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HAITIAN & DOMINICAN ENERGY EXECUTIVES ANALYZE APPLICABILITY OF SALVADORAN POWER SECTOR REFORM & GOVERNANCE

USAID/USEA EXECUTIVE EXCHANGE WITH SALVADORAN ENERGY INSTITUTIONS

September 2014 – SAN SALVADOR, EL SALVADOR – Supported by the U.S. Agency for International Development (USAID), seven senior executives from the Government of Haiti and Electricité d’Haïti, along with two senior officials from the Dominican Republic’s National Energy Commission and the state power holding company, CDEEE, participated in an executive exchange with their counterparts from El Salvador’s energy sector to review best practices in electricity sector reform and governance. The exchange, conducted by the U.S. Energy Association as part of its Haiti Energy Policy and Utility Partnership Program (HEPP), introduced and reinforced best practices in energy policy, legal and regulatory framework reform. This was the second executive exchange to occur under the partnership, following an initial exchange to Colombia in April 2014. This is the first exchange to incorporate delegates from the Dominican Republic. The Dominican delegation, like their Haitian counterparts, benefitted from learning about El Salvador’s electric sector management. The Dominican delegation also familiarized themselves with the Haitian delegation and energy sector - a key development in the event of future electrical interconnection agreements between the neighboring countries.



The delegation meets with Eng. Luis Roberto Reyes Fabian, Executive Secretary of the Salvadoran National Energy Council (CNE). Top row, left to right: Mr. Ludner Remarais, Mr. Yves Bastien, Mr. Christopher Marshall, Mr. Carlo Lafond, Mr. Jean Marcel Pinard, Mr. Radhames del Carmen, Mr. Jules André Joseph. Bottom row, left to right: Mr. Jean Robert Altidor, Mr. Anthony Carvalho, Dr. René Jean-Jumeau, Eng. Luis Roberto Reyes Fabian, Mr. Julian Despradel

USAID's **Haiti Energy Policy and Utility Partnership Program (HEPP)** is a two-year project conducted jointly with the Government of Haiti and Electricité d'Haiti to encourage electricity sector reform, encourage private sector participation and investment, and make way for future generation capacity expansion. Throughout the executive exchange, representatives from El Salvador's government and electric utilities presented their perspective on the country's experience with electricity sector reform and the benefits that it has reaped for the nation, both economic and social.

PRIMARY TOPICS OF THE EXCHANGE

The delegation of nine senior Haitian and Dominican policy makers and utility officials spent four days visiting Salvadoran energy government institutions and electric utilities.

The goal of this executive exchange was to familiarize the energy policy makers with El Salvador's experience with reforming the legal and regulatory frameworks governing the country's power sector. Key topics of the program included:

- **Drivers behind El Salvador's electricity sector reform**
- **Key laws and regulations governing the electricity sector**
- **Integration of renewables**
- **Cross border trade - The SIEPAC Project**

A list of participating Salvadoran energy institutions is below:

- **CAESS:** Owned by the AES Corporation, CAESS is the largest electricity distribution company in El Salvador, serving over 519,000 customers in four departments, including San Salvador.
- **Comision Hidroelectrica del Rio Lempa:** El Salvador's state power company that engages in the generation of clean electricity from hydro and wind energy sources, as well as the development of hydro projects.
- **Consejo Nacional de Energia:** An autonomous, non-profit institution responsible for developing the national energy policy and energy planning in the short, medium and long term.
- **Ente Operador Regional:** Manager of the SIEPAC transmission line, which interconnects Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica and Panama.
- **ETESAL:** ETESAL is El Salvador's state-owned transmission company, responsible for maintaining and expanding El Salvador's transmission system. ETESAL is also a shareholder in the SIEPAC transmission line.
- **Superintendencia General de Electricidad y Telecomunicaciones (SIGET):** El Salvador's autonomous government agency for regulating the country's electricity market, distribution companies and consumer prices.



Far left: 230 kv transmission lines connecting El Salvador to the SIEPAC network.

