

ENERGY DOSSIER

**08** NICARAGUA



# Prologue

This publication forms part of a series of monographs produced by the [Energy Division of the Infrastructure and Environment Department](#) of the Vice President of the Research Department at the [Inter-American Development Bank \(IDB\)](#) for regional public good. It is designed to increase the base of knowledge about the characteristics and functions of the Energy Sector in Latin American and Caribbean countries (LAC).

This is the first step in a project that will culminate in books that organize the countries according to the subregions in which the IDB groups the countries of LAC. The purpose of publishing each country separately is to obtain feedback from the descriptive analysis provided by local authorities, academics and the general reading public.

Comments and observations can be sent to the authors via email at: [ramones@iadb.org](mailto:ramones@iadb.org)

The sources of information are made explicit and the responsibility for their use and interpretation is exclusive to the authors of this monograph.

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We hope that this contribution to regional knowledge will be useful,

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# Introduction

This Energy Report is part of a series that includes all Latin American and Caribbean countries (LAC) that are members of the [Inter-American Development Bank \(IDB\)](#). The publications will be made in sequential order and grouped according to the geographic regions organized by the [IDB](#) in the following order: countries of the Central American Isthmus and the Dominican Republic (CID); countries of the Andes (CAN), countries of the Southern Cone (CSC); countries of the Caribbean (CCB).

The Report on each country has two components: the Energy Flows and the Description of Industrial Organization and Institutional Framework of the energy sector. For both components, the most recent description will be presented first and then the historic development will be discussed.

In the case of Energy flows, the information is gathered from the energy balances that the [International Energy Agency \(IEA\)](#) produces for almost all of the countries in the world. The use of a single source allows comparisons between countries and also a long-term analysis without methodological distortions. Schematic flows derived from this information and are used to describe the energy sector in each country during a specific period.

The most recent “photo” with information from the [IEA](#) is from 2009. Even though it is from a few years ago, we used this matrix in order to ensure consistency among countries. It reflects the current situation because energy matrixes change slowly. What follows is an analysis of the historic evolution of the matrix from 1971 to 2008. It is divided into four periods: 1971-74; 1984-87; 1999-02; and 2005-08.

The reason for using an average of four years as the break between periods is to neutralize the distorting impact that sudden natural, economic and political events could have in a given year. The unit of measurement for the energy flows is thousands of barrels of oil per day (kboe/day), a simple transformation of the unit of measurement used by the [IEA](#), equivalent to tons of oil per year.

For the description of the Industrial Organization and the Regulatory Framework, the work is more complex because they don't have a single source of common information. Even when all the countries are presented under a single descriptive framework, the work of gathering basic information was ad-hoc by country.

In addition to the public information from various agencies and organizations, legal texts, academic publications and press reports are referenced. Beyond a strict description of the sector, this report seeks to link information with the political evolution of a country, which makes the reading more enjoyable and provides a clear picture of institutional changes.

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# GUIDE TO ACRONYMS

ALN	Nicaraguan Liberal Alliance	KWh	Kilowatt hour
Bboe	Oil equivalent of billions of barrels	LIE	Law of the Electricity Industry
<u>CND</u>	<u>National Load Dispatch Center</u>	LPG	Liquefied petroleum gas
CNE	National Energy Commission	Mbd	Millions of barrels per day
DAI	Import Tariff Duties	Mboe	Oil equivalent of millions of barrels
<u>DISNORTE</u>	<u>Electricity Distributor of the North</u>	MEM	Ministry of Energy and Mines
<u>DISSUR</u>	<u>Electricity Distributor of the South</u>	MW	Megawatt
DNP	Nicaraguan Oil Distributor	<u>OLADE</u>	<u>Latin American Energy Organization</u>
<u>ECLAC</u>	<u>Economic Commission for Latin America and the Caribbean</u>	PCI	Constitutionalist Liberal Party
ENALUF	National Power Company	PEP	Primary Energy Production
<u>ENATREL</u>	<u>National Electricity Transmission Company</u>	PES	Primary Energy Supply
<u>ENEL</u>	<u>Nicaraguan Electricity Company</u>	SIN	National Interconnected Power System
FSLN	Sandinista National Liberation Front	SNT	National Transmission Company
GDP	Gross Domestic Product	TEC	Total Energy Consumption
GECSA	Central Electric Generator	<u>UNDP</u>	<u>United Nations Development Programme</u>
GEMOSA	Geothermal Generator Momotombo Company	UNO	National Opposition Union
GEOSA	Western Electricity Generator	<u>WB</u>	<u>World Bank</u>
Gwh	Gigawatt Hour		
Hidrogesa	Hydroelectric Generator		
<u>IDB</u>	<u>Inter-American Development Bank</u>		
<u>IEA</u>	<u>International Energy Agency</u>		
IEC	Consumption Tax		
<u>INE</u>	<u>Nicaraguan Energy Institute</u>		
ISLR	Income Tax		
ITF	Stamp Tax		
IVA	Sales Tax		
Kbd	Thousands of barrels per day		
Kboe/day	Thousand barrels of oil equivalent per day		
Kv	Kilovolt		



# Nicaragua

The size of the economy of Nicaragua in 2011, according to [World Bank](#) statistics, was 9.3 billion USD, the smallest of the Central American isthmus after Belize. The economy of Nicaragua is 25% the size of that of Honduras. Its population of almost 5.8 million is situated just below the regional average. It has a per capita GDP of US \$ 1,510, the lowest of the region and one that has the greatest territorial extension in the area, near 120,000 Km.<sup>2</sup>

Of the population, 42% live in rural areas, making it the fourth country with the highest concentration of people in rural areas in the region. A similar ratio of the population, 42.5% lives below the poverty line. It occupies the 115th position of 169 countries on the measurement of human development index.

Nicaragua has the lowest percentage of electricity coverage in the region at 63.4%. The country currently has an installed capacity for electricity generation of 1,067.6 MW and a maximum demand of 538.9 MW. From this capacity they generated 3,294.6 GWh of energy (2010), 80% coming from plants owned by private businesses and 20% from publicly owned generation plants. Despite traditionally being a net importer of energy, in 2010 the country exported the equivalent of 43.3 GWh.

According to INE statistics, of the gross generation in 2011, 927.2 GWh (24.2%) was transformed from primary renewable sources, of which 11.6% correspond to hydroelectric sources, 7.1% to geothermal and the rest to wind generation. The remaining 2850 GWh (75.8%) came from thermal sources of which 64.8% correspond to the use of liquid petroleum products and the rest to sugar cane husks. Nicaragua does not have its own oil production or other hydrocarbons. Its consumption of petroleum products exceeds 25 thousand barrels per day.

The country has abundant natural resources and its greatest potential lies in hydraulic and geothermal energy. In the past few years Nicaragua has made efforts to: (i) expand electric energy generation from renewable sources (ii) increase efforts at oil exploration.

# Current Energy Sector

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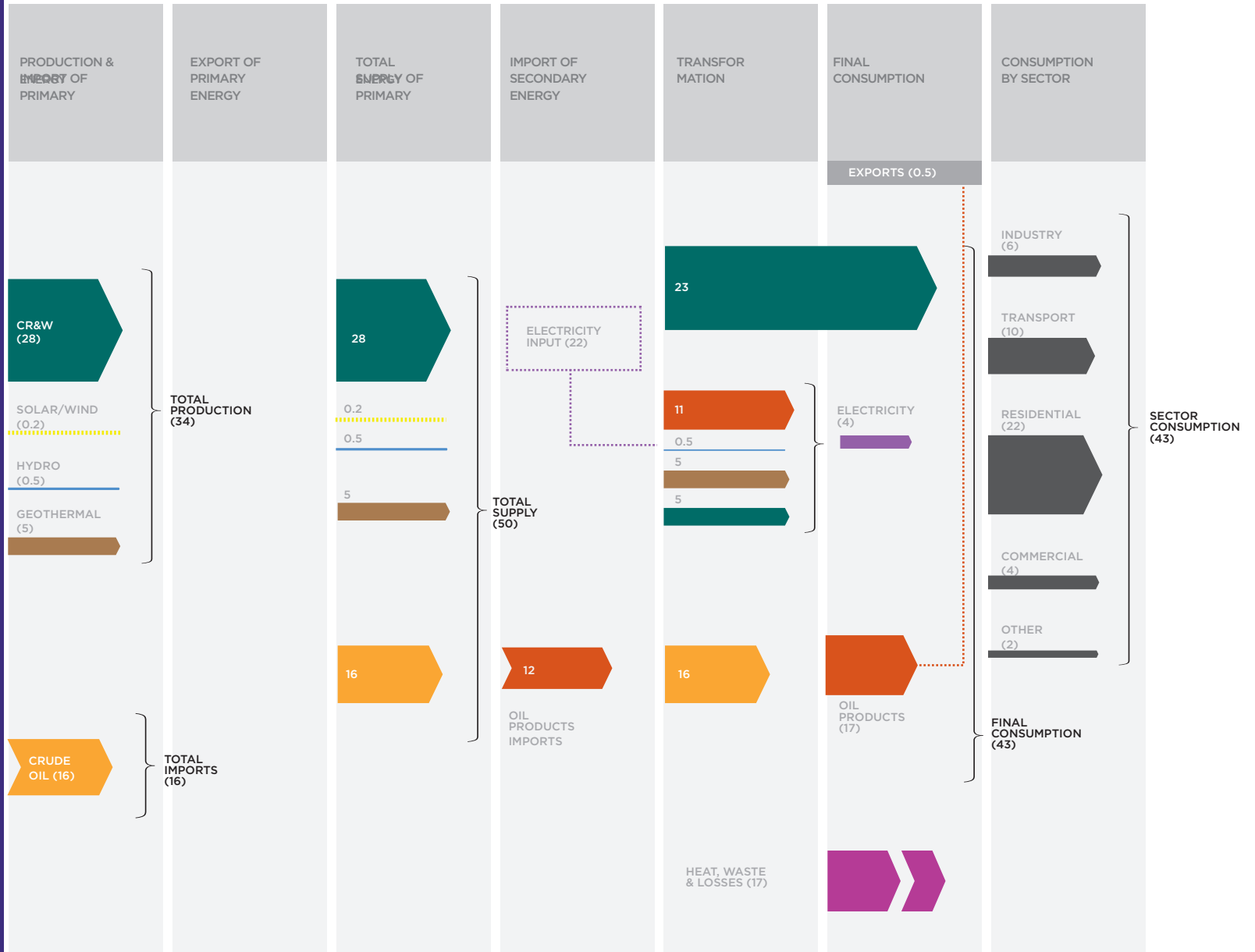
Total Energy Consumption (TEC) in Nicaragua in 2009 reached 62 thousand barrels of oil equivalent per day (kboe/day) which represents a drop of 12% from the average consumption between 2005 and 2008. However, the composition of its energy consumption was maintained along general lines. It was stable and continued to depend on two principal energy sources: biofuels – firewood and sugar cane husks – and oil and its derivatives.



# CURRENT

## Energy Flow

(kboe/day)



Biofuels, 80% composed of the consumption of firewood according to [OLADE](#) information, continue to be a principal energy source for the Nicaraguan economy with 28.4 kboe/day. This source was 45.6% of the TEC. Even though it is currently important as a primary energy source, the consumption of firewood has fallen visibly in recent years. In comparison to the average between 2005-08, in 2009 the consumption of firewood fell in absolute and relative terms. The average consumption between 2005-08 was 35.9 kboe/day, representative of 51.4% of TEC. At the same time, between 2005-08 and 2009, byproducts fell slightly from 28.6 kboe/day to 28.1 kboe/day, but they increased in importance in terms of TEC from 40.7% to 45.1%.

The other energy sources in the country - hydraulic, geothermic and wind - made small contributions to the TEC, a sum of less than 6 kboe/day. Of these, the geothermal resources stand out, and have been used in plants in Momotombo and San Jacinto-Tizate, with 5.1 kboe/day, an increase of 70% over the annual average between 1999 and 2002. Hydraulic energy in Nicaragua does not play a big role and totaled only 0.5 kboe/day, the same level that it reached at the beginning of the 21st century. Wind energy had scarcely begun to appear on the matrix in 2009 with 0.2 kboe/day - from the 40 MW Amayo wind park.

## Production, Commercial Balance and Primary Energy Supply

### Production

Primary energy production (PEP) in Nicaragua reached 34.2 kboe/day, which represented a drop of 7.4 kboe/day from the 2005-2008 average. This drop in primary production is mainly related to the decline in the use of biofuels (firewood). This energy source moved from 35.9 kboe/day between 2005 and 2008 to 28.4 in 2009, a PEP decline from 89 to 83%.

In slight contrast, geothermal energy increased from 5 to 5.1 kboe/day - passing from 12 to 15% of the PEP - while energy production from wind began with 0.2 kboe/day (1% PEP) thanks to the 40 MW Amayo wind park that was incorporated into the electricity network in 2009.

### The commercial balance of primary energy

As has been the pattern in recent history, Nicaragua only participated in international markets as crude oil importer via the agreement that the Nicaraguan government maintains with the Venezuelan state company [PDVSA](#). These Venezuelan oil imports reached 16.3 kboe/day, slightly above the 15.5 kboe/day annual average between 2005 and 2008. This crude oil is refined in the Cuesta del Polmo facilities.

## Domestic supply of primary energy

From primary production and crude oil imports, the internal supply of primary energy (OEP) in Nicaragua in 2009 totaled 50.3 kboe/day, a 12% drop from the annual average between 2005 and 2009. This can be explained by a decline in the use of biofuels.

This supply was composed of 68% renewable energy sources, mostly biofuels – 56% of the OEP – followed by geothermal energy with 10% of the OEP. Crude oil imports represented the second primary source in the country with a total of 32%.

## Electricity

### Installed capacity

The installed capacity in Nicaragua has been characterized by the high use of thermoelectric plants and in 2009 this pattern of use was maintained. In 2000 thermoelectric plants represented 70% of the installed capacity – with 472 MW – while in 2009 this percentage fell to only 68% with 749 MW.

