

Monday, February 25, 14:00 hrs

Key Regulatory Issues and Challenges Confronting the INE.

- Mr. Enrique Kuan, General Director of Electricity, INE.
- Mr. Rolando Arriola, General Director of Hydrocarbons, INE.
- Mrs. Nelly Harding, General Director of Environmental Control, INE.

1



NICARAGUA ENERGY INSTITUTE

Regulatory Issues and Challenges

2



Former Structure of the Electricity Sector

National Electricity Company
Isolated Systems



Generation

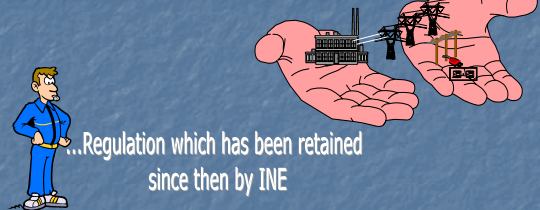
Transmission

Distribution and
Marketing

3



ENEL was created in 1995
and was responsible for everything, except...



In 1996 studies were undertaken to create
the Nicaraguan Electricity Market
with the passage of the respective law, its regulation
and norms

4



Nicaragua's Electricity System

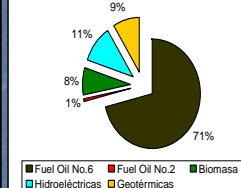
- Peak demand: 507 MW
- Electric power demand: 2,969.82 GWh
- Customers: 661,169
- Electricity growth rate: 4 %
- Losses through transmission: 2.8%
- Losses through distribution: 27%
- Average Electricity Price:
 - 2004 0.1231 US\$/kWh
 - 2008 0.2018 US\$/kWh

5

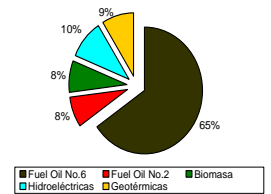


Generation Structure

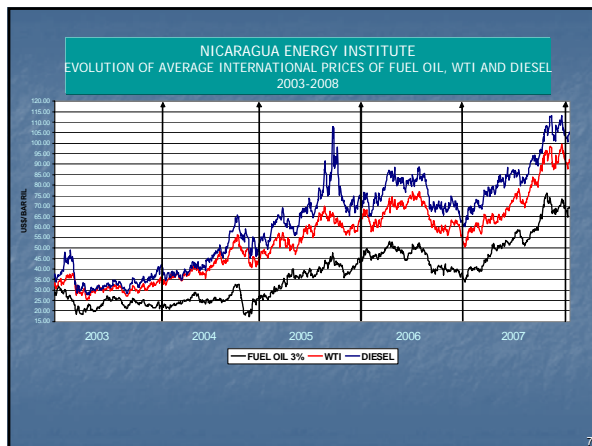
Estructura de Generacion 2004




Estructura de Generacion 2007




6



 Financial Situation


- Over-dependence on oil prices
 - Changes in generation matrix
 - Investment in renewable electricity generation
 - Reduction and stabilization of electricity prices
 - Reduction of losses at the distribution level (27%)
 - Tariffs (10.71%)
 - Electricity theft (settlements) (5-6%)
 - Fraud (11%)

8

 Actions Undertaken

- Adjustment of electricity tariffs
- Study by Ministry of Energy and Mines with funding from the World Bank.
- Project implemented by INE, with support from USAID, to conduct circuit and transformer measurements.
- Regulation to guarantee legal use of electricity service.
- Characterization of electricity theft as a misdemeanor in the Penal Code
- Anti-fraud bill

9

 Quality of Electricity Service

Claims serviced:

- 2000: 706 claims
- 2004: 10,048 claims
- 2007: 23,667 claims

■ Complaints from unsatisfied users:


- Poor commercial quality
- High electricity costs
- Outages (generation deficits)
- Quality of technical product (limited investment in distribution and transmission networks)

10

 Major Challenges

- Establish appropriate conditions for investment in generation, transmission and distribution.
- Stabilize and reduce electricity prices.
- Increase electrification coverage in Nicaragua.
- Guarantee quality commercial and technical services.

