Trade in Energy Services in Paraguay and Objective for Sustainable Development 7

by

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The views expressed are those of the author and do not necessarily reflect the views of UNCTAD.
TRADE IN ENERGY SERVICES IN PARAGUAY AND OBJECTIVE FOR SUSTAINABLE DEVELOPMENT 7
The 100% of the primary energy produced in Paraguay corresponds to renewable energy. It is also remarkable that 100% of the energy exports in Paraguay originate from renewable sources of energy: electricity generated in hydroelectric plants and charcoal produced in coal bunkers. This means that around 70% of the energy supply nationwide constituted by renewable energy sources.

Hydro energy is the main national energy resource. The power generation capacity from hydropower surpasses 45,000 GWh / year, and is one of the largest in the world, in terms of electricity generation per inhabitant (9,000 kWh per inhabitant).
On the side of final consumption, renewable energy represents a share of almost 59% of total final consumption. However, since Paraguay is a producer of renewable energy, there is a high dependence on oil derivatives, including LPG (Petroleum liquid gas) and liquid fuels.
By energy, the growth recorded in the consumption of petroleum products (13.0%) and in electricity consumption (4.1%) stands out.

The consumption registered in the various products of biomass in the year 2016 grows by 1.7%.
Of the total final consumption of renewable energy, 30.6% corresponds to electricity and the rest to primary biomass and products derived from biomass such as charcoal and fuel alcohol, mixed either with motor gasoline or in direct use. The production and consumption of biodiesel is incipient, but with great perspectives.

ENERGY MATRIX 2015

STRUCTURE OF THE MATRIX ENERGY 2015

- **HIDROENERGÍA**: 51%
- **Biomasa**: 30%
- **Electricidad**: 18%
- **Derivados del petróleo**: 43%
- **Biomasa derivados del petróleo**: 39%

**Consumo Final**
- **CONSUMO FINAL**: 4,955,5 ktep
- **Exportación**: 3,607,4 ktep
- **Perdidas y stock**: 1,740,2 ktep

**Nacional**
- **Oferta Bruta de Energía**: 10,303,1

**Importado**
- **Oferta Bruta de Energía**: 19%
ENERGY MATRIX 2016

STRUCTURE OF THE MATRIX ENERGY 2016

NACIONAL

54 % HIDROENERGÍA
28 % BIOMASA
18 % ELECTRICIDAD

IMPORTADO

13 % OTROS FUEGOS DE ESCASO PESO

11.401.2 Ktep

OFERTA BRUTA DE ENERGÍA

CONSUMO FINAL

5.281.0 ktep

DESTINOS DE LA OFERTA

46 % CONSUMO FINAL
37 % EXPORTACIÓN
17 % PÉRDIDAS Y STOCK

1.893.2 ktep

41 % BIOMASA
41 % DERIVADOS DEL PETRÓLEO

99 % ELECTRICIDAD
Electrical System in Paraguay - The National Electricity Administration (ANDE) is in charge of Law 966/64 of the SERVICE of the distribution of electric power in the whole country; it is vertically integrated: generation, transmission, distribution and commercialization. - The current electricity coverage (population served) at the national level exceeds 98.5%.
### ELECTRICAL ENERGY CONSUMPTION

#### COMMERCIALIZATION

**COMPOSITION OF THE CLIENTS OF LA ANDE**

The residential sector with 45% participation in the structure of total electricity consumption and therefore, which determines the pattern in the behavior of the same.

<table>
<thead>
<tr>
<th>Consumer Group</th>
<th>Quantity</th>
<th>Consumption</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residencial</td>
<td>86,4</td>
<td>45</td>
<td>51</td>
</tr>
<tr>
<td>Comercial</td>
<td>9,3</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Industrial</td>
<td>1,6</td>
<td>20</td>
<td>18</td>
</tr>
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<td>General</td>
<td>1,7</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Gubernamental</td>
<td>1,0</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>
ELECTRICITY CONSUMPTION OF THE RESIDENTIAL SECTOR

The residential sector registered a growth of 4.0% in the residential electric power consumption index per inhabitant, slightly higher than that observed in the previous year (3.5%).
The estimates of the consumption of biomass products (firewood, charcoal, agro-forestry residues and alcohols including that destined for mixtures with gasolines) grew by 1.7%, a behavior slightly higher than that recorded in the previous year.

