
Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS
REPUBLICA DE NICARAGUA AMERICA CENTRAL
GEOTHERMAL DEVELOPMENT IN NICARAGUA
POLICIES AND LEGAL-REGULATORY FRAMEWORK
Dr. María Eugenia Meza
Eng. José Francisco Ruiz Cordero
Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
2013:
BENDECIDOS, PROSPERADOS Y EN VICTORIAS!
PODER CIUDADANO
CRISTIANA, SOCIALISTA, SOLIDARIA!
BUEN GOBIERNO!

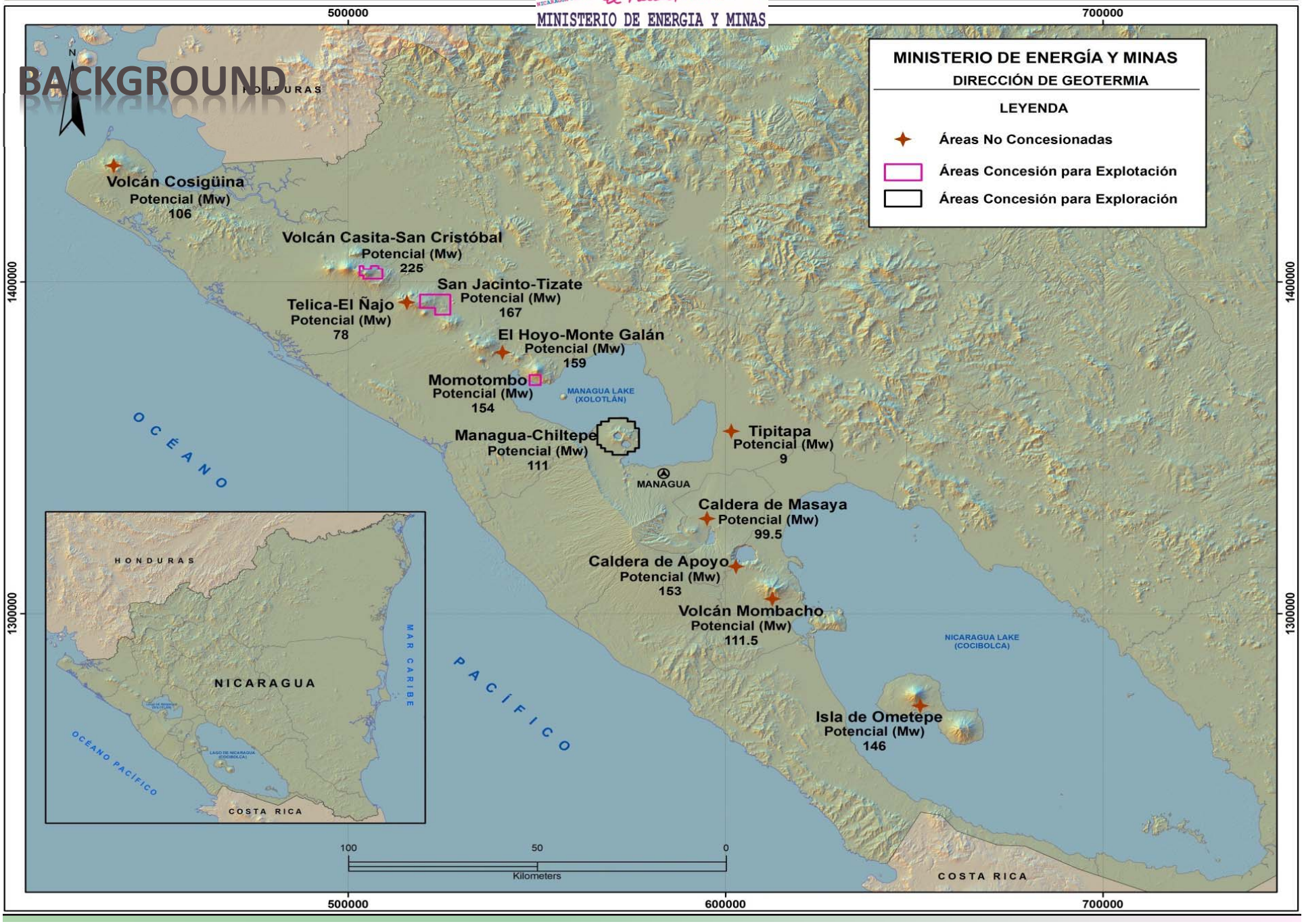
Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

CONTENTS

MAPA POTENCIAL GEOTÉRMIC[illegible]AESTRO DE NICARAGUA, 2001.