HAITIAN ENERGY SECTOR: AN OVERVIEW

Haiti	
Population	9.8 million
% Electricity Coverage	20%
Net Generation	0.69 billion kWh
Installed Capacity	261 MW
Electricity tariffs (in US Cents/kWh)	36¢ (retail)
GDP growth stats (2012 est.)	2.8%
Length of Transmission Lines	NA

Haiti is one of the poorest countries in the Western Hemisphere, with more than half of the population living on an income of less than two dollars per day. These poverty levels are directly reflected in the energy sector; Haitian energy consumption per capita is one of the lowest in the Latin American and Caribbean region at only 32.49 kWh per capita as of 2011.

Lack of electricity and domestic energy are the most prominent issues affecting Haiti's electric sector. Only approximately 30% of Haitian citizens have access to electricity sources, leaving about 7 million people without power access to power. Most citizens who are legally connected to the grid only receive power for ten hours a



day. As a result, Haiti depends almost entirely on imported oil and the majority of Haitian citizens rely on the unsustainable use of charcoal, firewood, small diesel generators and/or electricity theft to meet their basic electricity needs. The January 2010 earthquake only further compounded Haitian electric sector instability, damaging already poorly maintained transmission and distribution grid infrastructure and increasing reliance on imported power.

Governmental dysfunction, lack of a regulatory framework, low native energy resources for production and poor reliability of existing infrastructure and equipment contribute to the malfunctioning electric system. *Électricité d’Haïti (EDH)*, the State-owned utility, monopolizes electricity generation, transmission and distribution. Rather than an autonomous Ministry of Energy, The Ministry of Public Works, Transportation and Communications maintains the authority over the energy sector. Haiti’s government assumes the role of customer, owner and regulator of EDH, which allows for power sector operation free of stringent rules or required performance criteria.

The Haitian Government is currently prioritizing initiatives focused on encouraging electricity sector reform, encourage private sector participation investment, making way for future generation capacity expansion and increasing general and rural electrification rates.

EL SALVADOR’S ELECTRIC SECTOR: IMPETUS FOR REFORM

Up until the mid-1990s, El Salvador’s government-owned *Comision Hidroelectrica del Rio Lempa (CEL)* dominated the electricity sector, providing generation, transmission and distribution services. The concentration of all electric sector responsibilities in a single state enterprise alone did not instigate the process of reform. However, when coupled with a lack of legal and regulatory framework, poor administration, rapid increases of cost and demand and diminished government ability to invest in the sector, the Salvadoran State recognized the urgent need for restructuring. 1996 ushered in an era of reform as El Salvador developed an institutional framework with robust judiciary backing to unbundle the market, foster competition, free up generation prices and establish regulations for transmission & distribution.

KEY LAWS AND REGULATIONS GOVERNING THE ELECTRICITY SECTOR

The delegation was keenly interested in understanding the responsibilities of the El Salvador’s governmental and regulatory agencies, as well as how these regulatory bodies maintained their independence. All participating Salvadoran public and private energy institutions stressed the critical role of Salvadoran law in all energy sector governance. A basic and fundamental legal framework provides legitimacy and legal authority to the Salvadoran government and regulatory institutions, as well as a basis for all legal and regulatory structures promulgated by such governmental bodies. The following key laws and regulations enabled the modernization process of El Salvador’s electric power sector:

- 9/1996, Legislative Decree No. 808: Created the regulator, the General Superintendence of Electricity and Telecommunications (*SIGET*), and granted authority to promote and guarantee competition and to prohibit anti-competitive practices.
- 10/1996, Legislative Decree No. 843: General Electricity Law (GEL): Aimed to regulate the



Eng. Blanca Coto, Superintendent General of SIGET, warmly greets Haitian delegation leader Dr. René Jean-Jumeau before explaining SIGET’s role as regulator in the Salvadoran power sector.

generation, transmission, distribution and marketing of electricity.

