price of the appliance and transportation costs, storage and destruction associated with the replacement of the equipment.

b) Supplementary funding to cover the price of the appliance, and if so, the costs associated with replacing it. This support consists of a credit at a preferential rate for a period of four years, which will be charged through the electricity bill. In no case will the beneficiary be obliged to use the financial support.

6. Market for efficient equipment

The Federal Government, through the Secretariat of Energy, has implemented the Program to Replace Electrical Appliances for Electrical Energy Saving, whose aim is to replace refrigerators or air conditioning equipment that has been used for ten or more years, with new, more efficient devices in terms of energy consumption. In December 2009, the Federal Government announced that this program will undergo modifications in order to benefit a larger number of Mexican families. In this regard, the amount of financial support was increased, maximum limits of electricity consumption were eliminated, and the capacity of equipment that can be purchased under the program was increased; it will be receiving financial support from the World Bank to ensure its continuity based on its successful implementation.

As of October 2010, the Program to Replace Electrical Appliances for Electrical Energy Saving “Change your Old One for a New One” had benefited over 756,924 families in Mexico.

7. Equipment labeling

In Mexico there is a voluntary label which is used to identify the most efficient equipments in the market; this label is the FIDE seal.

The FIDE seal aims to:

- Easily identify best electricity saving products in the market
- Encourage consumers to acquire products that excel at saving energy.
- Recognize companies for their technical and financial effort to produce efficient equipment.
- Foster the competitiveness of domestic industries in regards to international competition.
- Encourage the use of energy efficient products in programs promoted by the FIDE.

It is important to notice that the FIDE Seal is awarded to products that it checks through technical documentation and test reports issued by accredited laboratories (national or foreign) establishing that their products are outstanding in the efficient use of energy, or whose properties or attributes help reduce the consumption of energy.

List of equipment with FIDE Seal


Mandatory Mexican Regulations (Normas Oficiales Mexicanas [NOM]) of CONUEE

[http://www.conae.gob.mx/wb/CONAE/CONA_1002_nom_publicadas_vigen](http://www.conae.gob.mx/wb/CONAE/CONA_1002_nom_publicadas_vigen)

Program to Promote Process, Products and Services Certification

[http://www.conuee.gob.mx/wb/CONAE/0_programa](http://www.conuee.gob.mx/wb/CONAE/0_programa)
It has as one of its objectives: to establish guidelines, terms and mechanisms for obtaining a distinctive recognition for products and new residential buildings, non-residential buildings and industrial plants.

Additionally, it has published the catalogue of equipment and devices in which producers, importers, distributors and marketers should include information on energy consumption (http://www.conuee.gob.mx/work/images/catalogo.pdf).

8. Access to energy

In terms of the coverage of electrical energy coverage in the 2001–2009 period29, nearly 6,800 rural villages and slightly more than 4,000 popular colonias (neighborhoods) were electrified, benefiting over 2 million inhabitants.

Comparative progress: in 2009, 107.5 million inhabitants with electricity service compared to 99.7 million in 2001 (+ 7.8%); service coverage: in 2009, 97.3%; in 2001, 87.5% (+11.2%). Urban population with electricity coverage: in 2009, 98.4%; in 2001, 98.8% (-0.4%). Rural population with electricity coverage: 2009, 91.0%; in 2001, 83.0% (+9.6%).

The missing percentage represents between 3 and 4 million people, primarily living in rural villages scattered along the country's geography in communities with few homes, mostly states of southeastern Mexico (Oaxaca, Chiapas, Guerrero and Veracruz, where the average percentage of electrification is less than 90%). A significant percentage of people without access to electricity belong to indigenous communities. With regard to projects for rural areas, there is an operation with the GEF and the World Bank aimed at increasing access to electricity through generation using renewable sources of energy and through the extension of distribution networks. This project is called Integrated Energy Services and the counterpart is SENER.

For the partial financing of the Project, the World Bank lent $ 15 million plus $ 15 million in grants from the GEF, which will increase access to efficient and sustainable energy services in rural, predominantly indigenous, communities.


29 Source: Population: INEGI; Cobertura y población con acceso a energía eléctrica: Government Reports and Reports on the Work of the Secretariat of Energy of Mexico (Secretaría de Energía de México [SENER]).
NICARAGUA

1. Existing regulations

Electricity Industry Law No. 272, which stipulates policy guidelines to promote the saving and efficient use of energy (Article 2, Section 5).


2. Institution responsible for Energy Efficiency

The official agency that deals with the subject of energy efficiency is the Ministry of Energy and Mines (Ministerio de Energía y Minas [MEM]) (www.mem.gob.ni) of the Government of Nicaragua, through the Department of Energy Efficiency.

It promotes energy audits and demonstration projects in the industrial and commercial sectors, advises the general sector composed of government facilities, hospitals and schools on decreasing electricity consumption through improvements to lighting and air conditioning, and assists in the selection of electricity tariffs that are adequate for working operations, defining regulations that encourage the introduction of energy-efficient electrical equipment in the country.

It promotes training, guidance and information campaigns for all sectors, especially the residential sector, and encourages the labeling system for electrical appliances and energy-consuming equipment that allows the end-user to understand the energy efficiency of the equipment purchases.

It is the executing agency of Nicaragua’s Energy Efficiency Program with the Inter-American Development Bank.

OLADE is developing the institutional framework for Energy Efficiency, with the PALCEE Project, financed by the Austrian Development Cooperation agency.

3. Organization and definition of national programs: programs under execution

Under the framework of the Technical Cooperation of the Japan Special Fund (JSF), an Inter-American Development Bank (IDB) donor (see below), the following actions are being conducted:

- Preparation of 30 Energy Audits in the industrial, commercial and service sectors
- Efficient lighting for the general sector (government, hospitals and schools), public lighting and support for the implementation of pilot projects. 20 Energy Audits
- Feasibility of a trust fund for the procurement of energy-efficient equipment and systems
- Updating of prior studies on the Description of the Demand Curve and end-use of energy in the City of Managua
- Preparation of loan proposals for project financing
- Expansion and optimization of the current Program of Education on Energy Efficiency in the Residential Sector

In addition, MEM, with its own resources and the collaboration of other public institutions, has been carrying out the following activities that deal with energy efficiency:

a) Definition of a Public Lighting Program
b) Definition of a Fuel-Saving Program for the Transportation Sector

c) Studies related to the strengthening of Energy Efficiency in the country, such as the definition of elements for a baseline, project financing and strategies.

4. Schemes or mechanisms to finance Energy Efficiency efforts

Nicaragua recently approved its National Program for Sustainable Electrification and Renewable Energy (Programa Nacional de Electrificación Sostenible y Energía Renovable [PNESER]) which will provide up to US$381 million in loans and technical cooperation to transform Nicaragua’s electricity sector, including energy efficiency and access. Its design was coordinated with the IDB, with the participation of the World Bank, the International Finance Corporation, the Spanish Agency for International Development Cooperation, the Korean Eximbank, the Latin American Investment Facility, the European Investment Bank, the Central American Bank for Economic Integration, the Climate Investment Fund, and the Nordic Investment Fund. An initial concessionary loan of US$30.5 million to support PNESER was approved by the IDB on July 7.

In addition to PNESER and technical cooperation with the support of Japanese Special Fund (JSF) grant resources cited in 3), Nicaragua is carrying out other energy efficiency efforts with financing from the Global Environment Facility (GEF), with implementation through the United Nations Development Program (UNDP) and BUN-CA (www.bun-ca.org) (Energy Efficiency in the Industrial and Commercial Sectors).

With regard to the technical cooperation operation with the IDB, the amount of non-governmental contributions (from JSF) is US$726,350.00. The total amount to be spent for technical cooperation is US$916,350.00, 20% of which must be contributed by the local counterpart, i.e., MEM of Nicaragua (US$190,000).

Likewise, the World Bank, through its “Programmatic Study on the Energy Sector of the Central American Region,” is exploring available options for the implementation of energy efficiency measures in countries of said region.

5. Fiscal, economic or tariff incentives

The Nicaraguan Government recognizes the importance of establishing this type of incentives to favor the development of energy efficiency initiatives. This intention was explained in Decree 13-2004, Art. 5, VII. “On energy efficiency”, clause 3: Promote incentives that favor the importation of energy-efficient electrical equipment.

In turn, a Draft Law for the Promotion of Energy Efficiency is under preparation (as of June 2009). This Draft Law considers tax incentives such as a reduction in the Added Value Tax (Impuesto al Valor Agregado [IVA]) and access to project financing.

The Draft Law for the Promotion of Energy Efficiency is under discussion.

6. Market for efficient equipment

With regard to the Regulation of Energy Efficiency for Electrical Equipment, in accordance with Presidential Decree 2-2008 “Regulation for Energy Use,” Article 5, authorizes the Ministry of Development, Industry and Commerce (Ministerio de Fomento, Industria y Comercio [MIFIC]) to publish and put into practice the Mandatory Nicaraguan Technical Regulations (Normas Técnicas Obligatorias Nicaragüenses [NTON]), referring to the importation of electrical equipment that consumes more energy.
In its preamble, said Decree authorized the Ministry of Energy and Mines (Ministerio de Energía y Minas [MEM]) to coordinate and put into effect regulations, resolutions and administrative provisions for the use of energy in a rational and efficient manner with the support of other State institutions.

The following Mandatory Nicaraguan Technical Regulations on Energy Efficiency are currently becoming effective:

- Self-ballasted compact fluorescent lamps
- Incandescent and similar types of lamps for household use
- Household refrigerators and freezers
- Alternating current three-phase induction engines, squirrel-cage rotor type, with nominal power ranging from 0.746 to 373 kW.

7. Equipment labeling

Currently, in accordance with the NTON Regulation, only household refrigerators are labeled.

8. Access to energy

The reform of the electricity industry (in 1998) called for the creation of the National Electricity Industry Development Fund (Fondo para el Desarrollo de la Industria Eléctrica Nacional [FONDIEN]), designed to support electrification in rural and disadvantaged areas. The country’s electricity coverage in rural areas increased from 47.8% in 1995 to 55% in 2006, that is, less than 1% per year.

**National Program for Sustainable Electrification and Renewable Energy (Programa Nacional de Electrificación Sostenible y Energía Renovable [PNESER])**

With regard to access, PNESER expects to increase electricity coverage from 65% to 85% in the space of four years, thus benefiting 1.7 million inhabitants.

**Rural Electrification Program in Isolated Areas (Programa de Electrificación Rural en Zonas Aisladas [PERZA])**

The Ministry of Energy and Mines and the World Bank have been implementing this program since 2003. It includes rural electrification, mainly using solar energy and micro-hydroelectric plants. PERZA includes pilot projects that contemplate sustainable mechanisms for the installation of a variety of decentralized energy systems based on renewable energy technologies for the electrification of areas outside the grid. The projects have been located in coordination with the National Development Plan established by the Government of Nicaragua. The project promotes the participation of the private sector in Nicaragua’s rural electrification, and is supported by schemes that promote the supply of photovoltaic applications in areas distant from the electrical grid.

PERZA’s total investment is US$19 million, of which US$12 million correspond to a World Bank loan, US$4 million are a GEF grant and US$3 million are counterpart contributions. PERZA has two components:

a) Rural electrification and renewable energy policies (cost: US$1 million), with the objective of establishing a legal and regulatory framework for the sustainability, transparency and efficiency of rural electrification projects under the National Electricity Industry Development Fund (Fondo de Desarrollo de la Industria Eléctrica Nacional [FONDIEN]).
b) Rural electrification (cost: US$17 million). Phase 1 included populations of Jinotega, RAAN (Región Autónoma Atlántico Norte) and RAAS (South Atlantic Autonomous Region [Región Autónoma Atlántico Sur]), with photovoltaic battery charging centers (centros de carga de batería fotovoltaicos [CCBFV]) and mini-hydroelectric plants. Phase II considered the inclusion of microfinance and business development services components when carrying out projects, as well as the collaboration of productive uses of small-scale hydroelectricity (PCH), under another project executed by MEM and financed by UNDP/GEF.

As of mid-2007, seven CCBFV had been installed for 300 homes.
1. **Existing regulations**

The Legal and Regulatory Framework of the Program for the Rational and Efficient Use of Energy (Programa de Uso Racional y Eficiente de la Energía [UREE]) has been under preparation since March 2010 and is expected to be ready by November.

2. **Institution responsible for Energy Efficiency**

The National Secretariat of Energy (Secretaría Nacional de Energía [SNE]), assigned to the Ministry of the Presidency and created by Law 52 of 2008, is the entity that has taken over the functions of COPE (Energy Policy Commission [Comisión de Política Energética]). It operated in the area of the Ministry of Economy and Finance and was mandated by the law of February 1997, whose Article 16 indicates the duties and functions inherited from COPE; subsections 1 and 9 refer to the subject of the efficient use of energy:

- Study and analyze national policy options on the subjects of electricity, hydrocarbons, rational use of energy, and integrated use of the country’s natural resources and all of its energy sources, in accordance with general development plans;
- Establish programs for energy saving and rational use of energy.

3. **Organization and definition of national programs: programs under execution**

**Plan for Energy Saving in the Public Sector**

Under Executive Decree N° 758 of October 2009, a Program for Electrical Energy Saving in the Public Sector was implemented.

An Energy Administrator was appointed in each government institution, with a total of 74, to act as a liaison for the execution and monitoring of the Energy Saving Program. From November 2009 to February 2010, there have been US$4,500,000 in savings in electricity consumption; taking into account the fact that State institutions save 10% of electricity consumption with the implementation of this program, these efforts represent savings of US$1 million per month and nearly 5.4 GWh in energy.

Changes in public office hours from 8:00 a.m. to 4:30 p.m., to 7:30 a.m. to 3:30 p.m. This measure avoids traffic congestion and promotes fuel savings. This program includes electricity savings in Public Offices; air conditioners are turned on half an hour after offices open (8:00 a.m.) and are turned off half an hour before offices close (3:00 p.m.) Adjustment of air conditioner thermostats so that the room temperature is 23°C. Each degree (Centigrade) of adjustment represents 5% of the energy consumption of air conditioning.

“Support for the Program of Sustainable Energy and Energy Efficiency, and Strengthening of the National Energy Secretariat (Secretaría Nacional de Energía de [SNE] of Panama”

For the purpose of complying with the energy policy stipulated in Law 52 of 2008, with financing from the Inter-American Development Bank (IDB) ATN/MC-11323-PN grant, in the amount of US$750,000, the project to promote the development of the energy sector is being carried out.

**Program for the Rational and Efficient Use of Energy (Programa de Uso Racional y Eficiente de la Energía [UREE])**
Since March 2010, work is being done on a Legal and Regulatory Framework of the Program for the Rational and Efficient use of Energy (Programa de Uso Racional y Eficiente de la Energía [UREE]), the Energy Education Plan (Plan Educativo Energético), the Energy Dissemination Plan (Plan de Difusión Energético), labeling of electrical appliances and other equipment, the building construction code, the evaluation of the Metro and its feeder routes in the public transportation sector, the design of financing schemes, the simulation of the pilot project, and the creation of a Certification Program (“Diplomado”) in the Administration of Energy Resources, in conjunction with the Technological University.

Institutional Strengthening of the National Secretariat of Energy

As part of the same effort, the Design of the Strategic and Organization Basis of the Secretariat was obtained, using the definition of the legal and regulatory framework of Law No. 52 which creates the SNE and its regulation.

Creation of a training program for Energy Efficiency Technicians

In conjunction with the National Institute for Human Development (Instituto Nacional de Desarrollo Humano [INADEH]), SNE is participating in designing the curriculum and training plan for Energy Efficiency Technicians.

4. Schemes or mechanisms to finance Energy Efficiency efforts

Based on IDB technical cooperation, the design of schemes to finance energy efficiency programs is envisaged.

Likewise, the World Bank, through its “Programmatic Study on the Energy Sector of the Central American Region,” is exploring available options for the implementation of energy efficiency measures in countries of said region.

5. Market for efficient equipment

The Secretariat of Energy is developing a program with minimum efficiency standards for residential appliances and commercial, electrical, common use or mass-consumption equipment (new).

The program will indicate the minimum electrical efficiency values that manufacturers should meet when manufacturing their product. These values are applied to products manufactured inside the country and to all products imported into the country.

In its different phases, it will cover at least the following products and equipment:


6. Equipment labeling
As part of the same work cited in 5), it is expected that by November there will be a labeling system to guide
the rational and efficient use of energy in electrical appliances and other equipment, and a building
construction code, under the framework of the Program for the Rational and Efficient Use of Energy
(Programa de Uso Racional y Eficiente de la Energía [UREE]) (see 3).

7. Access to energy

The Panamanian Cabinet approved US$7 million for rural electrification projects. With these programs, more
than 25,000 people in 100 communities will be benefited.

The IDB approved a US$30 million credit for Panama to finance rural electrification.

The program, through public and private investment, will promote the delivery of service to 30,000 rural
families, thereby increasing rural electricity coverage by 10%; in 2005 the percentage was 57.6.

Electricity coverage in Panama totals 87.8%.

PARAGUAY

1. Institution responsible for Energy Efficiency

Currently, there is no specific regulation in effect to promote the efficient use of energy in Paraguay. What exists, at a design level, is a component of the future National Plan for the Efficient Use of Energy, entitled “Legal and Regulatory Framework”.

The institution in charge of promoting the efficient use of energy in Paraguay is the Vice-Ministry of Mines and Energy (Viceministerio de Minas y Energía [VMME]) (http://www.ssme.gov.py). It is an agency of the Executive Authority of the Government of Paraguay. A National Energy Efficiency Committee has been formed, under the coordination of the Vice-Minister.

2. Organization and definition of national programs: programs under execution

The electricity company ANDE (www.ande.gov.py) has a project for the Rational Use of Energy, with financial support from the Inter-American Development Bank; the project is currently at the stage of hiring consultants. The project calls for the study and preparation of a program of measures to be adopted for the rational use of electrical energy, including: a) physical aspects of the distribution system, b) control and reduction of electricity losses, c) characteristics of consumers, with an evaluation of energy saving, and d) efficient use of electricity.

At national level, VMME is carrying out the National Plan for the Efficient Use of Energy, with the following components: Diagnostic, Planning, Institutional, Legal and Regulatory, Human Resources, Financial and Logistical, Environmental and Social, Implementation, Control and Monitoring, Feedback. A National Energy Efficiency Committee has been formed; its tasks are to: a) Create a Promotion and Dissemination Campaign; b) Identify existing projects and programs; c) Analyze and identify sources of project financing; d) Analyze the implementation of fiscal, financial and taxation measures; e) Establish energy efficiency criteria (standardization and labeling of products, replacement of sources, etc.); and f) Prepare the Plan for the Efficient Use of Energy, addressing all of its aspects.

The Efficiency Committee is working on several projects, linking various sectoral institutions.

- Plan for the replacement of incandescent light bulbs with high-efficiency lamps. VMME, ANDE and OLADE. Project completed.
- Revision of ANDE’s rate schedule. Application of differential tariffs for low voltage and other measures.
- Communication campaign for proper use of energy.

3. Schemes or mechanisms to finance Energy Efficiency efforts

Currently being studied, as mentioned in item 3, paragraph two, National Energy Efficiency Plan, “Analyze and identify sources of project financing.”

4. Fiscal, economic or tariff incentives

Currently being studied, as mentioned in item 3), paragraph two, National Energy Efficiency Plan, “d) Analyze the implementation of fiscal, financial and taxation measures”.

5. Access to energy
Electricity coverage in Paraguay's urban areas is around 97% and in rural areas 87 to 88% (Source: SIEE-OLADE).

Pilot project conducted under the framework of cooperation with OLADE, in La Patria Community, an indigenous population located in the Chaco, with 250 families, where firewood, kerosene and candles are currently used.

- Components of the project currently under development
  - Productive use of carob beans (algarroba): flour – baking (includes radio communication system and diesel generator);
  - Multipurpose center for commerce, training and social events (use of SFV);
  - 122 improved stoves.

Key activities conducted:

- Workshops with the community to identify projects
- Establishment of a community enterprise and a sustainability scheme for fund administration by an NGO
- Construction of infrastructure to process carob beans (algarroba): collection centers, flour processing, baking

In the 2008–2013 Strategic Plan (Ministry of Public Works and Communications, www.mopc.gov.py, which deals with energy issues), there are no projects to expand access to energy.
PERU

1. Existing regulations

Peru has the following regulations on energy efficiency: a) Law 27.345, Promotion of the Efficient Use of Energy (September 2000); b) Regulation of Law 27.345, Supreme Decree No. 053-2007-EM (October 2007).

Measures for energy saving in the public sector: Supreme Decree No. 034-2008-EM (June 2008). Linear Fluorescent Lamps (40 W) (Model T12) should be replaced with 36 W (Model T8) lamps, and Incandescent Light Bulbs should be replaced with Compact Fluorescent Lamps (according to equivalency).

Energy consumption indicators and their monitoring methodology, R.M. No. 038-2009-MEM/DM (January 2009), were approved in order to establish energy consumption indicators disaggregated by sectors.

2. Institution responsible for Energy Efficiency

The General Directorate of Electricity (Dirección General de Electricidad [DGE]), belonging to the Vice Ministry of Energy, under the Ministry of Energy and Mines of the Government of Peru (www.minem.gob.pe), is the institution responsible for promoting energy efficiency activities in the country.

3. Organization and definition of national programs: programs under execution

Plan of Reference for the Efficient Use of Energy 2009–2018. Mission under the scope of energy efficiency: to promote the implementation of energy efficiency efforts in all sectors of consumption through best practices and the use of efficient technology.

DGE brought together the 25 regional governments at a Coordination Workshop – Regional Governments – Plan of Reference for the Efficient Use of Energy 2009–2018, in September 2009 with the objective of endorsing the approval of said Plan of Reference (PREE).

Enacted by R.M. No. 469-2009-MEM/DM (October 2009). Mission: to promote the implementation of energy efficiency efforts in all sectors of consumption through best practices and the use of efficient technology, improve competitiveness and contribute to the country’s sustainable development.

4. Support to ESCOs

In June 2009, the National Environmental Fund of Peru (Fondo Nacional del Ambiente del Perú [www.fonamperu.org]) organized an international course and workshop on entrepreneurial and business aspects of energy service companies in Peru.

An ongoing operation with the Inter-American Development Bank is Technical Cooperation Grant Agreement No. ATN/ME-10711-PE, “Promotion of Market Opportunities for Clean Energy and Energy Efficiency in Peru”. Its objective is to promote business opportunities and improve the competitive of PyMEs, among other aspects, with the intention of favoring the consolidation of a market for energy service companies. Under the framework of this project, a registry of ESCO-type companies and consulting firms has been prepared, available at: www.fonamperu.org/general/energia/documentos/directorio2.pdf.

30 See note for definition of ESCOs in the introduction.
5. Schemes or mechanisms to finance Energy Efficiency efforts

In 2008, the State allocated approximately US$2.8 million to the campaign for promotion of the efficient use of energy in the residential, public and productive sectors. In 2009, US$3.3 million had been earmarked.

Likewise, in 2008 Banco BBVA, belonging to Peru’s private banking system, at the request of the IFC-World Bank, channeled US$30 million in loans to productive sector companies for energy efficiency projects through the “leasing” modality, a fund that was exhausted that same year, for which it was considered a successful experience. Other local banks have been managing funds for Clean Production, which includes energy efficiency projects.

In August 2008, an energy efficiency campaign for small and medium businesses, financed by the IDB (cited in point 4 above), was launched. The executing agency is the National Environmental Fund (Fondo Nacional del Medio Ambiente [FONAM]) and has US$1.5 million available for three years.

For the purpose of financing energy efficiency programs in the productive sector, the Development Finance Corporation (Corporación Financiera de Desarrollo [COFIDE]) is coordinating a loan from RWE Bank (Germany) for €50 million, which is in final negotiations.

Moreover, in 2009 a specific project was implemented to replace 200,000 kerosene stoves with gas stoves, and 25,000 traditional firewood stoves with improved stoves. The project has an approved budget of US$15 million.

It has been estimated that the implementation of the Plan of Reference for Energy Efficiency will require a minimum initial annual budget of US$3 million. This amount is only for the promotion and stimulation of the energy efficiency market in all sectors, whereby the stakeholders themselves make the investments, since the energy efficiency efforts that are carried out will be paid with the savings that are obtained.

6. Fiscal, economic or tariff incentives

The Plan of Reference for Energy Efficiency calls for the design of support mechanisms through incentives for energy efficiency projects.

7. Market for efficient equipment


As of 2010 the following NTPs related to Energy Efficiency are in effect:

- Industrial Boilers: 4
- Electric Motors: 4
- Refrigeration: 4
- Lighting: 21
- Water Heaters: 6
- Solar Systems: 6
- Total: 45
Guidelines for Minimum Energy Efficiency Standards

Objective: to provide relevant information on the energy efficiency of energy-consuming equipment. For example, the minimum electricity consumption of a frost-free refrigerator with an upper freezer should be 255 kWh/year.

8. Equipment labeling

Guidelines for Energy Efficiency Labeling

Coordination is under way with INDECOPI and PRODUCE (www.produce.gob.pe), the portal of the Ministry of Production, to develop the mandatory use of these energy efficiency tools in the country.

9. Access to energy

Prior to 1992, electricity coverage was as low as 45%. Peru currently has the lowest coverage index in South America, after Bolivia. As of 2009, 79% of the country’s inhabitants had electricity. According to the Ministry of Energy and Mines, Peru will achieve a nationwide electricity coverage of 94% in 2011. To achieve this objective in 2011, MEM will execute the new electrification program known as “Luz para Todos”.

Access to electricity in disadvantaged urban zones: “Light for All” (“Luz para Todos”) Program

Under this program, MEM has US$36 million available to provide electricity to disadvantaged urban areas. The investment serves to cofinance the implementation of Emergency Decree Nº 116–2009, which promotes the provision of public electrification service in the country’s disadvantaged urban areas. Companies can submit to the Ministry of Energy and Mines a request for financing payable in 10 years, subject to the number of houses that they will electrify. The program’s mechanism will allow the electrification coefficient in urban areas to increase by 4%, and in rural areas by 10%.

In rural areas, 68% of the Peruvian population does NOT have electricity (based on the 2005 National Electrification Coefficient: 78%).

With regard to the expansion of access to energy for the rural sector, the objectives of the electricity sector in the medium and long term are to:

1. Place Peru within Latin’s top third in terms of electricity coverage in the medium term.
2. Train rural users of the electricity service in the productive use of electricity.
3. Prepare plans in coordination with regional and local governments, so that they are able to prepare and execute their own studies and works.
4. Conduct studies that enable the gradual development of non-conventional types of renewable energy (solar, geothermal and wind) and the updating of designs for rural electricity systems.
5. Coordinate financing with public and private agencies for the purpose of obtaining economic resources and favorable credits to finance project execution.
6. Optimize administrative management and achieve institutional strengthening through the adequate provision of resources.