Installed Capacity (MW)	2000	2005	2009
Total Renewables	199	315	355
Hydroelectric	103	105	105
Non-hydroelectric	96	210	250
Thermoelectric	472	583	749
Total	671	898	1104

Source: U.S. EIA

This slight set-back can mainly be explained by the increase in the installed capacity of electric plants using renewable non-hydraulic resources such as biofuels, geothermal energy – in Momotombo – and, to a lesser extent, wind energy – in Amayo, which has been in operation since 2009. This installed capacity went from 96 MW in 2000 to 250 MW in 2009.

### Sources of power generation

Nicaragua	2005-2008		2009	
<b>Total sources of generation (kboe/day)</b>	<b>17.8</b>	<b>100%</b>	<b>21.5</b>	<b>21.5</b>
Liquid fuels	10.1	57%	11	11
Renewables	7.7	43%	10.5	10.5

Renewables include wind energy, renewable fuels and other renewable sources. Source: Our calculations based on IEA information

The sources for generating power in Nicaragua in 2009 represent a balanced division between the liquid fuels used by thermoelectric plants and renewable sources – such as biofuels like sugar cane husks, geothermal energy and hydraulic energy. Oil products added up to 11 kboe/day – slightly above the average of 10.1 between 2005 and 2008.

Thus, the role of liquid fuels in the generation of electricity fell in relative terms from 57% to 51% despite growing in absolute terms almost 1 kboe/day. The increase of renewables in the supply of energy generation is due to an increase in the use of biofuels to generate electricity.

This source – especially the sugarcane husks – averaged only 2 kboe/day between 2005 and 2008 while in 2009 it reached 5 kboe/day. Between 2005-2008 and 2009 there was no growth in energy supplies from geothermal sources – it stayed constant at 5 kboe/day – nor was there growth in hydraulic energy sources. The incorporation of Amayo wind energy had a small impact on the electricity matrix.

## **Power Consumption**

Aside from the sources described above, during 2009 Nicaragua consumed 3,453 GWh, up by 11% in total from the 3,099 GWh average between 2005 and 2008. This power consumption depended highly on liquid fuels imported and produced in the country from imported crude oil that, with 2,386 GWh, represented 69% of the total.

The rest of the energy sources – hydraulic, geothermal, biofuels and wind energy – made up the 31% remaining. Among these, the use of biofuels should be highlighted (mainly sugar cane husks) that generated 363 GWh – 10.5% of the total. This was followed by hydro generation with 297 and 8.6% and then geothermal with the same statistics. Finally, the wind energy center Amayo generated 100 GWh, 3.1% of the total generation.

## **Secondary balance and final consumption**

### **Secondary energy balance**

The refining capacity of Cuesta del Plomo was not sufficient to supply the demand for liquid fuels in Nicaragua, which is why the country continued to import petroleum products during 2009. That year, the figure reached the equivalent of 12 thousand barrels per day, a level slightly below the annual average of 13 kboe/day between 2005 and 2008. During this period, Nicaragua imported 0.1 kboe/day of power, but these imports were negligible in 2009.

### **Final consumption by sectors**

The final consumption of Nicaragua during this period totaled 43 kboe/day, significantly below the 54 kboe/day that it consumed on average between 2005 and 2008. This drop can be understood by analyzing consumption by sector. The principal consumer in Nicaragua, as has been evident historically, was the residential sector

with 22 kboe/day - 7 kboe/day below the average between 2005 and 2008 - due to a lower use of fuels, which represented 91% of the residential total. As soon as homes stop using firewood and pick other energy sources or use modern firewood kitchens, the increase in efficient energy consumption will continue.

The second sector of the economy in terms of energy consumption was transportation, which remained stable between 2005 and 2008 with 10 kboe/day composed 100% of petroleum products. The industrial sector, which fell from 9 to 6 kboe/day, consumed 56% of its energy from electricity, 29% from biofuels and 15% from electricity. The drop in this segment can also be explained in large measure by the reduction in the use of biofuels.

The smallest sectors of the economy in energy consumption - commercial and others - maintained consumption between 4 and 2 kboe/day respectively. The commercial sector used energy derived 43% from petroleum products, 29% from electricity and 29% from biofuels. In conclusion, the rest of the sectors of the Nicaraguan economy consumed energy derived 41% from electricity, 33% from petroleum products and 27% from biofuels.



# **Institutional Organization of the Energy Sector**

## Institutional Structure

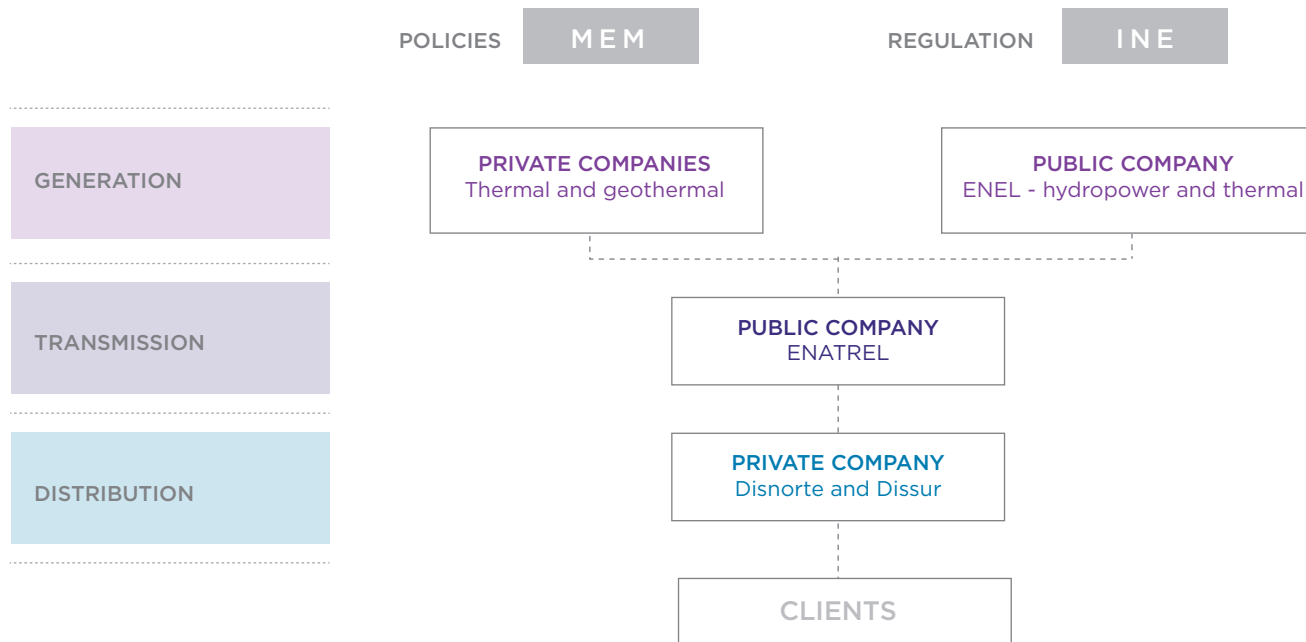
The energy sector in Nicaragua is characterized by the strong presence of private capital in different activities in each of the subsectors. The public sector creates the politics of both sectors via the [Ministry of Energy and Mines \(MEM\)](#), created in 2007. The [Nicaraguan Energy Institute \(INE\)](#), created in 1985, delegates the regulations of all energy sector activities.

The presence of the state in power generation activities is evident in the [Nicaraguan Electricity Company \(ENEL\)](#) that manages the total hydroelectric generation of the country and around 16% of the installed capacity derived from thermal sources. The transmission is controlled completely by the public sector via the [National Electricity Transmission Company \(ENATREL\)](#) that manages 100% of the transmission networks on a regional level. In terms of distribution, the private group TSK-Melfosur International manages around 95% of the networks of distribution in the country through their sister company [Disnorte-Dissur](#).

The important presence of private companies is also evident in the hydrocarbons subsector. The private company [Puma Energy](#), which controls the only refinery in the country, Managua Refinery, manages the refining and importation of crude. Private companies also participate in the importation and commercialization of oil products, among which Albanisa, the [Nicaraguan Petroleum Distributor \(DNP\)](#) and [Puma Energy](#) stand out. The presence of the public sector is evident in the hydrocarbon market in the form of the company Petronic, which has limited participation in the chain.

The most relevant laws for the sector are: Law No. 271 and No. 272 that constitute the legal framework for the regulatory organism and the Electricity Industry. Laws No. 443, 467 and 532 that relate to issues such as renewable energy sources and finally Law No. 554 on Energy Stability.

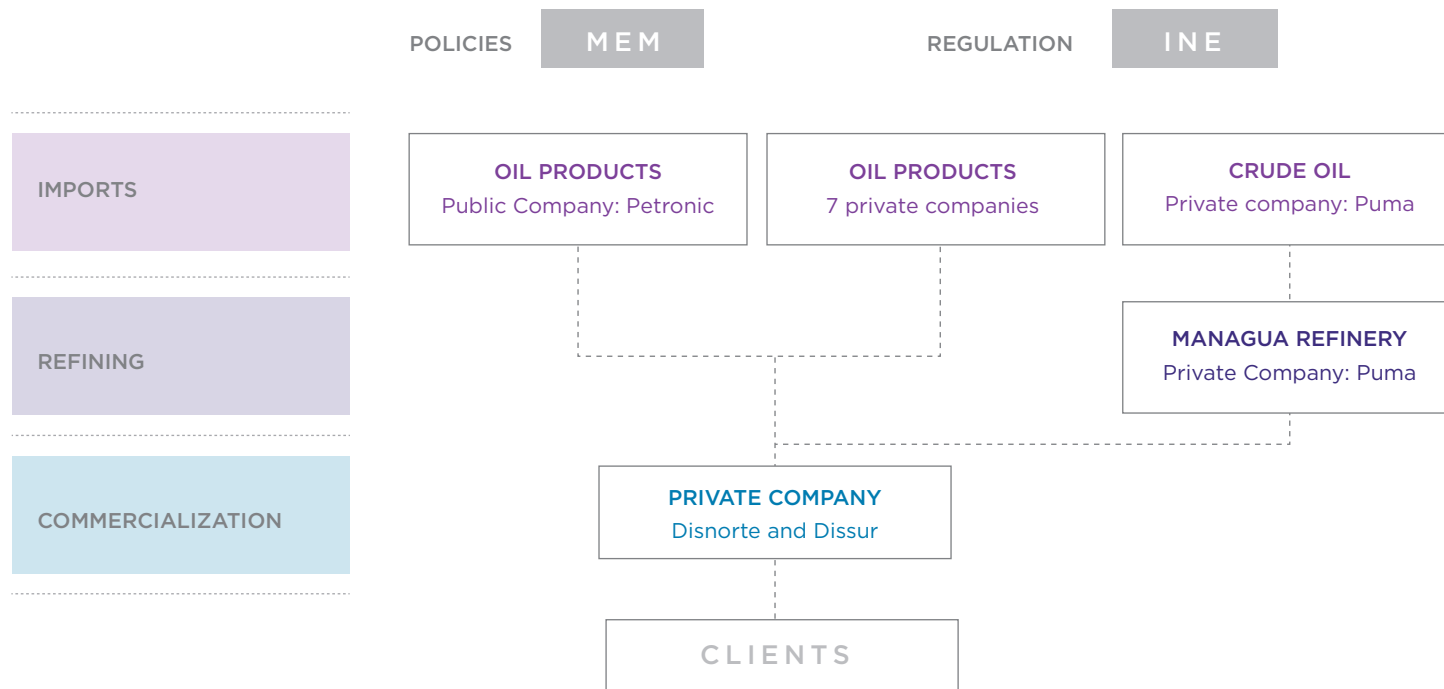
# Structure of the electricity subsector in Nicaragua, 2011



Source: INE, MEM, Cepal and current legislation



# Structure of the hydrocarbon subsector in Nicaragua, 2011



Source: INE, MEM, ECLAC and current legislation

## Policy making in the energy sector

The Ministry of Energy and Mines (MEM), created in 2007 with the proclamation of Law No. 612, is in charge of designing energy policies and national strategies to develop the sector. In addition, it directs the operation of state companies. The MEM formula proposes, coordinates and executes the Strategic Plan and the Public Policies of the Energy sector, including decision making related to the use, regulation and concession of geological, mining, geothermal, hydroelectric and hydrocarbon resources.

Its specific responsibilities according to current legislation include the following:

- To create, propose, coordinate and carry out the strategic Plan and the Public Policies of the energy sector and the geologic resources.
- To create technical rules, guidelines and regulations that regulate all activities related to the management and use of resources.
- To periodically evaluate the strategic Plan and public policies of the energy sector, with special emphasis on the balance between energy supply and demand, conservation, electricity service prices and subsidy policies, service coverage policies in the country, including rural electrification and policies and strategies of financing and inversion in the energy sector.
- To approve technical rules to regulate the activities of the energy sector at the request of the regulatory body, such as the proper function of all the activities of the hydrocarbon sector.
- To award and modify permissions and concessions for the use of any energy source, licenses of operation for importing, exporting, refining, transporting, storing and commercializing hydrocarbons, as well as authorizations for the construction of oil facilities.
- To award licenses for the generation and transmission of energy, such as distribution concessions. To declare the termination of or cancel the same licenses at their own initiative or at the request of the Regulatory Body due to a breach of License or Concession contracts.
- To participate together with the Regulatory Body in the inspection of the projects and facilities of the holders of licenses and concessions.
- To negotiate contracts for oil exploration and operation and for geologic resources. The President of the Republic or his Representative will be in charge of signing these contracts.
- To direct the operation and administration of State companies that operate in the energy sector.
- To promote relationships with financial institutions and the private sector to evaluate sources of accessible financing and to propose strategies to finance the energy sector, geologic energy and hydrocarbons in both public and private investment.