- 7/1997, Executive Decree No. 70: Electricity Law Regulations (amendment to GEL): Set forth the necessary procedures to comply with the provisions made by the GEL and SIGET, the entity responsible for verifying its compliance.
- 10/2000: Electric Power Marketing Activities Regulations: Aimed to promote competition in energy market.
- 04/2003, Legislative Decree No. 1216: Amendment to the GEL, which designated SIGET with the task of ensuring the implementation of transitional rules intended to ensure that market players submitted bids based on marginal production costs.
- 08/2007, Legislative Decree No. 405: Creation of Consejo Nacional de Energia (CNE) to create and establish policy and strategy for efficient development of the energy sector.
- 11/2007, Law on Tax Incentives for Renewable Energy Development: Included incentives such as tax exemption for ten years for projects under 10 MW of generating capacity.
- National Energy Policy 2010-2024: Overseen by CNE, the objective of this national strategy is to outline energy policy from 2010-2024 that supports supply diversification, cost minimization, rational and efficient energy use, coverage improvement, social equity and environmental responsibility.

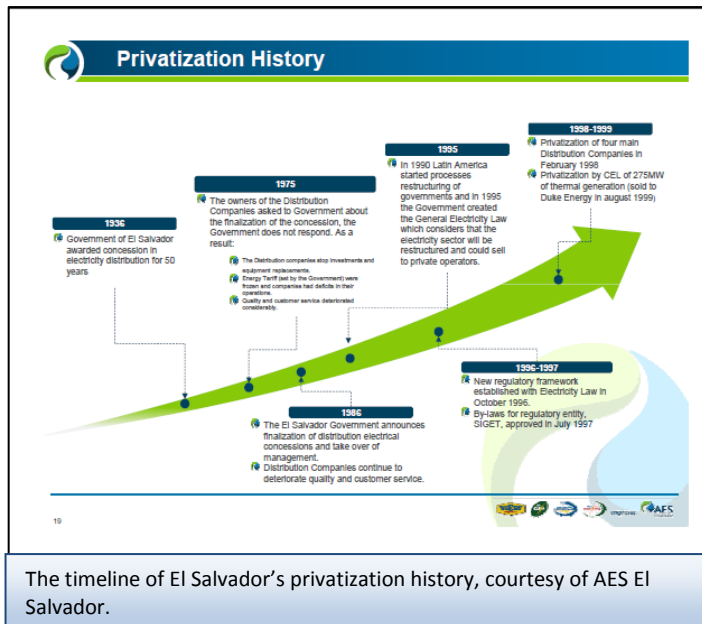


AES hosted the delegation for a tour of their 6 MW Nejapa Landfill Gas to Energy Plant.

EL SALVADOR'S ENERGY SECTOR: AN OVERVIEW

The delegates stressed understanding the current structure of El Salvador's energy sector. Coupled with their knowledge of the nation's key governing laws, understanding the power sector's entities, policy trajectory, and generation mix completed the comprehensive historical overview and showcased the hard-won results of El Salvador's ambitions.

Salvadoran officials emphasized that their nation's restructuring process was a series of modifications enacted over a period of several years rather than a single instantaneous transition. The outcome of this extensive process is a Salvadoran power sector with measured governmental presence and demarcated roles for each player. Public law created several state institutions with varying levels of autonomy to divide and clearly define the responsibilities of policy formulation, market regulation and supervision, and market operations as outlined below.



The timeline of El Salvador's privatization history, courtesy of AES El Salvador.

- **The National Energy Council (CNE)**, a government institution, is responsible for policy formulation, demand & supply forecasting and power sector planning.

- **The General Superintendence of Electricity and Telecommunications (SIGET)**, a semi-autonomous government entity, is in charge of registration, regulation and supervision of the market.

- **The Transactions Unit (UT)**, a private organization owned by market participants, operates the market.

- **The Ministry of Economy** is dedicated to promoting economic and social development by increasing production, productivity and rational use of resources.

- **Ministry of Environment and Natural Resources (MARN)** is tasked with the guidance and development of environmental policies and regulations for conservation, as well as preparation of environmental projects with a focus on renewable resources.
- **The wholesale electricity market**, per its clearly divided power supply roles, is comprised of generation, transmission, distribution and marketing subsectors.