SAINTS KITTS AND NEVIS

1. Existing regulations

The Ministry of Public Works, Housing, Energy and Utilities (MPHEU) of the Federation of Saint Kitts and Nevis (SKN) is the entity responsible for energy issues in the islands. With financial support from the OAS, the Federal Energy Department has been initially financed under the MPHEU. This Department will be responsible for formalizing staffing requirements, equipment needs and skills development, as well as identifying sources of financing (within or outside the Federation) that will ensure the Department’s economic sustainability. The Department is responsible for facilitating the dissemination of information and best practices to all sectors with the aim of energy sustainability. Despite this, due to its recent creation it has limited personnel and its activities and role within the Ministry are still being formally established. In addition, the Nevis Island Administration (NIA) operates under the protection of the SKN Government. NIA has a Ministry of Communications, Works, Post, Physical Planning, Natural Resources and Environment which coordinates energy-related activities for the Island of Nevis.

A strategic plan for sustainable energy was formally approved in 2002, promoted as part of the Global Sustainable Energy Islands Initiative (GSEII) initiative, which will be supported by the national energy policy. SKN has not formally accepted its energy policy but it is currently in draft and is under discussion.

2. Institutions responsible for Energy Efficiency

The institutions responsible for carrying out the policy for the efficient use of energy in Saint Kitts and Nevis are the MPHEU and the Nevis Island Administration.

3. Organization and definition of national programs: programs under execution

Incandescent light bulb replacement program (2004–2007)

In 2007, Saint Kitts and Nevis, as part of Cuba’s International Cooperation Program implemented in several Caribbean countries (all of these beneficiaries are members of PETROCARIBE), fully replaced incandescent light bulbs with energy-saving lamps. Savings of US$4.2 million were estimated as a result of this Cuban initiative (according to OLADE data).

Low Carbon Communities for the Caribbean (LCCC) initiative (2010)

The OAS organized the LCCC program with funds from the Caribbean Sustainable Energy Programme (CSEP), an initiative financed by the ACP-EU Energy Facility of the European Union, in conjunction with technical assistance from the National Renewable Energy Laboratory (NREL) of the United States Department of Energy (DOE), and support from the Caribbean Electric Utility Service Corporation (CARILEC). This project seeks to create public capacity in renewable energy and energy efficiency, in which public employees will receive training by the DOE to conduct energy audits.

The Government has shown interest in issuing mandates and restructuring taxes to promote the adoption of energy efficiency measures.

Most activities and efforts have dealt with the development of renewable energy, i.e., two wind power project and one geothermal project, and bioenergy studies.

4. Equipment labeling
The responsible authority is the Bureau of Standards (BoS), which operates under the Ministry of Finance, Foreign Trade, Industry and Consumers, but interest in the energy labeling of equipment has not yet been established.

5. Access to energy

The level of electrification in Saint Kitts and Nevis is over 99%.
SAINT LUCIA

1. Existing regulations

Saint Lucia recently approved its national energy policy (June 2010), which will be followed by modifications to legislation, regulations, etc. to promote the use of renewable energy and energy efficiency measures, with a defined institutional and regulatory framework. In terms of energy efficiency, the national energy policy highlights the implementation of demand management programs, the creation of incentives that promote energy efficiency, mandatory energy audits for large-scale consumers, support for the creation of ESCOs, and focus on efficiency in construction and transportation, among other activities.

The Ministry of Planning, Development, Housing and Environment is in charge of administering activities dealing with energy, formulating and monitoring the national energy policy, strategy and plans.

2. Institution responsible for Energy Efficiency

There is no specific institution in charge of energy efficiency. This responsibility falls under the Ministry of Planning, Development, Housing and Environment.

3. Organization and definition of national programs: programs under execution

Energy Awareness Week (2004–present)

Since 2004, with the support of the GSEII program, Saint Lucia created and annually conducts the “Energy Awareness Week”, seeking to raise awareness and educate the population on the rational and efficient use of energy.

Energy audits and training for the hotel industry (2004)

A series of training workshops were held for energy audits and energy management in the hotel sector.

Incandescent light bulb replacement program (2004)

Under GSEII, the replacement of incandescent light bulbs with energy-saving lamps was initiated.

Incandescent light bulb replacement program (2005–2007)

Saint Lucia, as part of Cuba’s International Cooperation Program implemented in several Caribbean countries (all of these beneficiaries are members of PETROCARIBE), fully replaced incandescent light bulbs with energy-saving lamps.

Energy-Saving Light Bulb Project (2008–present)

As a follow-up to the bulb exchange programs, the Government is continuing efforts to replace light bulbs, with the ultimate goal of prohibiting the importation of incandescent bulbs.

Low Carbon Communities for the Caribbean (LCCC) initiative (2010)

The OAS organized the LCCC program with funds from the Caribbean Sustainable Energy Programme (CSEP), an initiative financed by the ACP-EU Energy Facility of the European Union, in conjunction with technical assistance from the National Renewable Energy Laboratory (NREL) of the United States Department of
Energy (DOE), and support from the Caribbean Electric Utility Service Corporation (CARILEC). This project seeks to create public capacity in renewable energy and energy efficiency, in which public employees will receive training by the DOE to conduct energy audits.

4. Equipment labeling

The responsible authority is the Saint Lucia Bureau of Standards, which is currently labeling and monitoring all imported electrical appliances.

The Government is very interested in, and has assigned priority to, the labeling of electrical appliances and the development of construction codes, as defined in the national energy policy.

5. Access to energy

The level of electrification in Saint Lucia is over 99%. 
SAINT VINCENT AND THE GRENADINES

1. Existing regulations

In February 2009, Saint Vincent and the Grenadines became the first Eastern Caribbean country to approve, through proceedings in its Cabinet, the National Energy Policy aimed at ensuring the provision of clean, reliable and affordable energy to its population. The National Energy Action Plan was approved in April 2010. The creation of the Energy Unit (2008) under the Office of the Prime Minister the Ministry of National Security, as well as the Energy Conservation Fund (2008), are aimed at reducing dependence on imported energy resources through the establishment and implementation of policies and programs to promote energy conservation and efficiency in the end-use and development of local renewable energy. In 2008, the National Energy Committee was also established; it is composed of experts in different fields and is in charge of supervising and providing recommendations to the Prime Minister on energy issues.

2. Institution responsible for Energy Efficiency

The institution responsible for carrying out the policy for efficient use of energy in Saint Vincent and the Grenadines is the Energy Unit, cited in 1).

3. Organization and definition of national programs: programs under execution

Incandescent light bulb replacement program (2004–2007)

Saint Vincent and the Grenadines, as part of Cuba’s International Cooperation Program implemented in several Caribbean countries (all of these beneficiaries are members of PETROCARIBE), fully replaced incandescent light bulbs with energy-saving lamps. VINLEC31 reported a 1 MW (4%) reduction in peak evening demand, thanks to this program.

Campaign for energy efficiency measures (2005)

VINLEC conducted a nationwide television campaign to promote energy conservation and efficiency.


This year the GoSVG, with financing from the European Commission, commissioned a study of energy efficiency in 75 public buildings to demonstrate the benefits of energy-saving technologies and practices and to provide public employees with information and increase their awareness of the rational use of energy.

Low Carbon Communities for the Caribbean (LCCC) initiative (2010)

The OAS organized the LCCC program with funds from the Caribbean Sustainable Energy Programme (CSEP), an initiative financed by the ACP-EU Energy Facility of the European Union, in conjunction with technical assistance from the National Renewable Energy Laboratory (NREL) of the United States Department of Energy (DOE), and support from the Caribbean Electric Utility Service Corporation (CARILEC). This project seeks to create public capacity in renewable energy and energy efficiency, in which public employees will receive training by the DOE to conduct energy audits.

4. Schemes or mechanisms to finance Energy Efficiency efforts

31 VINLEC is the national electricity company, a state monopoly.
The Energy Conservation Fund was given the sum of EC$1 million for three years (2008–2010) to develop an Energy Conservation Program.

5. Fiscal, economic or tariff incentives

Tax on incandescent light bulbs (2007)

The Government introduced a 10% tax on incandescent light bulbs with the goal of phasing out their importation.

Elimination of taxes on solar heaters and photovoltaic solar panels

On a case-by-case basis, solar heaters and photovoltaic solar panels (including batteries and inverters) are exempt from import taxes. The impacts of this measure have not been evaluated. Data on the importation of equipment show a significant increase in imports, from fewer than 100 solar heaters imported per year to nearly 500 in subsequent years, although their use is limited. The importation of photovoltaic solar panels is less significant.

Tax on vehicles

An environmental tax is levied on vehicles built before year 2000. This tax is aimed at having a newer vehicular fleet, but it has not been effective in terms of improving efficiency in energy consumption in the transportation sector.

6. Equipment labeling

The responsible authority is the Bureau of Standards (BoS) which currently labels all imported electrical appliances with information (vendor, country, model, voltage, frequency, current, etc.), but this information is not specific with regard to their consumption.

The Government has expressed great interest in, and has assigned priority to, the labeling of electrical appliances and the development of building codes, to be coordinated and executed by the Energy Unit and the BoS.

7. Access to energy

The level of electrification in Saint Vincent and the Grenadines is over 99%. Firewood is still used for cooking (low efficiency); this should be evaluated in greater detail and alternative services should be sought.
SURINAME

1. Institution responsible for Energy Efficiency

Currently, no specific regulation is in effect for the promotion of efficient energy use in Suriname.

Suriname has no official agency in charge of energy efficiency issues. The institutional scheme with respect to energy is as follows:

The three entities (two public enterprises and the Department of Energy under the authority of the Ministry of Natural Resources) have their own energy efficiency programs, which are approved by the Ministry.

2. Organization and definition of national programs: programs under execution

The light bulb replacement program, through a donation from Cuba, reduced energy consumption in some residential areas by 10%. It did not ensure sustainability.

3. Schemes or mechanisms to finance Energy Efficiency efforts

Indirectly, under the framework of a Water Supply Infrastructure Rehabilitation Project with the financial support of the Inter-American Development Bank (SU-L1018), there is a component that refers to energy efficiency:

Component 2: As a result of several energy audits conducted with IDB financing through RG-T1605 “Energy Efficiency for Caribbean Water and Sanitation Companies”, this component will finance equipment upgrades and the implementation of energy-efficient measures that will make it possible to generate benefits and energy savings and recover expenses in the short term. The Executing Agency for Project SU-L1018 is the water company N.V. SWM.

4. Market for efficient equipment

There is only partial penetration of efficient lamps in the residential sector.

5. Access to energy

By 2008, it was estimated that 85% of the population would have access to electricity. Of this 85%, 79% is served by the state energy company N.V. Energiebedrijven (EBS) and the remaining 6% by the district-level electrification company DEV under the Ministry of Natural Resources.
The Ministry of Natural Resources, through the Department of District-level Electrification, is responsible for supplying electricity to rural villages in the country’s interior. At the end of 2009, the IDB approved a technical assistance program whose objective is to promote and support the use of renewable energy in Suriname’s interior areas, for the purpose of ensuring the sustainable development of these regions, offering alternatives to reduce dependence on fossil fuels and ensuring the adequate use of their natural resources. The outcomes of this technical assistance may help improve conditions for providing electricity in rural areas of the country’s interior.
TRINIDAD AND TOBAGO

1. Institution responsible for Energy Efficiency

There are no laws or regulations aimed at the rational use of energy, whether indicative or mandatory.

However, the Government has agreed to include this subject in its medium-term sustainable development goals, stemming from its statement at the Workshop for Promoting Energy Efficiency in the Caribbean, held in May 2010 in Port of Spain.

The government agency in charge of managing and developing petroleum and mining resources in the country is the Ministry of Energy and Energy Industries (www.energy.gov.tt).

The Ministry’s Web site describes its principal activities; none of them deals with actions, projects and/or programs for efficiency in the use of energy. It also cites the Ministry’s strategic objective and makes no mention of energy efficiency in the area of Energy Planning.

2. Market for efficient equipment

There is a Green Building Certification, which will allow Trinidad and Tobago to meet international standards in the construction of efficient buildings.

3. Equipment labeling

No system has been implemented for the labeling of energy efficient equipment. Imported equipment comes with labels from the countries of origin.

4. Access to energy

The current percentage of electricity coverage in Trinidad and Tobago is over 97% in urban areas. There is no information on the percentage of coverage in rural areas.

Most of the existing electrical power plants are simple-cycle gas turbines and steam turbines with an average thermal efficiency of 25%. The strategy of the Electricity Commission of Trinidad and Tobago is to have a plan for the expansion of electricity supply that uses high-efficiency generation (over 40%), operating as combined cycle, to meet the country’s needs for electricity supply until 2018.
URUGUAY

1. Existing regulation

A Legal-Institutional Framework has been established for energy efficiency in Uruguay. It has been formalized through a series of Laws, Decrees and Resolutions that provide the legal-institutional framework to make energy efficiency a State policy and establish the rules for promoting business activity.

- Law 18.587: Efficient use of energy
- Decree 408/08: Public lighting
- Decree 311/06: Summer hours
- Decrees 527/08 and 152/010: Energy efficiency in the public sector
- Decree 306/09: Energy efficiency labeling
- Decree 354/09: Promotion of investments in energy efficiency
- Resolution 2928/09: Municipal regulation of thermal isolation

- The National Energy Efficiency Plan is defined, and institutionality is established for energy efficiency.
- Mandatory energy efficiency labeling is determined.
- The responsibilities of energy companies are modified.
- Sources of financing and their distribution are established.
- The need to remove economic and administrative barriers to energy efficiency is established.

The Plan has a 15-year horizon and will be reviewed and evaluated every 5 years.

2. Institution responsible for Energy Efficiency

Energy efficiency activities in Uruguay are the responsibility of the Energy Efficiency Project Management Unit (Unidad de Gerenciamiento del Proyecto de Eficiencia Energética [www.eficienciaenergetica.gub.uy]). Its location in the Government of Uruguay’s organizational chart for energy issues is as follows:
The National Director of Energy has overall responsibility for project execution, with the support of the Project Management Unit headquartered in the Ministry of Industry, Energy and Mining (Ministerio de Industria, Energía y Minería [MIEM]).

The component under the responsibility of UTE (the Uruguayan public enterprise dealing with energy) is executed by the Energy Efficiency Services Unit (Unidad de Servicios de Eficiencia Energética [USEE]). The Project Management Unit (Unidad de Gerenciamiento del Proyecto [UGP]) is in charge of coordinating project activities.


3. Organization and definition of national programs: programs under execution

Energy Efficiency Program in Uruguay

The Energy Efficiency Project is one of the instruments that supports the strategic guidelines and policy defined for the Uruguayan energy sector, and contributes to: increasing competitiveness; encouraging private sector participation; diversifying energy sources; protecting the environment; supporting programs and technologies that promote efficient uses of energy; and facilitating access by isolated, low-income rural households to modern sources of energy that can meet their basic needs.

Specific Objectives: to promote energy efficiency and environmental protection, correcting market failures and increasing institutional capacity; to increase the economy’s efficiency by reducing energy intensity; to reduce the economy’s exposure to external shocks; to encourage private sector participation by supporting energy service companies (empresas de servicios energéticos [ESCOs]); and to promote the generation of a suitable legal-institutional framework for the development of energy efficiency in Uruguay.

Expected results in the 15-year life span of the Energy Efficiency Project:

- US$22.7 million in energy efficiency investment at project completion
- US$6.2 million in project financing through the Energy Efficiency Trust Fund
- 10 energy service companies (ESCOs) operating
- 250 stakeholders trained in energy efficiency practices
- 559 ktep of energy saved at project completion
- 1.4 million tons of CO2 emissions avoided

4. Support to ESCOs

Some of the objectives of the Energy Efficiency Project are to develop the market for energy service companies and contribute to strengthening them by generating the necessary conditions for project execution under the scheme of Performance Contracts between ESCOs and energy consumers. (See market development plans)

This will be achieved by creating links between ESCOs and energy consultants with energy-using companies and financial and support institutions. To do so, information is being collected on energy consultants and on companies interested in becoming ESCOs, as well as on the identification of areas of opportunity in energy-using facilities interested in project development.

The existing energy service companies appear in the list of companies registered to date.

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See note on the definition of ESCOs in the introduction.
5. Schemes or mechanisms to finance Energy Efficiency efforts

During the period of effectiveness of the Uruguay Energy Efficiency Project, energy efficiency activities are financed by a Global Environment Facility (GEF) grant, through the World Bank, which is contributing US$6,875,000, and by counterpart funds from the Ministry of Industry and Energy and the electricity company UTE, which together will contribute US$8,200,000.

GEF is contributing funds for the implementation of the Uruguay Energy Efficiency Project through a grant to the Uruguayan Government, to the Ministry of Industry, Energy and Mines, channeled through the World Bank.

The Ministry of Industry, Energy and Mines and UTE are contributing the remainder of the funds for project implementation, in the form of local counterpart.

Once the Energy Efficiency Law comes into effect, energy efficiency activities will be financed by the Uruguayan Energy Efficiency Trust Fund (Fideicomiso Uruguayo de Eficiencia Energética [FEE]). This Trust Fund administers the funds collected from the tax levied on sales of energy (electricity and fuels) and on the installation of new power plants that use fossil fuels.

Energy Efficiency Trust Fund

In October 2008, the contract between the Ministry of Energy and Mines and the National Corporation for Development (Corporación Nacional para el Desarrollo [CND]) for the creation of the Energy Efficiency Trust Fund (Fideicomiso de Eficiencia Energética [FEE]) was signed. In December 2008, the financing was officially launched. In January 2009, grant funds were disbursed for the capitalization of the FEE: US$2.5 million for the formation of the guarantee trust fund that will form part of the National Guarantee System (Sistema Nacional de Garantías [SNG]). Once the initial contracts with financial market institutions are signed, the process to grant the first loans for energy diagnostics began.

Funds come from the grant received by MIEM from the Global Environment Fund, through the World Bank.

Two lines: 1) Technical assistance by ESCOs – 2) Project implementation.

As of July 2010, FEE’s activities imply an accumulated energy saving of 7 ktep and an emission reduction of 16 kton CO₂.

6. Fiscal, economic or tariff incentives

Subsidies from the Energy Efficiency Fund are granted to energy saving projects through an Energy Saving Certificate scheme; investments are also promoted through fiscal incentives for projects that save energy.

7. Market for efficient equipment

National Technical Standards for Energy Efficiency. Over 35 standards for electrical appliances, gas appliances, buildings and solar collectors have already been approved.

Test laboratories

In October 2009, the laboratory for testing the energy efficiency of water heaters was inaugurated. The first facility in the country aimed at conducting efficiency tests, this laboratory, together with two others that are
currently being modified, will form part of the network of Uruguayan national laboratories dealing with this subject.

8. Equipment labeling

Energy Efficiency Labeling was put into effect in September 2009 and the first equipment to be labeled will be compact fluorescent lamps and electric water heaters.

“A Todas Luces” Program: the first milestone in national labeling

As of July 2010, 1,589,830 lamps labeled with efficiency level “A” in accordance with the UNIT standard had been delivered to residential users. This implies a 14% level of penetration of efficient lighting in the country’s entire urban residential lighting stock. Savings of 94,000 MWh/year.

In September 2009, the Decrees that launched the energy efficiency labeling operation for electrical and gas equipment became effective. Labeling becomes a mandatory application and a requirement for marketing throughout Uruguay, once the temporary periods established in the individual Decrees expire.

9. Access to energy

Overview of access to energy, selecting three indicators:\(^{33}\)

- Indicator 1 = Degree of electricity coverage (98.5%)
- Indicator 2 = Per capita residential electricity consumption (kWh-year/no. inhabitants). (850)
- Indicator 3 = Amount of residential electricity bill in relation to household income (5%)

These indicators reflect significant distribution in access to and use of electricity.

Access to electricity service provided by UTE (the Uruguayan public enterprise responsible for generating, transmitting and distributing electricity) – 2008.

- With “formal” access: Total: 93.6% - Montevideo: 91.3% - Rural interior: 80.3%
- With “informal” access (“colgados”): Total: 4.6% - Montevideo: 8.4% - Rural interior: 0.6%
- Without access: Total: 1.8% - Montevideo: 0.3% - Rural interior: 19.1%

UTE is conducting rural electrification projects under the framework of its basic principles:

- Universalization of electricity service: contributes to helping people remain in rural areas and serves as a development springboard for national production.

These works are carried out through various forms of international cooperation and with the active participation of the community; for example, the agreements aimed at social inclusion, with the Ministry of Social Development and the National Public Education Administration (Administración Nacional de Educación Pública) (www.anep.edu.uy).

Under the framework of the National Plan to Address the Social Emergency (Plan Nacional de Atención a la Emergencia Social) (2005–2007), the Ministry of Social Development and UTE signed an agreement under

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\(^{33}\) Source: Jorge Molinari, “Access to energy and poverty reduction to achieve Millennium Development objectives: an analysis of the Uruguayan electricity sector”, Santiago de Chile, October 2009
which a discount in the simple residential tariff is granted. Objective: to take an initial step toward forming a Basic Energy Basket.

Target audience: the population that received the “Citizen Income” (Ingreso Ciudadano) from the Emergency Plan (approx. 80,000 families) and that meets the following requirements:

- Present proof of receiving the “Citizen Income”.
- Have 2.2 kW of contracted power.
- Have a single supply in his or her name.
- If a new client, he or she must belong to an electrified zone and have interior installations in adequate condition.
VENEZUELA

1. Existing regulations

As background, the Ministry of Popular Power for Energy and Petroleum of Venezuela (Ministerio del Poder Popular para la Energía y Petróleo de Venezuela), under the framework of cooperation between the CEPAL Project/European Commission on “Promotion of the efficient use of energy in Latin America”, prepared a draft Law to Promote Energy Efficiency (2001) and conducted a study on the Venezuelan legal framework.


In response to this policy, the Energy Revolution Mission (Misión Revolución Energética) was created in 2006. In addition, the Organic Law of Hydrocarbons and the Decree with Rank and Force of the Organic Law of Gas Hydrocarbons and the Organic Law of Electricity Service establish guidelines aimed at introducing energy efficiency in the activities that they regulate.

2. Institution responsible for Energy Efficiency


The regulation, formulation and monitoring of policies, planning, conduction and monitoring of the activities of the National Executive Authority on the subjects of hydrocarbons, energy in general, petrochemicals, carbochemicals, and similar or related subjects, is in the hands of the Ministry of People’s Power for Energy and Petroleum (Ministerio del Poder Popular para la Energía y Petróleo [MENPET]).

The General Bureau of Electrical Energy and the General Bureau of Alternative Energy are under the responsibility of the Office of the Vice-Minister of Energy.

Foundation for the Development of Electricity Service (Fundación para el Desarrollo del Servicio Eléctrico [FUNDELEC])

This is an agency assigned to MENPET that provides comprehensive advice on the operation of the electricity sector and on the different circumstances that may arise with respect to service. Its functions include coordinating the Cooperation Project for the Integrated Training of Personnel of Cuba and Venezuela (Proyecto de Cooperación para la Formación Integral de Personal de Cuba y Venezuela), under the scope of the Rational and Efficient Use of Electrical Energy.

National Electricity Corporation (Corporación Eléctrica Nacional [CORPOELEC]) ([www.corpoelec.gob.ve](http://www.corpoelec.gob.ve))

The National Electricity Corporation (CORPOELEC) is a state operated enterprise in charge of carrying out generation, transmission, distribution activities and the marketing of electrical power and energy, and is under the authority of the Ministry of People’s Power for Energy and Petroleum.

CORPOELEC gives support to the Energy Revolution Mission by implementing actions aimed at sustaining the program for replacing incandescent light bulbs with energy-saving lamps and at the installation of distributed generation plants, through the construction of locations for power unit batteries.
3. Organization and definition of national programs: programs under execution

In 2006, the President of the Bolivarian Republic of Venezuela announced the start of the Energy Revolution Mission whose aim was to promote the efficient use of energy in the country, with the following programs:

- Program to replace incandescent light bulbs with energy-saving lamps.
- Vehicle Natural Gas Program.
- Replacement of obsolete gas infrastructure and national gasification.
- Creation of energy efficiency standards.
- Renovation of the electricity generation pool and conversion of diesel-consuming generation units to gas.
- The use of alternative energy sources.
- Installation of alternative electricity systems in isolated communities.
- Installation of water purification plants in rural communities, using photovoltaic energy.
- Installation of distributed generation plants.
- Carry out campaigns to educate, inform and raise the awareness of the population.

Actions:

- Replacement of lamps in the residential sector: 53.16 million lamps. In other sectors: 15.36 million lamps.
- Residential sector: replacement of 36,417 air conditioning equipment units.
- Fuel substitution: the objective is to promote the use of natural gas as a fuel alternative to be used in the nationwide automotive pool to improve environmental quality, increase the exportation of liquid fuels and favor the sustainable development of Venezuela.
- Other actions: Pilot study on energy efficiency in four large electricity consumers on the Island of Margarita, State of Nueva Esparta.

CORPOELEC carried out the third phase of replacing incandescent bulbs with energy-saving lamps; it began in February 2008 and involved the replacement of 11.3 billion bulbs, as reflected in a 569.7 MW reduction in the load curve and assistance to 1,890,000 families.

4. Schemes or mechanisms to finance Energy Efficiency efforts

Under the framework of several bilateral energy agreements, the State has allocated resources to carry out energy efficiency projects. This is the case of the Cooperation Project for Integrated Training of Personnel of Cuba and Venezuela, cited in 2 b).

Under the scope of the above project, CORPOELEC has invested in training by promoting energy efficiency certificate programs in several of the Corporation’s branch offices, under the auspices of the Ministry of People’s Power for Energy and Petroleum, the Foundation for the Development of Electricity Service, and the Energy Agreement between Cuba and Venezuela and the National Experimental Polytechnic University (Universidad Nacional Experimental Politécnica [UNEXPO]).

Currently, CORPOELEC is giving support to the Energy Revolution Mission in order to successfully complete the third phase of replacing incandescent light bulbs with energy-saving lamps.
5. Fiscal, economic or tariff incentives

Specific incentives of this nature are applicable only to the construction sector. The purpose of the incentives is to encourage the design and construction of buildings with higher thermal quality than that required by the regulation (Ordinance on Thermal Quality of Buildings in the Municipality of Maracaibo). Thus, a special certification is established, recognizing the additional effort for contributing to the efficient use of electrical energy, through a rating scale that improves the thermal quality required by the regulation between 10% and 30%. Two types of incentives are established: urban and fiscal.

6. Market for efficient equipment

The market for efficient equipment in Venezuela needs to be expanded; it currently includes compact fluorescent lamps, refrigerators and freezers, and air conditioners.