- To manage and regulate the Fund for the Development of the National Electricity Industry.
- To promote policies and strategies that allow the use of alternative energy sources for the production of electricity.
- To establish and update the National System for Information on Hydrocarbons and the Central License Registry and concessions to operate any activity or link in the supply chain.
- To produce and propose drafts of laws, regulations and resolutions related to the energy sector, hydrocarbons and geologic energy resources and to approve its internal rules.
- Any other function related with its activity that can be attributed to other laws on the subject and those specifically assigned to the [National Energy Commission](#).

## Regulator

The [INE](#) is in charge of the regulatory activities in both the electricity market and the hydrocarbon market in Nicaragua. Law No. 271 governs it and its reforms. This legislation defines the [INE](#) as responsible for applying the Electricity Industry Law and its regulations, as well as the specific rules and procedures of the energy sector.

Its board of directors is composed of three members proposed to the National Assembly by the President of the Republic with a rotation every 6 years. This period, according to current legislation, should alternate with presidential elections. Its budget does not depend on the national budget, because it is related to a charge for the service of regula-

tion realized by the majority of commercial operations in the electricity industry and to the sales of all oil derivatives. This means that the [INE](#) has administrative and financial autonomy.

In relation to the energy subsector, the [INE](#) has the following functions:

- To protect the rights of energy consumers.
- To supervise the compliance of the rules, guidelines and technical regulations of activities related to the recognition, exploration, exploitation, application, production, transport, transformation, distribution, management and use of energy resources.
- To develop and oversee the compliance with rules and regulations aimed at taking advantage of energy in a rational and efficient manner.
- To protect the proper function of electricity service and to define indicators for quality, reliability and security.
- To approve, publish and control sales taxes from distributors to consumers.
- To approve, publish and control tolls for the use of power transmission and distribution networks.
- To apply sanctions in cases related to laws, rules, guidelines, concessions and license contracts and other resolutions
- To resolve controversies between economic agents who participate in the energy sector following the Electricity Industry Law.

- To grant, extend and declare the expiration of or cancel licenses for the generation and transmission of energy, like distribution concessions.
- To establish categories for the big, medium and small consumer based on technical and economic parameters when the related law does not specify them.
- To prevent and adopt the necessary measures to stop restrictive competition practices in the supply or provision of products and services regulated by the electricity subsector.
- To monitor the compliance of holders of licenses and concessions in relation to regulations that protect the environment.

In relation to the hydrocarbon subsector, the INE has the following functions:

- To grant, extend and cancel the Licenses of operation for the importation, exportation, refining, transport, storage and commercialization of hydrocarbons, such as the authorization and construction of oil facilities.
- To approve, publish and control the prices of regulated fuels.
- To develop, approve and enforce standards, agreements, resolutions and other administrative and technical provision necessary for the proper function of all the activities of the hydrocarbon subsector.
- To prevent and take the necessary measures to stop restrictive competition practices in providing services and products in the oil subsector.

- To establish and update the National Oil Information System and the Central License Registry to operate any activity or link in the supply chain.
- To impose sanctions related to violation of the present Law, its regulations and the other rules and technical specifications.
- To negotiate contracts for oil exploration and exploitation. The President of the Republic or his representative will be in charge of signing these contracts.

# Institutional Matrix of the electricity sector in Nicaragua

Generation		Transmission		Distribution	
	<b>Installed Capacity</b>	Company	ENATREL	Companies	Disnorte - Dissur (95%) Bluefields (5%)
Hydroelectric	9.8%	Ownership	State-owned	National coverage	63%
Solar & Wind	5.9%	Private	No	Markets	Regional monopolies
Thermoelectric	76.1%	Pricing policy	Regulated	State company	n/a
Geothermal	8.2%			Private participation	Allowed
Main State Company	ENEL (21.8%)	<b>Wholesale market</b>		Concessions	Tendering Maximum 30 years
Private participation	Allowed			Subsidized users	< 150 kWh per month
Registered	9 Companies	Tasked organization	CNDC	Pricing policy	Regulated
Requirements	Minimal	Responsibilities	Manage the integrated system		
Vertical integration	Not allowed	Retailers	n/a		
<b>Fiscal incentives</b>	Yes	Large users	9		
Equipment	Renewable sources	Maximum demand			
Fuels	Law on energy stability				
Small generators	Up to 5 MW				
<b>Pricing policy</b>					
Bilateral agreements	(Tenders)				
Spot market	Price = Marginal Cost (regulated)				
Regulator		National Energy Institute Regulator (INE)			
Members of the board		5			
Appointed by the president and approved by the Assembly		Yes			
Budget		Independent of the National Budget			

Source: National dispatch center, National Electricity Institute, Law 272 for the Electricity industry and regulations.

## Electricity subsector

The electricity subsector in Nicaragua is characterized by the strong presence of the private sector in the generation and distribution stages. In the generation sector, there are now nine (9) private companies registered with the [INE](#) in the wholesale market. They manage 78.2% of the national generation capacity, of which more than 2/3 parts come from thermal sources based on diesel and gas.

The private sector handles 5.9% and 8.2% of wind and geothermal generation capacity respectively, which represents 59% of the generation capacity from renewable resources.

The main public company in the subsector is the [Nicaraguan Electricity Company \(ENEL\)](#), which handles 21.8% of installed capacity, including all hydroelectric generation plants.

The participation of the private sector requires a formal request to the [INE](#) if the project has a greater capacity than 1MW, a rule that has been in force since 1998 following the enactment of the LIE. It is an example one of the few legal barriers that maintains the sector.

Table 1 illustrates the composition of the installed capacity in Nicaragua by source, distinguishing between the public and private sector.

Table 1. Distribution of Electricity Generation Capacity in Nicaragua, 2010

Sources	Public	Private	Total
<b>Primary</b>			
Hydraulic	9.8%	n.a.	9.8%
Geothermal	n.a.	8.2%	5.2%
Wind	n.a.	5.9%	8.9%
<b>Secondary</b>			
Thermal	12.1%	64.1%	76.1%
<b>Total</b>	<b>21.8%</b>	<b>78.2%</b>	<b>100%</b>

Source: CEPAL and own calculations.

Overall, the State of Guatemala through the EGEE handles most renewable sources. In 2010, around 72% of electricity generation in Nicaragua came from thermal sources, mainly diesel and natural gas. Nicaragua is a country that does not produce hydrocarbons in its territory. It imports all of the oil derivatives necessary to supply the national transport and electricity sectors. This is why in 2002 it created measures to promote the development of generation sources from renewable sources and thereby minimize the impact of rising hydrocarbon prices on electricity prices.

These measures, established in Laws No. 443 for Geothermal Generation, No. 467 for the Promotion of Hydroelectric sources and No. 532 for the Promotion of Renewable Sources, include the following incentives in tax and fiscal information for a period of 10 years:

- Exemption from the payment of Import Tariff Duties (DAI) for machinery, equipment, materials and supplies used exclusively for pre-investment work and the construction of facilities for hydroelectric generation and for the construction of transmission lines necessary to carry power from the central plant to the National Interconnected System (SIN)<sup>1</sup>.
- Exemption from the payment of Sales Tax (IVA) on machinery, equipment, materials and supplies used exclusively for pre-investment tasks, for the construction of hydroelectric generation works, and for the construction of the transmission line required to carry power from the hydroelectric plant to the National Interconnected System (SIN).
- Exemption from the payment of Income Tax (ISLR) and the minimum definitive payment of IR established in Law No. 453, the Fiscal Equity Law, for a maximum period of 7 years starting from the beginning of the commercial operation of the Project.
- Exemption from all local taxes in effect during the construction of the project and for a maximum period of 10 years from the beginning of the commercial operation of the project, a period during which they are exempt from local taxes according to the following rules: 75% exemption in the first three years; 50% in the following five years and 25% in the last two.

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<sup>1</sup> The benefits of this Law include new Isolated Systems with a capacity of up to 5 MW.

- Exemption from the Stamp Tax (ITF) that could cause the construction or operation of a project under the Water Management Permit for a maximum of ten years.
- Exemption from all taxes that may exist related to the exploitation of natural resources.

In addition, this legislation requires distributors to include their bidding processes, the energy hiring and/or power from renewable sources

## Generation

Generation companies can sell their power via *bilateral contracts*<sup>2</sup> between operators and the wholesale market (other generators, large consumers or distributors) at a free price but notifying the [National Dispatch Center \(CNDC\)](#)<sup>3</sup> or in the *secondary market* for a fixed price per hour related to the economic cost of production and regulated by the [INE](#) in agreement with the Energy Stability Law. The parties engaged in power generation cannot be vertically integrated with other market sectors unless they are connected to the National Transmission System (SNT), i.e. unless they form isolated systems.

## Transmission

In the transmission sector, the [National Electricity Transmission Company \(ENATREL\)](#) is the state company that handles high voltage networks on a national level. Three points should be highlighted in relation to this sector: (i) The participation of private companies is possible only

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<sup>2</sup> Equivalent to a Power Purchase Agreement (PPA)

<sup>3</sup> Responsible for managing the wholesale electricity market in Nicaragua

in isolated systems, that is to say, when the lines are not connected to the national transmission system, (ii) the toll for the use of the network is regulated and the price is fixed by the [INE](#)<sup>4</sup> and (iii) the latest expansion plan was finished in 2005, and it is expected that the next plan will be considered around 2018.

Nicaragua currently has 2,189.17 km of power lines and 79 substations, which together with the generation and distribution companies form the National Interconnected System (SIN).

According to Law No. 583 that created [ENATREL](#) in 2007, this should comply with the following functions:

- To transmit power at a voltage of not less than 95 kV.
- To transform electric energy from voltage levels of 230 kV to 13.8 kV.
- To operate the National Interconnected System and manage the National Electricity Market and all other activities related to the Regional Electricity Market through the [National Dispatch Center \(CNDC\)](#).
- To take advantage commercially of the excess installed capacity of transmission and communication systems via fiber optics according to respective laws governing the matter and other existing regulations.
- To develop the construction, installation, maintenance and operation of power transmission systems and related services.

- To prepare an expansion plan and implement the projects of the National Transmission and Communication System.
- To provide services or implement projects associated with the various activities related to the transmission, transformation, operation and communication of the National Transmission System.
- To market the excess capacity of the Communication System.
- To participate in the establishment and development of public, private or public-private partnership, national and international companies and to partner them with existing ones.
- To perform any other activities necessary for its development in accordance with related laws.

The [National Dispatch Center \(CNDC\)](#) is therefore responsible for managing the operations of the SIN and also the wholesale electricity market. According to their legal duties, they should fulfill the following objectives:

- To perform scheduling and make resources available to minimize the cost of supply within the priorities set by the Criteria for Quality, Safety and Reliability.
- To operate the SNT in a centralized manner, dealing with the electricity demand in conditions of maximum reliability and quality.
- To perform the operation of the National Interconnected System (SIN), including international interconnections at a minimum cost and in a safe and reliable manner.

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4 - Chapt. XIV Article 111 Law 272.



- To coordinate the scheduling of preventive and corrective maintenance SIN and International Interconnection installations.
- To manage the Market and calculate Business Transactions that arise from operations outside of contracts related to both energy and ancillary services.

## **Distribution**

In relation to the distribution sector, in Nicaragua there are three companies registered as distribution agents. Two of them, Disnorte and Dissur, have belonged since 2013 to the group TSK-Melfosur and together manage around 95% of the country's distribution network. Both companies operate with administrative and financial independence.

Current legislation prevents distribution companies from integrating vertically and from having their own capacity for generation greater than 10 MW. Additionally, final sale prices to the consumer are regulated by the INE.

Currently there are two types of grants for the final energy consumer. According to the Energy Stability Law, all domestic users who consume less than 150 kWh receive a subsidy established by the INE in agreement with the MEM. On the other hand, according to Law No. 494 that amended the Electricity Industry Act (LIE) in 2004, the final users with monthly consumption below 300 kWh are exempt from the IVA.

# Hydrocarbon Sector Institutional Matrix, 2010

Imports		Transformation/refining		Retailing	
Main state company	Petronic	Company	Refinería Planteil Managua	Total service stations	280
Private Participation	Allowed	Ownership	Puma	<b>Gasoline</b>	
<b>Importers by product (market share)</b>		Sector	Private	Pricing policy	Free
Crude oil	Puma (100%)	Refining capacity	20.000 Bpd	Companies (market share)	Uno (29.1%) Puma (26.6%) DNP (22.2%) Texaco (21.1%) Petronic (0.91%)
Oil products	DNP (46%) Albarisa (40.8%) Puma (9.4%) Petronic (2.4%) Empresa energética de Corinto (1.3%) Los Brasiles (0.1%)	Market share	47%	<b>Diesel</b>	
LPG	Tropigas (80.6%) Zetagas (19.4%)	<b>Oil products</b> (Volume in kb/d - market share in specific product)	Fuel Oil (2,361 - 42.7%) Diesel (1.656 - 47.7%) Gasoline (827 - 43.3%) LPG (192 - 24.2%)	Pricing policy	Free
				Companies (market share)	DNP (32.7%) Puma (25.6%) Uno (20.6%)
				<b>Fuel oil</b>	Free
				Pricing policy	Puma (58.9%) Albanisa (36.9%)
				Companies (market share)	DNP (2.7%) Otros (1.4%)
				<b>LPG</b>	Regulated
				Pricing policy	Tropigas (65%) Zetagas (13.5%) Puma (12.5%) Petronic (8.9%)
				Companies (market share)	
Regulator	National Energy Institute				
Appointed by the President of the Republic	Freely appointed by the President of the Republic				
Financing	Independent of the National Budget				

Source: Created by the author with information from the MEM, INE and our own calculations.

## Hydrocarbon subsector

Nicaragua is a country that does not produce hydrocarbons. Its legislation, however, provides for the development of contracts for the exploration/exploitation of hydrocarbons and natural gas in the country established by among other things: (a) that the property of the deposits belongs to the State of Nicaragua (b) allowing the participation of private, national and international companies, (c) establishing three types of possible contracts; concession, shared participation and others that meet an international standard and (d) establishing royalties and ISLR.