11

 NICARAGUA ENERGY INSTITUTE

HYDROCARBON GENERAL DIRECTORATE

Rolando Enrique Arriola
General Director
Managua, February 2008

12



LEGAL FRAMEWORK: LAWS

- Law No. 271, INE Law Reform, published in the official daily La Gaceta No. 63 of 1 April 1998.
Article 6:
 - Approve, publish and control regulated fuel prices.
 - Draft, approve and enforce rules, agreements, resolutions and other administrative and technical provisions as may be necessary for sound performance of all activities in the hydrocarbon subsector.
 - Prevent and take all measures as may be necessary to preclude restrictive competitive practices in the provision of services and products in the hydrocarbon subsector.

13



LEGAL FRAMEWORK: LAWS

- Law No. 277, Hydrocarbon Supply Law, published in the official daily La Gaceta No. 25 of 6 February 1998.
Article 1:
 - The purpose of this law is to establish a legal regime for all activities, participants and facilities that form part of the country's hydrocarbon supply chain.

14



LEGAL FRAMEWORK: LAWS

- Law No. 277, Hydrocarbon Supply Law, published in the official daily La Gaceta No. 25 of 6 February 1998.
Article 2:
 - In a context of free enterprise and competition, any natural or legal person, national or foreign, public or private, may import, export, refine, transport and market hydrocarbons or provide any related services upon obtaining the respective license and/or authorization.

15



LEGAL FRAMEWORK: LAWS

- Law 612 reformed Law 290, transferring all powers to grant, modify, extend or cancel operating licenses for hydrocarbon importation, exportation, refinement, transportation, storage and marketing, as well as construction permits for petroleum facilities, and limited INE's function to regulating, overseeing and monitoring these activities.

16



LEGAL FRAMEWORK: DECREES

- Decree No. 38-98, Hydrocarbon Supply Law Regulation (Law No. 277), published in the official daily La Gaceta No. 97 of 27 May 1998.
- Decree No. 56-94, Hydrocarbon Importation and Marketing Regulation, published in the official daily La Gaceta No. 63 of 22 December 1994.
- Decree No. 62-2006, reforming Decree 56-94, Hydrocarbon Importation and Marketing Regulation, published in the official daily La Gaceta No. 63 of 22 December 1994.

17



LEGAL FRAMEWORK: RESOLUTIONS

- INE Ministerial Resolution No. 09-96, dated July 1, 1996, establishes standard dispatch volumes and penalties for service stations on account of defective calibration of gasoline pumps.
- INE Ministerial Resolution No. 11-96, dated September 6, 1996, reforms the previous ministerial resolution.
- INE Ministerial Resolution No. 9-97, dated October 6, 1997, establishes technical regulations for finished petroleum derivatives that are imported, refined, marketed and distributed in the country.

18



LEGAL FRAMEWORK: RESOLUTIONS

- MEM Ministerial Resolution No. 34-DGH-01-2007 establishes international metering system and maximum variations when filling petroleum liquefied gas cylinders for residential use.
- MEM Ministerial Resolution No. 35-DGH-02-2007 establishes Fine and Penalty Regulation on marketing of petroleum liquefied gas cylinders.

19



FUNCTIONS

1. Protect consumer rights.
2. Inspect safety, operation and maintenance of hydrocarbon storage facilities and service stations.
3. Control, approve and publish petroleum liquefied gas prices for residential use.
4. Propose policies, indicative plans, rules and national strategies to the Ministry of Energy and Mines in relation to hydrocarbon supply.
5. Investigate violations and impose penalties in the event of any violation of Law 277, its regulation and other standards and technical specifications.

20



REGULATION

- Nicaragua's hydrocarbon market was opened by Executive Decree No. 56-94 of April 1, 1995, Hydrocarbon Importation and Marketing Regulation, and reformed by Executive Decree No. 62-2006.
- In view of the foregoing, the only price regulated is the price of Petroleum Liquefied Gas cylinders of 4.53Kg (10 Lbs.), 11.34Kg (25 Lbs.) and 45.36Kg (100 Lbs.). This activity started in September 2007 pursuant to Ministerial Resolutions 34-DGH-01-2007 and 35-DGH-02-2007.