7. Equipment labeling

Through a Joint Resolution by the Ministries of Popular Power for Commerce and for Energy and Petroleum, it is mandatory to place the “Consumption Guideline” label that indicates energy consumption in refrigerators and freezers.

Building codes

Ordinance on Thermal Quality of Buildings in the Municipality of Maracaibo: A mandatory legal instrument whose purpose is to ensure that the design and construction conditions of new buildings meet the limits of the Overall Thermal Transfer Value of roofs and walls, stipulated for the Municipality of Maracaibo, in order to seek comfortable thermal conditions, achieving a reduction in electricity consumption through the use of air conditioners.

8. Access to energy

The percentage of electrification in Venezuela totals 97%, with a three-point increase in recent years (June 2010).

According to OLADE statistics, the percentage of electrification in rural areas is 95% and in rural areas 97%.

Project in rural areas: the rural electrification project for isolated communities in Venezuela was formalized at the end of 2009. The project is composed of 48 hybrid systems—wind, photovoltaic, diesel—to supply electricity to small communities divided into groups of 10, 20, 30 or 40 houses, respectively. It is currently being executed in the different locations selected for the installation of these systems.

In addition, the Inter-American Development Bank (IDB) approved a US$200 million loan to aid Venezuela in optimizing its electricity services through support for the corporative and institutional strengthening of CORPOELEC, particularly in terms of resources for the management of commercial, administrative and environmental administration areas.

Although Venezuela is one of the countries with the most electricity coverage in the region, the sector needs to be modernized; in particular, it must reduce energy losses as well as losses due to lack of payment collection. In order to address these challenges, CORPOELEC has undertaken a strategy based on absorbing all public electricity companies and assuming the responsibilities for generation, transmission, distribution and commercialization.
The IDB loan has a 20-year life cycle, with a 5-year grace period, at a LIBOR-based variable interest rate. The Government of Venezuela will contribute an additional US$50 million.
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33. Argentina – PERMER – Framework for Environmental and Social Management (www.wds.worldbank.org)


38. IV Meeting of Latin American Former Presidents – Social Forum: “Access to electricity service and poverty in Latin America and the Caribbean” – Presentation to the Global Center for Democracy, São Paulo, March 2009 – (www.corporacionesescenarios.org)

39. Rural Electrification – Twice-monthly report of the National Society for Mining, Petroleum and Energy of Peru (Sociedad Nacional de Minería, Petróleo y Energía del Perú [SNMPE]) (www.snmpe.org.pe)


41. Lessons learned in the OLADE Rural Electrification Project (www.aep-peru.org/foroerural/ByronChiliquinga.pdf)

42. Energy and Poverty in LAC (Energía y Pobreza en LAC.pdf) – Byron Chiliquinga and Mentor Poveda, OLADE.


44. Energy and Poverty (Energía y Pobreza) – (www.energiasinfronteras.org/documentacion/energia y pobreza)
45. Growing with Energy (Crecer con Energía) – “Linking micro-enterprises and income-generating activities with energy services for the poor population in the South American Chaco” – Manuel Fuentes – IT Power – CINER (Bolivia) (http://www.crecerconenergia.net/archivos/PDF/g6_d31.PDF)


List of websites dealing with energy efficiency, renewable energy, rural electrification and access to energy issues

(Compiled by: Biomass Users Network [BUN-CA – www.bun-ca.org])

1. http://www.undp.org: Homepage of the United Nations Development Programme (UNDP). Information of global relevance is available, highlighting the participation of energy and the environment as key aspects for achieving sustainable development, as well as subjects related to the objectives of the Millennium Project.


3. http://gefweb.org: Saving energy and facilitating the use of renewable energy technologies, expanding the provision of electrical energy to rural communities, reducing dependence on less-efficient technologies that pollute the air, and contributing to the reduction in greenhouse gas emissions are the key objectives of the projects that the Global Environment Fund (GEF) finances in different operational programs and strategic priorities in the Climate Change Thematic Area. The productive uses of renewable energy constitute one of its strategic priorities.


5. http://www.fenerca.org: FENERCA is a program sponsored by the United States Agency for International Development (USAID) that seeks to increase the use of renewable energy in five countries of the Central American Region: Guatemala, El Salvador, Honduras, Nicaragua and Panama. FENERCA develops specialized tools for capacity formation that make it possible to formulate solutions and alternatives for the removal of existing barriers to small-scale renewable energy projects and for energy efficiency. These policies may be of a legal or financial nature. One of FENERCA’s key areas of focus since 2000 has been support to projects related to the productive use of renewable energy.

6. http://www.nreca.org: The National Rural Electrification Cooperative Association (NRECA) is a service organization dedicated to representing the interests of United States electricity cooperatives and of the consumers they serve. In addition, the original purpose of NRECA’s international programs is to export the US rural electrification model to developing countries.

7. http://www.fao.org: The Food and Agriculture Organization of the United Nations (FAO) conducts a variety of international activities aimed at eradicating hunger. By offering its services both to developed and developing countries, FAO acts as a neutral forum in which all countries, under equal conditions, can negotiate agreements and discuss issues. FAO is also a source of knowledge and information, including the productive uses of energy for food production. Since its founding in
1945, FAO has paid special attention to the development of rural areas, where 70 percent of the world’s poor live.

8. http://www.esmap.org: The World Bank’s Energy Sector Assistance Program (ESMAP) is a global technical assistance program that prepares and facilitates guidance on policies for sustainable energy development to governments of developing countries with economies in transition. ESMAP also contributes to technology transfer and knowledge about energy sector management, including the productive uses of energy, and the provision of modern energy services to the neediest people.

9. www.cepal.org: The Economic Commission for Latin America (ECLAC)/Comisión Económica para América Latina (CEPAL) is one of the United Nations’ five regional commissions. Its headquarters are in Santiago, Chile. It contributes to the economic development of Latin America and the Caribbean, coordinates actions aimed at its promotion and strengthens the countries’ economic relationships, both among its member countries and with other world nations.

10. http://www.oas.org: The Organization of American States (OAS)/Organización de Estados Americanos (OEA) conducts various programs in member countries of Latin America and the Caribbean: for example, sustainable development programs for biodiversity conservation, planning to address problems of global warming, mitigation of natural disasters, management of river basins, etc.

11. www.ccad.ws: During the Summit of Central American Presidents in San Isidro de Coronado, Costa Rica, December 10, 11 and 12, 1989, the Presidents of Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua signed, in mutual agreement, the Constitutional Agreement of the Central American Commission for the Environment and Development. Under this agreement, the Contracting States establish a regional cooperation scheme for the optimum and rational use of the area’s natural resources, pollution control, and re-establishment of the ecological balance to ensure a better quality of life for the population of the Central American isthmus.

12. www.reeep.org: This is an active global organization (REEEP: Renewable Energy Efficiency Partnership) that structures policy initiatives for clean energy markets, including project financing.

13. http://www.itpower.co.uk: One of principal consulting firms on renewable energy and sustainable development. Since 1981, ITPOWER has undertaken nearly 800 projects in 91 countries for institutional and private clients. ITPOWER is established in the United Kingdom but it works worldwide through a network of regional offices.

14. http://www.energyhouse.com: With headquarters located in Bloomfield, New Jersey, USA, E+Co is an organization that assists in the creation of viable local businesses that provide clean, reliable and reasonably priced energy, facilitating the merger of human capital, financial resources and different technologies. With representation in Latin America, the Caribbean, Africa and Asia, E+Co offers business development services and provides loans and capital investments to clean energy and energy efficiency companies or projects, in which support for productive uses of energy is an important area of its work.

15. http://www.preeica.ca: Regional Electrical Energy Project for the Central American Isthmus–Proyecto Regional de Energía Eléctrica para el Istmo Centroamericano, known as PREEICA, helps Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama to carry out the process of reforming and restructuring their electricity sectors in order to improve efficiency, private sector participation, reliability and fairness in the provision of electricity, and to take advantage of the savings that can be obtained through regional cooperation.
16. http://www.olade.org: The Latin American Energy Organization/Organización Latinoamericana de Energía (OLADE) is a policy and technical support organization through which its Member States conduct mutual efforts to integrate and develop the regional energy market. OLADE promotes agreements among its members and conducts efforts to meet their energy needs through the sustainable development of different sources of energy.

17. www.worldenergy.org: The World Energy Council (WEC) is a global energy organization with members from 90 countries. Its programs include all types of energy, petroleum, coal, natural gas, nuclear energy and renewable energy.

18. http://europa.eu.int: This is the website of the European Union (EU), the democratic European countries that have agreed to work together for the sake of peace and prosperity. The energy section includes the issues of renewable energy, energy supply and development.

19. http://www.sandia.gov: The Renewable Energy Program of Sandia National Laboratories of the United States promotes the use of renewable energy technologies, especially in photovoltaic and wind-power systems for productive application in remote areas not connected to the public utility grid. This website has guidelines, manuals, presentations and interactive documents that provide information on photovoltaic energy and its applications, including water pumping and other types of uses.


21. http://www.nmsu.edu: New Mexico State University responds to the educational needs of the state’s diverse population, offering comprehensive programs on the subjects such as education and research, including sustainable energy. It also has a College of Agriculture and Home Economics which gives rise to projects related to productive uses of energy.

22. http://www.conuee.gob.mx: The National Commission for the Efficient Use of Energy – Comisión Nacional para el Uso Eficiente de la Energía (CONUEE) is a decentralized administrative agency of the Secretariat of Energy of Mexico. It has technical and operational autonomy. CONAE’s objective is to act as a technical consultation agency for agencies and entities of the Federal Public Administration, as well as for the governments of federative entities and individuals on the subjects of energy saving, efficient use of energy, and use of renewable energy.

23. www.funtener.org: This website publishes the Energy Transition (Transición Energética) bulletin, which contains articles and news on climate change, renewable energy, co-generation and distributed generation, especially in the context of Mexico.

24. http://solar.nmsu.edu/funsolar: The Fundación Solar is a Private Development Organization – Organización Privada de Desarrollo (OPD) that was established in Guatemala in September 1994. This foundation coordinates efforts for the execution of projects related to the environment and to the management of renewable natural resources.

25. http://dei.uca.edu.sv: The José Simeón Cañas Central American University–Universidad Centroamericana José Simeón Cañas (UCA) in El Salvador has several departments and specializes in the teaching of Natural Sciences and Renewable Energy. The principal mission of these departments in the UCA is to serve as a scientific basis for the different careers of the Faculty of
Engineering and Architecture and for Professors of Natural Sciences of the Faculty of Sciences of Man and Nature, and to conduct research in various areas, under the University's social projection guidelines.

26. http://rds.org.hn: In Honduras, the portal of the Sustainable Development Network–Red de Desarrollo Sostenible (RDS) has websites specializing in different thematic areas, including productive uses in rural areas. The Network has spaces of general interest in the social-cultural, environmental and natural resources, economic and policy areas.

27. http://www.cne.gob.ni: The National Energy Commission of Nicaragua–Comisión Nacional de Energía de Nicaragua (CNE) is an inter-institutional agency assigned to the Executive Authority. Some of its functions include the formulation of objectives, policies, strategies and general guidelines for Nicaragua’s energy sector as a whole. CNE is also in charge of indicative planning and development strategy in the energy sector. It is in charge of promoting rural electrification for the purpose of seeking the development and optimum use of the country’s energy resources. It is currently the national executing agency for a UNDP/GEF Project that is developing the productive use of hydroelectricity in areas isolated from the National Interconnected System, including a climate change adaptation component.

28. http://www.cnfl.go.cr: The National Power and Light Company–La Compañía Nacional de Fuerza y Luz is Costa Rica’s principal electricity distribution company. It carries out sustainable actions that make it possible to meet its customers’ needs in terms of programs, advisory services, projects and education on the Rational Use of Energy and on Demand Management, maintaining the population’s quality of life and protecting the environment.

29. http://udenor.gov.ec: In Ecuador, the Northern Development Unit–Unidad de Desarrollo Norte (UDENOR) promotes and accelerates the sustainable development process, negotiating resources and coordinating the execution of the Preventive Alternative Development and Social Reactivation Program (Programa de Desarrollo Preventivo Alternativo y Reactivación Social) with a community and regional focus, through the application of effective, transparent management models. With regard to productive projects in rural areas, UDENOR assigns priority to the areas of forestation, education for production, and support to small industry. It is negotiating resources for the execution of forestry project and has begun the operation of 8 integrated educational farms.


31. www.conama.cl: The National Environment Commission–Comisión Nacional del Medio Ambiente is a Chilean State institution with the mission of promoting the environmental sustainability of the development process and coordinating actions stemming from government-defined environmental policies and strategies. Subjects include productive activities and energy.


33. http://www.energetica.info/: Energética is a private, non-profit Bolivian institution that has been working in the country’s rural areas, in the fields of energy, development, environment and
poverty, since 1993. Its main areas of focus are: Rural Energy Development, Natural Resources and Environment, Energy Training and Promotion, and Institutional Development and Business Management.

34. www.ciner.org: The Center for Information on Renewable Energy—Centro de Información de Energías Renovables in Bolivia oversees the rational use of energy, promoting information sharing among institutions, businesses and people who work on energy issues.

35. www.bariloche.com.ar: The Bariloche Foundation—Fundación Bariloche is a non-profit private institution for the public good, associated with the United Nations University (UNU), UNESCO, the International Federation of Institutes for Advanced Studies (IFIAS) and the Ibero-American Educational Television Association—Asociación de Televisión Educativa Iberoamericana (ATEI). It was founded on March 28, 1963 by a group of Argentine scientists and businessmen to contribute to the conduction of research, and to creative, training, technical assistance and dissemination activities. Its areas of operation include energy, environment and climate change. It is headquartered in San Carlos de Bariloche, Argentina.

36. http://www.ecotopia.com: This website illustrates how to develop and promote market methodologies, as well as technologies and products that help to conserve natural resources and lead our planet toward sustainability with the use of solar energy.


40. http://aleph.gdl.iteso.mx:8080/acad/deptecno/invest/solarcap09.htm This website provides information on water heating for household use.

41. http://www.rwedp.org: Website of the FAO biomass project in Asia, with information on its production, processing and use, and with emphasis on project development in the Asian context, but possibly relevant for Latin America.

42. http://www.cookstove.net: This website provides information on improved cookstoves.


44. http://ww.unam.edu.ar/microt/barney0.htm: Methodological guideline for the implementation of small hydraulic projects.

45. http://www.microhydropower.net/ Website dealing with micro-hydropower systems, with a focus on applications for developing countries.
46. http://www.windmillpower.com/homeSP.html: Website with information on manufacturers of wind energy systems for water pumping, such as Windtech International.


49. http://retscreen.gc.ca: The CANMET Energy Diversification Research Laboratory (CEDRL) in Canada has developed software for the analysis of renewable energy projects to help users identify, evaluate and compare cost-efficient opportunities for renewable energy.

50. http://ez.embajada-alemana-bolivia.org/Instrumentos_Institucionales.htm: The German Financial Cooperation Agency (Kreditanstalt für Wiederaufbau–KFW). This is a pluralistic, flexible system that includes bilateral aid implementation agencies (governmental) such as GTZ, KfW and DED, with representation in Bolivia, as well as large German NGOs partially financed by German Government funds and private support groups that mainly operate with their own resources from private donors.
VII. BIOGRAPHICAL

Leandro Alves, Chief, Energy Division, Inter-American Development Bank

Mr. Leandro Alves is Head of the Energy Division of the Infrastructure and Environment Department of the Inter-American Development Bank (IDB), responsible for Energy, Oil and Gas, Extractive Industries, and Biofuels for the Latin America and the Caribbean region. The Energy Division of the IDB structures projects with sovereign guarantees, public sector projects without the sovereign guarantee, and projects with public private partnership characteristics.

Prior to Mr. Alves’ appointment as Head of the Energy Division, he was Senior Investment Officer for the Structured and Corporate Finance Department SCF of the IDB, responsible for over US$1 billion in structured finance transactions in the energy sector. During his employment with the Structured and Corporate Finance Department, Mr. Alves has led the structuring of financing of numerous projects including: the Moema Biofuels Project, the Campos Novos Hydroelectric Power Project, the Novatrans Transmission Line, the Bandeirante’s Electricity Distribution Project, and participated in the IDB’s 1st Political Risk Guarantee to VBC Energy in Brazil, amongst others.

Prior to joining the Corporate and Structured Finance Department Mr. Alves worked in the Finance and Infrastructure Division of the IDB, at the International Finance Corporation (IFC), and at The World Bank. Mr. Alves has a Bachelor of Arts in Economics from the University of Maryland, a MBA and a MSIM from Marymount University, and a Ph.D. in Finance from the George Washington University.
Philippe Benoit is the Energy Sector Manager in the Sustainable Development Department of the Latin America and the Caribbean Region (LCR) of the World Bank. In this capacity, he is currently focusing on enhancing energy security in the LCR Region in an environmentally sustainable manner, taking into account climate change and other key development considerations.

Mr. Benoit combines over twenty years of experience in energy (including power, oil and gas), both in the private sector and at the World Bank. His vast international expertise includes energy security issues in Latin America, energy efficiency projects in Latin America and Africa, IPPs in North America, regional pipelines in Europe, Central Asia and Africa, hydropower and other renewable projects in Latin America and Africa, access and utility reform issues in Africa and LNG development in the Middle East. At the World Bank, he has also worked with the energy group of the Africa Region and the Private Sector Development Department (specializing in Public Private Partnerships).

Outside of the Bank, Mr. Benoit held the positions of Director of Oil and Gas for the SG Investment Bank and Associate in Corporate Law at the Wall Street firm of Debevoise and Plimpton. Mr. Benoit’s publications include "Project Finance at the World Bank: An Overview of Policies and Instruments". He holds a BA in Economics and Political Science from Yale University, a JD from Harvard Law School, and a DESS in Law from the University of Paris, Pantheon-Sorbonne.
President Felipe Calderón Hinojosa was born on August 18, 1962, in Morelia, Michoacán. He is the youngest of five brothers, and the son of Carmen Hinojosa de Calderón and the late Luis Calderón Vega, founder, leader and historian of the National Action Party (PAN). He is married to Margarita Zavala Gómez del Campo, with whom he has three children.

He holds a bachelor’s degree in Law from the Escuela Libre de Derecho, a master’s in Economics from the Instituto Tecnológico Autónomo de México (ITAM) and a master’s in public administration from the John F. Kennedy School at Harvard University.

Within the PAN, President Felipe Calderón was Secretary of Studies (1987), National Youth Secretary (1991) and Secretary General (1993). From 1994 to 1995, he was the PAN representative to the Federal Electoral Institute (IFE), and in 1995 was candidate for governor of the state of Michoacán.

He was elected president of the PAN’s National Executive Committee during the three year period from 1996-1999. During his tenure, the PAN achieved significant electoral triumphs and was witness to several important agreements, such as the Electoral Reform, which paved the way for the IFE’s autonomy. During his legislative career, President Calderón was Representative of the Legislative Assembly of the Federal District (1988-1991) and Federal Deputy in the 55th Legislature (1991-1994).

In 2000, he was Federal Deputy in the 58th Legislature and was appointed Coordinator of the PAN’s Parliamentary Group (2000-2003), where he submitted various law proposals for the consecutive election of deputies, the Law of Responsibilities of the Civil Servant and the rules and regulations to apply the Law of Access to Information in the Chamber of Deputies.

In 2002, he was president of the Board of Political Coordination, where he promoted transparency in the use of funds in the Chamber of Deputies.

Because of his legislative leadership and performance, President Felipe Calderón was awarded the “NAFTA Congressional Leadership Award” from the México-US Chamber of Commerce and the “CANACINTRA Eagle Award for Legislative Merit” award from the National Chamber of the Manufacturing Industry.

In the international arena, he was Vicepresident of the Christian Democrat Organization of America (CDOA). He was member of the “World Leaders of the Future” of the World Economic Forum from 1997 to 2000.

During his professional career, President Felipe Calderón worked in the areas of civil and labor law, at the firms of Goodrich, Riquelme and Partners and at Multibanco Comermex, respectively. Moreover, he has written as an editorialist for Mexico’s main newspapers. In March 2003, in the public sector, President Felipe Calderón was appointed General Director of the National Bank of Public Works and Services (BANOBRAS) a banking institution in charge of granting financing to states and city councils, as well as promoting investment in infrastructure projects.
In September 2003, he was appointed Secretary of Energy by then President Vicente Fox. As the head of Mexico’s energy sector, he promoted the modernization of state-owned companies as president of the Board of Directors of PEMEX, the Federal Commission of Electricity (CFE) and the electricity company Luz y Fuerza del Centro (LyFC).

In 2005, he was elected as the PAN’s presidential candidate, and, on July 2, 2006, he obtained the majority of the votes in one of Mexico’s closest elections. On December 1, he was sworn in as President of Mexico for the 2006-2012 term.
Pamela Cox became the World Bank’s Vice President for the Latin America and the Caribbean Region on January 1, 2005. She is a development economist and has held management positions in various countries and regions since joining the Bank in 1980.

From 2000 to 2004, Ms. Cox was Director of Strategy and Operations in the Office of the Vice President for the Africa Region, where she oversaw the increase of Bank lending to the poorest African countries. Previously, she served as Country Director for South Africa, Botswana, Lesotho, Namibia and Swaziland from 1996 to 2000. During 1994-1996, she was Chief of the Country Operations Division in East Asia covering Vietnam, Laos, Cambodia, Myanmar, the Philippines, Malaysia, Thailand and Korea. She served as Chief of the Agriculture and Environment Operations Division from 1992 to 1994 in the same region.

During the early years of her career in the Bank, Ms. Cox was an economist working on agricultural and environmental issues in the units for South Asia and Latin America. In the Latin America and the Caribbean Region, Ms. Cox was a senior economist in the Agriculture Division (1985-87), where she worked primarily with Brazil.

A national of the United States, Ms. Cox holds two masters degrees (Masters of Arts in Law and Diplomacy and Masters of Arts in Development Economics/International Economics), as well as a Ph.D. in Development Economics and Policy from the Fletcher School at Tufts University in Boston, Massachusetts. She speaks English, Spanish, Portuguese, French and Swedish.
After graduating, Chris started his career in sales. In 1981, he joined Robertshaw Controls Company holding several positions over a 12 year period including International Sales Manager from 1984 to 1986 where he spent significant time overseas in Europe and Asia. Robertshaw Controls was purchased by Siebe plc in 1986 and later merged with Barber Colman. Siebe would later be known as Invensys and ironically, the portion of Invensys that Chris started his career is now part of Schneider Electric Building Automation Division (TAC). In 1993 Chris joined Square D as Director of National Accounts and worked with his global counterparts to develop what ultimately became the SGBD organization.

In February of 1994 he moved to Raleigh as Industrial Marketing Director. In 1995 he was regional sales vice president. In 1996 he went back into marketing as the OEM Director and led the team to a high growth performance which led to his appointment as Vice President of Marketing for the U.S. in 1998. In 2002 Chris went to Canada as President for one year coming back to the U.S. in 2003 as Senior Vice President of Sales and Services. In 2006 Chris was appointed President of Schneider Electric U.S. and is now President and CEO of Schneider Electric North American Operating Division. He also serves on the Management Board of TAC.

Chris is active in the community serving on the Board of Directors of the American Heart Association and serving last year as the Co-Chair of the largest Heart Association fundraising effort in the U.S. and will work with the National Electrical Manufacturers Association (NEMA).
Mr. de la Torre is a Civil Engineer graduated from the Engineering School of the Costa Rica University. He has a post graduate degree in Management from the Central American Institute of Business Administration (INCAE), and a degree in Senior Public Sector Executives, by the Centre for Political Research and Public Administration Training of the University of Tulane (USA).

He is renowned for his extensive experience in the energy sector, mainly on electricity issues. He was Executive Secretary and Project Manager for the Electrical Interconnection Network of Central American Countries (SIEPAC) in the Central American Electrification Council from 1995 to 2010. He was previously Executive President of the Costa Rica Electricity Institute three times, Chief Executive and Chairman of the Board of Directors in charge of development and operations of electricity and telecommunications in the country. He was Development Manager of the Institute of the Electricity Institute of Costa Rica for two periods, and Regional Coordinator of the electrical interconnection program of the Central American countries in 1991.

In 1987 and 1988 he was Vice-minister of Natural Resources, Energy and Mines of Costa Rica, where he focused on energy, particularly in guiding companies in the sector, both oil and electricity. Before he served as Chairman of the National Power and Light Company, in charge of distribution and electric service in the metropolitan area of San José, Costa Rica.

Mr. de la Torre also served as Director of Engineering of the Costa Rica Electricity Institute, and he was a founding member of the first National Energy Commission, which led to the formation of the now Ministry of Energy in Costa Rica in 1978, among others.
Reid Detchon is Vice President for Energy and Climate at the United Nations Foundation. He is also the executive director of the Energy Future Coalition, a broad-based non-partisan public policy initiative supported by the UN Foundation that seeks to bring about change in U.S. energy policy to address three critical challenges related to the production and use of energy: the political and economic security threat posed by the world’s dependence on oil; the risk to the global environment from climate change; and the lack of access of the world’s poor to the modern energy services they need for economic advancement.

From June 1999 through December 2001 Mr. Detchon served as director of special projects in Washington, D.C., for the Turner Foundation, managing a portfolio of major grants aimed at increasing the effectiveness of environmental advocacy and encouraging federal action to avert global climate change.

Previously he spent six years at Podesta Associates, a government relations and public affairs firm in Washington, D.C., where he was a principal. From 1989 to 1993 Mr. Detchon served as the principal deputy assistant secretary for conservation and renewable energy at the U.S. Department of Energy. Previously he was principal speechwriter for Vice President George H. W. Bush.

Mr. Detchon worked for five years in the U.S. Senate, advising Senator John Danforth of Missouri on energy and environmental issues and serving as his legislative director. He was a reporter for the Columbia Daily Tribune in Missouri from 1974 to 1980. He is a graduate of Yale University and lives in Bethesda, MD.
Christine Egan has over 16 years of experience in energy and environmental policy as both a project administrator and researcher. She is an internationally recognized expert in energy labeling, principles of label design and consumer behavior with particularly strong expertise in appliance standards, labeling and voluntary programs. Currently, Christine is the Executive Director of the Collaborative Labeling and Appliance Standards Project (CLASP). She has successfully led this start-up non-profit for five years. Prior to joining CLASP, she managed a comprehensive evaluation of the U.S. Energy Guide Labeling program for the American Council for an Energy Efficient Economy (ACEEE). And, as Manager of Residential Programs for the Consortium for Energy Efficiency (CEE), she developed national market transformation initiatives and participated in the development of U.S. for rulemakings for standards. She also provided training to representatives from India, Indonesia and Philippines on efficient product labeling, focusing on the use and need for consumer research and field testing in program design.