Current legislation in Nicaragua<sup>5</sup> allows free competition in all stages of the hydrocarbon business, with the exception of exploration and exploitation (Article 2) in the context of free enterprise and competition<sup>6</sup>.

Currently there is one (1) refinery named Managua Refinery with a capacity of 20,000 bld<sup>7</sup>. The private company Puma Energy has controlled this refinery since 2011 when it bought operations from Esso. Esso was selling all of its assets in the region. The selling price of its products are not regulated, but the use of transport infrastructure is regulated<sup>8</sup>.

The marketing and distribution of petroleum products in Nicaragua permits the participation of the private sector within a legal framework that promotes competition. Currently there are 5 distribution companies for derivative products and 4 for GLP. All petroleum products (local and imported) pay a tax called the “Specific Consumption Tax (IEC).”

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<sup>5</sup> Law 277

<sup>6</sup> Import, export, refining, transportation, storage, marketing and services.

<sup>7</sup> Official information about this refinery was not obtained. However, the available information suggests that it was owned by Exxon Mobil and that in 2011 it was sold (as well as all actions in Central America) to the Puma Energy company [http://www.pumaenergy.net/section\\_6/news/test\\_news\\_4.aspx](http://www.pumaenergy.net/section_6/news/test_news_4.aspx)

<sup>8</sup> We were unable to verify if such infrastructure exists. However, the law provides for the payment of a tariff.

# Evolution of the Energy Sector



# Evolution of the Energy Matrix 1971 - 2008



# 1971-1974

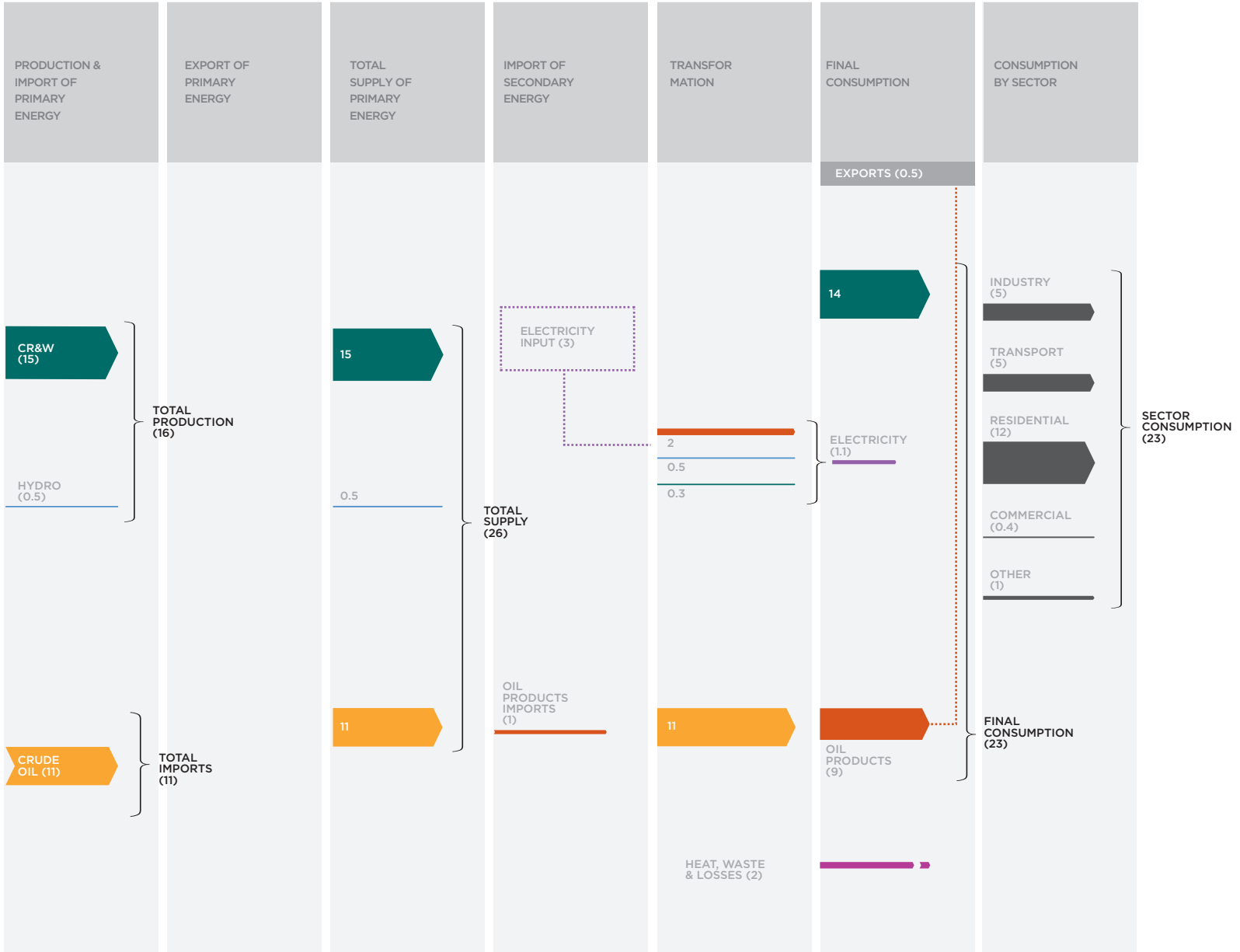
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The Nicaraguan matrix in the early seventies is notable for its lack of diversification in terms of sources. Essentially, all energy comes from biofuels – in their vast majority consisting of firewood – and from imported crude refined in the country. At that time, residential consumption formed the largest part of the economy.

# 1971-1974

## Energy Flow

(kboe/day)



## Total Energy Consumption

Of the 27.5 mbepdkboe/day that were consumed annually between 1971 and 1974, 55% were biofuels. The high percentage of use of this source of energy consumption is due to the low level of urbanization in the country at that time, as well as the level of economic development. The use of firewood represents more than 80% of the consumption of renewable fuels.

Most of the rest of consumption, nearly 40%, is represented by crude oil imports that are processed in the refinery Cuesta del Plomo, which was then property of [ExxonMobil](#). It was inaugurated in 1962 in the west of the city of Managua.

Hydropower consumption, slightly above 0.5 kboe/day and 2% of the total, stems from two plants: Centroamerica, which begins operations in 1965 with two 25 MW units and Carlos Fonseca, inaugurated in 1972 with 50 MW of installed capacity, split over two units.

## Electricity

The consumption of thermoelectric power plants accounted for almost 72% of total energy use for electricity generation with 2.16 mbepdkboe/day. The two hydroelectric plants in the country consumed 0.58 mbepdkboe/day, 19% and the consumption of biofuels for total electricity generation, 0.27 mbepdkboe/day, represented 9% of the total. Of the 751.75 GWh consumed on average per year between 1971 and 1974, 48% were from petroleum products, 45% from hydropower and the remaining 7% from biofuels.

Source	Inputs (kboe/day)	%	Electricity consumption (GWh)	Electricity consumption (kboe/day)	%
Oil products	2.16	71.66%	359.25	0.52	48%
Hydropower	0.58	19.34%	337.50	0.49	45%
Biocombustibles	0.27	9.00%	55.00	0.08	7%
Total	3.01	100	751.75	1.09	100

Source: Own calculations based on the IEA balances.



## Final Consumption by Sector

Reflecting the preponderance of biofuels in the energy matrix, during this period, the consumption of the residential sector totaled more than 51% of the final energy use in Nicaragua. About 93% of residential energy consumption was of biofuels. The transport sector, with 22% of the total and a consumption of only petroleum products, came in second place with 5.2 mbepdkboe/day, slightly above the industrial sector. This consumption totaled 5.1 mbepdkboe/day of which 62% were biofuels and 28% were petroleum products, which adds up to almost 22%.

Consumption by Sectors	Industry	Transport	Residential	Commercial	Others
Oil products	27.9%	100%	3.9%	89.9%	82.1%
Biocombustibles	61.8%	0.0%	92.7%	0.0%	3.0%
Electricity	10.3%	0.0%	3.4%	10.1%	15.1%
Total	100%	100%	100%	100%	100%

Source: Own calculations based on the IEA balances.



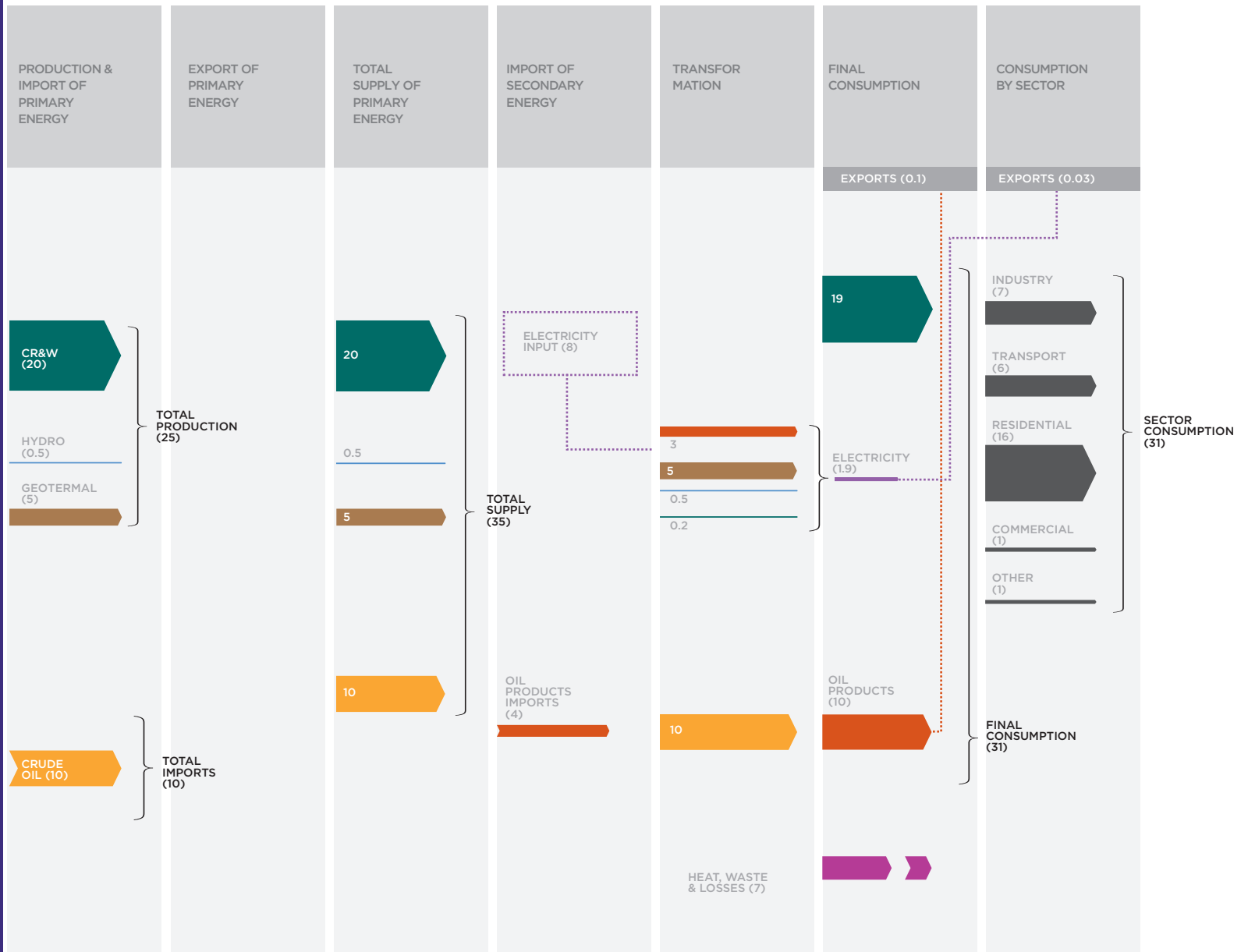
# 1984-1987

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During this period it is important to note the addition of geothermal energy to the matrix, exploited from the Momotombo field since 1983. In addition to this change, the matrix does not show important differences beyond the overall growth of energy consumption and biofuel energy use.

# Energy Flow 1984-1987

(kboe/day)



## Total Energy Consumption

Between 1974 and the period analyzed, total energy consumption grew 41% to reach slightly below 39 mbepdkboe/day. This growth can be explained by two main factors. The first is the rise in consumption of renewable fuels, which grew 32% in total, almost 20 mbepdkboe/day during this period – 51% of the total final consumption at the end of the eighties. These biofuels remained at a little less than 80% firewood, which is used primarily for cooking in rural areas. The second factor is the incorporation of geothermal energy, with almost 5 mbepdkboe/day and 12% of total consumption. Nicaragua has been exploiting geothermal resources since 1983 at the Momotombo field with two 35 MW capacity units installed in the north of Managua and on the shores of Lake Nicaragua.

The hydro generator park remained unchanged and thus hydraulic energy consumption remains at around 0.5 mbepdkboe/day, below 1%

of total consumption. The importation of crude oil and its refinement in Cuesta del Plomo did not register significant changes, remaining around 10 mbepdkboe/day and below 26% of the total consumption during this period. It is important to note the growth of almost 300% in the importation of petroleum products, which rose to 3.8 mbepdkboe/day and represented 10% of total consumption.

## Electricity

With the exploitation of geothermal resources, that source became the bulk of consumption for electricity generation with 4.61 mbepdkboe/day – 56% of the total. The liquid fuels fell to second place within the consumption of energy generation with 35% while hydraulic energy represented only 6%. However, of the 1,136.25 GWh of average yearly electricity consumed between 1984 and 1987, 46% was from petroleum, 26% from hydropower and 23% from geothermal. This drop in geothermal energy is explained by its low rate of power generation efficiency.