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

BACKGROUND

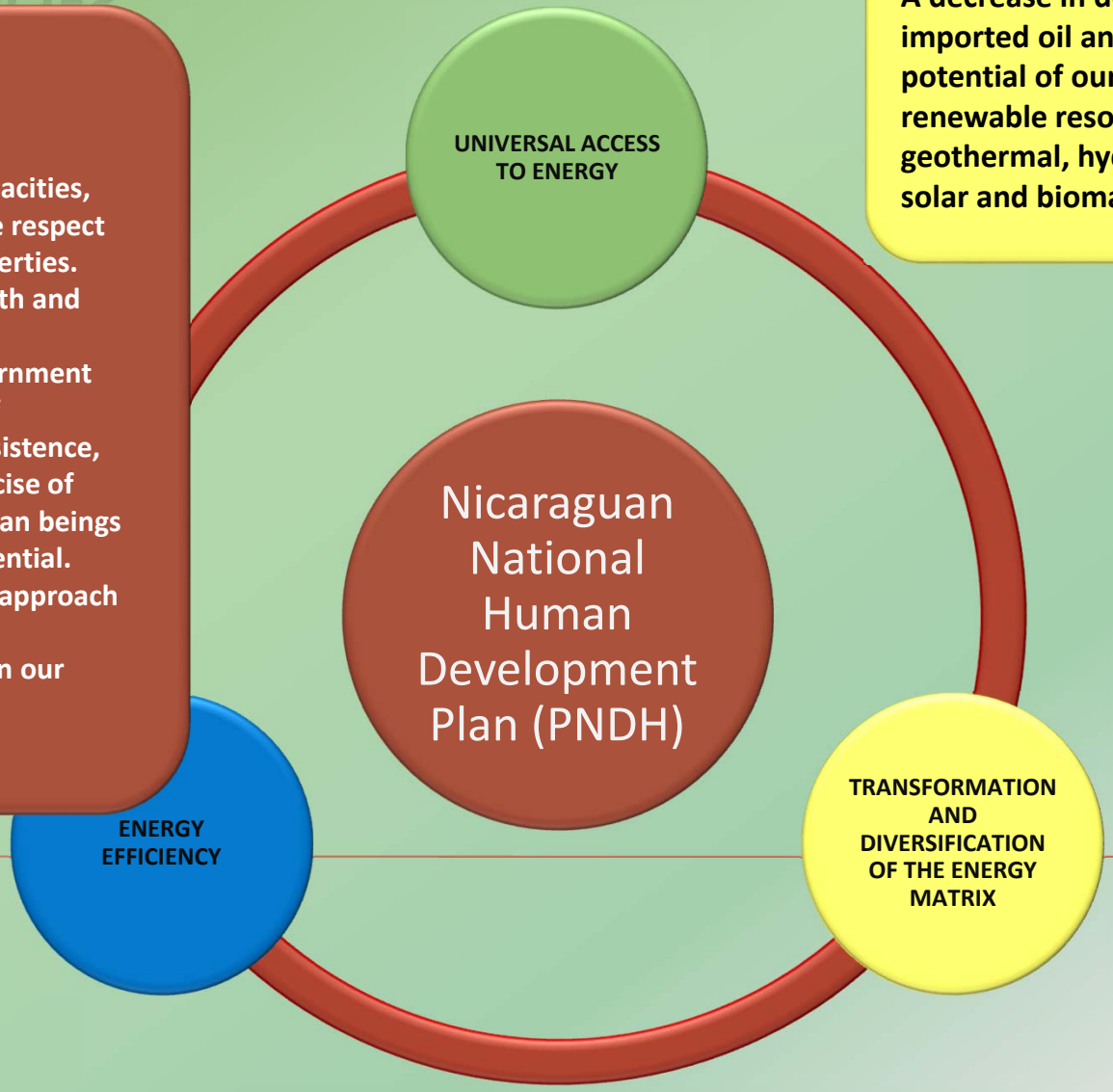


Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

ENERGY POLICIES

Human Development:

- **Expansion of people's opportunities and capacities, guaranteeing effective respect for their rights and liberties.**
- **Improvements in health and education.**
- **Guarantee, from government institutions, the set of opportunities for subsistence, life and effective exercise of liberties to allow human beings to reach their full potential.**
- **This is a fundamental approach of the Citizen Power Development Model in our country.**



A decrease in dependence on imported oil and harnessing of the potential of our available renewable resources, such as geothermal, hydropower, wind, solar and biomass

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

IMPACT OF THE POLICIES

2013 ESTIMATED ECONOMIC IMPACT

Projects		Effective Capacity	Plant Factor	Annual projected power generation (energy)	SUBSTITUTION OF FUEL (FUEL OIL)		PERCENTAGE SHARE OF THE TOTAL DEMAND	Commercial Operation Commencement Date
		MW		MWh	Thousands of Barrels	Millions of US$ *	%	
BIOMASS								
INGENIO SAN ANTONIO	***	30,00	0,43	113,10	171,80	18,90	2,9%	1999
INGENIO MONTE ROSA	***	30,00	0,58	151,80	230,70	25,40	3,9%	2002
SUBTOTAL		**60,00**		**264,90**	**402,50**	**44,27**	**6,8%**	
GEOTHERMAL								
SAN JACINTO-TIZATE FASE I		36,00	0,93	293,29	445,70	48,90	7,4%	Jan 12
SAN JACINTO-TIZATE FASE II	**	36,00	0,93	293,29	445,70	48,90	7,4%	Dec 12
MOMOTOMBO	***	27,50	0,96	231,26	351,43	38,74	5,9%	Jun 05
SUBTOTAL		**99,50**		**817,83**	**1242,83**	**136,54**	**20,7%**	
HYDROELECTRIC								
LARREYNAGA	***	17,20	0,35	53,12	80,70	8,90	1,4%	Aug 13
HIDROPANTASMA	**	12,00	0,50	52,76	80,20	8,80	1,3%	Mar 13
CENTROAMÉRICA	***	50,00	0,39	171,20	260,10	28,60	4,4%	1964
CARLOS FONSECA	***	50,00	0,39	170,50	259,10	28,50	4,3%	1971
SUBTOTAL		**129,20**		**447,58**	**680,10**	**74,80**	**11%**	
WIND								
AMAYO I		39,90	0,35	121,70	184,90	20,30	3,1%	Feb 09
AMAYO II		23,10	0,41	82,10	124,70	13,70	2,1%	Mar 10
EOLO	**	37,50	0,40	131,19	199,30	21,90	3,3%	Dec 12
BLUE POWER	**	39,60	0,42	145,70	221,40	24,40	3,7%	May 12
SUBTOTAL		**140,10**		**480,69**	**730,37**	**80,34**	**12,3%**	
TOTAL		***428,80***		***2011,00***	***3055,80***	***335,95***	***51,1%***	

* Calculated based on a fuel oil price of **US$110 per drum** and an average yield of 15.67 kWh/gallon of fuel oil.

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

CURRENT STATUS OF GEOTHERMAL PROJECTS

- **PROJECTS IN OPERATION PHASE**

MOMOTOMBO, in operation since 1983
Installed Capacity 78 MW
PP: 9 PR: 6

SAN JACINTO TIZATE, in operation since 2005
Installed Capacity 72 MW
PP: 7 PR: 3

CASITA-SAN CRISTÓBAL OPERATION CONCESSION IN DEVELOPMENT STAGE

- **PROJECTS IN EXPLORATION PHASE**

Managua-Chiltepe

- **PROJECTS WITHOUT CONCESSIONS**

El Hoyo-Monte Galán
Volcán Cosigüina
Volcán Telica-El Ñajo
Tipitapa
Isla de Ometepe
Caldera de Apoyo, Caldera de Masaya
Volcán Mombacho