INTEGRATION OF RENEWABLES: EL SALVADOR'S MASTER PLAN

As a new Salvadoran wholesale electricity market emerged, it set in place conditions to ensure an available, efficient energy supply able to meet demand. Updated regulatory procedures guaranteed compliance with appropriate technical, environmental, financial and social viability criteria. Fortified by government support, and with assistance from the Japan International Cooperation Agency (JICA), CNE developed the Master Plan for the Development of Renewable Energy in the Republic of El Salvador.

Plan Maestro para el Desarrollo de las Energías Renovables

Estudio desarrollado con el apoyo de la **Agencia de Cooperación Internacional del Japón (JICA)**. Se elaboró en un período comprendido desde el 6/sept/2011 al 17/feb/2012.

Propósito del Plan Maestro

La planificación a largo plazo del desarrollo de las energías renovables para el suministro nacional de energía


Hidro


Geotermia


Eólica


SFV


Solar
térmica
concentrada


Biomasa y
biogás



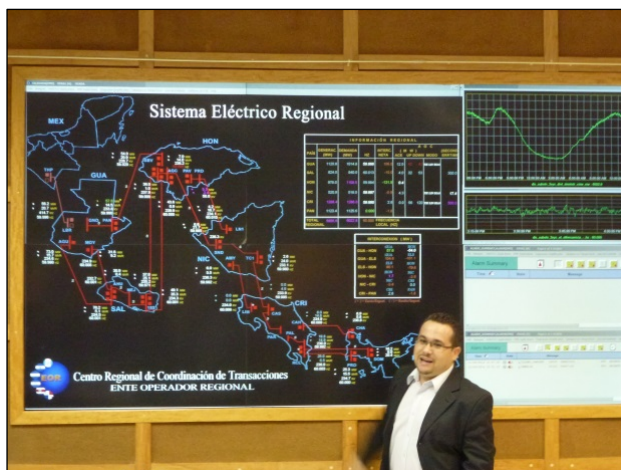
El Salvador's National Energy Council (CNE) outlines its master plan for development of the nation's renewable resources.

The delegates learned that El Salvador's master plan aims to identify and analyze the energy potential of El Salvador's varied renewable resources to form a clean energy development strategy, to be carried out in 3 phases from 2012-2027. The plan focuses on development of seven renewable energy sources for 15 year period, including small hydropower, wind power, solar PV, solar thermal, geothermal & biomass. This plan and the broader discussion surrounding integration of renewables was a topic of interest for both the Haitian and Dominican delegates as their respective countries consider paths to decreased reliance on fossil fuels.

CROSS-BORDER TRADE: THE SIEPAC LINE & REGIONAL ELECTRICITY MARKET (MER)

The Central American Electrical Interconnection System (SIEPAC) Project is an initiative to connect the power grids of six countries- El Salvador, Guatemala, Honduras, Nicaragua, Costa Rica and Panama- comprised of two mutually dependent projects:

- The formation of a regional electricity market (MER);
- The development of approximately 1800km in new international transmission lines running from Guatemala to Panama.



Delegates tour Ente Operador Regional's (EOR) control room for a behind-the-scenes look at the SIEPAC transmission system in real time.

Ente Operador Regional (EOR), the SIEPAC independent system operator responsible for dispatch and energy exchanges, is headquartered in San Salvador and was keen to host the HEPP delegation. El Salvador's experience with such a complex interconnection initiative greatly interested the delegation as there is considerable opportunity for cross-border trade between Haiti and the Dominican Republic. During their meeting, senior EOR officials outlined the origin of the SIEPAC project concept, background, project finance and the benefits and challenges of operating a regional electricity market.

Background In 1996, after almost 10 years of feasibility studies and intergovernmental dialogue, the Central American governments signed *The Framework Treaty from the Regional Electricity Market of Central America*, formalizing the plan to develop the SIEPAC line and the Regional Electricity Market. The treaty also established Ente Operador Regional (EOR) and the



Delegates receive a brief presentation by Nejapa plant operators during their tour of the methane recovery facility.