Source	Inputs (kboe/day)	%	Electricity consumption (GWh)	Electricity consumption (kboe/day)	%
Oil Products	2.93	35%	526.50	0.86	46%
Hydropower	0.52	6%	298.25	0.49	26%
Biocombustibles	0.22	3%	44.75	0.07	4%
Geothermal	4.61	56%	266.75	0.43	23%
Total	8.28	100	1,136.25	1.85	100

Source: Own calculations based on IEA balances.

## Final Consumption by Sector

Residential consumption increased its importance during this period to grow to 38% and represented 53% of total consumption. It continued to consume more than 90% of its energy in renewable fuels. The industry moved into second place with 21% of the total thanks to its consumption of 6.6 mbepdkboe/day made up of 60% biofuels and 32% petroleum products. Transport, only consuming petroleum products, fell to third place with 19% of the total and 5.9 mbepdkboe/day. Commercial and other sectors represented 7% of the total.

Consumption by Sectors	Industry	Transport	Residential	Commercial	Others
Oil Products	31.6%	100%	3.1%	69.1%	72.4%
Biocombustibles	59.8%	0.0%	92.4%	0.0%	3.0%
Electricity	8.6%	0.0%	4.5%	30.9%	24.4%
Total	100%	100%	100%	100%	100%

Source: Our calculations based on IEA balances.



# 1999-2002

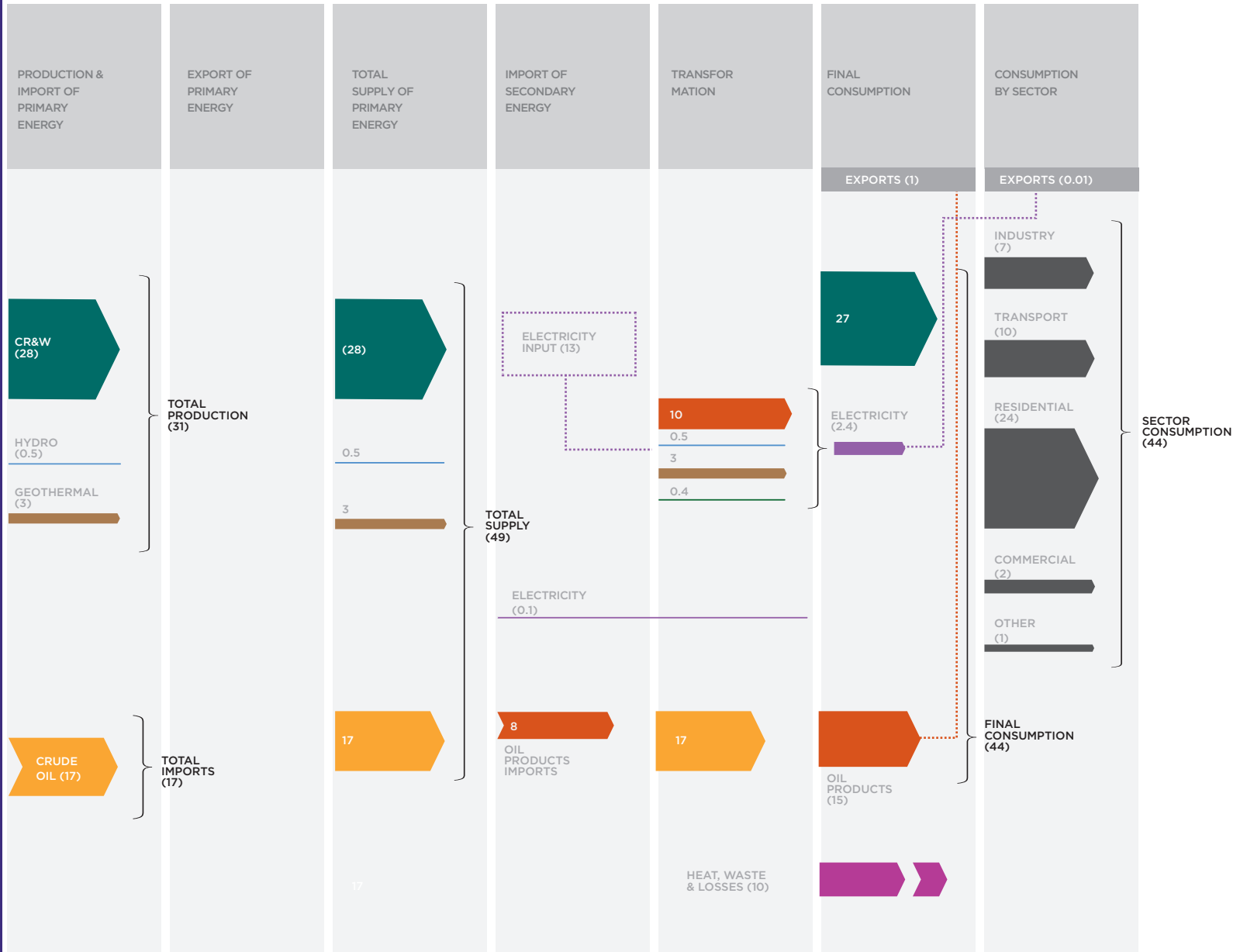
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By the early twenty-first century, the Nicaraguan matrix reflects few changes in historic patterns aside from a steep growth in the consumption of biofuels and crude oil imports.

# 1999-2002

## Energy Flow

(kboe/day)



## Total Energy Consumption

Driven by growth in crude oil and petroleum products imports, as well as increased energy use of renewable fuels and waste, the total consumption for this period continued its upward trend reaching 56 mbepdkboe/day, 45% above the total at the end of the eighties. Biofuels, still 80% composed of firewood consumption, remain in first place with 28 mbepdkboe/day, equivalent to 50% of the TEC.

Crude oil imports are still the second source of Nicaraguan consumption with 31% of the total. Crude oil imports increased 74% from the pervious period thanks to the expansion of capacity at the Cuesta del Plomo refinery, thus reaching 17.3 mbepdkboe/day. We should also note that imports of petroleum products at this time doubled to almost 8 mbepdkboe/day from the 4 mbepdkboe/day reported at the end of the previous period.

The [International Energy Agency](#) reported that consumption of geothermal energy in Nicaragua, despite the incorporation of the country's second center at San Jacinto-Tizate with two 5 MW turbines of installed capacity, fell to 2.8 mbepdkboe/day.

## Electricity

At the end of the decade, Nicaraguan dependence on liquid fuels for electricity generation increased significantly from 35% to 71% of consumption generated by electricity between the two periods, reaching almost 9 mbepdkboe/day of the 12.6 consumed for this purpose. It was followed by geothermal energy, which fell from 56% to 22%, while hydropower stood in third place with 4% of generated consumption. Liquid fuels were 80% of the 2,391 GWh of electricity consumed of the annual average during this periods. Geothermal was 7% and hydro-power 12% due to efficiency.

Source	Inputs (kboe/day)	%	Electricity consumption (GWh)	Electricity consumption (kboe/day)	%
Oil Products	8.95	71%	1,905.50	1.91	80%
Hydropower	0.48	4%	275.75	0.28	12%
Biocombustibles	0.40	3%	46.75	0.05	2%
Geothermal	2.81	22%	163.00	0.16	7%
Total	12.64	100	2,391.00	2.40	100

Source: Our calculations based on IEA balances.



## Final Consumption by Sector

Again the use of energy by the residential sector accounts for the majority of Nicaraguan consumption with 55% and 24 mbepdkboe/day of biofuels. Industrial use was once again overtaken by transportation consumption. The first totaled 7.3 mbepdkboe/day (17% of the total), 55% biofuels and 37% petroleum products. This represented a slight decline in the use of biofuels in favor of petroleum products. Meanwhile, transportation reached 9.7 mbepdkboe/day (22% of the total) and used only petroleum products from crude oil, which follows its particular historical pattern.

Consumption by Sectors	Industry	Transport	Residential	Commercial	Others
Oil products	36.6%	100%	2.7%	40.6%	75.5%
Biocombustibles	54.8%	0.0%	94.0%	14.8%	8.0%
Electricity	8.6%	0.0%	3.3%	44.6%	16.4%
Total	100%	100%	100%	100%	100%

Source: Our calculations based on IEA balances.



# 2005-2008

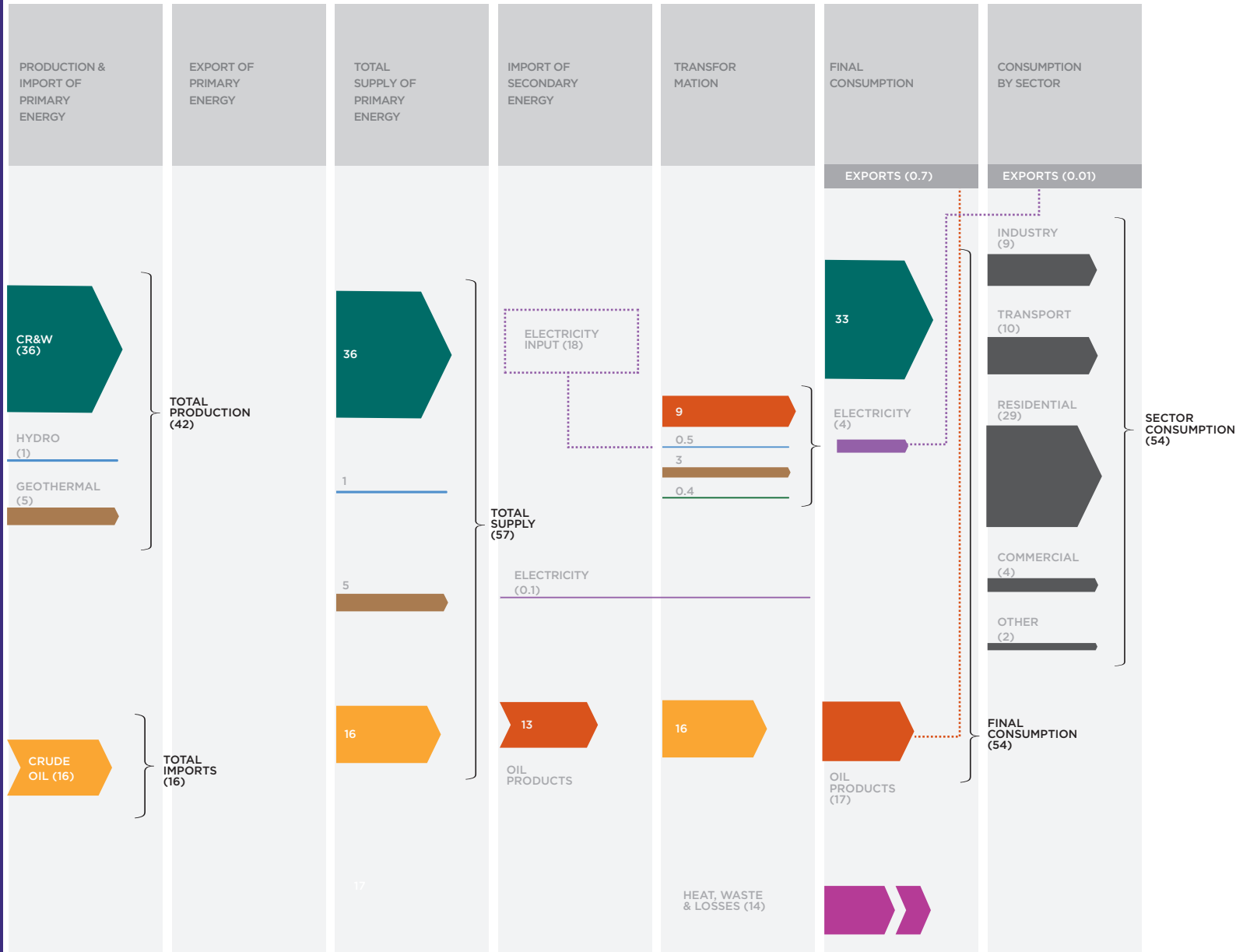
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While overall the Nicaraguan matrix has not undergone important structural changes, it has experienced remarkable growth in a short period between the two analyzed periods. This growth in consumption is due primarily to the rise in the use of imported petroleum products, the recovery of geothermal consumption and the continued growth of biofuel consumption.

# 2005-2008

## Energy Flow

(kboe/day)



## Total Energy Consumption

Unlike almost all the countries in the region, even by the year 2000, biofuels represented the majority of total energy consumption in Nicaragua, which indicates an enduring level of rurality in the country among other factors. This source is 51% of the TEC with almost 36 mbepdkboe/day for the period between 2005-2008. Biofuels follow crude oil imports with 22% of total consumption and 15.6 mbepdkboe/day - 10% below the previous total.

The decline in crude oil imports can be explained by the increased importation of petroleum products, which grew 72% to 13 mbepdkboe/day - 19% of the TEC. Consumption of geothermal power, thanks to two Nicaraguan centers, returned to the levels of the eighties and totaled 5 mbepdkboe/day, representing 7% of total consumption. Efficiency

improvements and better use of water resources, as well as the incorporation of small hydraulic centers like Wabule and Las Canoas into the matrix, boosted hydraulic energy consumption to 43%, making this source 1% of the TEC and 0.7 mbepdkboe/day.

## Electricity

When geothermal energy recovered, liquid fuel use fell from 75% to 57%, although it increased its contribution to generated consumption to 10 mbepdkboe/day. It was followed by geothermal energy with 28% of consumption generation and 4.95 mbepdkboe/day. For the first time, the contribution to consumption generated by biofuels (2 mbepdkboe/day, 11%) was higher than hydropower (0.7 mbepdkboe/day, 4%). This consumption generated 3,098.5 GWh, of which 70% came from liquid fuels, 13% from hydropower, 9% from geothermal and 8% from biofuels.

Source	Inputs (kboe/day)	%	Electricity consumption (GWh)	Electricity consumption (kboe/day)	%
Oil products	10.14	57%	2,160.50	2.51	70%
Hydropower	0.68	4%	395.25	0.46	13%
Biocombustibles	2.00	11%	256.00	0.30	8%
Geothermal	4.95	28%	286.75	0.33	9%
Total	17.78	100%	3,098.50	3.59	100%

Source: Own calculations based on IEA balances.