Christine has a Bachelor’s degree in International Affairs from the George Washington University and a Master’s degree in Energy and Environmental Policy from the University of Delaware. In addition, she has authored and presented a number of papers and book chapters on energy efficiency, labeling standards and the environment.
Alfredo Elías Ayub, Director-General, CFE, México

Since 1999, Alfredo Elías Ayub has served as Director General of the Federal Electricity Commission.

Prior to that he was Director General of Airports and Auxiliary Services (ASA) where he was given the mandate of preparing it for privatization and substantially improving the service provided.

He worked for nine years at the Secretariat of Energy, Mines and Parastate Industry, as Coordinator of the Secretary's Advisors, the Under-Secretariat of Mines and Basic Industry and the Energy Under-Secretariat. His main projects included inviting the main participants in the sector to establish a long-term investment program in both PEMEX and CFE and achieving greater consensus as regards planning in the energy sector.

At the state level, he has experience as Executive Coordinator of Urban Development of the Secretariat of Public Works in the State of Mexico. He has also promoted social development activities as Director of the National Fund for Social Activities. Together with his public duties, he has also run a family real estate business, in which he has developed the following complexes: Residencial Fundición, Residencial del Bosque, Edificio Corporativo Coca Cola, Parque Industrial Querétaro and Parque Industrial Tecnológico de Guadalajara.

Among his academic activities, he has been Director of the School of Engineering at the Anáhuac University, Member of the Board of Alumni of Harvard University Business School, Chairman of the Board of Development of the Anáhuac University and the Mexico Foundation in Harvard. He studied Civil Engineering at the Anáhuac University, where he graduated with honorable mention.

He obtained an MA in Administration from the Harvard University Business School where he was awarded a distinction for his academic performance. A native of Mexico City, he was born on January 13 1950, and re-appointed to this post by President Felipe Calderón.
Juan Rafael Elvira, Secretary of the Environment and Natural Resources, México

Agrícola ingeniero que graduado de la Escuela de Avance Cuautitlán National Autonomous University of Mexico, y tiene un Máster in Agrícola Engineering - Agrícola Mechanization at the Cranfield Institute of Technology, Bedfordshire, United Kingdom. Entre las posiciones públicas que ha desempeñado se destacan como Presidente del consejo de Cupatitzio Canyon National Park, Municipal President of Uruapan, Michoacán, from 1999 to 2001, and after that he was a Delegate of the Federal Environmental Protection (PROFEPA), in Michoacán.

In 2003 he was Director General of the Primary Sector and Natural Renewable Resources, of the Ministry of Environment and Natural Resources.

In 2004 he was Deputy Secretary of Development and Environmental Regulation in the same Ministry, until June 1, 2005, date on which he was appointed Attorney Industrial Inspection of the Federal Environmental Protection (PROFEPA).

From December 1, 2006 he is the Secretary of Environment and Natural Resources.
Patricia Espinosa, Secretary of Foreign Relations, México

Born in Mexico City on 21 October 1958 and married with two children. Obtained a BA in International Relations at El Colegio de México, and an MA in International Law at the University Institute of International Advanced Studies in Geneva.

Completed elementary, middle and high school at the Colegio Alemán Alexander von Humboldt in Mexico City and undertook studies to improve her command of German in Ahrensburg, Germany, for a year.

Joined the Mexican Foreign Service on 16 September 1981. From 1982 to 1988 she was responsible for economic issues in Mexico’s Permanent Mission to the United Nations in Geneva, Switzerland.

From 1989 to 1991, she served as Coordinator of Advisors to the Under-Secretariat of Foreign Affairs. From 1991 to 1993, she was Director of International Organizations. From February 1993 to 1997, she was attached to Mexico's Permanent Mission to the United Nations in New York. She was responsible for issues concerning the Third Commission of the United Nations General Assembly: Drug trafficking, Human Rights, Social Development, Women’s Progress and the Promotion and Protection of Children’s Rights, among other social issues.

She was elected President of the Third Commission during the 60th Period of Sessions of the United Nations General Assembly, a post she held from September 1996 to September 1997. From 1997 to 1999, she was Director General of American Regional Organizations and Mechanisms, National Coordinator for the Rio Group, the Latin American Summit, the Summit of the Americas, the Latin American, Caribbean and European Union Summit.

In 1999, when Mexico occupied the Pro Tempore Secretariat of the Rio Group, she was directly responsible for coordinating the mechanism work and negotiations with the European Union for preparing the Heads of State and Government of Latin America and the Caribbean and European Union (Rio de Janeiro, June 1999) Summit. Promoted to the rank of ambassador in January 2000, she served as Mexican Ambassador to Germany from January 2001 to June 2002.

She has been Mexican Ambassador to Austria and Permanent Representative to International Organizations based in Vienna since June 2002.
Germán Fatecha, ANDE, Paraguay

He holds two B.A.’s, in Topography and Civil Engineering, both from the Physical Sciences and Mathematics School of the Universidad Nacional de Asunción, Paraguay.

Has directed the construction of power lines, buildings and communications infrastructure.

Was Vice Minister of Mines and Energy of Paraguay.

He currently is President of the National Electricity Administration; Member of the Board of Itaipú and President of the CIER National Paraguayan Committee.
María del Carmen Fernández Rozado, Counselor, National Energy Commission, Spain

Carmen Fernández Rozado has a PhD in Economics and Business and a BA in Political Science and Sociology, both from the Universidad Complutense de Madrid and is also inspector of Finance and Auditor.

Currently, she is a Counselor at the National Commission of Energy, Chairman of the Task Force for the Analysis and Promotion of Renewable Energy projects and Clean Development Mechanism projects at ARIAE (Ibero-American Association of Energy Regulators) and member of the Panel of Experts on Climate Change of CIER (Regional Energy Integration Commission).
Carlos Flórez, Executive Secretary, OLADE (Latin-American Energy Organization)

Carlos Arturo Flórez Piedrahita, a Colombian citizen, is the current Executive Secretary of the Organization for the period 2008-2010. He was appointed in office by the XXXVIII Meeting of Ministers, on November 30, 2007.

The Executive Secretary is responsible for implementing the ministerial decisions and executing programs and projects of the Permanent Secretariat. He is the legal and institutional representative of the Organization. He heads and administers the Permanent Secretariat in a direct and immediate manner.

Dr. Flórez is a professional specialized in Administrative Sciences in Israel. He is a leader and a managerial strategist with 27 years of experience in the Social, Professional and Solidarity Sector, and 14 years in the Colombian Public Sector, 10 of which were in the energy sector.

He has held executive positions at different institutions such as the Ministry of Mines and Energy of Colombia, the Mining-Energy Planning Unit (UPME - in Spain) Public Entities of Medellin (EPM - in Spanish), and ISA (Electric Interconnection S.A.), among others. He was the National Coordinator of OLADE in Colombia, which enabled him to work on behalf of his country as Chairman of the Strategy and Planning Committee of OLADE, in 2005, and as member of the Directive Committee of the Organization until the year 2007.
Sergio F. Garribba, Counselor for Energy Policy, Ministry of Economic Development, Italy


From December 2006 through December 2007 Sergio Garribba worked as a freelance providing governments and companies with analysis and studies on energy market strategies, technology programmes and investments. Board member of companies in the energy-related sectors. Technical Programme Director of 40th WEC World Energy Congress, Rome, November 11-15, 2007.

From January 2004 through November 2006 Sergio Garribba served as the Director General of Energy and Mineral Resources in the Ministry of Economic Development, Italy. Amongst other functions, as the Director General: a) contributed to the definition of national energy policy, monitored the energy market and its developments, co-ordinated the relevant activities at national and regional level in the areas of energy and mineral resources; b) enforced laws in the fields of oil, natural gas, coal, nuclear energy, renewable sources, electricity generation and supply, efficient energy end-use, integration of environmental concerns into energy strategies. Maintained watch over the national electric and gas grid companies as well as over other interests in the areas of energy and mineral resources and public entities; c) developed relations with the European Commission and participated actively in international organisations including the International Energy Agency, International Energy Forum, Euromediterranean Energy Forum, Energy Community for South-East Europe, World Energy Council and international energy technology partnerships.

Until December 2003, Mr. Garribba was one of three Commissioners of the Italian Regulatory Authority for Electricity and Gas.

Prior to joining the Regulatory Authority in 1996, Mr. Garribba was Director of the Energy Department at Italy’s National Agency for Energy, New Technologies and the Environment (ENEA).

Prior to that, he served as the Director of Energy Technology and R&D in the International Energy Agency (IEA-OECD) from 1986 through 1992. During the years 1977-1986 he was Co-Director and Director of Economic Research at the Institute of Economics of Energy Resources (IEFE) in Milan.

Mr. Garribba was an active contributor to the international negotiation processes leading to the UN Framework Convention on Climate Change, the Agenda 21 for Sustainable Development, and the Energy Charter. He has been in charge of the co-ordination and management of national and international programmes and projects in the energy industry sector and the environment. Advisor on energy policy matters to the Italian Government on several occasions.
Mr. Garribba has served as chairman and board member of various small and medium enterprises and consortia active in the area of R&D and technology innovation.

Professor on leave from the Polytechnic Institute of Milan, Italy. Graduated in Nuclear Engineering, University of California, Berkeley and Polytechnic Institute of Milan, Italy.

Author, co-author and editor of more than 20 books and numerous papers on subjects spanning from energy policy, to enterprise development and energy technology innovation.

Italian citizen, living in Rome and Milan, Italy.

**Sri Mulyani Indrawati, Managing Director, World Bank**

Sri Mulyani Indrawati, Managing Director, joined the World Bank in June 2010. She is responsible for the Bank’s operations in Latin America and the Caribbean, East Asia and the Pacific, and the Middle East and North Africa. In addition, Sri Mulyani oversees other administrative vice-presidencies and functions, including the Information Systems Group, Integrity Vice Presidency and the Office of Evaluation and Suspension.

Prior to joining the Bank Group, Sri Mulyani served as Indonesia’s Minister of Finance, at which time she guided economic policy for one of the largest countries in Southeast Asia, and one of the biggest states in the world, navigating successfully in the midst of the global economic crisis, implementing key reforms, and earning the respect of her peers across the world.

Ms. Indrawati served as State Minister and Chair of the Indonesian National Development Planning Agency prior to her position as Finance Minister. Her earlier positions include Coordinating Minister of Economic Affairs, Executive Director at the International Monetary Fund, faculty member at the University of Indonesia and a visiting professor at the Andrew Young School of Public Policy at Georgia State University.

Ms. Indrawati holds a Ph.D. in Economics from the University of Illinois and a BA in Economics from the University of Indonesia. She has received numerous honors and awards, including Euromoney Magazine’s Global Finance Minister of the Year, and Emerging Markets Best Finance Minister in Asia. She has also been regularly on Forbes List of the 100 Most Powerful Women.

Ms. Indrawati is married with three children.
Richard H. Jones took up his duties as Deputy Executive Director of the International Energy Agency on 1 October 2008. Ambassador Jones, a former American diplomat, brings to the IEA over thirty years of diplomatic and policy experience on issues ranging from Middle East politics to trade negotiations and energy security. After a rapid rise through the ranks of the U.S. Foreign Service, he served as the American Ambassador to four countries: Israel (2005-2008), Kuwait (2001-2004), Kazakhstan (1998-2001) and Lebanon (1996-1998). He also acted as the U.S. Secretary of State’s Senior Advisor and Coordinator for Iraq Policy from February-August, 2005.

During his diplomatic career Ambassador Jones gained a wide range of policy experience in energy policy. As Ambassador in Kuwait, he held discussions with international oil companies and with the Minister of Petroleum on production-sharing proposals. In Kazakhstan, he was the key liaison between the U.S. government and the Presidency on the Baku-Tbilisi-Ceyhan pipeline and other critical energy issues. In an earlier diplomatic posting in Riyadh, Saudi Arabia, he forecast, analysed and reported on changes in Saudi policy that eventually resulted in the collapse of world oil prices in 1986. In Riyadh he also reported on the development of the Saudi petrochemical industry and held talks with Iraqi officials then working to build the first Iraq pipeline in Saudi Arabia. Ambassador Jones also is well-versed in the work of international organisations. Early in his diplomatic career he served as Economic Policy Advisor at the U.S. Mission to the OECD.

Born in 1950 near Shreveport, Louisiana, Ambassador Jones has a Bachelor’s degree in mathematics with distinction from Harvey Mudd College in Claremont, CA, and an MS and PhD in Business/Statistics from the University of Wisconsin. In addition to his native English, his foreign languages include Arabic, French, Russian and German. He and his wife Joan have four children.
Georgina Kessel, Secretary of Energy, México

Georgina Kessel has a extensive experience in the public sector and particularly in the energy sector. Among other posts, at the beginning of her career she worked at Petróleos Mexicanos and was appointed as the Director General for Economic Analysis of the former Ministry of Energy, Mines and Industry.

In 1994 she was appointed as the first chairman of the Energy Regulatory Commission. She also served as Consultant at the Investment Unit of the Ministry of Finance, in charge of reviewing investment projects in the public sector in general and in particular of Petróleos Mexicanos, the Comisión Federal de Electricidad and Luz y Fuerza del Centro, from 2002 to 2006, she was the Director General of the Mexican Mint.

Secretary Kessel studied a bachelor’s degree in economics at the Instituto Tecnológico Autónomo de México and a PhD in economics at Columbia University in New York City.

In academia she has been a professor and researcher at the Instituto Tecnológico Autónomo de México. Some of her research analyzed the energy sector and other areas of the economy.
Ángel Larraga, México Country Manager, Grupo Gas Natural Fenosa

He is an Industrial Engineer, graduated from the High School of Engineering of Bilbao, Spain. Holds a diploma on Business management from the Institute for High Business Studies of Spain (IESE).

Has worked for more than 24 years at Gas Natural Group. He is the manager of the Gas Natural Fenosa Group in Mexico (responsible for electric generation, gas distribution and wind power businesses).

Has held different positions at various gas companies in Spain, such as: President, Gas Natural Castilla y León; President, Gas Galicia y Gas Coruña; President, Gas Cantabria; President, Gas Navarra; and President, Gas Rioja.

Was Counselor of Gas Natural Álava and Sedigas, and worked as Director for Distribution and New Markets in Madrid and Castilla-La Mancha, Spain.

Before heading the Mexico office, served as Director for Distribution and New Markets in Cataluña and Rioja, Spain.
Santiago Levy is the Vice-President for Sectors and Knowledge at the Inter-American Development Bank. From August 2007 to February 2008, he served as General Manager and Chief Economist for the IDB Research Department. Previously, he was General Director at the Mexican Social Security Institute (IMSS) from December 2000 to October 2005. Under his tenure, he promoted changes to the Social Security Act to increase transparency and accountability in IMSS finances and create long-term reserves.

From 1994 to 2000, Levy served as the Deputy Minister at the Ministry of Finance and Public Credit of Mexico, becoming the main architect of the renowned social program Progresa-Oportunidades that benefits the poor.

He holds a Ph.D. in economics and a Masters in Political economy from Boston University. He was a post-doctoral fellow at Cambridge University. Mr. Levy has advised several governments and international organizations and has held several teaching positions, including faculty positions at the Instituto Tecnológico Autónomo of Mexico and Boston University, where he was Associate Professor and Director of the Institute for Economic Development.

He is the author of at least 75 articles, monographs and book chapters on such diverse subjects as poverty reduction, competitiveness, foreign exchange policy, export imbalances, pricing, microeconomics and energy. His paper Poverty in Mexico won the 1992 National Research Prize in Economics awarded by the Bank of Mexico.

Mr. Liu got his PhD on Production Automation at Nancy 1 University and PhD on Hydropower Engineering at Huazhong University of Science and Technology in 2002, and got his Master’s Degree in 1992 and Bachelor’s Degree in 1986 on Hydropower Engineering at North China Institute of Water Conservancy and Hydropower.

He has 24 years of professional experience on Renewable Energy and Energy Efficiency. He is one of the founders of the Bachelor’s programme, Wind Energy and Power Engineering in China, and his achievements include strong record of numerous academic and industrial R&D projects, technological consulting projects, and over 50 research papers including 25 journal papers.

Academic Activities: Member of the Chinese Wind Energy Association (2004); Member of the Meteorological Resources Application Committee, Chinese Meteorology Society (2007); Member of the Renewable Energy Committee, Chinese Society for Electrical Engineering (2007); Regional Editor (Asia Pacific) of IET Journal “Renewable Power Generation” (2009); Lead Author of IPCC (Intergovernmental Panel on Climate Change) Special Report on Renewable Energy and Climate Change Mitigation (2009).
William Mganga Ngeleja, Minister of Energy and Minerals, Tanzania

Mr. Ngeleja is a lawyer, graduated in 1994 from the University of Dar es Salaam.

In 1999 he worked as a lawyer in the Attorney General's Chamber. From 1995 to 2000 he served as lawyer within PriceWaterhouseCoopers, Tanzania.

He studied a postgraduate degree in law in the University of Dar es Salaam from 1996 to 1999. From 2000 to 2005 he worked as lawyer for Vodacom Tanzania.

In 2005 he was elected Member of Parliament for the Sengerema Constituency. In 2008 he became Minister of Energy and Minerals.
Dr. Molina was born in Mexico City in 1943. Molina received a bachelor’s degree in chemical engineering from the Universidad Autónoma de México in 1965, a postgraduate degree in 1967 from the University of Freiburg in West Germany and a doctorate in physical chemistry in 1972 from UC Berkeley. As a postdoctoral researcher in 1974 at UC Irvine, he was a co-author with F. Sherwood Rowland of a paper in the journal Nature that detailed their research on the threat to the ozone layer in the stratosphere of CFCs, then widely used as propellants in spray cans and as refrigerants in refrigerators.

Molina’s early research convinced governments around the world to eliminate CFCs from spray cans and refrigerators. He has focused much of his recent research on the chemistry of air pollution in the lower atmosphere, working with collaborators from other countries, most notably colleagues in Mexico City, on assessing and mitigating the air pollution problems of rapidly growing cities around the world.

He held teaching and research positions at UC Irvine, the Universidad Nacional Autónoma de México and the Jet Propulsion Laboratory at the California Institute of Technology before arriving at MIT in 1989 as a professor in the Department of Earth, Atmospheric and Planetary Sciences and the Department of Chemistry. He was named MIT Institute Professor in 1997. He is a member of the National Academy of Sciences, the Institute of Medicine and the Pontifical Academy of Sciences. He has served on the U.S. President’s Committee of Advisors in Science and Technology, the Secretary of Energy Advisory Board, National Research Council Board on Environmental Studies and Toxicology and on the boards of U.S.-Mexico Foundation of Science and other non-profit environmental organizations. He won the 1995 Nobel Prize in Chemistry for his role in elucidating the threat to the Earth’s ozone layer of chlorofluorocarbon gases, or CFCs.

He currently is part of the faculty of UCSD’s Department of Chemistry and Biochemistry and the Center for Atmospheric Sciences at Scripps Institution of Oceanography. Since 1995 he also serves as president of the Centro Mario Molina para Estudios Estratégicos sobre Energía y Medio Ambiente, located in Mexico City.
Lucio Monari, Sector Manager, Energy, World Bank

Lucio Monari has been Sector Manager of the Energy Anchor in the Energy, Transport and Water Department since 2008. Before joining the Energy Anchor, Mr. Monari has been working in the Latin America and South Asia regions of the World Bank on several energy projects related to sector reform, energy access and renewable energy. In addition, Mr. Monari has also led Analytical and Advisory Activities and has published several reports on various power sector aspects, including subsidies and impacts of reforms. He has worked extensively in Pakistan, India, Bangladesh, Sri Lanka, Dominican Republic, Honduras, Argentina, Uruguay and other countries in the Latin America region. Prior to joining the World Bank, he worked in the international negotiations department responsible for the acquisition of concession contracts of AGIP SPA, the national oil company. Mr. Monari holds a degree in Economics from the University of Bergamo and an MBA from the Scuola Mattei in Milan, Italy.
Rajendra K. Pachauri is director-general for The Energy and Resources Institute, which conducts research and provides professional support in the areas of energy, environment, forestry, biotechnology and the conservation of natural resources. Prior to this, Pachauri held managerial positions with the Diesel Locomotive works in Varanasi, and served as assistant professor and visiting faculty member in the Department of Economics and Business at North Carolina State University.

In 2002, he was elected Chairman of the Intergovernmental Panel on Climate Change, in 2001, he was awarded the Padma Bhushan by the president of India for his contributions to the environment and the Nobel Peace Prize in 2007.

Pachauri taught at Yale University’s School of Forestry and Environmental Studies in 2000 as a McCluskey Fellow. In 1999, he was appointed by Japan to the Board of Directors of the Institute for Global Environmental Strategies, Environment Agency. He is also president of the India Habitat Centre.

Dr. Pachauri has sat on various international and national committees and boards, including the International Solar Energy Society, the World Resources Institute Council, the International Association for Energy Economics, and the Asian Energy Institute. He has also contributed to the Economic Advisory Council to the Prime Minister of India; the Panel of Eminent Persons on Power, the Ministry of Power; Delhi Vision - Core Planning Group; the Advisory Board on Energy, reporting directly to the prime minister; the National Environmental Council, under the chairmanship of the prime minister; and the Oil Industry Restructuring Group, ‘R’ Group. Pachauri earned an M.S. in industrial engineering, a Ph.D. in industrial engineering, and a Ph.D. in economics from North Carolina State University.
Shilpa Patel manages the Climate Change unit in IFC’s Environment & Social Department. This unit is responsible for coordinating IFC’s climate change strategy, building IFC’s analytical capacity to better understand the climate change impacts of its activities, and providing support to IFC’s cleaner production initiatives.

Prior to this, she managed IFC’s Sustainability Business Innovator, an incubator for innovative business models, products and instruments to harness the power of the private sector in realizing environmental and social benefits. She also oversaw IFC’s carbon finance activities, including the development of new financial instruments for private sector participation in carbon trading.

Shilpa joined IFC in 1997, and has managed IFC’s investment activities in the Chemicals and in the Health and Education sectors. Prior to moving to IFC, Shilpa worked at the World Bank, and has also held the position of Adjunct Professor at Georgetown University’s McDonough School of Business. Shilpa holds undergraduate and graduate degrees from the Wharton School at the University of Pennsylvania.
In the past twenty years, Milo has been responsible for creating two landmark organizations that ultimately have had an important and lasting impact on insurance industry in California.

With over 35 years of insurance experience, Milo’s background is both unique and distinctive. After 15 years in the private insurance sector, Milo spent the next 11 years with the California Department of Insurance where he was responsible for the creation and management of the Rate Regulation Division, a staff of 100+ charged with the implementation of Proposition 103. Milo headed the Rate Regulation Division as Division Chief and Deputy Commissioner. In 1996, Milo helped to create the California Earthquake Authority where he served as the Authority’s Chief Operating Officer for 7 years.

Milo is currently a senior partner with Insurance Solutions Group, a consulting firm specializing in regulatory and catastrophe related issues. Milo also serves as the Executive Director for the Pacific Association of Domestic Insurance Companies, an industry trade association and is Chairman of the Board for the Caribbean Catastrophe Risk Insurance Facility, the world’s first multi-national insurance catastrophe pool.
Emiliano Pedraza, Director-General, CONUEE, México

Mexican lawyer. Head of the National Commission for the Efficient Use of Energy (CONUEE).

Has extensive experience in the Energy Sector. He has served as Chief of Staff and Director General of Information and Energy Studies, at the Deputy Ministry for Energy Planning and Technological Development, in the Secretariat of Energy. Former Director General of the National Commission for Energy Conservation.

He has also held several positions: Coordinator of Information at the Miguel Estrada Iturbide Foundation AC, advisor to the Parliamentary Group of the National Action Party in the Chamber of Deputies, Deputy Director General of Information, Evaluation and Monitoring of Mexican National Railways; Technical Secretary of the Public Policy Committee for the Presidential Campaign of the National Action Party and Public Policy Committee for President’s Calderón Transition Team.
Steven J. Puig, Vice President for the Private Sector and Non-Sovereign Guaranteed Operations, Inter-American Development Bank

Steven J. Puig was appointed Vice President for the Private Sector and Non-Sovereign Guaranteed Operations, at the Inter-American Development Bank, effective November 7, 2007.

Mr. Puig is responsible for coordinating the private sector and non-sovereign guaranteed operational programs of the IDB Group, the development and implementation of a private sector integrated business plan, as well as the business plans of each of the group’s private sector entities. The IDB Group is composed of the IDB, the Multilateral Investment Fund (MIF) and the Inter-American Investment Corporation (IIC). The area under Mr. Puig’s responsibility includes the IDB’s Structured and Corporate Finance Department (SCF) and the Opportunities for the Majority Sector (OMJ).

Prior to joining the IDB, Mr. Puig held a number of positions with Citigroup. From 2004 to 2007, he was Global Head of Trade for Latin America in Miami. From 2001 to 2004, he was Country Corporate Officer in Colombia. From 1998 to 2000, he was Country Corporate Officer in El Salvador. Prior to that, Mr. Puig was Vice President of Corporate Banking and Corporate Finance in the Dominican Republic. Before joining Citigroup, Mr. Puig served on the management team of two commercial groups in the Dominican Republic, Grupo Ambar and Grupo Reid & Perellano.

Mr. Puig holds a master’s degree in International Management from the American Graduate School of International Management of Arizona, and a degree in Economics and International Finance and Commerce from Georgetown University’s Edmund A. Walsh School of Foreign Service, Washington, D.C.
BORN in Monterrey, N.L. on August 3 1947, he studied Industrial Engineering at the Tecnológico de Monterrey and Purdue University in the United States and obtained an MA in Business Administration at Stanford University. He has attended seminars on Finance and Administration in San Francisco, New York and Tokyo and on Energy at Oxford University in England.

He began his professional career in 1972 when he joined Citibank, Mexico as an Account Executive and was subsequently appointed Vice-president of Corporate Banking. In 1978, he joined the Somex team as Credit Director and following the merger between this institution and Banco Mexicano S.A., became Corporate Credit Director in charge of all the institutions’ credit activities.

In 1982, he joined Petróleos Mexicanos (as Technical Secretary of the Head Office and was subsequently nominated Executive Coordinator of Financing responsible for the management and negotiation of PEMEX’s external debt. In 1987, he set up his own firm of Financial Engineering, Rangel Domene y Asociados, and took part in the setting up and financing of several infrastructure projects and the privatization of several firms, such as Bancomer, S.A.

From December 1991 to September 2008, he collaborated with Grupo Financiero Bancomer where he was responsible for various areas of business such as International, Corporate, Government, Business, Electronic Banking, Investment Banking management and was President of the Board of Directors of Grupo Financiero BBVA Bancomer and its subsidiary companies from October 2004 to September 2008.