Comisión Regional de Inteconexión Eléctrica (CRIE), the body responsible for setting tariffs and regulating trade. With financial backing from the International Development Bank, Central America Bank for Economic Integration and the Spanish Government, the project moved toward implementation.

Objective

The objectives of the SIEPAC project include improving security of supply by expanding reserve margins, reducing electricity rationing, improving operating efficiency, supporting competition in domestic markets, lowering end-user electricity costs, attracting foreign investment, and furthering regional economic development.

Market structure

These objectives are incorporated in the system’s design, which enables regional trade while intentionally allowing each country to develop its sector at its own pace. The

regional focus allows the six national electricity markets to operate in an amalgamated, synchronized manner through the MER, forming a seventh market superimposed on the six existing national markets. The MER is then regulated regionally, with EOR -authorized agents carrying out regional electricity transactions.

Challenges

Aside from building the physical infrastructure of the SIEPAC line, coordination between the six nations to create the MER has proven challenging to navigate. Reconciling several different electricity industry structures with varying degrees of government ownership is a massive undertaking. With this in mind, EOR is overseen by a Board of Directors comprised of two government-nominated representatives from each country. The board works directly with system and market operators from each individual country, ensuring technical and commercial coordination.

Current status & 2013 results

The SIEPAC project was completed June of 2013 and now services approximately 30 million Central American residents. The two 230-kv lines connecting El Salvador to the MER became fully operational and El Salvador solidified its role as a leader in regional electricity trading. In its first year of operation, a total of 690.3 GWh was put onto the MER, of which El Salvador sold 14.3%, and a total of 687.6 GWh was purchased, of which El Salvador imported 55.6%. Guatemala and Honduras are El Salvador’s largest trading partners and that trade is expected to increase in the future. EOR officials added that, going forward, future studies pinpointing where investment in infrastructure is most needed will be key to ensuring the continued development of the SIEPAC project and an increase in energy transactions.

BEST PRACTICES INTRODUCED & LESSONS LEARNED

This second HEPP executive exchange exposed senior executives from Haiti’s energy sector to numerous best practices in electricity sector reform and governance. Delegates related to El Salvador’s experience of suffering the financial repercussions from a lack of adequate investment in the power sector, as well as the challenge of normalizing large numbers of utility customers who are unaccustomed to paying for their power, or who unable to because of their remote location.



Delegates learn about the Salvadoran National Energy Council’s rural electrification projects during a hands-on presentation.

This executive exchange exposed delegates to the following best practices:

Electricity Sector Reform:

- El Salvador’s government fully supported the country’s electricity sector reform.
- The Salvadoran government empowered autonomous regulators with enforcement capabilities in order to ensure successful implementation of electricity sector reform.
- El Salvador’s government made new laws and regulations publicly available. This commitment to transparency throughout the reform process built confidence and helped attain public buy-in.

Organizational Structure of the Electricity Sector:

- El Salvador’s public law created several state institutions with varying levels of autonomy to divide and clearly define the responsibilities of policy formulation, market regulation and supervision, and market operations, as depicted below.

Role Summary	Organization
Policy formulation, demand & supply forecasting and planning.	The National Energy Council (CNE),
Market registration, regulation and supervision	The General Superintendence of Electricity and Telecommunications (SIGET),
Market operation	Transaction Unit (UT)
Promotion of economic and social development by increasing production, productivity and rational use of resources	The Ministry of Economy
Guidance/development of environmental policies and regulations for conservation and preparation of environmental projects with a focus on renewable resources	Ministry of Environment and Natural Resources (MARN),
Generation, distribution, transmission, marketing	Private & state owned companies

- The Salvadoran electricity sector is currently unbundled, meaning that no single company is allowed to simultaneously own or operate generation, transmission, distribution and/or marketing companies.

Involvement of Private Investors in the Electricity Sector:

- To foster market competition, the Salvadoran government significantly reduced the scope of its planning functions, direct participation and ownership in the nation’s power sector.
- El Salvador’s legal frameworks sanctioning private investment in the electricity sector are enshrined in law and supported by clear and transparent regulations.
- The Salvadoran government recognized that the country’s utilities should not regulate themselves. As such, they installed a strong and transparent regulator to ensure fair treatment of customers by their monopoly service providers.