## Final Consumption by Sector

Consumption patterns between 2002 and 2008 were practically identical. Residential consumption grew 22% to total 29 mbepdkboe/day but was still 55% of final consumption, and 94% of the energy consumed came from biofuels. Transportation, nearly 10 mbepdkboe/day, fell from 22 to 19% of consumption by sector with a slight increase of 2%. Industry grew 23% to total almost 9 mbepdkboe/day and reduced its use of biofuels that fell to 51% from 55% as the use of liquid fuels rose from 36.6% to 38.1%. The commercial sector, 40% of liquids and 34% of electricity, increased its consumption significantly to total 3.7 mbepdkboe/day and thus represent 7% of final consumption. Transportation, nearly 10 mbepdkboe/day, dropped from 22 to 19% of consumption by sector with a small increase of 2%. The industry grew 23% to total nearly 9 mbepdkboe/day and reduced its use of biofuels, which dropped to 51% from 55% with a rise in the use of liquid fuels from 36.6% to 38.1%. The commercial sector, 40% liquids and 34% electricity, grew significantly to total 3.7 mbepdkboe/day and thus represent 7% of final consumption.

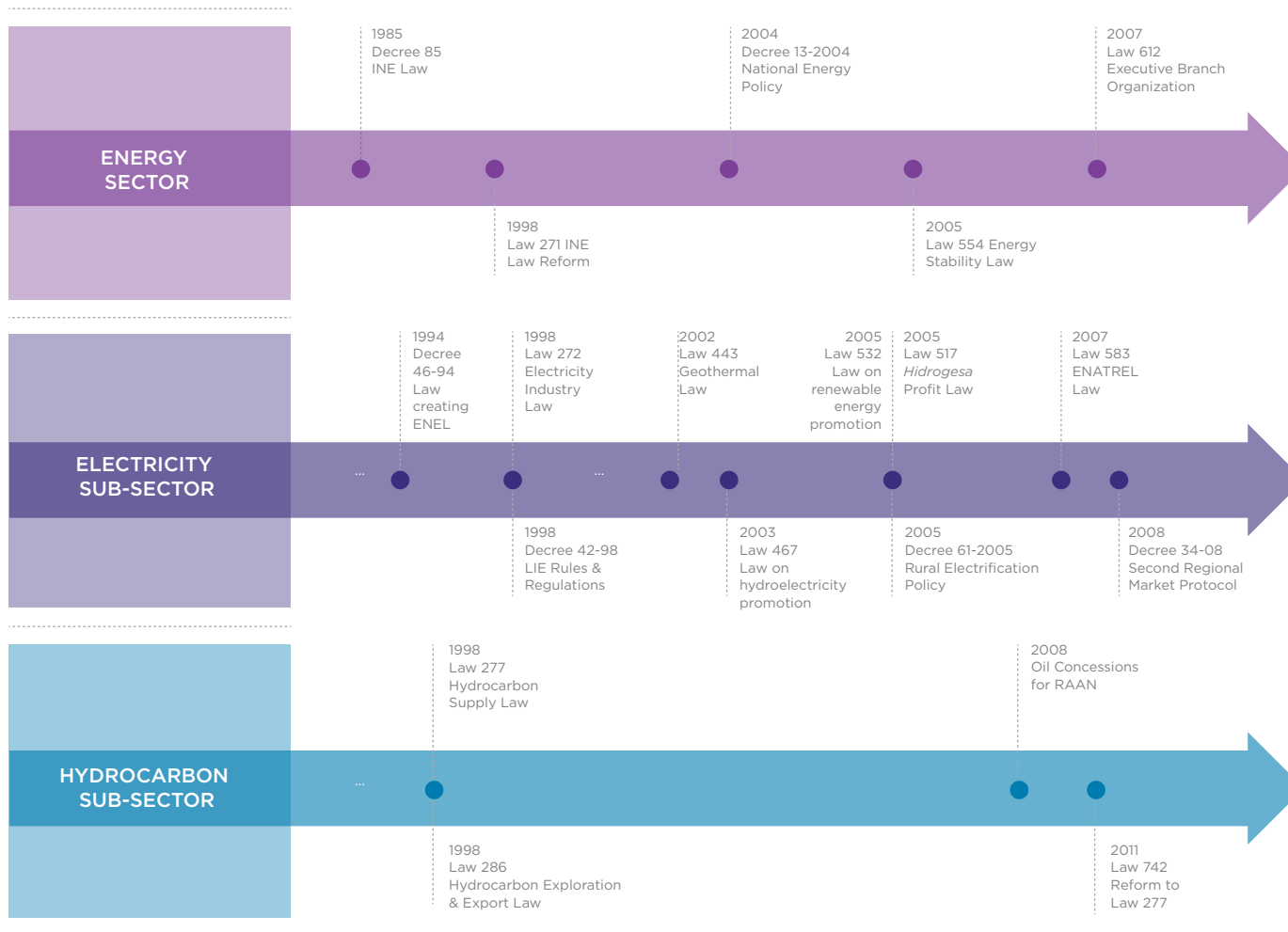
Consumption by Sectors	Industry	Transport	Residential	Commercial	Others
Oil products	38.1%	2.2%	0.0%	40.2%	69.9%
Biocombustibles	50.5%	93.8%	6.1%	25.8%	21.0%
Electricity	11.5%	3.9%	88.7%	34.0%	9.0%
Total	100%	100%	100%	100%	100%

Source: Own calculations based on IEA balances



# Institutional Evolution of the Energy Sector

# The evolution of the regulatory framework for the energy sector, the electricity subsector and the hydrocarbon subsector.



Source: Author's work

# Origin

The institutional evolution of the energy sector in Nicaragua has a long history of state presence that only began to play a smaller role in the mid-nineties. In the electricity subsector the state has had an almost monopoly like control since 1941. In the hydrocarbon subsector, the public sector has controlled all imports of crude and petroleum products since 1979 when it created<sup>1</sup> the public company Petronic.

The history of a state presence in the electricity subsector dates back to 1941 when the state-owned Nicaraguan Pacific Railroad bought the electric company Central American Power Corporation, which was owned by an American company. Later, in 1954, it created<sup>2</sup> the autonomous entity the National Electrical Company of Power and Light (ENALUF)<sup>3</sup> that was the first state company in Nicaragua dedicated exclusively to providing electric energy.

During the period of government of the Sandinista Revolution (1979 – 1990) the state-owned electricity company, called the National Energy Institute (INE)<sup>4</sup> since 1979, took total control of the energy sector. It took control in the electricity subsector by absorbing the assets of the few private companies that existed in the country.

<sup>1</sup> Decree No. 135. Reform Law of the Foreign Trade Ministry. Approved on October 31, 1979. Published in La Gaceta No. 48 on November 3, 1979

<sup>2</sup> Legislative decree No. 102. Constitutive act of the national light and power company. Approved on September 8, 1954. Published in La Gaceta No. 239 of 23 on October 23, 1954.

<sup>3</sup> The National Light and Power Company (ENALUF) was created with the assets of the Managua Light and Power Company. This company was created in 1953 to absorb assets related to the provision of electric energy controlled by the Nicaraguan Pacific Railroad company. By Executive Decree No. 16 Approved April 9, 1953. Published in La Gaceta 84 on April 14, 1953.

<sup>4</sup> Decree No. 16. Transformation of the National Light and Power Company in the Nicaraguan Energy Institute (INE). Approved July 23, 1979. Published in La Gaceta No. 2 on August 23, 1979.

In 1981 the INE assumed broad responsibilities in the hydrocarbon subsector when it was awarded managerial responsibility<sup>5</sup> for the public company Petronic, which had exclusive rights to import crude oil and petroleum products. A few months later they enacted the Organic Petronic Act<sup>6</sup>

Finally in 1985, by decree No. 87<sup>7</sup> which enacted the Organic INE Law, they were granted extensive responsibilities in all areas of the energy sector. As an example, one can review the third article<sup>8</sup> of the organic law which specifies that the INE should not only be the sole participant in the electricity, hydrocarbon and alternative source market, but that it should also create the policies and regulations for the sector.

Therefore, in 1990, the INE controlled all the activities of the electricity subsector and managed them exclusively, through Petronic, the import of crude and its products. However, the presence of the private sector is evident in the internal market for oil products

The crude imported by Petronic was sold to ESSO, which owned the only refinery in the country. Four private companies controlled the commercialization of final clients, and Petronic only participated mar-

<sup>5</sup> Decree No. 807. Assigned by the Nicaraguan Oil Company to the INE. Published in La Gaceta No. 201 on September 5, 1981.

<sup>6</sup> Decree No. 902. The Organic Law of the Nicaraguan Oil Company (Petronic). Published in La Gaceta Diario Oficial No. 286 on December 16, 1981

<sup>7</sup> Decree No. 87. The Organic Law of the Nicaraguan Energy Institute. Approved May 23, 1985. Published in La Gaceta No. 106 on June 6, 1985.

<sup>8</sup> Article 3 of the Organic Law of the INE: "The Institute is the governing body of national energy policy, thus, planning, organization, direction, management, exploration, exploitation, approval, control and use of energy resources, both domestic and imported, under the guidelines issued by the Government."

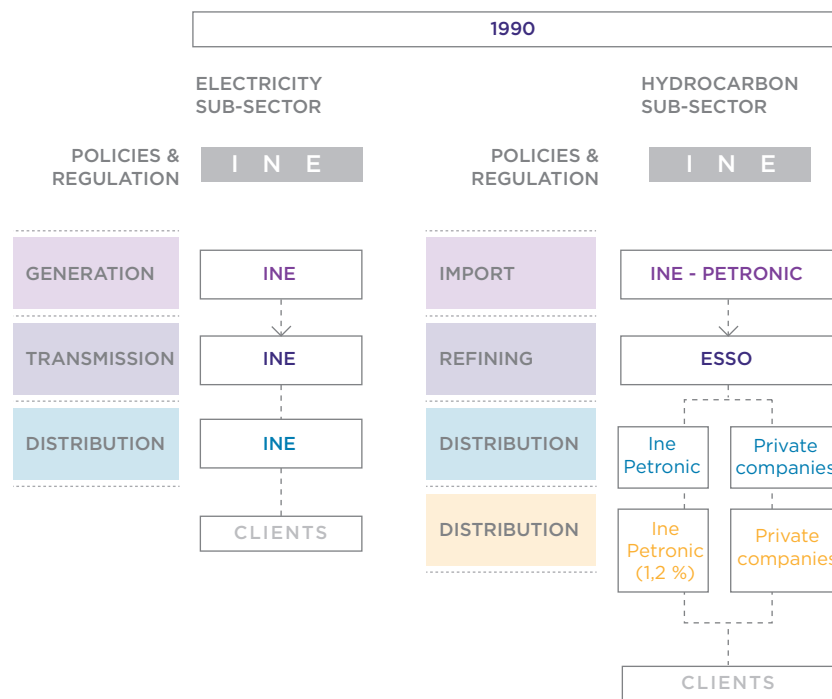


## Peacemaking and reforms

ginally. Market participation was distributed in the following manner: ESSO 65.5%, Shell 14.3%, Texaco 10.5%, Chevron 8.5% y Petronic.<sup>9</sup>

Therefore, as shown in figure 1, at the beginning of the 90s, almost the entire energy sector in Nicaragua was controlled by the INE.

Figure 1. Structure of the Energy Sector in Nicaragua, 1990.



Source: INE, MEM, ECLAC and legislation at the time.

<sup>9</sup> INE. Distribution of the oil derivatives market by company, 1990. [http://www.ine.gob.ni/DGH/estadisticas/serie\\_estadistica/Mercado90.pdf](http://www.ine.gob.ni/DGH/estadisticas/serie_estadistica/Mercado90.pdf)

In the presidential elections on February 25, 1990 Violeta Barrios de Chamorro is elected with 54.7% of the vote, beating Daniel Ortega, incumbent president and member of the Sandinista National Liberation Front (FSLN). On April 25th of the same year, she takes office in the first transfer of power by vote in the history of Nicaragua. Peacemaking, national reconciliation and the return to a market economy were all priorities for Violeta Chamorro during her campaign.

Her candidacy was supported by the National Opposition Union (UNO), which was a conglomeration of fourteen parties of various ideological trends among which they shared an opposition to the Sandinista government. The elections marked an important milestone in the peacemaking process in the country that, during almost a decade during the 80s, had suffered a period of armed conflict between the Sandinista government and armed opposition groups called “contras.”

Just like the political situation, the economic situation in the country at the beginning of the 90s was extremely difficult. During the 80s economic indicators were deteriorating rapidly. The country had suffered a process of hyperinflation since 1985, the GDP had fallen every year during the decade and external debt represented a monumental burden. In 1989 the GDP fell 2.3% (coming from a drop of 15% in 1998), prices rose 4.770% and debt represented 752% of GDP at current prices<sup>10</sup> The energy sector was not immune to the crisis facing the cou-

<sup>10</sup> World Bank. Report and recommendation of the president of the international development association to the executive directors on a proposed economic recovery credit of sdr 83.5 million (us\$110 million equivalent) to the republic of Nicaragua. September 3, 1991.

ntry; in 1992 the electricity shortage was between 10 and 15% of the demand and losses reached 24%.<sup>11</sup>

The new government sought assistance from multilateral agencies to deal with the complex economic situation. Programs designed by the [World Bank](#) and the [Inter-American Development Bank \(IDB\)](#) included, among other priority areas, energy sector reforms. The multilateral organizations proposed, among other things, an increase in the participation of the private sector, the restructuring of the INE and the creation of a regulatory agency.

The Chamorro government, seeking to fulfill the promised reforms, modified the Organic [INE](#) Law in 1992. Decree No. 25-92<sup>12</sup> eliminated the exclusive role of the [INE](#) in the electricity market and the importation of oil, allowed the granting of permits and concessions to other companies and authorized the contracting of private companies. This reform permitted the entry of private capital in the electricity subsector and the importation of oil opened the way for the creation of new public companies and enabled the future transformation of the [INE](#) from an omnipotent public organization to a regulatory agency in the energy sector.