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

2013-2027 GENERATION EXPANSION PLAN

PROJECTS	Resource	YEARS														
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
CASUR (ingenio)	Biomass			24												
Biomasa 1	Biomass								30							
Biomasa 2	Biomass												30			
Montelimar	Biomassa				30											
Alba Rivas	Wind	40														
MMV 35 MW	Fuel Oil			35												
MMV 35 MW	Fuel Oil			35												
MMV 35 MW	Fuel Oil			35												
MMV 35 MW	Fuel Oil			35												
Casitas	Geo				35											
Apoyo	Geo								36							
Chiltepe	Geo								35							
Mombacho	Geo								25							
Boboké	Hydro								70							
Hidro Pantasma	Hydro	12														
Larreynaga	Hydro		17													
Tumarín	Hydro						253									
Piedra Puntuda	Hydro						15									
El Carmen	Hydro										100					
Copalar Bajo	Hydro									150						
Valentín	Hydro												28			
Salto Y-Y	Hydro									25						
El Diamante	Hydro				5											
Piedra Cajón	Hydro										22					
Corriente Lira	Hydro														40	
TOTAL	**1162**	**52**	**17**	**164**	**70**	**0**	**268**	**0**	**196**	**175**	**122**	**0**	**58**	**0**	**40**	**0**

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

COMPLEMENTARY STUDIES

UBICACIÓN DE NUEVAS ÁREAS GEOTÉRMICAS PARA MEDIA Y BAJA ENTALPÍA

STRENGTHENING OF CAPACITIES

The execution of geothermal projects requires the participation of experts to improve project supervision.

Thus, for many years the Government of the Republic of Nicaragua, through the MEM, has been developing national and international training programmes, at both introductory and advanced levels (Cuba, El Salvador, Iceland, Italy, Japan, Mexico, New Zealand), focused on professional development in the different areas related to geothermal energy.

In 2008, the Government of the Republic of Nicaragua and the Government of Iceland signed a partnership agreement, "Strengthening Geothermal Capacities", with three components: a) Training of personnel related to geothermal energy, b) Technical assistance, c) Installation of a geochemical laboratory. This laboratory is accredited under the ISO 17025 standard.

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

LEGAL FRAMEWORK FOR GEOTHERMAL ENERGY

Volcán Momotombo
Source: MEM

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!

2013: BENDECIDOS, PROSPERADOS Y EN VICTORIAS!

PODER CIUDADANO

CRISTIANA, SOCIALISTA, SOLIDARIA!
BUEN GOBIERNO!

MAIN ELECTRICAL SUB-SECTOR REGULATIONS

- **INSTITUTIONAL**
  - Decree No. 87 (1980), "Organic Law on the INE" and its amendments (Regulating Entity).
  - Decree No. 46 (1994), "Creation of ENEL" and its amendments: government electrical power generating company.
  - Law No. 290, "Law on Organisation, Competences and Procedures of the Executive Power", and its amendments and implementing regulation:
  - Decree No. 583 (2006), "Law Creating ENATREL" and its amendments: State transmission company that operates the SIN and administers the National Electrical Market through the CNDC.
  - Law No. 612, Amendment and Addendum to Law No. 290. This law creates MEM as the governing body for country's energy and mining sector.
- **ELECTRICAL INDUSTRY**
  - Law No. 272 (1998), "Electrical Industry Law" and its amendments, regulations and standards for the electrical sector .
- **GEOTHERMAL ENERGY**
  - Law No. 443 (2002), Law on Exploration and Exploitation of Geothermal Resources and its amendments.
  - Decree 45-2010, Implementing Regulation of Law No. 443.
- **ENVIRONMENT**
  - Law No. 217 (1996), "General Law on the Environment and Natural Resources" and its amendments.
  - Decree No. 76 (2006), "Environmental Assessment System".

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

LEGAL AND REGULATORY FRAMEWORK FOR GEOTHERMAL ENERGY

The Ministry of Energy and Mines (MEM) is the governing body for the country's energy and mining sector. Among other responsibilities, MEM grants licenses and concessions for exploration and exploitation of natural resources.