21



NATIONAL INFRASTRUCTURE

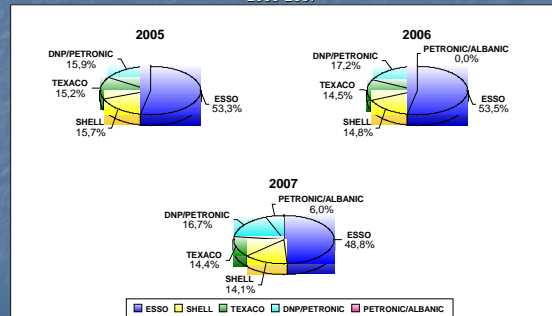
- 43-year old refinery with a nominal installed capacity of 20,000 barrels per day (bbd) of crude and 80% capacity utilization, mainly due to problems related to the type of crude being processed.
- 5 brands competing in the fuel market:
 - Chevron (49 E/S),
 - Distribuidora Nacional de Petróleo (66 E/S),
 - Exxon (47 E/S),
 - Shell (70 E/S),
 - Bandera blanca (40 E/S)

Total: 272 E/S

22

DISTRIBUTION OF DOMESTIC PETROLEUM DERIVATIVES MARKET

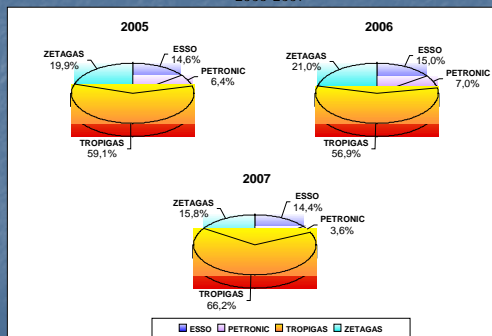
2005-2007



23

DISTRIBUTION OF DOMESTIC PETROLEUM LIQUEFIED GAS MARKET

2005-2007



24



HUMAN RESOURCES

- The Hydrocarbon General Directorate has assigned a total of 7 inspectors to regulating activities related to petroleum liquefied gas supply and service stations.
- Three inspectors assigned to regulating activities related to hydrocarbon storage facilities.
- Fuel prices monitored by an inspector.

25



WEAKNESSES

1. National inspection coverage ratio is not optimal.
2. Inadequate process to continuously update and strengthen staff knowledge in this area due to lack of resources.
3. Lack of laboratory to oversee fuel quality marketed in the country.
4. High safety risk in petroleum liquefied gas supply due to low storage capacity in the country.

26



CHALLENGES

- Safety of petroleum liquefied gas supply.
- Investment to increase national storage capacity.
- Guarantee quality, price, weight and volume of products purchased by consumers.
- Laboratory to analyze quality of hydrocarbons imported or marketed in the country.
- Update regulations to adapt service stations to location and sales volume.
- All service stations must be adapted to Regulation NTON 14 002 03 by 2011.

27

THANK YOU

28



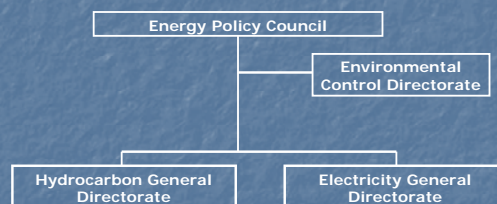
ENVIRONMENTAL CONTROL DIRECTORATE

- The necessity of environmental control on emerging projects in the sector due to worldwide public awareness of the impact caused by electricity generation, transmission and distribution companies and other players in the hydrocarbon supply chain and the pressure exerted by international financing institutions.

29



Institutional Organizational Chart



30



Legal Framework

■ LAW 271, INE LAW REFORM

Article 4:

- Subparagraph q): "Oversee compliance of environmental protection regulation by license and concession holders. (electricity subsector)"

31



Legal Framework

■ LAW 271, INE LAW REFORM

Article 5:

- Subparagraph f): "Supervise and control compliance with technical quality specifications, environmental protection and industrial safety regulations by license holders in each link of the hydrocarbon supply chain." (hydrocarbon subsector)

32



■ Environmental Crime Law (Law 559):

The purpose is to characterize crimes against natural resources and the environment, any actions or omissions that breach or alter provisions regarding conservation, protection, management, defense and enhancement of natural resources and the environment, as well as to establish civil responsibility for any damages and losses caused by natural or legal persons upon confirmation thereof.

33



■ Environment and Natural Resources Law (Law 217)

The purpose of this Environment and Natural Resources Law is to establish standards for the conservation, protection, improvement and restoration of natural resources and the environment, ensuring rational and sustainable use thereof, as provided in the Political Constitution.