Two years later, in 1994, Decree Law No. 46-94<sup>13</sup> was signed, which created the [Nicaraguan Electricity Company \(ENEL\)](#). Among the objectives of the new company were generating, transmitting, distributing and commercializing electric energy, the coordination of the National Dispatch Center and the operation of the National Interconnected Sys-

tem. Consequently, in order to perform their duties, all the assets of the [INE](#) that relate to those activities are transferred to them. The [INE](#) in practice, after transferring all its electric energy assets, remains with only the policy and regulation responsibility granted by the 1985 law.

In late 1994, there were also substantial changes in the hydrocarbon subsector. In December of the fourth year of her government, Violeta Chamorro enacted decree No. 56-94<sup>14</sup> which regulated the importation and commercialization of hydrocarbons. This measure established the figure for import licenses that could be granted by the [INE](#) or by any natural or judicial entity that met certain requirements. Additionally, it established a system for price regulation<sup>15</sup> for gasoline, diesel, kerosene and liquefied petroleum gas (GLP), freeing prices from all the other petroleum products.

The following year, in June of 1995, the Organic [INE](#) Law was reformed again via decree No. 30-95<sup>16</sup>. This reform modified its function again, consolidating the new institutional architecture of the energy sector. Policy-making responsibilities were eliminated this time: the operational activities related to the electricity market and the control of Petronic. [INE](#) functions, as a result of this transformation, delimited only regulatory activities in both branches of the energy sector.

Decree 30-95 formalized the transformation that the [INE](#) suffered de facto in 1994 when it transferred its assets to the [ENEL](#). Furthermore, it transferred its powers to design policies to the Ministry of Commer-

11 World Bank. Nicaragua - Public sector expenditure review (Vol. 2 of 3) : Main report. September 11, 1992.

12 Decree No. 25-92. Reform of the organic law of the Nicaraguan Energy Institute. Approved April 6, 1992. Published in La Gaceta 80, April 28, 1992.

13 Decree Law No. 46-94. Creation of the Nicaraguan Electricity Company (ENEL). Approved on October 28, 1994. Publish in La Gaceta No. 204 on November 1, 1994.

14 Decree No. 15-94. Regulations for the importation and commercialization of hydrocarbons. Published in La Gaceta No. 240 on December 22, 1994

15 The concept of the Maximum Consumer Price is created.

16 Decree No. 30-95 on June 14, 1995. Reform of the organic law of the Nicaraguan Energy Institute (INE). Published in La Gaceta No. 118 on June 26, 1995

ce and Transport that was created<sup>17</sup> in 1990. It also turned over all regulatory activities and the granting of permits related to the exploration and exploitation of hydrocarbons to the Ministry of Economy and Development.

The same day that the Organic INE Law was reformed, decree No. 26-95<sup>18</sup> that reformed the Organic Petronic Law of 1981 was signed. The public company established by this reform is an autonomous company with commercial purposes. The reform eliminates the references made about its connection to the INE.

Thus, by the end of Violeta Chamorro's government, the INE became a regulatory institution for the whole energy sector (except in relation to the exploration and exploitation of hydrocarbons). The electricity subsector was formed by the ENEL as the only public electricity company managing the integrated vertical monopoly and the Ministry of Construction and Transportation (MCT) as the responsible organization for policy design.

Private companies maintained an important presence in the hydrocarbon subsector in the internal market for oil derivatives, although the progress of Petronic showed that its participation in this market moved from 1.9% in 1990 to 27.7% in 1996.<sup>19</sup> On the other hand, Petronic reduced its control over hydrocarbon importation.

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<sup>17</sup> Decree No. 1-90 on April 25, 1990. Decree of law establishing the ministries of state. Published in La Gaceta No. 87 on May 8, 1990. .

<sup>18</sup> Decreto No. 26-95. Aprobado el 14 de Junio de 1995. Reforma a la Ley Orgánica de la Empresa Nicaragüense del Petróleo (PETRONIC). Publicado en La Gaceta No. 118 del 26 de Junio de 1995.

<sup>19</sup> INE. Market distribution of oil derivatives by company, 1990, 1996. [http://www.ine.gob.ni/DGH/estadisticas/serie\\_estadistica/Mercado90.pdf](http://www.ine.gob.ni/DGH/estadisticas/serie_estadistica/Mercado90.pdf)

## Further liberalization

Violeta Chamorro's successor in the presidency was Arnoldo Alemán. The new president was elected in the presidential elections of October 20, 1996 and represented the "Liberal Alliance," a coalition of parties<sup>20</sup> of liberal ideology that had formed part of the UNO. The public policies of the new government sought to consolidate the political peace process and the further liberalization of the economy.

During the government of Arnoldo Alemán, policy reforms were made that were fundamental in creating the new architecture of the energy sector. The regulatory bodies approved during this government sought to fill legal loopholes that existed as a result of a broken legal framework. Therefore, the four major laws passed between 1997 and 1998 were the framework for the whole energy sector.

One of the central laws of the reforms made by the government of Arnoldo Alemán was law No. 271 which reformed the organic INE law. This law repealed decree 30-95 of Violeta Chamorro's government. But, like that decree, it delimited the functions of the INE exclusively to regulatory activities. The main contribution of law No. 271 was that it specified in detail the regulatory functions of the institute in each of the subsectors of the energy sector.

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<sup>20</sup> The parties that formed part of the coalition were: The Constitutionalist Liberal Party (PLC), the Neoliberal Party (PALI), the Independent Liberal Party for National Unity (PLIUN) and the Nationalist Liberal Party (PLN).

Alongside the reform of the INE, there was specific legislation for the two parts of the energy sector. The hydrocarbon sector enacted the 1997 law No. 277<sup>21</sup> called the Hydrocarbon Supply Law and the 1998 law No. 286<sup>22</sup> called the Special Exploration and Exploitation of Hydrocarbons Law. For its part, the electricity subsector passed, in March of 1998, law No. 272<sup>23</sup> called the Electricity Industry Law (LIE).

The institutional structure proposed in the new legislation established the CNE as the body in charge of designing policies and the INE as the regulatory body. Like the other legislative initiatives of the time, law No. 286 allowed private sector participation. However, by constitutional provision, it maintained state ownership of hydrocarbons found in the country.

## New legal framework for the hydrocarbon subsector

Law N° 277 was the first of four legal measures (relating to the energy sector) approved by the Arnaldo Alemán government. It designed a new institutional structure in which the National Energy Commission (CNE)<sup>24</sup> deals with policy design and the INE dedicates itself to regulating the internal oil derivatives market. With regard

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21 Law No. 277. Approved on November 26, 1997. Law of hydrocarbon supply. Published in La Gaceta No. 25 on February 6, 1998. .

22 LLaw No. 286. Approved on March 18, 1998. Special law for the exploration and exploitation of hydrocarbons. Published in La Gaceta No. 109 on June 12, 1998.

23 Law No. 272. Approved on March 18, 1998. Electricity industry law. Published in La Gaceta No. 74 on April 23, 1998

24 Body of Executive Power established subsequently in law No. 272.

to regulation, it describes more accurately the regulatory functions and rules of the INE related to that market. For example, it organizes, according to the regulations<sup>25</sup>, the participation of private actors in hydrocarbon market activities through a system of licenses issued by the INE.

The law of hydrocarbon supply and its regulation laid the foundation for the operation of a derivatives market with limited state intervention. In fact, it only stipulated price intervention in emergencies. However, both measures maintained the provisions of decree 56-94 about the power of the INE to set the maximum sale prices of certain products. Therefore, in practice, the INE continued to set prices for the four regulated products<sup>26</sup>.

The law passed after No. 277, which regulated the downstream activities of the hydrocarbon industry, was law No. 286, which was designed to regulate upstream operations. Law No. 286 established a new legal framework for the exploration and exploitation of oil in Nicaraguan territory, replacing laws that dated back to 1958.

The institutional structure proposed in the new legislation established the CNE as the body in charge of designing policies and the INE as the regulatory body. Like the other legislative initiatives of the time, law No. 286 allowed private sector participation. However, by constitutional provision, it maintained state ownership of hydrocarbons found in the country.

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25 Executive Order No. 38-98. Approved on May 6, 1998. Regulation of hydrocarbon supply. Published in La Gaceta No. 97 on May 27, 1998.

26 The four products regulated according to decree 56-94 were: gas, diesel, kerosene and liquefied petroleum gas.

## New legal framework for the electricity subsector

The electricity subsector also produced important reforms. In 1998 law No. 272, called the Electricity Industry Law (LIE), was enacted. This law established the regulatory framework for the entire electricity subsector and replaced all previous legislation that had been in place since 1957.

Among the important contributions of LIE are:

- The creation of the **National Energy Commission (CNE)**. This organization, assigned to executive power, would be dedicated to the design of policies for the sector. The CNE replaced the Ministry of Commerce and Transportation.
  - To support the regulatory function of the INE.
  - To allow the full participation of the private sector in generation and distribution.
  - To establish state ownership of the Transmission Company.
  - To prohibit the vertical integration of market players. With the exception of companies participating in isolated systems.
  - Established the **National Dispatch Center (CNDC)** as the entity responsible for coordinating the electricity market. This entity should be attached to the state transmission company.
  - Created the figure of licenses for the generation and concessions of distribution. Both for terms of up to 30 years.
- Established two pricing systems:
    - The Free Pricing System: For transactions between generators, co-generators, auto-producers, distributors, big consumers, traders, imports and exports.
    - The Regulated Pricing System: For sales to final consumers and for the transport of energy in systems of transmission and distribution
  - Assign the responsibility for determining regulated prices to the INE.
  - Waived all taxes and levies on the importation of equipment for the supply system for electric energy to the public for three years.
  - Waived the levies on fuel for generation indefinitely.
  - Orders the division of the ENEL into several companies in accordance with restrictions on vertical integration.

With the enactment of LIE, the government of Arnaldo Alemán sought to develop a competitive electricity market with the full participation of private companies but without vertical integration. With this objective LIE ordered the division of the ENEL into several companies for resale according to its areas of service. These provisions made way for the process of privatization of the main state company in the sector.

## Division and privatization of ENEL

In March of 1999 the Nicaraguan president signed Presidential Agreement No 16-99<sup>27</sup> that formalized the process of dividing the ENEL. In this document, president Alemán authorized the formation of seven companies that should absorb the assets of the state company. Authorized authorities should create four generation companies, two distribution companies and one transmission company.

To handle the division of the state company, in 1997 the Restructuring Body of the ENEL was created, a body that was formalized in 1998 by a presidential decree<sup>28</sup>. This body counted with financial support from the Inter-American Development Bank and FOMIN under the project “Nicaragua: aid to restructure the ENEL and incorporate the private sector,” signed in 1998.

The seven companies founded in 1999 were Hidrogesa (Hydroelectric Generator S.A.), GEOSA (Western Electricity Generator S.A.), GECSA (Central Electricity Generator S.A.) y GEMOSA (Momotombo Geothermal Generator Company S.A.), two distribution companies, DISNORTE (Electricity Distributor of the North S.A.) and DISSUR (Electricity Distributor of the South S.A.) and a transmission company (ENTRESA).<sup>29</sup>

The process of privatizing the new companies (with the exception of the transmission company) was regulated by decree No. 128-99<sup>30</sup>. This decree established that bids would be made for 95% of the shares of the companies, and that the 5% remaining would be sold to ENEL workers. The companies included in the process of privatization that began in 1999 were GEOSA, GECSA, Hidrogesa, DISNORTE and DISSUR.

The first companies sold in the bidding process were DISNORTE and DISSUR. They were bought by Unión Fenosa from Spain in 2000, giving one company all the electricity distribution assets. Two years later, under the government that followed Alemán, the North American group Coastal Power International IV, Ltd (a subsidiary of El Paso Corporation) bought<sup>31</sup> the generation company GEOSA. Bids for the sale of Hidrogesa and GECSA were unsuccessful. Meanwhile, GEMOSA assets were not sold, but instead were awarded in a 15-year operation contract to a private company called Ormat.

Efforts to liberalize the electricity subsector during the decade of the 90s proved to be successful in promoting private investment in generation. During the Arnaldo Alemán government, the installed capacity of private thermal generation grew more than six times, passing from 36 Mw in 1997 to 221 Mw in 2001.<sup>32</sup>

27 Presidential Resolution No.116-99. Approved on March 25, 1999. Presidential agreement as a product of the division of the Nicaraguan Electricity Company. (ENEL). Published in La Gaceta No. 67 on April 13, 1999.

28 Decree No. 53-98. Approved on August 6, 1998. Ratification of the creation of the restructuring unit ENEL-URE. Published in La Gaceta No. 150, on August 12, 1998.

29 Dussan, Manuel. Nicaragua: Policy options for reforming the electricity sector. January 2004.

30 Decree No. 128-99. Approved on December 14, 1999. Reform to decree No.42-98, regulation of electricity industry law. Published in La Gaceta No. 240 on December 16, 1999.

31 Presidential Resolution No. 198-2002. Approved on April 19, 2002. Authorization to enter into the share purchase agreement and the asset contribution agreement to be signed on the occasion of the sale of 95% shares of the capital endorsed by the Western Electricity Generator S.A (GEOSA). Published in La Gaceta No. 73 on April 22, 2002.

32 Cepal. Central American Isthmus: Statistics for the Electricity Subsector, 2001 and 1999.

## Hydroelectric generation in conflict

The vice president during the government of Arnoldo Alemán, Enrique Bolaños, was the president elect in the November 2001 elections. The new president, who formed part of the Constitutionalist Liberal Party (PCL), kept the line of the previous government regarding the promotion of a market economy.

The government of Bolaños continued the process of privatizing electricity companies. The privatization of GEOSA, which was carried out under his mandate, unified the bids for GECSA and Hidrogesa carried out on April 18, 2002. Hidrogesa received three bids while the GECSA bid was declared void.