The purpose of Law No. 443 is to foster and establish the basic conditions to regulate the activities involved in exploration and exploitation of the country's geothermal resources exclusively for the generation of electricity. Direct negotiation is established as the only channel for the granting of concessions for geothermal resources, with MEM authorised to invite bids from national and foreign investors.

Concessions for exploration are granted in a 100-km² area for a period of three years, extendable for another two years; concessions for exploitation are for a 20-km² area, with the possibility of enlarging this by an additional 20 km², for a period of 25 years, extendable for another 10 years.

Geothermal resources are national assets according to the CN and other laws of the republic.

The Government promotes, regulates and establishes the activities inherent in exploration and exploitation of geothermal resources. All activities covered by the Law related to exploration and exploitation of geothermal resources are matters of national interest.

Natural and legal persons can freely conduct preliminary investigations for exploration and exploitation of geothermal resources with prior authorisation from MEM.

It is the responsibility of MEM to execute the policies and strategies approved by the Executive Branch, as well as to administer and apply Law No. 443 and its Implementing Regulation.

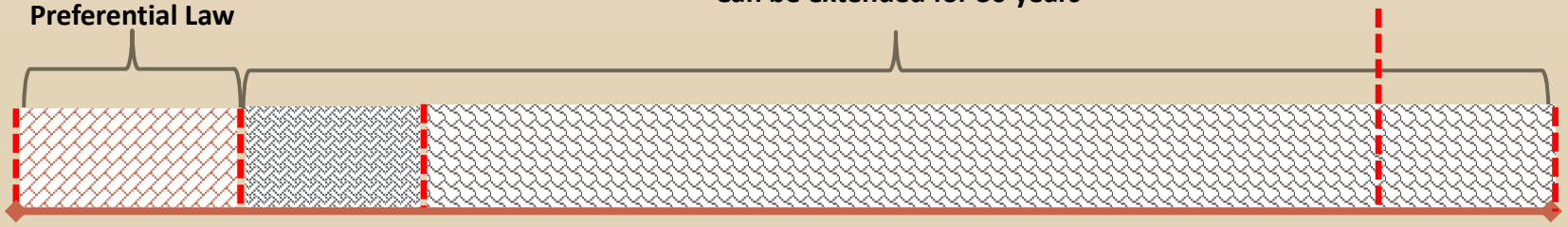
Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

CONCESSIONS FOR EXPORATION AND EXPLOITATION OF GEOTHERMAL RESOURCES

CONCESSION CONTRACTS FOR EXPLORATION
3 years, +2-year optional extension. Use of Inherent and Preferential Law

CONCESSION CONTRACT FOR EXPLOITATION
25 years, extendable for another 10

Generation License for 30 years
Can be extended for 30 years



Pre-investment

Exemption from Temporary and Final Import Taxes
Local Purchases Required

Construction ≈ 4 years

Exemption from Temporary and Final Import Taxes
Local Purchases Required

Commercial Operation 26 years

Exempt from Income Tax (30%) for 10 years
Exemption from municipal income taxes for 5 years

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

TAX INCENTIVES FOR INVESTMENT IN ELECTRICAL POWER GENERATION

The National Assembly approved Law 532: "Law for the Promotion of Electricity Generation Using Renewable Resources", Published in Official State Gazette No.102 of 27 May 2005, which establishes the following incentives for generation projects that harness the country's renewable energies for public electricity service. Article 7

- **Exemption from payment of Import Customs Duties (DAI)**
- **Exemption from payment of Value-Added Tax (IVA) during construction of the project.**
- **Exemption from payment of Income Tax (IR) for the first 7 years of operation.**
- **Exemption from all applicable Municipal Taxes, on a staggered basis during 10 years.**
- **Exemption from any taxes on exploitation of natural resources for a maximum period of 5 years after the start of operation**
- **Exemption from the Revenue Stamp Tax (ITF) related to construction or operation of the project or extension by 10 years**

In the case of concessions for exploration and exploitation of geothermal resources, there are tax benefits, such as exemptions from final import taxes (ISC, DAI and IVA), local purchases (IVA), as well as exemptions from taxes on income (national) and revenues (municipal). Some of these benefits extend to the concession holder's contractors and subcontractors.