34



■ Decree No. 68-2001 creating the Environmental Management Units (EMUs)

- **Purpose:** Create and organize Environmental Management Units in the government entities and public administration in general as bodies that support decision-making and compliance of environmental management actions in their respective sphere of competence.

35



- **Obligations:** Oversee compliance of standards, regulations and other environmental practices in the programs, projects and activities of the institution and monitor implementation of environmental policy in its respective sphere of competence.

- **INE's Environmental Control Directorate is a Sector Environmental Management Unit;** understood as the units created in the government entities whose mandate contains attributions and functions for regulating the sector.

36



Inter-Institutional Coordination

Pursuant to Laws 217, 272, 277, 443, 286, 559 and Decree 68-2001, coordination is established with:

- MARENA for the development of standards, monitoring and control of the activities developed in each sector.
- The institutions that may be deemed necessary to establish an Emergency Technical Committee in the event of environmental accidents in the hydrocarbon subsector, with the objective of enriching technical criteria for the solution of contamination problems.

37

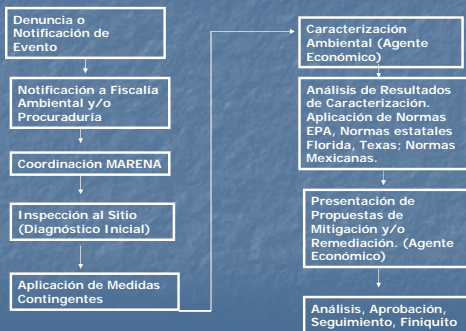


- INAA, ENACAL, ENTRESA, ENEL, MINSA, MTI, MEM, Municipal Governments, Public Prosecutor and Attorney General for monitoring projects that involve health risks, water or land transportation incidents, contingencies, water pollution, territorial system, among others.

38



Procedure for Contamination Cases



39



REQUIREMENTS FOR IMPROVING OVERSIGHT AND MONITORING

I. Formulation, Adoption or Adaptation of Environmental Standards, such as:

1. Environmental Standard for Oil Refinery and Pipeline Environmental Management.
2. Standard for Characterization, Establishment of Parameters and Allowable Limits of Soil and Water Contamination, and procedures for Remediation of Hydrocarbon Contaminated Sites.

40



REQUIREMENTS FOR IMPROVING OVERSIGHT AND MONITORING

3. Standard for Environmental Management in Electricity Generation Plants. This standard should include the establishment of metering parameters and allowable limits for each type of generation.
 - Cogeneration Plants (Biomass)
 - Thermal Generation Plants (Hydrocarbons)
 - Thermal generation Plants (Coal-fired)
 - Hydropower Generation Plants
 - Geothermal General Plants
4. Environmental Standard for Hydrocarbon Storage in Marine Facilities and Terminals.

41



REQUIREMENTS FOR IMPROVING OVERSIGHT AND MONITORING

- II. UPDATING OF STANDARDS
 - Service stations
 - Oil exploration
- III. ESTABLISHMENT OF SITES FOR TOXIC WASTE MANAGEMENT
 - Contamination by lead, mercury, PCB
 - Filters, rags containing grease and oils
- IV. EMISSION MONITORING

42



Environmental Management Issues

- Non-existence of environmental insurance and/or Financial Fund or Budget to guarantee site remediation and implementation of measures to mitigate and eliminate environmental losses.
- Limited Technical Knowledge in the following areas:
Technological enhancement/reconversion of electric power generation equipment, with the objective of improving fuel consumption efficiency, reducing gas emissions, reducing water-based processes, reducing the use of chemicals, managing hazardous waste, among others.

43



Updating technical levels through training in the following areas:

- Management of process water discharges and elimination of hazardous waste.
- Industrial safety and hygiene
- Handling of metering equipment
- Pollution dispersion models

44



Updating technical levels through training in the following areas:

- Methods of remediation of contamination by hydrocarbons and heavy metals.
- Methodologies for analyzing man-made and natural hazards.
- Renewable and Coal-Fired Electricity Generation Processes and their Environmental Impact.
- Technological Reconversion Processes for Reducing Emissions and Participating in Carbon Market.

45

Thank you

46