From March 2000 to April 2002, he was President of the Bankers’ Association of Mexico and from June 2002 to 2004, President of the Business Coordinating Council. From June 2007 to December 2008, he was President of the Center for Economic Studies of the Private Sector.

He has been a member of the Board of Directors of Several Public and Private Firms, the Committee for the Prevention of Risks of the Institute for International Finance in Washington and of the Universidad Iberoamericana, Interactive Museum of Economics and the Franz Mayer Museum trusts.

On January 1 2009, the President appointed him Director General of Nacional Financiera and the National Bank of Foreign Trade.
Francisco Xavier Salazar Diez de Sollano was named president of the Energy Regulating Commission in December 2005. Francisco completed an MA in Economics with a specialty in Public Finances as well as a Diploma Course in the Economy of Global Markets at the London School of Economics and Political Science and studied Chemical Engineering at the University of San Luis Potosí.

He was elected Federal Deputy for the 6th District of the State of San Luis Potosí during the 59th Legislature (2003-2005) during which he was President of the Energy Commission and a Member of the Budget Commissions and Public Economy and Economic Development Boards. He also served as Federal Deputy during the 58th Legislature (1997-2000) in which he acted as Secretary of the Ecology and Environment Commission and a member of the Energy and Hydraulic Affairs Commissions.

He teaches Public Finances in the Master’s Degree Program on Tax Administration at the University of San Luis Potosí and Monetary Theory and Credit in the Bachelor’s Degree Program in International Business at Champagnat University.

He is currently a member of the energy editorial board for the magazine Expansión and was a member of the energy editorial board for Reforma newspaper in 2005 and 2006.
Richard Samans, Managing Director, World Economic Forum

Rick received a BA in Economics and French from Tufts University. He completed a Masters degree in International Affairs at Columbia University.

Rick began his career in 1982 with Credit Lyonnais USA as Corporate Lending Officer. He then became Legislative Assistant to a member of the House Committee on Ways and Means, between 1985 and 1988. Until 1991, Rick was a Professional Staff Member and Senior Legislative Assistant to the Chairman of the Senate Banking Committee.

From 1992 to 1993, he was an International Affairs Fellow at the Council on Foreign Relations in London and Washington DC. Rick was then Associate Director and Staff Director for the Subcouncil on Capital Allocation on the Competitiveness Policy Council between 1993 and 1996. Thereafter, he held the position of Economic Policy Adviser to the Senate Minority Leader until 1999.

Rick served the Clinton Administration as Special Assistant to the United States President for International Economic Policy, from 1999-2001. He was an Adjunct Faculty Member and Guest Lecturer in International Relations at the School of International Service, American University.

Rick joined the World Economic Forum in 2001 as Director of Global Issues, and as an Associate Member of the Managing Board. He was appointed Managing Director in August 2003.
Currently, he is Peru’s Minister of State for Energy and Mines. Before this State appointment, he worked for the World Bank as Team Leader for the Central Asia Energy Program, and earlier for the South Asia region (India, Afghanistan, Pakistan, Bhutan y Nepal).

During the nineties, he participated as a consultant in the reform of the electricity sector for Peru, Bolivia and Panama. He has also carried out several consultancies for institutions like the World Bank, the Inter-American Development Bank, OLADE (Latin American Energy Organization), the Ministry of Energy and Mines of Colombia, the Chilean Association of Public Service companies, as well as for companies like ENDESA (Spain), DUKE ENERGY (USA), HAINA (Dominican Republic), etc.

Between 1992 and 1999, through consultancy contracts between the World Bank and the UNDP, he led the reform of the Electric Sector in Peru and associated programs of private concessions in infrastructure.

Between 1992 and 1994 the participated in the development of a regulatory framework for the electricity sector, which included the Electricity Concessions Law project and its regulations. He also lead the restructuring of the electricity companies as well as the development of their regulatory organism.

Between April 1994 and October 1996, as chairman of the Boards of Directors and the investment promotion committees for ElectroLima and ElectroPeru (Peruvian light and power companies) he carried out the privatization of their subsidiary companies EDEGEL, EGENOR, ETEVENSA, CAHUA, EMPRESA ELECTRICA DE PIURA, EDECANETE Y EDECHANCAY. He also participated in the privatization of Petroperu (the Peruvian State oil company), as member of its privatization committee.

Between November 1997 and July 1998, as Executive Director of the Commission for the Promotion of Private Investment (PROMCEPRI), he led the team which developed the regulatory framework for private concessions in Peru, which has allowed the execution of projects such as Camisea, the Mantaro-Socabaya electricity transmission line, the Jorge Chavez International Airport, etc.

Between August 2001 and April 2002, as Executive Director of the COPRI (Peru’s privatization commission) he participated in the re-launching of the system for the promotion of private investment.

Mr Sánchez (50), is an electricity engineer by profession and has a Master’s degree in Business Administration from ESAN and another Master in International Policy and Practice from George Washington University in the USA.
Francisco Santoyo, CFO, CFE, México

He obtained his degree in laws from the Escuela Libre de Derecho, and has developed most of its professional career in the public sector, although he has also worked in the private sector as founder of Santoyo Consultores, Strategic Planning Center and Corporate Center on Integral Strategy.

In the public sector has worked also for the Instituto del Fondo Nacional para la Vivienda de los Trabajadores (Infonavit), where he acted as: Secretary of the Management Board and of the Oversight Commission (1973-1976) and General Coordinator for Mexico City and the State of Mexico; Deputy Director General for Mexico City and Deputy Financial Director (1993-1997).

He also worked at the Secretariat of Programming and Budget as Coordinator of the Integration Unit (1977). Between 1978 and 1986 he worked at the Secretariat of Finance, as Secretary of the Advisory Committee on External Financing for the Public Sector, Chief of Staff to the Deputy Secretary, Director for National Credit Institutions and Director General for Development Banks.
Chandra Shekhar Sinha, Senior Energy Specialist, Carbon Finance Coordinator, Energy Unit, Latin America and Caribbean, World Bank

Chandra Shekhar Sinha is a Senior Energy Specialist and the Carbon Finance Coordinator in the Sustainable Development Department for the Latin America and the Caribbean Region of the World Bank. Mr. Sinha has held various positions at the World Bank, including the Team Leader for Operations for the Carbon Finance Business and the Fund Manager for the €970 million Umbrella Carbon Facility and the Netherlands CDM Facility. He joined the World Bank in 1997 and was part of the design team for the Prototype Carbon Fund through which carbon finance was established at the World Bank.

Mr. Sinha was the Head for Environmental Markets in Asia for J.P. Morgan Chase from February 2008 to March 2010 during which time he set up and managed the carbon finance business for the firm in Asia. Mr. Sinha has also worked at the TERI (New Delhi), United Nations Development Program and has been a Fellow at the John F. Kennedy School of Government, Harvard University. He has a Ph.D. and M.Tech. in Energy Studies from the Indian Institute of Technology, Delhi and a Masters degree in Physics from the Indian Institute of Technology, Kanpur.
Mark Spelman is the managing director for the Accenture Strategy service line. He also leads Accenture’s strategic think tank— the Institute for High Performance. Spelman has responsibility for Accenture’s global relationship with the World Economic Forum. Additionally, he oversees Accenture’s relationship with INSEAD business school.

Spelman joined Accenture in 1989. He has an MA in economics from Cambridge University and an MBA from INSEAD. He is the chairman of the American Chamber of Commerce’s European Union Executive Council.
Andrew Steer, Special Envoy for Climate Change, World Bank

In July 1, 2010 became Special Envoy for Climate Change, a new position created to ensure focused leadership and representation of the World Bank in the international discussions around climate change.

Mr. Steer, a UK national, previously spent 3 as Director General, Policy and Research at the UK Department of International Development in London. In earlier years at the World Bank he held a number of positions including Country Director for Indonesia and Vietnam and Director of the Environmental Department. He was also Staff Director of the 1992 World Development Report on Environment and Development, the Bank’s Flagship report to the Rio Summit.

In his post, which ranks at the level of Vice President, Mr. Steer is responsible for guiding the Bank’s external work on climate change and further advancing its internal capabilities in this area. He also oversees the Climate Investment Fund, co-chairs the Strategic Climate Fund and helps mobilize climate financing.

Mr. Steer has a Ph.D in Economics from the University of Pennsylvania.
Laura Tuck has been the Director for the Sustainable Development Department since it was created on January 1, 2007. This Department is responsible for transport, energy, urban development, water resources management and water supply/sanitation, agriculture and rural development, social development and environment. It is also responsible for climate change and GEF. This new department is the result of the merger of two previous departments and Ms. Tuck was the Director of what was also called the Sustainable Development Department, covering environment, agriculture and social development in Latin America from March 1, 2006 until the merger.

Before she moved to the Latin America Region, Ms. Tuck was the Director for Sustainable Development in the Europe and Central Asia Region, a position she held from 2002-2006. Prior to that assignment, she was a Sector Manager for Agriculture and Rural Development in Europe and Central Asia for five years. Ms. Tuck has been at the World Bank since 1987 and has held positions as a Lead Economist in the Chief Economist’s office of Europe and Central Asia, and in agricultural operations in the Middle East and North Africa. Before coming to the Bank, Ms. Tuck also worked as an agricultural economist in Africa and served on the faculty of Princeton University.
Veerle Vandeweerd, Director of the Environment & Energy Group, United Nations Development Program

Since 1999, Ms. Vandeweerd held the positions of:


- Head of the UNEP's Regional Seas, Coral Reefs & Small Island Developing States Programmes

- Deputy Director of the Division of Environmental Policy Implementation.

From 1989 to 1999 Mrs. Vandeweerd oversaw several global environmental monitoring systems, such as the Global Environmental Monitoring System Pollution Programmes on Water, Air and Food, and assessment.

She has also initiated and directed the Global Environmental Outlook (GEO) Report Series of UNEP, a major reference work for academics and policy makers.

In 1998, Ms. Vandeweerd was Director of Environmental Assessment and Reporting for the Flemish Region, Belgium. Since becoming GPA's Coordinator in 1999, she has actively participated and contributed substantively to discussions on environmental policy development and implementation issues in major international conferences and stakeholders' meetings.

During her career, she initiated and directed over 100 publications, mainly dealing with environmental monitoring and assessment.

Dr. Vandeweerd has a PhD in Biochemistry from the University of Antwerp, Belgium. She was a Lecturer in Biochemistry at the University of Lusaka, Zambia, where she conducted research on African sleeping sickness. She spent many years in Africa working in humanitarian assistance helping to build schools and hospitals.
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<td>Mr. Arnaldo Vieira de Carvalho is Sr. Energy Specialist with the Energy Division of the Inter-American Development Bank – IDB in Washington, DC, USA</td>
<td>Mr. Vieira de Carvalho has been working for the IDB since 1997 on financing and implementing sustainable energy projects. He was Director of the Latin American Energy Organization – OLADE in Quito, Ecuador and General Manager of Promon Engenharia, a leading Brazilian consulting firm in Rio de Janeiro and São Paulo, acting internationally. He has also worked as independent energy consultant in several Latin American countries for power utilities and international organizations such as The World Bank, UN agencies and the Organization of American States – OAS. Mr. Vieira de Carvalho holds a Mechanical Engineering degree from the Aeronautical Institute of Technology – ITA in São José dos Campos, Brazil and a M.S. degree from Kansas State University – KSU.</td>
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Dominic Waughray, Senior Director, Head of Environmental Initiatives, World Economic Forum

Formerly, Managing Partner, Environmental Resources Management (ERM) UK, part of the ERM Group (1997-2005). Member of Executive Committee responsible for management of the UK OpCo, with specific P&L responsibility for environment and developing country work, with clients drawn from both the public (aid agencies, governments) and private (mostly extractives) sectors. Specific professional competencies in water, climate change and policies for sustainable natural resource management. Prior to ERM, Senior Scientific Officer (natural resource economist) with the Institute of Hydrology (1994-1997), a public sector research organization part of the UK Natural Environmental Research Council. Focus on water and climate change economic research. Previous posts also include with Friends of the Earth UK (international development unit) and a UK political party (environmental policy research).

First degree in Geography, University of Cambridge, UK; Master’s degree in Natural Resource Economics, University College London, UK.
Mr Joseph Williams is the Manager for the Energy Programme at The Caribbean Community (CARICOM) Secretariat – since April 2008.

He has approximately 20 years experience in the energy sector. Before joining the CARICOM Secretariat Mr Williams headed a private energy management consultancy which provided service in Jamaica and the Caribbean. Before this, he spent approximately 12 years with the electric utility, Jamaica Public Service Company Limited where he headed the Energy Services and Marketing Department which was responsible for renewable energy and customer energy efficiency matters. He was instrumental in the successful implementation of the GEF/World Bank funded Jamaica Demand Side Management Project (first of kind in region) under which renewable energy components were added and performed quite successfully.

Mr Williams is a professional Mechanical Engineering and also holds a Master of Science in Engineering Management with emphasis in National Energy Policy and Planning; from the University of The West Indies. He is a certified energy manager by the Association of Energy Engineers USA.
Kandeh K. Yumkella is the Director-General of the United Nations Industrial Development Organization (UNIDO), a specialized agency of the United Nations mandated to foster sustainable industrial development in developing countries and economies in transition. At the same time, UNIDO helps to protect the environment by supporting clean and sustainable technology. He was elected to the post of Director-General in December 2005, and re-elected for a second term in December 2009.

Before assuming his current position, Kandeh K. Yumkella had worked in various high-level policy positions in UNIDO, and was Special Adviser to two previous Directors-General. He also served as Director of the Africa and LDCs Regional Bureau and as Representative and Director of the first UNIDO Regional Office in Nigeria. Prior to joining UNIDO he had served as Minister of Trade, Industry and State Enterprises of the Republic of Sierra Leone; as an Assistant Professor and Lecturer at the Michigan State University and Assistant to the Dean in the College of Agriculture at the University of Illinois. Kandeh Yumkella earned a Bachelors degree in Agriculture, a Masters in Agricultural Economics and a Doctorate in Agricultural Economics. He has co-authored numerous publications and has received various awards and recognitions.

He is an active member of the UN system Chief Executives Board and is the current Chair of the UN-Energy Coordination Group and one of the conveners of the inter-agency dialogue on technology issues under the Secretary General’s Climate Change initiative. He also chairs the Secretary-General’s Advisory Group on Energy and Climate Change (AGECC).

Kandeh Yumkella is a strong believer that the most effective way to fight poverty is to strengthen the productive capacities of countries and people, enhance their adaptive capabilities to use modern technology and devices, and to commercialize new knowledge. He has advocated pro-poor industrial and agribusiness development as sustainable means of wealth and job creation, and the economic empowerment of the poor.
VIII. PRESENTATIONS

THEMATIC SESSION 1 – ENERGY EFFICIENCY PROGRAMS, TARGETS AND ACTION PLANS
September 28, 12:00 – 13:30 hrs.

Chair: Leandro Alves, Chief, Energy Division, Inter-American Development Bank.

**Objectives:**
- Energy efficiency programs implemented around the world
- Lessons learned during the design, implementation and oversight of EE programs
- Reports on energy efficiency actions carried out by companies and International Organizations.
- EE in the context of the Climate Change.

**Background:**
- Adoption of different EE programs around the world with the objective of sustainability
- Information necessary for EE programs to the relevant stakeholders (decision maker or the private sector).
- Governments can promote EE by setting targets to adequate policies into concrete actions with lines of accountability.

**Key questions for discussion:**
- Based on existing experiences, how to establish and implement successful EE programs?
- How can incentives help in the process?
- How to determine the right package?
- How to enforce EE targets?
- How to establish adequate EE targets?
- EE programs to the economic recovery and growth
- EE programs to climate change mitigation and adaptation.

**Panel Speakers:**
- Emilianio Pedraza, Director-General, CONUE, Mexico. Mexico’s National Program for the Sustainable Use of Energy.
Available Presentations:


Contents

1. Energy conservation targets of China
   2. Energy conservation actions in China
      2.1 Policies
      2.2 Organization systems
      2.3 Actions and achievements
   3. Conclusions

1. Energy Conservation Targets

2010: Unit GDP energy consumption drop 20% compare with that in 2005. (2005: 1.22 TCE, 2010: 1 TCE Per 10,000 RMB GDP)

2020: Unit GDP CO2 emission drop 40-45% compare with 2005. Energy saving will be the main contributing factors to this target.
2.1 Policies

- Laws and regulations
- Structural adjustment of the economy
- Economic incentive measures
- Capacity building

2.1 Policies(1): Laws and regulations

- Energy conservation law
- Energy law
- Cyclic economy law
- Renewable energy law
- Regulations on energy saving in buildings
- Regulations on energy saving in public institutions
- Energy efficiency standards for industrial products
- Standards for energy saving in buildings
- Standards on fuel in vehicles
- Energy efficiency standards for household electrical appliance
- Energy label for household electric appliance, vehicles, and buildings

2.1 Policies(2): Structural adjustment of the economy

Industrial policies: change the growth pattern of the economy through control
the increasing of market access standards and eliminating the backward industries.

- Regulations on Structural Adjustment of Industry, 2005, by NDRC
- Guiding Catalogue for Structural Adjustment of Industries, 2007
- Guidelines on rectifying the coke industry sector, 2004
- Access requirements on coke industry (2000)
- Industry integration and development of iron and steel, aluminum, and non-ferrous metal and coke industries, 2006
- Development policies for iron & steel industry (2005)
- Development policies for building materials industry (2005)
- Announcement on the green emission control on iron & steel industry, eliminating redundant production capacity, and speeding up structural adjustment (2005)
- Announcement on the inspection of dismantling the small-scale coal-fired power plants (2006)
- Guidelines on speeding up the structural adjustment for 9 sectors, including electric power, coke, cement, aluminium, ferroalloy, calcium carbide, coal and coking industries, 2005
- Subsidy for energy-saving projects in real estate investment projects (2007)

2.1 Policies(3): Economic incentive measures

a. Market operation instruments

- Energy pricing mechanism
- Resource and environment cost included: energy tax, environment tax, carbon tax
- Different energy price for different sectors
- Energy quota management + tiered energy price
- Energy fee
- Heating fee
- Energy fee for government institutions
- Fuel tax
- Energy saving incentive policies
- Energy-saving budget, energy-saving found
- Economic incentives for high energy efficiency new products, including buildings
- Economic incentives energy-saving projects
- Import/export tax incentives

b. Fiscal subsidies

- Subsidies projects
  - 50 key energy-saving projects
  - Fiscal reward for energy-saving projects
  - The investment projects of the central government budget on resources-saving and environment protection
  - Heating metering and energy-saving project for the existing residential building in North China
- Energy-saving companies
  - Renewable energy sources: Water-source heat pumps, Solar energy, Wind energy, etc.
- Product subsidies
  - Energy-saving products for people's wellbeing: Energy-saving products, such as lightings, air conditioners, vehicles, electric machines, etc.

2.1 Policies(3): Economic incentive measures
c. Tax rebate

- Output tax policies for products of high energy consumption, high pollution, and resources consumption.
- Value added tax rebate policies for the products of comprehensive utilization of resources and other products
- Income tax rebate list of the enterprises of comprehensive utilization of resources products
- Value added tax rebate list of energy-saving and water-saving products
- Income tax rebate list of the enterprises of energy-saving and water-saving

d. Finance

- CDM
- ESCo
- Energy-saving trade/Carbon trade

e. New mechanism
2.1 Policies: Capacity Buildings
- Leading roles of the government in energy conservation
  - responsibility and assessment systems of government at different levels, and the coordination among related departments
- Institutional capacity building of different levels
  - Energy conservation centers: National and local levels
  - Energy conservation inspection institutions
  - Agencies: consultant agencies, energy-saving service companies, financial institutions, third party institutions, etc.
- Energy management posts in enterprises: Energy manager

2.2 Energy Conservation Management Systems of China
- Starting in the 1980s
- 3 levels
  - Central government: Energy Conservation Department
  - Local government: Energy Conservation Department
  - Enterprises and individuals

2.3 Actions and Achievements
Distributing the overall energy-saving targets and responsibilities to regions, creating the assessment standards and monitoring systems.

Ten Key Energy-Saving Projects
1. Coal-Fired Industrial Boilers (kilns) Renovation Project
2. District Heat and Power Cogeneration Project
3. Waste Heat and Pressure Utilization Project
4. Oil Conservation and Substitution Project
5. Electrical Motor Systems Energy-Saving Project
6. Energy System Optimization Project
7. Energy-Saving in Buildings Project
8. Green Lighting Project
9. Government Energy-Saving Project
10. Energy-saving Monitoring and Technical Service System Building Project

Top 1,000 Energy-Consuming Enterprises Program
Saved 108 million tce of energy from 2006 to 2008, achieving the goal of the "Eleventh Five-Year Plan" period ahead of schedule.

Promote Energy Conservation Certification and Energy Label
Development of Iron and Steel Industry

- From 2000 to 2008, China’s steel production quadrupled, with an annual average growth rate of 18.5%.
- By the end of 2009, China has ranked first in crude steel output for 13 years consecutively, and its production exceeds the total output of all countries ranking the second to the sixth.
- 2008: China’s iron and steel industry consumed a total of 458 million tons of energy, accounting for 16.80% of the total national energy consumption.

Energy Conservation of Iron and Steel Industry

- In 2008, China’s comprehensive energy consumption rate per ton of steel production was 0.529gce/ton, down 3.4% compared to 2004, with an average annual decline rate of 1.2%
- The gap between China’s steel industry and the international advanced level in energy consumption level has been further narrowed by 3.4% compared to 2005.

Development of Cement Industry

- From 2000 to 2008, cement production increased from 597 million tons to 1.35 billion tons, with an average annual growth rate of 11.1%
- In 2008, China’s cement production accounted for around 60% of total production in the world.
- By the end of 2008, the production of new-dry-process cement production lines accounted for 91.8%, increasing 16.8% over 2005.

Energy Conservation of Cement Industry

- China’s comprehensive energy consumption per unit product of cement has been declining, from 331gce/ton in 2008, down 11.5% compared to 2005, with an average annual decline rate of 1.0%
- Source: Speed up eliminating backward production capacity
- Proportion of new dry-process cement production increasing quickly
- Technologies such as waste heat generation increasingly popularized

Development of Electric Power Industry

- By the end of 2008, the national installed capacity for power generation had reached 750 million kW.
- Elimination of small thermal power generating units, smoothly carried out: the task of closing down 70 million kW of small thermal power units during the “Eleventh Five-Year Plan” period had been accomplished.
- Most of newly built power units are large-scale and highly efficient.
- Low carbon power, including wind power and nuclear power, in accelerated development.

Energy Conservation of Electric Power Industry

- Coal consumption for power generation drops quickly, declining from 4.6g of standard coal in the past to about 3.9g of standard coal at present.
- In 2008, the coal consumption for power generation of 6,000 kW and above thermal power plants in China was reduced to 44gce/kWh, declining 7gce/kWh compared to 2007.
- The line loss rate keeps dropping, to 6.64% in 2008, a decline of 0.23% compared to the previous year.
Development and Energy-saving of Synthetic Ammonia Industry

- Coal is the primary material for synthetic ammonia production.
- In 2018, 82% of synthetic ammonia production used coal as feedstock.
- 35% of total coal use for ammonia production was converted to electric power.
- Energy efficiency of synthetic ammonia production increased by 6.9% in the last 5 years.
- Whether processed by water gas or steam reforming, the energy consumption per unit of synthetic ammonia was reduced by 8% compared to 2005.

Development and Energy Conservation of Non-Ferrous Metals Industry

- China is the world’s largest producer and consumer of non-ferrous metals.
- The energy consumption of non-ferrous metals production and consumption decreased by 20% in the last 5 years.
- In 2019, China’s aluminium production and consumption accounted for 37% and 32% of the global total, respectively.
- 2400kW electrolyser in 2003, China’s AC power consumption of electrolytic aluminium production decreased from 14.4kWh/kg Al to 13.1kWh/kg Al (11% improvement in energy efficiency) (Data from “China’s aluminum energy-saving target (14.4kWh/kg Al) set by the International Primary Aluminium Institute.”)

Energy-Saving Management of Transportation Sector

- China’s demand for passenger and freight transportation has tripled in the last 10 years.
- China’s transportation energy-saving management is being strengthened by several ministries.
- The Ministry of Transportation issued the “Medium and Long-term Outline Plan for Energy Conservation of Highway and Waterway Transportation.”
- The Ministry of Housing and Urban-Rural Development issued the Opinions about Giving Priority to Urban Public Transport Development.
- The State issued the Energy Saving and Integrated Resource Utilization Plan of Railways during Eleventh Five-Year Plan Period.

Energy Conservation of Building Sector

- Energy-saving standards for buildings, including energy conservation of terminal energy equipment.
- Five climatic zones of building thermal performance design: extremely cold zone, cold zone, hot summer and cold winter zone, hot summer and warm winter zone, and mild zone.
- The government formulated a series of laws, regulations, standards, and documents to promote building energy conservation.
- The energy-saving standard system for Chinese new buildings covering all climatic zones, residential and public buildings, processes of design, construction, operation, and internal energy and renewable energy utilization has basically taken shape.

Energy-Saving Measures of Transportation Sector

- Multi-measures taken at the same time
  - Infrastructure
  - Means of transport
  - Industrial development
  - Technology promotion and demonstration
  - Major technological breakthroughs
    - High-speed railway technology

Major Activities of Building Energy Conservation

- Energy-saving standard for new buildings
  - An increasingly number of new buildings follow energy-saving standard.
  - 98% of new buildings followed energy-saving standard at the design stage, an increase of 45% compared to 2005.
  - 82% of new buildings complied to mandatory energy-saving standard in the construction stage, increasing 63% over 2005.
Major Activities of Building Energy Conservation

- Energy conservation for existing residential buildings and public buildings;
- The energy consumption for heating purposes is reduced by 1.5% of the total energy consumption in 2007.
- From 2008 to 2012, the energy consumption of buildings in existing residential buildings and public buildings will be reduced by 10%.
- Energy consumption of government offices and large public buildings.
- Energy-saving efforts for government offices.
- The government will reduce energy consumption by 20% in non-energy-related government buildings.
- The government will install efficient energy-saving systems in all government offices and large public buildings.
- The government will reduce energy consumption by 20% in non-energy-related government buildings.

Significantly Increased Awareness on Energy Saving

Upgrading resource conservation as "basic state policy" and calling on the whole society to build a "resource-conserving and environment-friendly society."

- The whole society has an unprecedented level of energy-saving awareness.
- The government makes unprecedented efforts in launching energy conservation policies.
- The government makes unprecedentedly big investment.