Cross border trade - the SIEPAC line

- The Salvadoran government recognized the opportunity for growth inherent in developing a regional market and dedicated to collaborating with its Central American counterparts to develop a strong legal and policy framework for the project. The same charter enshrines both an independent SIEPAC system operator and regulator who collaborate directly with national market and system operators of participating countries.
- The Salvadoran government, in conjunction with governments of other SEIPAC countries, agreed that representatives from each SIEPAC country should comprise the system operator and regulatory body to ensure international communication and cohesion.

RESULTS

The following recommendations and document transfers resulted from the second HEPP executive exchange:

- **Tools for Restructuring the Electric Sector:** El Salvador’s reform process was born out of a climate not unlike Haiti’s: inhospitable to foreign investment, unable to meet demand & lacking a robust regulatory mechanism. Participating El Salvadoran entities provided delegates with specific examples of laws,

regulatory documents and policies undertaken to modernize and expand their electricity sector. These potentially transferrable laws could serve as the basis for legal and regulatory reform in Haiti.

- **Opportunities for Cross-Border Collaboration:** The Haitian delegates applauded the inclusion of Dominican officials in the exchange. Both parties recommended continued collaboration on future exchanges and agreed to continue the discussion on electric sector reform and explore opportunities for partnership.
- **Reducing Losses:** Haitian delegates expressed that loss reduction continues to be a major priority item for EdH and is a subject that they would like to explore further in future exchanges.
- **Rural Electrification Policy & Project Execution:** Officials from the Consejo Nacional de Energia (CNE) and AES El Salvador presented on Salvadoran rural electrification initiatives, prompting a discussion in which Haitian delegates conveyed their dedication to the issue and desire to further explore it in future exchanges. This exchange reaffirmed the delegation's drive to strengthen rural electrification initiatives in Haiti.
- **Offers of Continued Assistance from Salvadoran Power Sector:** The participating Salvadoran institutions and private companies offered their continued support and assistance to the Haitian government. They remain available for further information and expressed an interest in continuing their dialogue on reform with their Haitian counterparts.
- **Commitment to Strengthen Internal Dialogue:** Haitian delegates recommended that the "*Commission Mixte pour l'Energie*," (*Joint Commission for Energy*) composed of Haitian government and international donor representatives, should introduce a more rigorous discussion on reforming Haiti's energy sector to maintain the momentum gleaned during this exchange. The delegates also stressed the importance of including additional key decision makers in the internal reform conversations and strategy sessions.
- **Increasing Generation:** The Haitian delegates reiterated the need for the Government of Haiti to explore all options for increasing Haiti's electricity supply. This includes, but is not limited to, cross-border electricity exchange, LNG imports, renewable energy and other IPPs.

NEXT STEPS

Both Haitian and Dominican delegates, in concurrence with USEA, propose conducting another exchange on governance and reform in the Dominican Republic. USEA also proposes that members of the *Commission Mixte pour l'Energie* be considered as potential participants in the next exchange.

EXECUTIVE EXCHANGE PROGRAM PARTICIPANTS

1. René Jean-Jumeau, Minister for Energy Security, Haiti
2. Jean Marcel Pinard, Director of Planning, Electricité d'Haïti, Haiti
3. Yves Bastien, Director, Council for the Modernization of Public Enterprises, Haiti
4. Ludner Remarais, Director General, Bureau of Mines and Energy, Haiti
5. Jules André Joseph, Coordinator of Energy Cell, Ministry of Public Works, Transportation and Communications, Haiti
6. Carlo Lafond, Legal Counsel, Office of the Minister of Energy Security, Haiti
7. Jean Robert Altidor, Director, Bureau of Mines and Energy, Haiti
8. Julian Despradel, Head, International & Interinstitutional Department, National Energy Commission (CNE), Dominican Republic
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For copies of the presentations, please [click here](#).