The Committee for the Privatization of ENEL,<sup>33</sup> which was in charge of the bidding process, awarded the bid to Coastal Power International IV, Ltd. One of the competitors in the bidding process, Enron, challenged the award before the authorities. This dispute led to a discussion in public opinion about the benefits of privatizing companies that use water resources.

The National Assembly, due to a growing backlash against the privatization of Hidrogesa, enacted Law No. 440<sup>34</sup> the Law Suspending the Concession of Use of Water, in August 2003. This law expressly avoided privatizing Hidrogesa by suspending all concessions for the use of water sources. President Bolaños vetoed the enactment of the law, but his attempt to save privatization was not successful.

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<sup>33</sup> Decree No. 88-99. Approved on August 18, 1999. Amend the creation of the committee for privatizing the Nicaraguan Electricity Company (ENEL). Published in La Gaceta No.163 on August 26, 1999.

<sup>34</sup> Law No. 440. Approved on June 9, 2003. Law of the suspension of concessions for the use of water. Published in La Gaceta 150 on August 11, 2003.

The following year, in July 2004, the legislature strengthened the restrictions for the privatization of Hidrogesa by enacting Law No. 494<sup>35</sup> that reformed the LIE. This new legal measure modified the legal configuration of Hidrogesa, turning it into a state company for public service attached to the ENEL. This reform permanently prevents its privatization.

## Energy prices and emergency measures

Since the inauguration of the Bolaños government oil prices have demonstrated continued growth. In 2005 the impact of this growth was seen in both transportation fuels and electricity rates. Therefore the government began a process of emergency actions to cushion the impact of rising oil prices on the population.

Thus, in November 2005, Law No. 554<sup>36</sup> titled the law of Energy Stability, was enacted. This law declared a national energy crisis as long as oil prices (WTI) remain above fifty dollars a barrel or electricity generation comes from more than 50% fossil fuels. .

Consequently, the law took measures in the hydrocarbon market, in the electricity subsector and in the transportation sector. For example, in the hydrocarbon subsector it established a review of profit margins for companies participating in the fuel market.

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<sup>35</sup> Law No. 494. Approved on June 1, 2004. Law on amendments and additions to article 135 of law No. 272 "Law of the Electricity Industry." Published in La Gaceta No.243 on December 15, 2004

<sup>36</sup> Law No. 554. Approved on November 3, 2005. Law of energy stability. Published in La Gaceta No. 224 on November 18, 2005.

The electricity subsector measures included: tariff exemption for those derivatives used in generation, created a subsidy for final consumers with demands less than 150 kWh monthly, established price controls in the secondary market, regulated the amount of energy that distributors had to buy and canceled any remaining debts that distributors had with state generators (so that distribution companies would pass this state transfer on to final consumers).

The Law of Energy Stability became a key measure in the policies of the energy sector. Caused by the arrival of the crisis of oil prices, this law allowed timely interventions in energy products markets. The law continues to be in force because the conditions that caused the enactment of the law have not changed significantly. In fact, in September of 2012<sup>37</sup> a version of the law was published that consolidated all the reforms undergone since its enactment in 2005.

Additionally, the same year (2005) that Law No. 532 was enacted for the Promotion of Renewable Sources for the generation of electric energy, policies were designed for rural electrification, and it was established that a certain percentage of the earnings from ENEL-Hidrogesa should go to a fund that would be used for the development of the country.

In late 2006, during the last months of the presidency of Enrique Bolaños, the law<sup>38</sup> for the creation of the National Electricity Transmission Company (ENATREL) was passed. This public company would handle all transmission assets managed by the government since the division

of ENEL. Among its primary functions are the management of the national electricity market.

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During 2006 it became clear that the electricity sector was going through a crisis. On the one hand, there was a deficit in generation that produced recurring interruptions in electric service, and on the other, there was a lack of liquidity in the participants in the sector.

As it is explained in MEM documents, the generation gap occurred for several reasons, among which are: the insufficient growth of installed generation capacity, which grew only 14.2% during the 2002-06 period; the presence of periods of unavailability of larger generation plants; and a poor winter that affected the hydraulic generation capacity, among other reasons.

The lack of liquidity in the sector was caused by the high rate of technical losses, which were not transferred efficiently into rates. Therefore, the cost of providing electricity is not reflected in the prices, which gradually generates losses for all industry participants. Distribution companies were especially vulnerable to tariff lags, which created growing debt with generation companies.

<sup>37</sup> Law No. 554, Law of Energy Stability. Published in La Gaceta No. 175, on September 13, 2012

<sup>38</sup> Law No. 583. Approved on November 16, 2006. Law created by the national electricity transmission company. Published in La Gaceta No. 04 on January 5, 2007.



In the context of the electricity crisis, tensions began to arise between the government and the Unión Fenosa, the main shareholder of distribution companies. The conflict between Unión Fenosa and the Nicaraguan state, which grew over the next few years, ended with the departure of the Spanish company from the Nicaraguan market in 2013.

## Return of the FSLN to government

The Sandinista National Liberation Front party (FSLN), after spending 16 years in the opposition, returned to power thanks to the victory of Daniel Ortega in the 2006 presidential elections. The new president was elected with 38% of the vote in an election where the two main liberal parties each presented presidential candidates.

Daniel Ortega's running mate for vice president was Jaime Morales Carrazo, a former banker and a PLC party dissident. Ortega's campaign was characterized by his proposal for public policies focused mainly on the fight against poverty. In terms of energy policy, the new administration should have prioritized the resolution of the acute power crisis that had been intensifying since mid 2006.

Seeking greater control over energy sector policies, the new government created the Ministry of Energy and Mines by Law No. 290<sup>39</sup> in January 2007. The new executive body replaced the CNE in the development of energy policies. Additionally, they assigned public companies to the sector ([ENEL](#), ENATREL and [Petronic](#)).

<sup>39</sup> Law No. 612. Approved on January 24, 2007. Law of reform and addition to law No. 290, law of organization, competence and executive procedures. Published in La Gaceta No. 20 on January 29, 2007.

The MEM, using its new powers, presented the "Strategic Plan for the Nicaraguan Energy Sector"<sup>40</sup> in 2007, a plan which established the priority to attack problems in the sector using short, medium and long term measures. The short-term priorities were the reduction of the generation deficit and the containment of liquidity problems. The medium and long-term priorities include the reduction of system losses and the diversification of the generation matrix.

The implementation of the short-term strategy was formalized by Law No. 627<sup>41</sup> which amended the Energy Stability Law again. In this modification, in which some articles sought to increase the availability of energy, MEM was ordered to make efforts to increase the installed generation capacity by at least 120 MW. Additionally, it authorized [Disnorte and Dissur](#) to install generation plants with renewable sources for up to 20% of the total demand. Finally, it authorized ENATREL to import energy from the regional electricity market.

Law No. 627 also addressed the sector's liquidity problem. This law, although not adjusted to tariffs, was designed as a mechanism to compensate Disnorte and Dissur for the gap that existed between the prices paid for energy wholesale and the tariffs for the final consumer.

<sup>40</sup> Ministry of Energy and Mines. "Strategic Plan for the Nicaraguan Energy Sector." Presentation. July 2007.

<sup>41</sup> Law No. 627. Approved on June 28, 2007. Law of reforms and additions to law No. 554, "law of energy stability." Published in La Gaceta No. 132 on July 12, 2007.

## The Petrocaribe Agreement

Fulfilling the goal of the mandate of Law No. 627 on increased capacity generation in thermal plants, was possible thanks to the participation of the Nicaraguan Petrocaribe Agreement.<sup>42</sup> This initiative, promoted by the Venezuelan government, is an energy cooperation agreement that allows the purchase of crude oil and its derivatives by participating countries under financially favorable conditions.<sup>43</sup>

The Petrocaribe agreement stipulates that member countries receive Venezuelan oil and/or its derivatives at international prices but pay (depending on the price of crude) between 95% and 50% of the bill in 90 days. The amount not immediately canceled is financed at interest rates of 1% for 25 years with a 2-year grace period.<sup>44</sup> The agreement stipulates that the amount financed should be used for investment in productive projects.

In this regard, the Nicaraguan Government created the private company Alba de Nicaragua S.A. (Albanisa) to manage the Petrocaribe agreement. This company, whose partners are [Petronic](#) and [PDV Caribe](#) on behalf of the Venezuelan oil company, was responsible for enforcing the mandate of the July 2007 reform. Consequently, the installation of thermal plants began.

The first plant to join the efforts of Albanisa was a diesel plant called Hugo Chávez. This plant began operations on July 2007, and had an installed capacity of 60 MW.<sup>45</sup> In the following years, nine generation plants that use fuel oil joined. In 2012, the installed capacity accumulated in the Albanisa plants reached 291 MW, which represented 25.4% of the installed capacity of the whole country.<sup>46</sup> The growth of installed capacity generation during the period of 2007-12 was 347 MW. The Albanisa plants accounted for 83.7% of this added capacity.

According to the [MEM](#) management report for the period,<sup>47</sup> since May 2008 the volume of crude and derivatives imported to Nicaragua under Petrocaribe amounted to 27,000 barrels daily, which in 2011 represented almost 90% of the oil imports in the country. The total CIF value of those imports represents a bill of 1.133 million dollars, approximately 12% of the PIB.<sup>48</sup>

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42 Decree A.N. No. 5117. Approved on March 27, 2007. Decree approving the Petrocaribe Energy Cooperation Accord, between the government of the Nicaraguan Republic and the government of the Bolivarian Republic of Venezuela. Published in La Gaceta No. 67 on April 11, 2007.

43 No details are known about the agreement signed between PDVSA and the government of Nicaragua.

44 [http://www.pdvsa.com/index.php?tpl=interface.sp/design/biblioteca/readdoc.tpl.html&newsid\\_obj\\_id=1349&newsid\\_temas=111](http://www.pdvsa.com/index.php?tpl=interface.sp/design/biblioteca/readdoc.tpl.html&newsid_obj_id=1349&newsid_temas=111)

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45 By 2012 this plant only functioned as a backup plant and therefore has no power contract with distributors.

46 National Energy Institute. Statistical data from the electricity subsector.

47 Ministry of Energy and Mines, Assessment Report of good governance 2007-2012. 2013.

48 Ministry of Energy and Mines. CIF value of oil imports by country of origin 1998-2011.

## The agreement with Unión Fenosa and its implications

Resolving the conflict between the government and Unión Fenosa was one of the most important actions in order to overcome the electricity crisis. As a result, the government created<sup>49</sup> a commission dedicated to negotiating with the Spanish company. Thus, in June 2007, there was a meeting in Madrid between government representatives and Unión Fenosa to reach an agreement or “protocol of understanding” in which both parties would commit to a series of actions to resolve the existing conflict.

At that meeting, the parties reached a partial agreement that was completed at a subsequent meeting held in August of the same year. President Ortega signed the “protocol of understanding” in June 2008<sup>50</sup>, and it was ratified by congress in February 2009<sup>51</sup>. Among the measures that were agreed upon are:

- The adoption of firm measures on the part of the government to punish electricity fraud, including the enactment of a law on the subject;

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49 Decree No. 70-2007. Approved on July 16, 2007 the creation of the “Interagency Commission for negotiation with Unión Fenosa International.” Published in La Gaceta No. 138 on July 23, 2007.

50 Decree No. 29-2008. Approved June 13, 2008. Approval of the protocol of understanding between northern electricity distribution companies, s.a. (Disnorte), the southern electricity distributor, s.a. (Disur), the group Unión Fenosa International s.a., and the government of the republic of Nicaragua, signed on May 29, 2008 in the city of Managua, Nicaragua.

51 Decree A.N. No. 5557. Approved on February 12, 2009. Decree approving the “protocol of understanding between the northern electricity distribution companies, s.a. (disnorte), the southern electricity distributor, s.a. (disur), the group Unión Fenosa International s.a., and the government of the republic of Nicaragua.” Published in Las Gacetas Nos. 49, 50 and 51 on March 12th, 13th and 16th 2009.

- The commitment by the company to invest 33.7 million dollars to improve distribution service;
- The adoption of a pricing system that reflects the real cost of energy and electricity distribution;
- The conversion of debt that distributors had with public generation companies into social capital;
- The creation of a team of experts from Unión Fenosa that work together with experts from the [ENEL](#) to technically assess the generation companies;
- The suspension of all legal actions that have been initiated against the other party.

This agreement involved, from the regulatory point of view, the enactment of a series of legal measures that were important for the future development of the energy sector. Fulfilling the commitment to establish a legal framework related to electricity fraud, Law No. 661<sup>52</sup> titled “Law for the distribution and responsible use of public electric energy service,” was enacted in July 2008. This law established penalties and sanctions for distributor sand clients on issues related to the provision and sale of electricity.

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52 Law No. 661. Approved June 12, 2008. Law for the distribution and responsible use of the public service of electric energy. Published in La Gaceta No. 143 on June 28, 2008.

The government also promoted the adoption of legal measures to adapt the pricing system. In 2009 it enacted a legal measure<sup>53</sup> that modified the Electricity Industry Law and the Energy Stability Law. This reform included articles that allowed annual and monthly modification of the tariff structure. Modifications were also made to the structure of subsidies for the electricity consumer.

Unión Fenosa, for its part, on behalf of the government, capitalized the debt it had with state generation companies. Thus, the Nicaraguan government took control of 16% of the social capital of the two distribution companies, [Disnorte and Dissur](#).

Despite this agreement, the tension between the government and the Spanish company remained. This tension lasted until February 2013 when Unión Fenosa sold its stake in the distribution companies of the group TSK-Melfosur International. According to the directors of the selling company, the operation was performed for 57.8 million dollars, considerably lower than the 115 million dollars paid for [Disnorte and Dissur](#) in 2000.

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<sup>53</sup> Law of reforms and amendments No. 272, "Electricity Industry Law" and law No. 554, "Energy Stability Law." Approved on June 30, 2010. Published in La Gaceta No. 91 on May 19, 2009.



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NICARAGUA