Goals in the "Eleventh Five-Year Plan" Period for eliminating backward production capacity

- Industry: Cotton, 
- Energy: Improving "shengtai" (energy-saving) policies, improving energy-saving equipment and technology.
- Iron Making: Shengtai in blast furnaces.
- Steel Making: Shengtai in blast furnaces.
- Energy-saving equipment: Realizing a full production cycle of energy-saving equipment.
- Chemical Industry: Realizing a full production cycle of energy-saving equipment.
- Oil: Realizing a full production cycle of energy-saving equipment.
- Paper Making: Realizing a full production cycle of energy-saving equipment.
- Tobacco: Realizing a full production cycle of energy-saving equipment.
- Mining: Realizing a full production cycle of energy-saving equipment.
- Electric Power: Realizing a full production cycle of energy-saving equipment.

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3. Conclusions

- Energy-savings is the first priority in the overall national energy strategy of China
- Clear and strong energy-saving law and policy system has been formed
- Concrete and in large scale actions have been implemented and achieved remarkable results
- Greater technological and economic challenges lies ahead for achieving the 2010 and 2020 goals
- International cooperation are important for energy conservation

Acknowledgement

The data of this presentation is provided by the colleagues of ERI of NDRC

Thank you!
Emiliano Pedraza, Director-General, CONUEE, México: México’s National Program for the Sustainable Use of Energy.

THE INTERNATIONAL PARTNERSHIP FOR ENERGY EFFICIENCY CO-OPERATION

by Sergio F. Garribba, Counselor for Energy Policy
Ministry of Economic Development, Italy

Energy Efficiency & Access Forum – Session 1
Mexico City, September 28-29, 2010

1. IPEEC Framework and Outreach
   - International Partnership for Energy Efficiency Co-operation (IPEEC) launched by the G8 Energy Ministers Meeting and G8 Summit 2009 in Italy
   - IPEEC to further a Global Energy Efficiency Action Initiative taking into account the 20 recommendations by the International Energy Agency
   - IPEEC to act globally as an open-ended partnership through Task Groups and other means
   - Task Group on capacity building and training with a key role

2. Objectives of the Worldwide Energy Efficiency Action through Capacity Building and Training (WEACT)
   - Raising awareness on energy efficiency policies amongst decision and policy makers
   - Building institutions and tools for government officers and administrators
   - Assistance to identify and bridge gaps in existing energy efficiency programs
   - Fostering partnerships amongst countries to support energy efficiency policies and programs

3. WEACT: Agenda for Action
   - First meeting of the Working Partners, Rome, Italy, March 10, 2010 (Guidelines, Responsibilities and Funding)
   - Executive Committee meeting, Paris, France, September 13-14, 2010
   - 3 to 4 Regional energy efficiency workshops (Latin America, and other regions to follow)
   - Reporting to the IPEEC Policy Committee and to the 2011 G20 Summit Meeting in France
4. WEACT: Task Group Members (open ended)

Working Partners:
- Italy (leading)
- France
- Japan
- United States
- IEA Secretariat
- Energy Charter Secretariat

Hosting Partners:
- Mexico
- Brazil
- Newcomers (Egypt and others)

5. WEACT: Main Themes for the First Workshop, Mexico City, September 28-30, 2010

- Cross-cutting issues and framework (IEA and France)
- Transport sector (IEA)
- Building sector (United States)
- Appliances, lighting and equipment (United States)
- Industry sector (Japan)
- Public utilities (Italy)

6. WEACT: Expected Outcome

- Establishment of a global Energy Efficiency Policy Network
- Sharing knowledge developed through other IPEEC Task Groups
- Organising regional and sub-regional workshops in conjunction with high-level policy forums
- Identification and diffusion of best energy policy practice towards Cancun and beyond
THEMATIC SESSION 2 – THE ROLE OF STANDARDS, LABELING AND CODES
September 28, 15:15 – 16:15 hrs.

Chair: Emiliano Pedraza, Director-General, CONUEE, México.

Available Presentations:

Global cooperation needed to accelerate market transformation

Major target appliances

1. Refrigerator and freezer: energy demand to be more than double up to 2030 (half in China and S. Asia)
2. Domestic lighting: to be double in 2030 in every region
3. Televisions: to be quadruple up to 2030 in all regions
4. Air conditioners: increasing source of electricity demand
5. Electric motors: to be double up to 2030 in all regions
6. Network standby power: network products increasingly complex

Source: Kilsenber et al., 2009
More than half of the transport greenhouse gas reduction through Fuel economy improvement

How and where to cooperate?

- S & L policies offer one of the best prospects for global cooperation.
- Coordinate program design (Mandatory minimum energy performance requirement, comparative labels) as appropriate to send clear, performance-based signal
- Use coordinated financial incentives to encourage manufacturers to scale-up production of super-efficient products
- MVE (monitoring, verification and enforcement)
  - Non-compliance is projected to be as large as 20-50% in S&L program in most countries so far.
  - Most cost-effective option to unlock further economic potential existing within S&L schemes.

Thank you for attention!
Christine Egan, Executive Director, Collaborative Labeling and Appliance Standards Program (CLASP):
Latin America’s CO₂-reduction potential due to additional and more stringent EE S&L Programs is 14% annual Mtt in 2030.

**Characteristics of National Programs**

There are two types of EE S&L Programs in Latin America:

- **Programs with primary focus on Minimum Energy Performance Standards (MEPS):**
  - EE S&L Program of Mexico – which has followed the US model
  - Primary focus on MEPS, labeling considered as complementary instrument
  - Has been partly followed by Venezuela and serves as a model for Central American countries

- **Programs with initial focus on labeling:**
  - FNE of Brazil: first labeling program in the region, started voluntary, moved to mandatory
  - Model of EU & Brazil has been followed by majority of South American countries
  - MEPS are implemented as second step, based on operational labeling program

**EE S&L Harmonization or Alignment**

- Latin American EE S&L programs strongly influenced by those of the US and European Union respectively
  - Equipment designs
  - Orientation of test procedures in international (e.g. ISO, IEC) or national/ regional standards (e.g. ANSI-ASHRAE, NEMA)
  - Energy label design
  - Program design (primary focus on labeling or MEPS)

- Regional harmonization efforts had limited success
  - Initiatives of sub-regional harmonization (Andean Region, MERCOSUR) did not prosper
  - COPANT is proceeding in defining voluntary standards

- Alignment is still the rule
  - Mexico continues to align its standards with new US rulemaking
  - EE standards of South American countries are similar, but full harmonization is yet to be achieved

**Developments and Trends**

- From voluntary to mandatory labeling programs

- From labeling programs to minimum energy performance standards (MEPS)

- Increase of range of appliances and equipment covered by EE S&L programs

- Innovative concepts like system standards and standards taking into consideration human behaviour

- Revision and international/ regional harmonization and alignment of minimum energy performance standards (MEPS)

- Many countries of the region are implementing incentive programs and/or replacement programs for appliances and lamps
The Way Forward: What is needed and how can technical assistance help?

- There are important potentials to improve national EE SSL Program throughout the region, related to:
  - Apply analytical methods to determine economic and benefits and to define cost-effective energy efficiency thresholds for MEPS and appropriate test categories.
  - Methods of monitoring and evaluation of program results
  - Strengthening government entities in charge of program design and implementation.
  - Strengthen testing and certification infrastructure and procedures
  - Consumer awareness campaigns
  - Training of market actors
  - Market control and verification of test results

- These areas also offer ample opportunities for regional cooperation among national programs

CLASP’s current cooperations in Latin America

- Support to CONUEE of Mexico
  - Focusing on MEPS for high energy savings potential
  - Perspective to align with US and Canadian standards

- Support to the National Energy Efficiency Program (PPEE), Chile
  - Review of the National EE SSL Program, including complementary policies and evaluation of certification systems.
  - Technical Assistance on prioritization of equipment and elaboration of MEPS.

- Support to ENARGAS of Argentina
  - Technical Assistance on EE standards and MEPS for gas appliances

- Collaboration with CLADE (Latin America Energy Organization)
  - Regional trainings on EE SSL Building Blocks

For more information:

www.clasponline.org
Info@clasponline.org

Thank you, Gracias
THEMATIC SESSION 3 – THE ROLE OF INSTITUTIONS: PROJECTS, CAPACITY BUILDING AND PUBLIC AWARENESS

September 28, 16:15 – 17:15 hrs.

Chair: Carlos Flórez, Executive Secretary, OLADE (Latin-American Energy Organization).

Available Presentations:

EE Implementation Experience: Illustration # 1: Thailand

- Good EE Framework: Multiple strategies, plans, targets, and regulations (including EE Law from 1992 onwards)
- High and growing energy intensity, high dependence on oil and energy-GDP elasticity of -1.4 to 2005 (one of the highest in region)
- Institutional Structure is distributed into multiple agencies and funds
- Weak EE Governance Elements: poor stakeholder coordination, collaboration, dispersed accountability, inadequate decision-making authority with any one agency, funding and data availability not consistent across all institutions

EE Implementation Experience: Illustration # 2: South Korea

- Robust EE Framework: Multiple strategies well coordinated (e.g., supply and demand side), plans, targets, and regulations (including Rational Energy Utilization Act since 1979)
- Energy intensity declining (0.135 toe/1000 in 2001→ 0.297 in 2012→ 0.185 in 2030), oil share down, energy-GDP elasticity < 1
- Institutional Structure is solidly anchored around a single institution (KEMICO) with adequate funding and staffing
- Key Elements of Successful EE Governance (Good Funding)
- Leadership, accountability, and decision-making (Transparent, effective coordination with public & private sectors)

Enhancing EE Institutions and Governance: Lessons Learned & Conclusions (1)

- What drives EE implementation is important: The prime motivation for implementing EE should be driven by country priorities. While developed countries are motivated by energy security and climate change reduction targets, developing world EE potential may be motivated primarily by the need to improve energy access, energy security, reduce import costs, and local environmental goals.
- A political commitment to EE policies and goals is essential: Commitment from top political leadership is necessary to ensure that EE policies set the direction that they need, and the budget necessary to successfully operating EE institutions.
- EE policies, laws, and regulations should be developed based on a shared vision of the different and diverse group of stakeholders, the necessary to gain the support of stakeholders and facilitate policy formulation.
- Dedicated EE agency should be established under a legislative mandate. It is important that the EE agency is established as an outcome of legislative processes which provides them the legal mandate and framework for their operation.

Enhancing EE Institutions and Governance: Lessons Learned & Conclusions (2)

- Clear, independent decision-making authority and enforcement abilities with a strong independent EE agency, supported by leadership and adequate resources, including staff and funding, and accountability.
- Strengthened coordination and transparent collaboration between multiple EE institutions and market players and between national and state, provincial agencies, and with private sector stakeholders.
- Reliable energy data at the end-use level necessary to develop meaningful EE policies, laws, and regulations targeted at segments of the economy that bring the most benefits and need the intervention of the government to effect desired market transformation.
- Improving data availability for EE policy analysis and target setting with appropriate EE metrics and indicators needed to be pursued – some countries have good data and others have uncertain data.
- Credible monitoring and evaluation plans to enable effective policy formulation, implementation, and impact assessment.

Thank You!
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Joseph Williams, Manager, Energy Program, CARICOM: Challenges of Small Island Economies.

Energy Efficiency & Access Forum
Caribbean Community's Experience and Challenges

September 28, 2010
Mexico City

Joseph Williams
Manager, Energy Programme
Caribbean Community

CHALLENGES OF CARICOM SIDS
5D’s

- Dots (Small states)
- Discrete (separated by Sea)
- Diverse (resources, structures)
- Debt (rel high indebtedness)
- Disasters (prone to natural)

Barbados: Solar Water Heating Program – World Best Practice

- Close to 50,000 SWHs installed (pop approx 275,000).
  - SWHs are produced locally

- Govt promoted the expansion of the SWH industry by:
  - Waiving tax on raw materials to manufacturers,
  - Maintaining high taxes on non-solar water heaters (60%),
  - Allowing a 100% tax rebate on income taxes to householders to purchase a SWH,
  - Extends access loan for energy audits – recommended use of SWHS.

- Simple payback period in Barbados is approximately 2 years

- Benefits to economy approx US$10M/year;
- Consumers saved approx US$22M since beginning of programme

| Country     | Population | % of CARICOM's Pop | % Per Capita | Population Size | % of Total | Per Capita
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<td>Antigua &amp; Barbuda</td>
<td>105,000</td>
<td>7.0%</td>
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<td>Barbados</td>
<td>283,000</td>
<td>17.0%</td>
<td>4.2%</td>
<td>90,000</td>
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<td>Dominica</td>
<td>72,000</td>
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<td>Grenada</td>
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<td>27,000</td>
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<td>Guyana</td>
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<tr>
<td>St. Kitts &amp; Nevis</td>
<td>55,000</td>
<td>3.4%</td>
<td>1.5%</td>
<td>18,000</td>
<td>0.3%</td>
<td>0.9%</td>
</tr>
<tr>
<td>St. Lucia</td>
<td>170,000</td>
<td>10.5%</td>
<td>4.6%</td>
<td>50,000</td>
<td>0.7%</td>
<td>3.5%</td>
</tr>
<tr>
<td>St. Vincent &amp; the Grenadines</td>
<td>117,000</td>
<td>7.2%</td>
<td>2.0%</td>
<td>30,000</td>
<td>0.5%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Tall &amp; Tobago</td>
<td>1,290,000</td>
<td>8.1%</td>
<td>4.7%</td>
<td>45,000</td>
<td>0.6%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Total</td>
<td>16,135,000</td>
<td>100.0%</td>
<td>29.4%</td>
<td>1,000,000</td>
<td>100.0%</td>
<td>11.2%</td>
</tr>
</tbody>
</table>

| Island Type | Population | % of CARICOM's Pop | % Per Capita | Population Size | % of Total | Per Capita
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Antigua &amp; Barbuda</td>
<td>105,000</td>
<td>7.0%</td>
<td>2.7%</td>
<td>144,000</td>
<td>2.0%</td>
<td>0.7%</td>
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<tr>
<td>Barbados</td>
<td>283,000</td>
<td>17.0%</td>
<td>4.2%</td>
<td>90,000</td>
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<td>Dominica</td>
<td>72,000</td>
<td>4.5%</td>
<td>2.4%</td>
<td>20,000</td>
<td>0.3%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Grenada</td>
<td>91,000</td>
<td>5.6%</td>
<td>2.3%</td>
<td>27,000</td>
<td>0.4%</td>
<td>1.0%</td>
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<tr>
<td>Guyana</td>
<td>764,000</td>
<td>48.0%</td>
<td>3.4%</td>
<td>50,000</td>
<td>0.7%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Haiti</td>
<td>10,000</td>
<td>0.6%</td>
<td>0.3%</td>
<td>20,000</td>
<td>0.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Jamaica</td>
<td>2,837,000</td>
<td>17.7%</td>
<td>4.6%</td>
<td>90,000</td>
<td>1.3%</td>
<td>1.0%</td>
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<td>1,000,000</td>
<td>100.0%</td>
<td>11.2%</td>
</tr>
</tbody>
</table>

230
**HAITI**

**Human Development (16%) 2000**
- Poor country in Western Hemis
- One of most devastated
- Agglomerative income compared with percent of Sub-Saharan Africa
- Rate: 149 out of 177 on HDI (2007)
- 76% of 1,296 below poverty line
- 54% in extreme poverty
- Income inequality among highest; poorest 20% received 3.6% total income, wealthiest 20% percent accounting for 60%
- 60% use fuel wood and charcoal
- EARTHQUAKE JAN 12, 2010 – SITUATION MADE WORSE

**Energy Access Initiatives**
- Energy Access central to re-construction effort - provides opportunity under the "buildback better" strategy
- Solar, Wind, Bio-fuel to play key role
- Propose: Massave PPG, LPG strategy – for Cooking & Grid, CBB examined two scenarios
- Sunpower: Privatization route to given priority

**NEEDED FOR EE IN CARICOM**
- Successful EE Projects in the building sector for case studies & demonstration
- Improved regulatory framework (utility & market)
- Appliance Labeling Program - Region
- Transportation Sector - Standards
- EE Building Code & Standards
- Innovating Financing; eg esco - using EPC, to target Public Sector
- More high quality Information on EE
- Strengthened Capacity – individual & Institutional

**EE Initiatives in CARICOM**
- Barbados – SEF – IDB
- Bahamas – SEF – IDB
- Grenada – Public Sector
- Jamaica – DSM 94-99 WB; IDB, OLADE
- St Vincent & Grenadines – Public Sector – EU
- Others: Cuban Light Bulbs, PetroCaribe supported EE Initiatives
- Electric Utility promotions

**Development of a Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS)**

**Roadmap:**
- Community-wide ML EE Resource Assessment
- Set Ambitious Targets
- Secure Government Commitments to Targets
- Develop Platform for engaging stake holders

**Strategies:**
- To support Policies, Capacity Building, Financing, Awareness
- To achieve targets at national levels and
- Implement Regional Projects

---

**Thank You**

Joseph Williams
Manager, CARICOM Energy Programme
Caribbean Community Secretariat
energy@caricom.org
jwilliams@caricom.org
Leandro Alves, Chief, Energy Division, Inter-American Development Bank: *IDB-ENE Innovation Center and the ECPA EE Centers.*
Centro de Innovación Energética del BID
IDB Energy Innovation Center

- El BID, conjuntamente con el US DoE, lanzó en el IDB Energy Innovation Center en el marco de la ECPA
- El BID, en colaboración con gobiernos y otros asociados, lanza el programa de sector privado
- El Centro de Innovación Energética sirve como centro (subregional) para los varios centros de energía sostenible que se están desarrollando actualmente en la región

Objetivos

- Promover la innovación para la Eficiencia Energética, Energía Renovable y Acceso a la Energía
- Servir como centro para el intercambio de conocimientos y mejores prácticas del sector energético
- Apoyar al transitar de ideas a proyectos concretos a través de:
  - Asistencia Técnica para la preparación de proyectos
  - Financiamiento y refinanciamiento de proyectos

Centro de Innovación Energética del BID - IDB Energy Innovation Center
Concurso IDEAS

Prowe recursos no reembolsables para desarrollar ideas sobre energía sostenible replicables en LAC y que puedan ampliar su escala.

IDEAS2011:

- incorporar lecciones aprendidas, criterios de elegibilidad
- incorporar nuevas sociedades, organismos internacionales, sector privado
- incorporar financiamiento y equipo para ampliar la escala de los ganadores, business plans
- Concurso regional e sectorial (solo en el Caribe, solo para Acceso a EE)
THEMATIC SESSION 4: INNOVATIVE FINANCING MECHANISMS
September 28, 17:30 – 18:30 hrs.

Chair: Shilpa Patel, Chief, Climate Change, Environmental and Social Development Department, International Finance Corporation.
Co-Chair: Dominic Waughray, Senior Director, Head of Environmental Initiatives, World Economic Forum.

Available Presentations:

Steven J. Puig, Vice President for the Private Sector and Non-Sovereign Guaranteed Operations, Inter-American Development Bank: Mobilizing Resources for a “Cleaner” Energy Matrix.
**Regional and Institutional Context**

IDB Private Sector has a strong project portfolio in clean energy and energy access projects.

<table>
<thead>
<tr>
<th>Key Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective:</strong> Increase support to medium and small countries (19 countries)</td>
</tr>
<tr>
<td>from 27% to 35% by the end of 2025</td>
</tr>
<tr>
<td><strong>Objective:</strong> Increase loan volume for poverty reduction and social equity</td>
</tr>
<tr>
<td>from 40% to 50% by the end of 2025</td>
</tr>
<tr>
<td><strong>Objective:</strong> Increase loans for climate change initiatives, renewable energy,</td>
</tr>
<tr>
<td>and environmental sustainability from 5% to 25% by the end of 2015</td>
</tr>
</tbody>
</table>

**Content**

I. Regional and Institutional Background

II. IDB Innovative Financing Tools

III. Concluding Remarks

**Innovative Financing:**

**Structured & Corporate Finance Department**

SCF supports larger-scale investments in clean energy and energy access.

- Renewable Energy: Miravalles Geothermal Project (27.5 MW)
  - US$85M Loan - Costa Rica
- Energy Efficiency: EE Guarantee Mechanism for local financial institutions
  - US$25M Loan - Brazil
- Biofuels: ACA/FN Bioenergy Program
  - US$150M Debt Fund - Regional
- Transmission: "El Para Todos" (CEMEX/CLP) Energy access program
  - US$150M Corporate Loan - Brazil

**Innovative Financing:**

**Inter-American Investment Corporation**

IIC supports SMEs by providing financing and technical assistance to private enterprises.

- Renewable Energy: Cauquena & Guanaquitas - hydro - 9.5 MW & 9.8 MW - Colombia
  - HidroCerroalto - hydro - 34.5 MW - Ecuador
- Energy Efficiency: Senerex Pecosito - hydro - 15.4 MW - Peru
  - Energia Pacifico - biomass - 15.6 MW - Chile
- Energy Efficiency: Optima Energia - ESCO - Mexico
Innovative Financing: Using Multilateral Environmental Funds

Global Environment Facility (GEF). The IDB is an implementing agency of the GEF, a facility that funds projects in climate change, biodiversity, international waters etc.

The IDB also manages a platform of the GEF Earth Fund, which leverages public-private funding to address environmental threats. IDB GEF Portfolio:
- 34 projects in execution (US$16M GEF funds)
- 13 projects in pipeline (US$29M GEF funds)

Brazil: Energy Efficiency Guarantee Mechanism
- US$20M of GEF funds, plus USD 15m of IDB funds

Regional Water Funds Platform for Watershed Protection
- US$5M/GEF funds, plus USD 15m of co-finance

Concluding Remarks

The IDB is a committed partner in providing energy services to LAC.

Key Takeaways

- LAC will have massive investment needs to meet demand for energy and address the MDG through 2030; private sector participation is required
- Investment in clean and new energy technologies requires innovative approaches
- The IDB has made a corporate commitment to increasing investment in clean energy
- The IDB has developed and is developing innovative financial structures to channel investment toward clean energy and energy access
Héctor Rangel Domene, Director-General, Nacional Financiera, México: Success Stories.

Mecanismos Innovadores de Financiamiento: Casos de Éxito y Pasos a Seguir.

Ing. Héctor Rangel Domene
Director General
Septiembre 28 del 2010

Índice

- Metas para NAFIN
- Programas - Casos de Éxito
  - Financiamiento de Proyectos
  - Parques Eólicos
  - Instrumentos de Apoyo
  - Eficiencia Energética
    - NAFIN - FIDE: Substitución de Electrodomésticos para el ahorro de energía
    - Programa Mi Tortilla
    - FOMECAR
  - Conclusiones

Metas para NAFIN

- Contribuir al financiamiento de la matriz energética y a las estrategias federales de cambio climático.
- Actuar como estructurador de financiamientos para proyectos sustentables a través del desarrollo de nuevos productos.
- Dirigir y aplicar programas de largo plazo para proyectos de desarrollo sustentable, fomentando la participación de la Banca e Inversionistas Privados.
- Combinar recursos financieros (fondos públicos y privados), recursos de organismos multilaterales y mercados voluntarios de capital.
- Desestabilizar las fuentes de energía para el crecimiento sustentable del país.

Programas - Casos de Éxito

- Financiamiento de Proyectos
  - Energeía Eólica
  - Instrumentos de Apoyo
  - Eficiencia Energética: NAFIN - FIDE
  - Programa de Apoyo a la Industria de la Masa y la Tortilla
  - FOMECAR

Financiamiento de Proyectos

- Objetivo:
  Apoyar a una unidad económica para llevar a cabo en proyecto específico, basado en la estabilidad, certeza de flujos de caja futuros y de manera colectiva, en los propios activos del proyecto.
- Características:
  - Proyectos de gran escala: Generación de energía, creación de infraestructura, apoyo a sectores estratégicos, etc.
- Formas de financiamiento a proyectos:
  1. Sin recursos. Su patrocinio depende solamente del proyecto. El banco no tiene más recursos que los flujos y los activos del proyecto recibidos como colateral.
  2. Con recursos liberados. Además de los recursos del proyecto, se tiene garantía de un tercero, por un porcentaje del total de la inversión.
- La Garantía de Repago consiste en la viabilidad y la adecuada estructura contractual del proyecto.
Financiamiento de Proyectos

Ventajas:
- Aplaza plazos (hasta 15-20 años)
- Permite mayor aplazamiento (30/70%)
- Se diversifica y reducen los riesgos.
- La palanca ofrece un máximo retorno del capital para los socios (ROE)

Desventajas:
- Requiere de una fuente estable y prediccable de flujos a largo plazo
- No cualquier proyecto puede ser financiable
- Exige un periodo mínimo de explotación (relacionado con la vida de la deuda)
- Diseño complejo: Requiere varios meses de estructuración
- Requiere de asesores especializados: incrementa costos.

Energía Eólica

Proyectos de Energía Eólica

- En menos de un año de su creación, la Dirección de Proyectos Sustentables ha apoyado a dos grandes proyectos eólicos en México.

Características:
- Primero: Parque Eólico con capacidad instalada de 250 MW con 167 aerogeneradores.
- Segundo: Parque Eólico con capacidad de 225.5 MW.

Instrumentos de Apoyo

- Proyecto apoyado por Nedfi con un crédito de hasta 50 MMD en un límite de banco a un plazo de 15 años.
- Nedfi ofrece como Agente Emisor financiero del proyecto.

Instrumentos de Apoyo

- Programas Nedfi para Pymes y sectores específicos.
- Lineas internacionales (IDB, Banco Mundial, KFW).
- Reaseure economización (ESF, Climatic Investment Funds)

Emisión de capital y colocación de deuda:
- Dependiendo del volumen y estructuración de riesgo, se puede buscar aportaciones de capital y acudir a la BMF para colocar capital y emitir deuda a largo plazo.

Toma de Riesgo:
- Nedfi podría participar garantizando parte del riesgo, permitiendo así que participen Intermedios Financieros Privados.
Instrumentos de Apoyo

- **Programa de Garantías.**
  - **Objetivo:** Garantía Selectiva de hasta el 50% como apoyo para proyectos de Energía Renovable y de Ahorro de Energía y Medio Ambiente.

- **Criterios de Elegibilidad:**
  - Los proyectos de inversión deben ser viables y rentables, y deberán establecer claramente el origen y aplicación de los recursos.
  - Probada solvencia moral y crediticia de los solicitantes y obligados solidarios.
  - No encontrarse dentro de las actividades y destinos restringidos por Nafin
  - No se otorga garantía a proyectos que ya cuenten con apoyo de otros Bancos de desarrollo o Fideicomisos de Fomento Económico.

Eficiencia Energética: NAFIN - FIDE

Sustitución de Equipos Electrodomésticos para el Ahorro de Energía

- **Objetivo:**
  - Otorgar financiamiento a personas físicas, usuarios de CFE, en los estratos de población de bajos recursos del país, a fin de que se realice la sustitución de equipos ahorro de energía (refrigeradores y aire acondicionado).