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

REGIME OF TAX INCENTIVES LAW NO. 532

PRE-INVESTMENT

- Feasibility Studies
- Final Project Design

INVESTMENT

- Construction Operations

OPERATION

- Commercial Operation of the Project

TAX INCENTIVE COMPARISON TABLE FOR RENEWABLE RESOURCE PROJECTS

TAXES	GEOTHERMAL	HYDROPOWER	WIND/SOLAR/ BIOMASS
DAI	✓	✓	✓
IVA (Importation/local purchase)	✓ Law No. 443	✓	✓
ISC	✓	✗	✗
IR	✓ (10 year)	✓ (7 years)	✓ (7 years)
IBI (Municipal)	✗	✓ (75%-3 years; 50%-5 years; 25%-2 years)*	✓ (75%-3 years; 50%-5 years; 25%-2 years)
IMI (Municipal)	✓ (100%-5 years)	✓ (75%-3 years; 50%-5 years; 25%-2 years)	✓ (75%-3 years; 50%-5 years; 25%-2 years)
Registration (Municipal)**	✗	✓ (75%-3 years; 50%-5 years; 25%-2 years)	✓ (75%-3 years; 50%-5 years; 25%-2 years)
Natural assets (exploitation)	✓ (10 years)	✓ (5 years)	✓ (5 years)
ITF	✓	✓	✓

ENVIRONMENTAL PERMITS

Environmental Permit

Environmental Authorisation

High Environmental Impact Potential

High Environmental Impact Potential

Moderate Environmental Impact Potential

CATEGORY I Special Projects	CATEGORY II	CATEGORY III
Generation of hydropower of greater than 100 MW	Generation of hydropower of 10 to 100 MW	Generation of hydropower of less than 10 MW
	Generation of geothermal energy at any level of generation	
	Generation of electricity from biomass with a generation level of greater than 10 MW	Generation of electricity from biomass with a generation level of less than 10 MW
		Generation of wind energy

Photovoltaic ⇨ Low Environmental Impact Potential

CONFLICT RESOLUTION METHODS

- Law No. 540, (2005), Law on Mediation and Arbitration
- Law No. 344, (2000), Law Promoting Foreign Investment.
- ARPIs (Agreements for Reciprocal Protection of Investments)
- Convention on the Recognition and Enforcement of Foreign Arbitral Awards (New York Convention -1958)
- CIADI
- CCI (Tumarín)

Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
MINISTERIO DE ENERGIA Y MINAS

CHALLENGES

- **ELIMINATION OF CHARGES**

  - Surface Levy
  - Steam Tax
  - Water Levy
  - Minimum compensation (0.5%)
  - Government Participation

- **MANDATORY ENVIRONMENTAL TECHNICAL REGULATION**

In 2012, MEM, in coordination with MARENA and with Icelandic cooperation funds, drafted a Mandatory Environmental-Technical Regulation

- **REDUCTION OF INITIAL EXPLORATION RISK**

The Government of the Republic of Nicaragua is implementing a strategy with the support of cooperating financial bodies to reduce the economic risk involved in investment in the geothermal exploration phase for the purpose of bringing projects that still lack concessions to the level of feasibility. Currently, using PNESER funds, a feasibility study is being carried out through a consortium (national and international enterprise-SKM) of the Cosigüina Volcano area (technical-economic studies and slim-hole well drilling) that will provide results.

CHALLENGES

- **A NEW GENERATION OF INCENTIVES**

Some PGEFRs in operation, such as in the case of devices (biomass), have invested in the restructuring of agroindustrial technology, machinery and equipment that has resulted in an increase in the amount of energy produced during the year; in other words, they have increased the plant or availability factor without the tax incentives of Law No. 532.

- **LAW ON PUBLIC-PRIVATE ASSOCIATION?**

Is it necessary for the sector?

30-MW hydropower projects are covered under their Special and Specific Law

- **ENERGY EFFICIENCY LAW AND PROGRAMME PROJECT**

Gobierno de Reconciliación y Unidad Nacional

El Pueblo, Presidente!

MINISTERIO DE ENERGIA Y MINAS

THANK YOU FOR YOUR ATTENTION