- **Características:**
  - Monto del crédito hasta $9,000.00.
  - Tasa fija al usuario del 12%.
  - Plazo hasta 4 años.
  - Cobro mensual y bimestral en el recibo de energía eléctrica.

- **Resultados:**
  - Almes de mayo se han otorgado 328,515 créditos por un total de $ 977.1 MDP.

Sustitución de Equipos Electrodomésticos para el Ahorro de Energía

- **Objetivo:**
  - Fomentar el ahorro y la eficiencia energética en las micro, pequeñas y medianas empresas usuarias de CFE en toda la República Mexicana.

- **Características:**
  - **Tipo de Crédito:** Simple
  - **Monto a financiar:** hasta $200 mil pesos para microempresas, hasta $3.5 MDP para PYMES.
  - **Plazo:** hasta 4 años
  - **Tasa:** Fija
  - **Esquema de pago:** Mensuales y Bimestrales, con cobro en el recibo de energía eléctrica
  - **Garantías:** Las propias del crédito y en su caso el aval del principal socio o accionista.

- **Mercado Objetivo:** En una primera fase alrededor de 30 mil empresas.

Programa de Apoyo a la Industria de la Masa y la Tortilla

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Apoyo a la Industria de la Masa y la Tortilla

Objetivo:
• Apoyar al Gobierno Federal en la modernización del sector, con el Programa “Mi Tortilla”, mediante el financiamiento a Industriales de la Masa y la Tortilla

Características:
• Sustitución de máquinas de tortillas y equipamiento.
• Créditos a 4 años.
• Tasa fija del 6%, subsidiada por la Secretaría de Economía.
• La Secretaría de Economía paga adicionalmente $30 mil por la sustitución y clatrarización del equipo.

Fondo Mexicano de Carbono (FOMECAR)

Mercado Potencial en México

✓ El potencial de reducción de emisiones en México es de 100 millones de toneladas de emisiones de CO₂, en el año.
✓ Actualmente existen 121 proyectos mexicanos registrados, con reducciones anuales estimadas en poco más de 9 millones de toneladas.
✓ Por lo tanto, todavía existe un potencial del 91%, que representa ingresos anuales, nada más por la venta de Bonos de Carbono, cercanos a los 1,000 millones de dólares.

Fuente: UNFCCC, 17 de marzo de 2010;

✓ Objetivo:
• Apoyar a los dueños de proyectos bajo el Mecanismo de Desarrollo Limpio (MDL) con asistencia financiera para la elaboración del Documento de Diseño del Proyecto, validación y registro ante la Junta Ejecutiva de Naciones Unidas para la acreditación de bonos de carbono.

✓ Características:
• Fiduciario instituido en Bancomext desde 2006, como una iniciativa conjunta con la SEMARNAT, el Centro Mario Molina y con asistencia técnica del Banco Mundial.
• Cuenta con una donación del Banco de Desarrollo de Alemania (KFW).
• Recibe aportaciones a fondo perdido de 5% (EF), 3% (EF) y 2% (EF).
• Apoya costos de registro ante Naciones Unidas de proyectos bajo el MDL.
• Los beneficiarios se comprometen a reembolsar la asistencia financiera, más una comisión de éxito, una vez que generen bonos de carbono.
**FOMECAR**

- A la fecha, el FOMECAR está apoyando cuatro proyectos relacionados con la generación de energías renovables:
  - Inversión necesaria para la implementación de estos proyectos: $41 MMD.
  - Reducciones esperadas: por 261 mil toneladas de emisiones de CO₂.
  - Apoyo FOMECAR para el proceso de registro: $300,000 dólares.

**Conclusiones**

- La demanda de energía del país experimentará un crecimiento exponencial en los próximos 20 años.
- Nuestros recursos naturales como el petróleo, están volviéndose cada vez más escasos y por lo tanto más caros.
- Es fundamental invertir en energías renovables como la vórtica, solar, geotérmica y otras para hacer frente a la necesidad energética del país en los próximos años.
- La utilización de fuentes renovables de energía:
  - Reduce la dependencia de los combustibles fósiles.
  - Diminuye las emisiones de gases de efecto invernadero.
  - Aumenta el valor agregado de la actividad económica (mayor eficiencia).

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**Mecanismos Innovadores de Financiamiento:**

**Casos de Éxito y Pasos a Seguir.**

Ing. Héctor Rangel Domene

Director General

Septiembre 28 del 2019

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The Objective:
Propose new financial products that monetize future flows of CERs (Certified Emission Reductions) to raise finance today for EE/RE investments.
We will show you a product which can monetize today future flow of CERs to support the financing phase.

**The Carbon Market**

- **What is the underlying principle?**
  - A ton of CO₂, emitted anywhere in the world has exactly the same impact on climate change and should therefore be reduced/ mitigated where the cost of doing so is lowest.

- **What is sold?**
  - A commodity: Units = tons of carbon dioxide (or equivalent) allocated as part of an emission cap or "sequestered" by a project or program activity. These units are traded on the market segment in which they are traded: AAUs, CERs, ERUs, EUAs, VERs, etc.

**Where is the demand for carbon credits?**

- EU-TSP Phase III: ~36mm tCO₂/y

- Voluntary market, independent trading schemes

**How do carbon credits work?**

- Copenhagen Accord: Finance
  - Developed countries: Shall raise $100 billion through 2020 to 2012 from and additional source...

**Nature of Carbon Financing Contract**

- Challenge: ways to monetize the future stream of carbon revenues = similar to what we see in receivables

- Energy Project Finance - "Day 1"
  - Energy sales - "Day 2"

- CER sales - "Day 2"

**OUR PROPOSAL: A NEW PRODUCT LINE**
Proposal to monetize future CERs (the ‘GuaCER’):

- a forward sales CER Contract (i.e., selling today future CERs)
- from a LAC seller (investor in EE/RE) to an Annex 1 compliance buyer
- where CER delivery is guaranteed by the WB (or other similar financial institution)

If things go well...

If CERs are not delivered (i.e., ERPA is not honored), the shortfall agreement is triggered and a corresponding call for payment under WB guarantee can be made by the offshore buyer. As a result the obligation of the LAC Country (seller) is converted into a repayment obligation to the WB.
Using CFLs as an example:
- EE savings: $1 invested will buy 1 CFL, that reduces 65 kWh/year
- Emissions savings: Using Mexico’s emission factor (0.0.38 tCO2/MWh, 1 CFL saves 0.03 tCO2/year
- CER value: at $12/ton, this represents a return of over $0.40 per year.

$0.40 CERs/y
65 kWh/year
$1

Question: how much financing can you raise?

5 key steps from EE/RE proposal to GuaCER:
1. Capital investment today yields X number of CFLs or installed RE MW in future
2. X CFLs/MWs substitute for Y MWh of traditional generation over a future year
3. Multiply Y MWh grid emission factor, yields a number of CO2 averted/future year
4. Multiply CO2 averted by market price/CER, yields potential $ CER revenues in future
5. GuaCER product converts these future $ CER revenues into funding today

GuaCER CO2 emission reduction potential in MWh in different countries:

<table>
<thead>
<tr>
<th>Technology</th>
<th>Capacity Factor (F%)</th>
<th>Capacity Factor (N)</th>
<th>Energy (MWh/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro</td>
<td>45%</td>
<td>100%</td>
<td>230.00</td>
</tr>
<tr>
<td>Wind</td>
<td>10%</td>
<td>100%</td>
<td>110.00</td>
</tr>
<tr>
<td>Solar (PV)</td>
<td>20%</td>
<td>100%</td>
<td>40.00</td>
</tr>
</tbody>
</table>

CFLs are at the high end of savings.
- Illustrating emission reduction potential in BE and BE in different countries

- For $150mm invested...

<table>
<thead>
<tr>
<th>Technology</th>
<th>Energy (MWh/year)</th>
<th>Brazil</th>
<th>Chile</th>
<th>Mexico</th>
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<tbody>
<tr>
<td>CFL</td>
<td>9,500,000</td>
<td>1,900,000</td>
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<tr>
<td>Hydro</td>
<td>20,000,000</td>
<td>40,000</td>
<td>150,000</td>
<td>120,000</td>
</tr>
<tr>
<td>Wind</td>
<td>180,000</td>
<td>33,000</td>
<td>120,000</td>
<td>95,000</td>
</tr>
<tr>
<td>Solar (PV)</td>
<td>40,000</td>
<td>7,000</td>
<td>25,000</td>
<td>20,000</td>
</tr>
</tbody>
</table>

- Illustrating emission reduction potential in BE and BE in different countries

- For $150mm invested in Mexico

<table>
<thead>
<tr>
<th>Technology</th>
<th>Energy (MWh/year)</th>
<th>Emission Reductions (CO2/year)</th>
<th>$8.00/CO2</th>
<th>$12.00/CO2</th>
<th>$15.00/CO2</th>
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<tr>
<td>CFL</td>
<td>9,500,000</td>
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<td>20,000</td>
<td>160,000,000</td>
<td>240,000,000</td>
<td>305,000,000</td>
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</tbody>
</table>

- Applying other financial factors

- Factoring discount rates, etc...
Gracias, Thank you, Merci, Obrigado

CONCLUSIONS

• GuaCER is possible financial product to allow developing countries to sell CO2 emission reductions to Annex 1 countries; an open market sale of a good
• Provides funding today in exchange for a future flow of an EE/RE investment by-product, namely the CERs
• This proposed GuaCER financial product is at a preliminary concept stage
• There are, of course, potential problems and pitfalls – e.g. transaction costs; purchasers and sellers will need to become comfortable with the Guarantee dimension and other details
• ... but is a potentially interesting innovative product to mobilize financing for additional Energy Efficiency investments
THEMATIC SESSION 5 – THE ROLE OF REGULATORS AND UTILITIES EXPANDING ENERGY EFFICIENCY AND ACCESS
September 29, 10:15 – 12:00 hrs.

Chair: Alfredo Elías Ayub, Director-General, CFE, México.

Available Presentations:

The Role of Technology:
Chris Curtis, CEO, North America, President of the Global Buildings Group, Schneider Electric: Successful Experiences in Energy Management.
You can’t have a smart grid without a smart building!

What’s needed?
- Thought leadership
- Technology
- People
- Customer value

Make the most of your energy
The Role of Utilities: Challenges for Increasing Energy Efficiency and Access.

Germán Fatecha, ANDE, Paraguay.

Introducción

Hemos escuchado de varios exponentes quienes aseguraron, una pregunta que necesita respuesta, se preguntan del por que no se han avances significativos en el uso racional de la Energía Eléctrica, habiendo ya tanto conocimientos sobre el tema.

Nuestro planteamiento es que para materializarse una tendencia positiva, existen 3 aspectos:

1. La voluntad política que conciente del problema, prioriza las acciones a ser ejecutadas.
2. La conciencia ciudadana, por parte de la sociedad, para que aporte su aporte a favor de la Eficiencia Energética, que resulta tan importante como el 1er. punto.
3. La viabilidad financiera para llevar a adelante programas de Eficiencia.

Voluntad Política

Se presentan dificultades fundamentalmente en lo países en vías de desarrollo, donde las prioridades no siempre pasan por el Sector Energético, pasan mas por las emergencias sociales (alimentación, salud, seguridad, etc.), donde los Gobernantes no disponen de medios financieros suficientes.

Nuestras democracias a veces obtienen como resultado que los países sean administrados por personas/ equipos que desconocen el tema de la Eficiencia Energética.

Conciencia ciudadana

La falta de acciones comunicacionales que hagan que la sociedad tome conciencia de los beneficios que le ocasionan el uso Eficiente y correcto de la Energía Eléctrica que está a su alcance.

No se ven programas en las instituciones educativas, (escuelas, colegios, universidades, etc.) un plan de concienciación y educación de la Sociedad para que esta en consecuencia, educe positivamente, involucrados en el proceso, en el uso racional de los Recursos Energéticos que están a su alcance.

Se observa una ausencia de la campaña publicitaria acorde a la importancia del tema, las empresas de Energía Eléctrica, tiene un rol importante en esta situación, por lo que se ve una necesidad de un trabajo de relacionamiento con sus usuarios que aporte y complemente los puntos anteriores en la concienciación ciudadana.

Financiación

La necesidad financiera para los desarrollos de los programas tanto del trabajo social y técnico generalmente es superior respecto a los recursos disponibles.

Es más fácil lograr financiamiento para construir algo tangible que pueda ser garantizado que lograr financiamiento para un programa de Eficiencia Energética.

Muestras veces nos condicionan el crédito, para una inversión, condicionándonos a metas de disminución de pérdidas, por ejemplo, y resulta que no se tiene la disponibilidad financiera para esa meta.

Acceso a la Energía Eléctrica

El acceso a la Energía Eléctrica se puede ver desde dos puntos de vista:

- Como empresa productora y servicios de Energía Eléctrica.
- Como parte de la sociedad que necesita disponer de Energía Eléctrica.

En esta presentación solamente nos referimos al segundo punto.

El acceso al uso de la Energía Eléctrica debe ser consenso un Derecho Humano.

Sobre dicho principio es necesario encontrar la sustentabilidad de las Empresas Eléctricas, donde la Eficiencia Energética tiene un rol importante.

El tema del acceso al uso de la Energía Eléctrica atenta un análisis de nuestra organización, aquí presentes en esta foro, para cambiar la tendencia de la obtención de resultados positivos.

Con el principio de que el acceso a la Energía Eléctrica es un derecho humano, no existe más alternativas de costear Tarifas Diferenciadas, Tarifas Sociales y hasta la gratuitidad en algunos casos.
Paraguay

Con una población cercana a los 7.080.000 de habitantes en 406,732 km² (97% en la región central).

La ANEDE tiene la responsabilidad de la Generación, Transmisión, Distribución y Comercialización de la Energía Eléctrica.

**Generación**
- Potencia Total Instalada: 8,602 MW
- Transmisión
  - El Paraguay se conecta con LTA de 220 y 48 kV.
  - En proceso la construcción para un sistema de 100 kV en todo el país.
- Distribución
  - Clientes: 1,185,598
- Comercialización
  - La demanda interna es de alrededor de 2,000 MW.
- El resto es exportado a Brasil y Argentina.

Esta realidad ubica al Paraguay como el mayor exportador de Energía Eléctrica de la región.

Acceso a la Energía Eléctrica en el Paraguay

La ANDE posee un papel Social determinante en el país. La red convencional de Energía Eléctrica abarca más del 90% del territorio, parcialmente la Red Energética abarca a la Biomasa con un consumo superior al 5%, y la Energía Eléctrica convencional aproximadamente un 17%.  

**Distribución de Clientes**
- Clientes: 1,185,598

Medidas adoptadas y a implementar

- Compromiso de divulgación a nivel nacional de los horarios de mantenimiento, los cuales, por utilización de artilugios eléctricos, recomendaciones en el uso, tanto existentes y asentar a los grandes usuarios.

- Generación en los escenarios y colegios, con el Ministerio de Educación mediante un acuerdo de colaboración para la campaña desde la temprana edad.

- Presentaciones y charlas.
- Promoción de acciones para el uso eficiente de la Energía Eléctrica, como son:
  - Substituição de lámparas incandescentes (1,000,000 unidades).
  - Substituição de lámparas de alumbrado público.
  - Incentivo tarifario para uso de consumo de Energía Eléctrica fuera del horario pico.
  - Incentivo tarifario para la cogeneración en el horario de punta.

Medidas adoptadas y a implementar (cont.)

- Participación en lo que se hace a la sensación y/o, realización de los horarios de mantenimiento, etiquetado de artefactos eléctricos (flujo ascendente), modificación de los planes de Generación Independiente de Energía Eléctrica y de Energías Renovables.

- Presentación de un Plan de Eficiencia Energética a partir de la generación misma, con el consumo efectivo e inteligente, a implementar en el PLAN MAESTRICHE, DIARIA de ANEDE, periodo 2011 - 2022.

- Relevamiento e identificación de los potenciales energéticos sustentablemente explotables, en cada uno y/o región de la República del Paraguay, en busca de la descentralización de puntos de Generación mediante la presentación de proyectos de Generación Alternativa.
**Objetivos principales trazados**

- Normalizar el valle de demanda, en un sistema eléctrico caracterizado por 2 picos, lo cual es una meta a mediano plazo.
- Sistema de Redes Eléctricas confiable y con un producto de calidad.
- Conservación ciudadana sobre el uso racional de la Energía Eléctrica.
- Meta de disminución en las pérdidas en un 1% anual (5% para el 2015).

**Proyectos Año 2010**

- Trabajos de Electrificación en 40 Comunidades Indígenas del Chaco Paraguayo (NTN, ITAPI, ANDE), con paneles solares (comunidades aisladas).
- Electrificación por medio de paneles solares a Escolares y Colegios en distintas zonas de la República - EUROIS/LAIR (NTN).
- Elaboración de proyectos de explotación de biogas en residuos sólidos urbanos y granos de genero confinado. (Convenios con sectores privados para inversión).

**Redes Eléctricas Inteligentes - Smart Grid**

- La ANDE como Smart Grid (red eléctrica inteligente) ha instalado sistemas de monitoreo por áreas (IMF - monitores de tareas), en donde se observa el horizonte de consumo y demanda.
- Época de implementación de Medidores Electrónicos Diferenciales ya aplicados en Grupos Usuarios (industriales y comerciales), desde mayo de 2010 es vista implementada a las entidades autorizadas (Comun. Residencial, etc.). Se cuenta con la herramienta OPEN SOC (comercial) y en la brevedad el OPEN SOC (distribución).
- Implementación en las líneas de Transmisión y Subtransmisión e integrado a todos los Pliegos de Bases y Condiciones de las Licitaciones en curso y futuras, para el uso de fibre óptica de comunicación (OPWAN).
- Con lo cual se obtendrá:
  - Accesorio para un CARáTER NACIONAL.
  - Posibilidad de monitoreo por mediciones remotas.
  - Posibilidad de interrupción por telemando.
  - Centros de control "on line".
  - Teléfono IP totalmente integrada a nivel nacional.
- Sistema de vigilancia con cámaras en los puntos diseñados (instalaciones, depósitos, etc.).

**Conclusión**

Fuente: Informe técnico, Dirección de Energía Eléctrica - ANDE.
The Role of Utilities: Challenges for Increasing Energy Efficiency and Access.
Ángel Larraga, México Country Manager, Grupo Gas Natural Fenosa.
3. Generación de Energía Eléctrica

Energías Renovables
- Necesario impulsar a las energías renovables proporcionando el soporte (legal y regulatorio) para su desarrollo.
- GNP tiene actualmente 3,000 MW de capacidad instalada en diversos activos renovables.
- La generación sónica, termoeléctrica, hidroeléctrica, eólica y biomasa son las ventajas en las que se han concentrado.

El objetivo fundamental es el compromiso con el medio ambiente y la búsqueda de energías renovables sustentables.

4. Distribución de Gas Natural

Gas Natural vehicular: Beneficios
- Económico
  - Ahorro de hasta el 50% en gasolina
  - Menos emisiones por tonelada de gasolina
- Ecologico
  - Reduce las emisiones de CO2, mejorando la calidad del aire.
- Seguridad
  - Reduce la probabilidad de accidentes de tráfico.
- Salud Público
  - Mejora la calidad del aire para los residentes de áreas con alta contaminación.

5. Conclusiones

Necesario tomar el uso eficiente de la energía y el acceso de todos los ciudadanos al ser un bien de primera necesidad.

El impulso y desarrollo del gas natural es la alternativa viable para reducir el gasto y mejorar el entorno.

“Implementar la energía...”, comparte Fenosa.
“La mejor energía en lo que respetamos...” Juan Ormazabal, Director del CENAR (Centro Nacional de Energías Renovables).

Muchas gracias
The Role of Regulators:
1. Panorama energético mundial vs Modelo energético sostenible

- ¿Conseguir un modelo económico sostenible?
  - La regulación para:
    - Intensidad en el precio de la energía y sociales (redistribución y seguridad de suministro).
    - Para un nuevo modelo económico con el precio de la energía como un verdadero valor.
  - Herramientas: Utilización de las energías renovables y mejorar la eficiencia energética.

2. El acceso universal a la energía en los países en desarrollo

- Acceso a la energía: Administraciones y reguladores desarrollan normativas y incentivos para:
  - Incrementar la cobertura energética con el objetivo de alcanzar el servicio universal.
  - Fomentar el acceso y la eficiencia energética en la población que tiene acceso a la energía.
  - Que fuentes de energía utilizar:
    - Recursos renovables = Dependencia del exterior.
    - Recursos propios renovables = Desarrollo local, regional, industrial.

3. Indicadores de eficiencia energética

- Intensidad energética: Energía primaria consumida por unidad de PIB.

4. El PIB y las emisiones de CO2: las economías más desarrolladas han alcanzado un crecimiento económico con un consumo energético y sus emisiones de CO2.

3. Indicadores de eficiencia energética

4. 1. Previsión de la demanda energética en España

5. Mecanismos regulatorios de eficiencia energética

- Instrumentos regulatorios de obligado cumplimiento:
  - Certificación de edificios, instalaciones en viviendas y en edificios del sector servicios.
  - Estructuras de eficiencia energética en los equipos de consumo y vehículos, prohibición de equipos ineficientes y requerimientos de etiquetado energético.
  - Auditorías energéticas.

- Instrumentos económicos para el uso de equipos eficientes, cambios de combustibles y hábitos de consumo más eficientes:
  - Incentivos económicos: subvenciones a las inversiones, reducciones de impuestos, etc.
  - Recursos fijos.
  - Impuestos y reducción de impuestos.
  - Impuesto al consumo energético.
  - Impuesto a la emisión de CO2.
4. Mecanismos regulatorios de eficiencia energética

3. Mecanismos de mensado

- Certificados blancos.
- Estímulos para el desplazamiento al menor costo posible.
- Obras de los comercializadores: en su caso, participación de los consumidores en el mercado mediante la intermitibilidad (servicios de ajuste del sistema).

4. Acuerdos voluntarios entre empresas y administraciones.

5. Programas de gestión de la demanda. Apoyados por la Administración y gestionados por los propios comercializadores.

6. Conciliación y formación de los consumidores: la nueva cultura del consumo

- Campañas de información y formación a los consumidores sobre cómo se pueden ahorrar en la factura de la energía.
- Conocer los derechos y deberes de los consumidores.
- Información sobre la generación de energía a partir de recursos renovables.

6. Empresas generadoras y comercializadoras

7. Eficacia energética en España

6. Empresas generadoras y comercializadoras

7. Eficacia energética en España

Marco normativo

- Liberalización de los sectores de electricidad y gas natural.
- Incentivos a los programas de gestión de la demanda. Dotaciones anuales en determinados RD de Tarifas.
- Plan de Fomento de las Energías Renovables.
- Documento de Planificación de los sectores de electricidad y gas natural 2002 - 2011 (y PANE).
- Orden TIC/1920/2007, de 26 de julio, por la que se regula el servicio de gestión de la demanda de intermitibilidad para que los grandes consumidores aporten servicios de ajuste al operador del sistema.

7. Eficacia energética en España

Adicionalmente se trabaja en proyectos SmartGrids

- Las redes que incorporan inteligencia artificial a las redes eléctricas con el fin de optimizar la entrega de energía eléctrica en todo momento, ahorro energía, reduciendo costos e incrementando la seguridad.
- Electric: redes inteligentes, redes flexibles, donde todos los agentes están involucrados, automáticamente gestionadas, totalmente integradas y con control centralizado permiten el diagnóstico, reparación y integración en los sistemas.

7. Eficacia energética en España

Por tanto, son los sistemas inteligentes que permiten:

- Mejorar los niveles de confiabilidad del sistema, la calidad y seguridad del suministro.
- Desarrollar de redes: mejor integración de diversas energías en el sistema con procesos de interconexión simplificados que mejorarán la transmisión.
- Los consumidores podrán jugar un papel más activo en el mercado energético y los que tengan más información tendrán mejores opciones para la elección de la oferta.
- Fomentar la integración de mercados.
- Reducir el impacto medioambiental.
7. Eficiencia energética en España

- Componentes:
  - Smart Metering (Medición Inteligente)
  - Grid Intelligence (Inteligencia de Red y sus Controles)
  - Utility IT (Gestión Inteligente de Datos)

- ERGEG: European Regulators’ Group for Electricity and Gas
  - Estudia aspectos regulatorios: necesidad de preparar un marco legal adecuado.

- Algunas iniciativas:
  - Futura Power and Light (Ciudad de Málaga)
  - Proyecto Living City: para explorar en condiciones reales el espacio de vehículos con participación puramente eléctrica.
  - Endera (Smart City Málaga)
  - Innotria (Smart City Castellón de la Plana)
  - B3.

8. Conclusiones

- Tres grandes orientaciones van a marcar las decisiones estratégicas de los próximos años en materia energética:
  - La necesidad de hacer frente a los retos de la seguridad de suministro en su triple dimensión: técnica, económica y política.
  - Los enfoques regulatorios dirigidos al aseguramiento de mercados eficientes, capaces de cumplir las funciones que le son propias en una economía abierta y globalizada.
  - El desafío mediterráneo y, en especial, la adopción de las oportunidades meditadas para prevenir o mitigar los efectos de un cambio climático cada vez mejor acreditado científicamente.

---

8. Conclusiones

- La mejor alternativa es:
  - Diversificar la intensidad energética es aumentar la competitividad del país.
  - El ahorro de energía es una opción energética fundamental en el corto y medio plazo.
  - Se debe de construir una nueva cultura energética.
  - La eficiencia energética debe de convertirse en una prioridad para la Administración, la industria, los ciudadanos, etc.

---

Muchas gracias por su atención

Carmen Fernández Rosado
Concejal de Economía y Transformación Digital
Presidencia de la Comunidad de Madrid
carmen@ferneyzando.com
The Role of Regulators:
Reasons for lack of energy

<table>
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<tr>
<th>Energy Source</th>
<th>Rural Areas Household</th>
<th>Urban Areas Household</th>
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<td>Electricity</td>
<td>Cost: 20%</td>
<td>Cost: 23%</td>
</tr>
<tr>
<td></td>
<td>Lack of infrastructure: 15%</td>
<td>Lack of infrastructure: 12%</td>
</tr>
<tr>
<td>Gas</td>
<td>Cost: 70%</td>
<td>Cost: 70%</td>
</tr>
<tr>
<td></td>
<td>Lack of distributor: 0%</td>
<td>Lack of distributor: 0%</td>
</tr>
</tbody>
</table>

Source: Standards, Promotion of competition and the New Model of Competition, 1997 Sources

Energy efficiency

- A question of "social" regulation or "economic" regulation?
- A question of both...
- Both have its origin in market failures...
- Social regulation includes technical standards and specific mandates...
- One of the main objectives of economic regulation is to assure the economic efficiency...
- As long as they are not distorted by other policies, prices and rates are the best way to induce efficient use of energy and conservation...
- Internalization of social costs should also help to achieve energy efficiency...
- One example: regulatory instruments for coproduction issued by CRE (permits and efficient coproduction criteria to qualify for special wheeling charges and the use of an "energy" bank).

Thanks!

www.cre.gob.mx
THEMATIC SESSION 6: ENERGY EFFICIENCY AND CLIMATE CHANGE PLANNING
September 29, 12:00 – 13:30 hrs.

Chair: Kandeh K. Yumkella, Director-General, United Nations Industrial Development Organization.

Available Presentations:

Laura Tuck, Sector Director, Sustainable Development Department, Latin America and the Caribbean Region, World Bank: Energy Efficiency and Climate Change.
3 Key Dimensions

1) Mitigation

2) Adaptation

3) Climate finance
Leandro Alves, Chief, Energy Division, Inter-American Development: Climate Change and Energy Efficiency.

**IDB’s EE goal**
- Use IDB’s technical assistance and funding instruments to promote and EE.
- With instruments such as:
  - **Technical Cooperation** (More than 50 projects)
    - Technical assistance for development of Nationaly Appropriate Mitigation Actions (NAMA)
  - **Clean Development Mechanism (CDM)**
  - **Program of Activities (PoA)** — equivalent to a programmatic (CDM)
  - **Global Environment Facility (GEF)** funded projects through IDB (more than 5 EE projects in the last year)
  - **Loans** in EE (more than 5 EE projects in the last 2 years)

**IDB, Energy Efficiency and Climate Change**
- IDB funded EE projects with possibilities for NAMAs, CDM or PoAs:
  - **Barbados**
    - Sustainable Energy Framework
    - US$45 million Policy Based Loan, including EE and RE
    - US$10 million Smart Fund to promote EE and RE
    - Result: Possible EE NAMA
  - **Bahamas**
    - US$2.5 million technical assistance
    - Result: Possible EE NAMA
  - **Caribbean Hotel Energy Efficiency Action Program (CHENACT, US$2 million)
    - Result: Possible PoA

**Barbados’ Sustainable Energy Matrix — outcomes compared to BAU**
Barbados can reach the Sustainable Energy Matrix by 2020 and reduce reliance on fossil fuels, improve energy security, reduce electricity costs, and reduce CO2 emissions.
Leandro Alves
Head of the Energy Division
Inter-American Development Bank

1300 New York Avenue, Washington DC, USA
Email: leandroa@iadb.org

IDB
Sustainable Energy For All
LUNcheon KEYnOTE SPEECH - POLICY RECOMMENDATIONS FOR ADVANCING THE ENERGY EFFICIENCY AGENDA


Chair: Francisco Santoyo, CFO, CFE, México.

Presentation:

Richard Jones, Deputy Executive Director, International Energy Agency.

Discussion Topics

- Energy efficiency policy drivers worldwide
- Latin America-Caribbean energy intensity trends
- The IEA's energy efficiency work
- International cooperation
- Conclusions

IEA Energy Efficiency Work

- 25 EE Policy Recommendations
- Global Fuel Economy Initiative
- Policy Pathways
- Roadmap on Energy Efficiency

25 EE Policy Recommendations

- 5 cross-cutting policy recommendations
- 20 policy recommendations covering 6 consuming sectors
- Policies selected that:
  - Yield significant energy savings at low cost;
  - Address market imperfections or barriers;
  - Address significant gaps in existing policy;
- Commitment to implement
  - Supported by IEA member country EE experts
  - Embraced by political leadership
  - Process to review implementation progress

Source: IEA

Energy Efficiency Policy Drivers

LAC Regional Trends

Source: Enabling Energy Efficiency (IEA 2010)
25 policy recommendations across 7 areas

1. Across sectors
   - Energy efficiency in industry
   - Energy efficiency in transportation
   - Energy efficiency in buildings

2. Buildings
   - Building codes
   - Efficient equipment and products

3. Appliances
   - High-efficiency appliances
   - Energy efficiency in consumer products

4. Lighting
   - Energy-efficient lighting
   - LED technology

5. Transport
   - Electric vehicles
   - Biofuels

6. Industry
   - Energy efficiency in industry
   - Process optimization

7. Utilities
   - Demand response
   - Energy management systems

Global Fuel Economy Initiative

- Launched on 4 March 2009 in Geneva by IEA, ITF, UNEP, and the FIA Foundation

- Reduction in fuel consumption per km of 50% by 2050 for (stock of all cars) compared to 2005

- Four main activity areas:
  - Analysis of global fuel economy trends and potential
  - Outreach to governments, assistance in policy development
  - Outreach to stakeholders, dialogue to improve coordination
  - Information campaigns

Lessons learned on certification

- Certification systems have been developed in many countries.
  - We looked closer at schemes from Europe, United States, Australia, and Singapore.
  - Systems are developed for different reasons:
    - Some support minimum standards - compliance
    - Some support building better than standards
    - Some target improvements in existing buildings regular or by sale
  - Schemes for different purposes are different.
    - It can be an advantage to include other resources:
      - But it increases the complexity!
    - Decisions have to be taken early and this will

Progress in Implementing the EE Policy Recommendations

- Not implemented
- Implementation underway or planned
- Full and substantial implementation

No country has “fully” or “substantially” implemented more than 57% of the relevant recommendations.

Policy Pathway series

- Policy Pathways
  - Appliances monitoring, verification and enforcement (Oct 2010)
  - Buildings certification (November 2010)
  - Industrial energy management (March 2011)
  - Mitigating energy efficiency finance risk (June 2011)

Checklist for Energy Certification of Buildings

You will know you have effective certification when...

<table>
<thead>
<tr>
<th>Phase</th>
<th>Critical element</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>Framework</td>
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<td></td>
<td>Appropriate scope</td>
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</tr>
<tr>
<td></td>
<td>Certification process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market feedback</td>
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Implement

- Collect data centrally, ensure and assess influence

Monitor

- Assess quality and compliance
- Communicate the outcomes regularly

Evaluate

- The bigger picture

© OECD/IEA, 2010
Building Certification Messages

- Many different options and need for planning and structuring at early stage – make an action plan and stick with it!
- Set realistic timeframe and ensure enough finance.
- Communication between multiple government structures, and open communication with stakeholders are keys to success.
- Develop training strategy early – check capacity and train.
- Control quality and collect data centrally, use this to develop certification system as well as other initiatives.
- Many stakeholders are involved – be sure they collaborate.
- Communicate open also on errors.
- Be ready to continue development and prepare for changes, evaluations should feedback into the system.
- Certification of building cannot deliver all alone – it must be supported by and should feed into other policies too.
- Learn by the experience of others.

MVE PP messages

- MVE about measuring compliance in the context of S&L programmes.
- MVE not simple – not obvious to everyone at every stage of policy pathway.
- MVE requires training and support for new programme managers.
- Check list approach to reduce complexity and mistakes. Reflect on the data and information throughout the process to improve compliance.
- MVE must be robust match needs with resources and changing goals of maturing S&L programmes.
- Must be tailored to legal requirements, the capacity of the people involved and time available to complete the actions.
- People experiences (30yrs) and information readily available to provide advice. Use lessons learned by others.
- If you need an MVE wheel, don’t re-invent it yourself.

International Cooperation

- Int’l Partnership for EE Cooperation (IPEEC)
- Worldwide Energy Efficiency Action thru Capacity Building & Training (WEEACT)
- Sustainable Buildings Network (SBN)
- Energy Mgmt Action Network (EMAK)
- Super-Efficient Equipment & Appliance Deployment (SEAD)
- Assessment of Energy Efficiency Finance Mechanisms (EEFM)
- Improved Policies through EE Indicators (IPEEI)
- Clean Energy Ministerial (CEM)
- Energy Efficiency Finance Action Network (EEFAN)

Checklist for MVE in S&L

You will know you have an effective MVE programme when you...

<table>
<thead>
<tr>
<th>Phase</th>
<th>Critical element</th>
<th>Check</th>
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<tr>
<td>Plan</td>
<td>Determine appropriate framework</td>
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<td>Propose shared resource arrangements</td>
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<td>Ask the difficult questions</td>
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<td>Implement</td>
<td>Establish transparent procedures</td>
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<tr>
<td>Monitor</td>
<td>Provide education and support</td>
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<td>Match data collection and analysis to changing priorities</td>
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<td>Assess the level of compliance</td>
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<td></td>
<td>Communicate openly</td>
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<td>Evaluate</td>
<td>Accept diversity</td>
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<tr>
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<td>Evaluate continuously</td>
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Roadmaps on Energy Efficiency

- New Energy efficiency roadmaps:
  - Advanced windows for buildings (October 2011): roadmap
  - Solid state lighting (2011): roadmap
  - Vehicle efficiency (2011/12)

Key points

- Drivers of EE vary may affect rates of EE improvement, public education important
- Resources exist for designing programs: 25 recs, IEA pubs
- International cooperation is growing
- Mexico’s example shows that training works; IEA is ready to help
- Join an IPEEC Task Group today!! Contact Amit Bando at ambardo@gmail.com
THEMATIC SESSION 7: ENERGY ACCESS: INTERNATIONAL EXPERIENCES AND PROGRAMS
September 29, 15:30 – 17:30 hrs.

Chair: Philippe Benoit, Sector Manager, Energy Unit, Latin America and Caribbean, World Bank.

Available Presentations:

To meet the UN MDG of eradicating extreme poverty by 2015, an additional 935 million people need to be provided with electricity and an additional $1 billion provided with access to clean cooking facilities.

Achieving the more ambitious goal of universal modern energy access by 2030 requires investment of only $3.5 billion per year over the next two decades.

The EDI tracks progress in the transition to access to modern energy services.
Pedro E. Sánchez Gamarra, Minister of Energy and Mines, Perú: Lessons Learned from the Peruvian Rural Electrification Program.
Perú: Acceso Preferencial a los Más Importantes Mercados

Matriz Energética del Perú 2008 - Presente y Futuro

Perú: Potencial en Energías Renovables

Balance Oferta – Demanda Eléctrica en el Medio Plazo
1. Programa "Luz para Todos", a través de varios mecanismos busca incrementar la cobertura eléctrica a nivel nacional al 92% para el año 2011; extensión de red y energías renovables en zonas aisladas y remotas.
2. Subsidios cruzados para alentar el consumo de los hogares menos favorecidos a través del Fondo Social de Compensación Eléctrica (FOSE).
3. Promoción de las inversiones privadas en transporte y distribución de gas.
4. Reducción del precio de la conexión interna al gas natural para hogares con menos recursos a través de subsidio a la acometida.
5. Medidas (bonos, reducción del ISC) para incentivar la conversión de vehículos a Gas Natural Vehicular (GNV) y, de esta manera, la oferta de estaciones de servicio de GNV.

**Programa “Luz para Todos”**

Programa destinado a incrementar el acceso a servicio eléctrico a nivel nacional de modo que aproximadamente el 92% de viviendas cuenten con dicho servicio a fines del 2011.

Inversión estimada 2006-2011 de US$ 1,700 millones.

4 millones de beneficiados
- Otras
- Conclusiones
- En Ejecución
- Convocadas

3 millones adicionales
- Otras por convocar

**Coeficiente de Electrificación Nacional: Proyección**

Proyección del Coeficiente de Electrificación Nacional

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<td>20%</td>
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<td>2010</td>
<td>25%</td>
</tr>
<tr>
<td>2011</td>
<td>30%</td>
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**Conclusiones**

- El crecimiento económico se sustenta en políticas estables.
- Los programas de eficiencia energética y cambio climático requieren un marco regulatorio sólido.
- El crecimiento económico de un país debe estar acompañado de políticas de inclusión social que permitan el acceso de la población a los servicios básicos.

**GRACIAS**

www.minem.gob.pe
Milo Pearson, Executive Chairman of the Board of Directors, Caribbean Catastrophe Risk Insurance Fund: 
Response to Disasters.

- CCRIF overview and background
- CCRIF role in disaster risk management
- Performance to date
- Regional role of CCRIF
- CCRIF initiatives
- Caribbean Electrical Utilities (CARILEC) Project
- Summary

The Caribbean context
- Caribbean countries are highly vulnerable to natural disasters, which have caused them average losses amounting to 2% of GDP since 1970
- Only 3% of potential loss is currently insured in developing countries vs 45% in developed countries
- Immediate access to liquidity is critical for governments and individuals post disaster
- Smaller nations with high debt burdens can no longer afford to self-finance disaster risk

History
- Pooled reinsurance solution for Caribbean governments first called for by CARICOM Working Party on Insurance after Hurricane Andrew (1992)
- Andrew resulted in US$250 million in damage in Bahamas alone
- Revised in 2004, after Hurricane Ivan inflicted almost 200% of GDP damage on Grenada and the Cayman Islands
- All parties identified the high exposure of small island economies across the region to natural hazards, and the consequential risk to sustainable development
- CARICOM Heads of Government asked the World Bank to assist in designing and implementing a cost-effective risk transfer programme for member governments

Aims of CCRIF
- Stakeholders identified the need for a mechanism to provide:
  - Funds to cover the post-disaster liquidity gap faced by governments between immediate emergency aid and long-term redevelopment assistance
  - A facility which would enable governments to receive money quickly, with the payout calculated in a completely objective way
  - A mechanism which would minimise the burden on governments to provide exposure information prior to coverage being initiated and loss information after a disaster

What is CCRIF?
- Began operation in 2007
- CCRIF is the world's first multi-national risk pool to cover sovereign risk via parametric insurance
- A regional catastrophe fund for Caribbean governments designed to limit the financial impact of devastating hurricanes and earthquakes by providing liquidity very quickly after a major event
- Functions like business interruption insurance against Government revenue reductions in the aftermath of major natural catastrophes
- Capitalised by donors and participants (via a membership fee), CCRIF initially raised capital to cover claims and operating costs from donors (c. US$50 M) and from its participants (c. US$25 M) Donor capital now over US$85 M
- Uses parametric index which converts wind speed (for storms) or ground acceleration (for quake) into a government loss estimate at key sampling sites, which are aggregated to national loss

THE WORLD BANK
Sovereign liquidity gap

- Short-term emergency assistance (mainly goods and services)
- Long-term infrastructure and sustainable development assistance

Liquidation Gap: All revenue to fund Government services

CCrif performance to date

- Paid out approximately US$19 million since its inception (3 years)
- 2007 – ~US$1 M to St. Lucia and Dominica
  - 20 November earthquake in Eastern Caribbean
- 2008 – US$6.3 M to the Turks & Caicos Islands
  - Hurricane Ike
- 2010 – US$7.75 M to Haiti
  - 12 January earthquake
  - The first set of funds to be received by the Government of Haiti inclusive of all pledges, regional and international
  - Represented perhaps 5% of the TOTAL aid Government of Haiti received in first 10 weeks in the form of direct liquidity
- 2010 - US$4.2 M to Anguilla
  - Hurricane Earl (September)
- Strong proof of concept

Members

- Antigua
- Barbados
- Bermuda
- Dominica
- Haiti
- St. Kitts & Nevis
- St Vincent & the Grenadines
- Turks & Caicos Islands

Apart from assist in the recovery and reconstruction process through provision of liquidity, CCRIF is also engaged in the following:
- Facilitate the implementation of risk management measures that reduce risk and heighten resilience
- Promoting risk assessment and risk management tools at all levels (e.g. Real Time Forecasting System)
- Involved in the design of suitable index-based or hybrid products at sub-national level either directly or via community-based partners

Focus on 2 initiatives
- CCRIF Economics of Climate Adaptation Project
- Caribbean Electrical Utilities (CARILCE) Project
CARIF Initiative

- Caribbean Electrical Utilities Corporation (CARILEC) approached CCRIF about developing a parametric solution for insuring transmission and distribution systems against catastrophic losses due to hurricanes.
- Within the Caribbean, transmission and distribution (T&D) systems are usually not insured due to the prohibitive costs in the open market.
- CCRIF’s role is to pool these risks and provide affordable parametric coverage options.
- The CCRIF interest in this initiative is based on the recognition that:
  - Caribbean Governments continue to hold equity interests in or own many of the CARILEC utilities.
  - The vital role that rapid repair of the electrical distribution systems plays in post-disaster recovery within Caribbean countries.

Current Status

- In June 2009, the CCRIF Board approved the work plan for the development of a parametric product for overhead electrical transmission and distribution systems for Caribbean Electrical Utility Services Corporation (CARILEC) members.
  - This was based on the initial feasibility study and subsequent expressions of support from a large number of the CARILEC utilities.
- Currently addressing regulatory issues to set up the risk-carrying vehicle (owned by CARILEC).
- Thereafter CCRIF will complete modelling and policy formulation.
- CARILEC, with CCRIF support, will then raise donor funds for capitalisation and sell policies to its members.

Summary Points

- CCRIF is the world’s first parametric risk pool and the first multi-national pool covering sovereign risk.
- CCRIF shows the feasibility and benefits of multi-country risk transfer and risk sharing.
- CCRIF has successfully implemented a low-cost insurance programme for governments which has maximised its attraction to participants, donors and risk transfer markets.
- Already a proactive initiative within the region.
- CCRIF works because:
  - Payouts are fast.
  - Premiums are low.
  - The pool is mutually beneficial, transparent and fair.

The End

Thank you.
Arnaldo Vieira de Carvalho, Senior Energy Specialist, Coordinator, Energy Efficiency and Access Programs, Inter-American Development: **Sustainable Energy for All**.
Desafíos al aumento del acceso (cont.)

- Participación del Estado: parte de la inversión en la expansión no rentable
- La construcción y la operación a cargo del distribuidor
- Esquemas que promuevan inversión de parte del distribuidor
- Evitar arriesgos y destrucción de entidades que no justifiquen
- Evitar arriesgos (uso de energía renovable) en áreas aisladas, de forma no sostenible

Lecciones Aprendidas

- Proceso participativo: comunidades tenedores organizadas solicitando el servicio
- Sostenibilidad: incentivos subsidios limitados inversión no recuperable vía la tarifa, O&M cubierta por la tarifa
- Instalaciones interconectadas a ser incluidas en los programas de préstamo
- Obras terminadas solo cuando clientes sean conectados y energizados

Compromiso con Electrificación Rural

BID es la principal fuente de financiamiento para el desarrollo regional
- 87% de los préstamos a nivel regional

Financiamiento al Sector Energía
- 14% del total de los financiamientos del BID

Del total de financiamiento al Sector Energía de ALC:
- 40% para proyectos de electrificación
- 20% para proyectos de diversificación rural

Apoyo reciente BID a Electrificación Rural

Operaciones de Financiamiento:
- Chile (SERIE / CSE)
- Paraguay (CSE / COPE)
- Ginebra (CSE / COPE)
- Nicaragua (FNEEER / Visión; Tecnópolis / intermunicipal)
- Honduras (Alba Solar / Telecentros)
- Brasil (microempresas PV = Ecoregión: CEMIG)
- Perú (microempresas TDG / MCE)
- Bolivia (VMEEA / Ginebra)
- Cooperativas Tecnológicas no remunerativas (CTAs):
- Panamá (COPA / OER); Chile (SERIE / CSE)
- El Salvador (MINEC / BID)
- Guatemala (CSP / GVEF / IDB)
- Nicaragua (CSE / energía solar aislada)
- Bolivia (VMEEA; Brasil (MIEE)
- Paraguay (VMEEA / AMIGA)

Lecciones Aprendidas (cont.)

Solamente proyectos de electrificación rural con beneficios sociales económicos para el país son elegibles, en base a metodología acordada con actores

Calculo/indicación del subsidio de cada proyecto en base a metodología acordada (planilla de cálculo de subsidios máximos):

(i) Para las soluciones de red: negociaciones/licitaciones/empresas con las distribuidoras
(ii) Para las soluciones fuera de red: procesos competitivos
IX. PHOTO GALLERY

OPENING CEREMONY
September 28, 09:00 – 09:45 hrs.

Presidium:

- Patricia Espinosa, Secretary of Foreign Relations, México.
- Rajendra K. Pachauri, Director-General, The Energy and Resources Institute.
- Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization.
- Richard Samans, Managing Director, World Economic Forum.
- Santiago Levy, Vice President Sectors & Knowledge, Inter-American Development Bank.
- Juan Rafael Elvira, Secretary of the Environment and Natural Resources, México.
- Sri Mulyani Indrawati, Managing Director, World Bank.
- Georgina Kessel, Secretary of Energy, México.
OPENING PLENARY SESSION
September 28, 10:00 – 11:30 hrs.

- Chair: Georgina Kessel, Secretary of Energy, México.

Keynote Speakers:

- Rajendra K, Pachauri, Director-General, The Energy and Resources Institute: *Energy Efficiency and Climate Change*.
- Pamela Cox, Regional Vice President, Latin America and the Caribbean, World Bank: *A Global View on Energy Efficiency*.
- Santiago Levy, Vice President Sectors & Knowledge, Inter-American Development Bank: *Energy Efficiency in the Americas*.
- Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization: *Energy Efficiency Roadmap and Perspectives*.
THEMATIC SESSION 1 – ENERGY EFFICIENCY PROGRAMS, TARGETS AND ACTION PLANS
September 28, 12:00 – 13:30 hrs.

- Chair: Leandro Alves, Chief, Energy Division, Inter-American Development Bank.

Panel Speakers:

- Andrew Steer, Special Envoy for Climate Change, World Bank: Energy Efficiency in the context of Climate Change Negotiations.
- Emiliano Pedraza, Director-General, CONUEE, México: México’s National Program for the Sustainable Use of Energy.
LUNCHEON KEYNOTE SPEECH – THE ROLE OF ENERGY EFFICIENCY TO INCREASE ACCESS AND THE MILLENNIUM DEVELOPMENT GOALS
September 28, 13:30 – 15:00 hrs.

- Chair: Georgina Kessel, Secretary of Energy, México.

Speaker:

- Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization.
THEMATIC SESSION 2 – THE ROLE OF STANDARDS, LABELING AND CODES
September 28, 15:15 – 16:15 hrs.

- Chair: Emiliano Pedraza, Director-General, CONUEE, México.

Panel Speakers:

THEMATIC SESSION 3 – THE ROLE OF INSTITUTIONS: PROJECTS, CAPACITY BUILDING AND PUBLIC AWARENESS
September 28, 16:15 – 17:15 hrs.

- Chair: Carlos Flórez, Executive Secretary, OLADE (Latin-American Energy Organization).

Panel Speakers:

- Leandro Alves, Chief, Energy Division, Inter-American Development Bank: IDB-ENE Innovation Center and the ECPA EE Centers.
THEMATIC SESSION 4 – INNOVATIVE FINANCING MECHANISMS
September 28, 17:30 – 18:30 hrs.

- Chair: Shilpa Patel, Chief, Climate Change, Environmental and Social Development Department, International Finance Corporation.
- Co-Chair: Dominic Waughray, Senior Director, Head of Environmental Initiatives, World Economic Forum.

Panel Speakers:

- Steven J. Puig, Vice President for the Private Sector and Non-Sovereign Guaranteed Operations, Inter-American Development Bank: Mobilizing Resources for a “Cleaner” Energy Matrix.
- Héctor Rangel Domene, Director-General, Nacional Financiera, México: Success Stories.
PLENARY SESSION – ENERGY EFFICIENCY: THE PATH TOWARDS LOW-CARBON ECONOMIES
September 29, 09:00 – 10:00 hrs.

Speakers:

- Mario Molina, President, Centro Mario Molina: The Role of Technology to address the Challenges of Climate Change.
- Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization: Recommendations for a Sustainable Energy Future.

Keynote Speaker:

- Felipe Calderón, President, México.
THEMATIC SESSION 5 – THE ROLE OF REGULATORS AND UTILITIES EXPANDING ENERGY EFFICIENCY AND ACCESS
September 29, 10:15 – 12:00 hrs.

- Chair: Alfredo Elías Ayub, Director-General, CFE, México.

Panel Speakers:

The Role of Technology:
- Chris Curtis, CEO, Schneider Electric North America: Successful Experiences in Energy Management.

The Role of Utilities: Challenges for Increasing Energy Efficiency and Access.
- Germán Fatecha, ANDE, Paraguay.
- Ángel Larra, México Country Manager, Grupo Gas Natural Fenosa.

The Role of Regulators:
THEMATIC SESSION 6 – ENERGY EFFICIENCY AND CLIMATE CHANGE PLANNING
September 29, 12:00 – 13:30 hrs.

- Chair: Kandeh K. Yumkella, Chair, UN Secretary-General’s Advisory Group on Energy and Climate Change and Director-General, United Nations Industrial Development Organization.

Panel Speakers:

- Laura Tuck, Sector Director, Sustainable Development Department, Latin America and the Caribbean Region, World Bank: *Energy Efficiency and Climate Change.*
- Reid Detchon, Vice-President for Climate and Energy, UN Foundation: *Towards a Climate Change Agreement.*
- Juan Rafael Elvira, Secretary of the Environment, México: *The Environmental Aspects towards Climate Change Negotiations.*
- Mario Molina, President, Centro Mario Molina: *Viability of NAMAS.*
- Leandro Alves, Chief, Energy Division, Inter-American Development: *Climate Change and Energy Efficiency.*
LUNCHEON KEYNOTE SPEECH - POLICY RECOMMENDATIONS FOR ADVANCING THE ENERGY EFFICIENCY AGENDA

- Chair: Francisco Santoyo, CFO, CFE, México.

Speaker:

- Richard Jones, Deputy Executive Director, International Energy Agency.
THEMATIC SESSION 7 – ENERGY ACCESS: INTERNATIONAL EXPERIENCES AND PROGRAMS
September 29, 15:30 – 17:30 hrs.

- Chair: Philippe Benoit, Sector Manager, Energy Unit, Latin America and Caribbean, World Bank.

Panel Speakers:

- Pedro E. Sánchez Gamarra, Minister of Energy and Mines, Perú: Lessons Learned from the Peruvian Rural Electrification Program.
- Milo Pearson, Executive Chairman of the Board of Directors, Caribbean Catastrophe Risk Insurance Fund: Response to Disasters.
- Arnaldo Vieira de Carvalho, Senior Energy Specialist, Coordinator, Energy Efficiency and Access Programs, Inter-American Development: Sustainable Energy for All.
CLOSING SESSION – FINAL REMARKS
September 29, 17:30 – 18:00 hrs.

- Laura Tuck, Sector Director, Sustainable Development Department, Latin America and the Caribbean Region, World Bank.
- Leandro Alves, Chief, Energy Division, Inter-American Development Bank.
- Richard Samans, Managing Director, World Economic Forum.
- Georgina Kessel, Secretary of Energy, México.
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<td>ENDE ANDINA - Ministry of Hydrocarbons and Energy</td>
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<td>Coordinator, Energy Efficiency Program</td>
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