The consumption of 6.8% of Alcohol that is observed in the graph, corresponds to what is used for the automotive sector, which includes the quantities destined to the mixtures with motor gasolines.
DECREE No. 2794/2014
"By which approves the NATIONAL DEVELOPMENT PLAN PARAGUAY 2030"
Within Strategy 24, VALUATION OF ENVIRONMENTAL CAPITAL
Promotion of the environment as economic value and cultural heritage within the
framework of a sustainable economy.
**Objective:** Increase the consumption of renewable energy by 60%. (Annual% of
total national energy consumption) and Reduce fossil fuel consumption by 20%
(annual% of total national energy consumption)

DECREE Nº 6092/2016 "By which the Energy Policy of the Republic of Paraguay
is approved."
It includes a "STRATEGIC VISION" with "Superior Objectives" and "Specific
Objectives" by Sector: 1. ELECTRICAL with the Subsector "Bi-national
Hydroelectric Entities and Electric Integration"; 2. BIOENERGY AND OTHER ALTERNATIVE SOURCES (a) Contribute to energy security, development and diversification of national sources, b) Promote the use of bioenergy and other alternative sources in a sustainable manner and with criteria of efficiency, competitiveness and quality, and c) Promote the generation of jobs and economic value linked to the subsector. "); and 3. HYDROCARBONS reduce dependency and consumption of fossil fuels.
Five are the Superior Objectives contained in the Energy Policy of the Republic of Paraguay:

1. Guarantee energy security with criteria of self-supply, efficiency, minimum cost, with socio-environmental responsibility, which accompanies the productive development of the country.

2. Ensure access to quality energy for the entire population with attention to consumer rights.

3. Use national energy sources - hydroelectricity, bioenergy and other alternative sources, as strategic resources to reduce external dependence and increase the generation of greater national benefit.

4. Consolidate the position of Paraguay as the axis of regional energy integration based on the sustainable use of its natural resources and its strategic geographic location.

5. Promote, in the population, the understanding of the importance of energy and its sustainable use as a factor of integral development.
• LAW Nº 4601 of April 30, 2012 "OF INCENTIVES TO THE IMPORTATION OF ELECTRIC AND HYBRID VEHICLES".

• The first electric vehicle manufactured 100% in Paraguay and by Paraguayan professionals. Although it is a prototype, Aguará is a bet on vehicles that are friendly to the environment.

The same Law grants benefits to Service Stations that are interested in installing posts for the fast charging of electric vehicles.

PARAGUAYAN RULE, for installation of recharging service stations for electric vehicles

• "Promotion of the Production and Utilization of Electric Stoves and Ovens". That seeks to reduce the consumption of LPG polluting and imported product, as well as the reduction in the use of firewoods that contribute to deforestation.
The transport service through the commuter train is a project of Ferrocarriles del Paraguay SA (FEPASA), which was approved by the Senate last November. Later it passed for his study in the Chamber of Deputies WITH FAVORABLE OPINION. They also mention that the train will travel through an exclusive route with a traffic light preference, it will not stop at car crossings, with air conditioning, wifi, economic and MOVED WITH ELECTRICAL CURRENT. The Commuter Train project proposes the SERVICE of 12 trains simultaneously, which would have a frequency of 5 minutes in peak hour, with the possibility of carrying about 300 passengers.
SAN FRANCISCO MODEL DISTRICT
Social development program destined for the relocation of the families that reside in 5 flood areas of the Bañado Norte de Asunción, in addition to areas surrounding the project in Zeballos Cué, financed by the ITAIPU, it has the electric power service with LED technology, with social rate.
LEGAL FRAMEWORK FOR BIOFUELS (BIOETHANOL AND BIODIESEL)


-The execution of projects under the Clean Development Mechanism (CDM) provided for in Article 12 of the Kyoto Protocol, Law No. 1447/1999 "APPROVING THE KYOTO PROTOCOL OF THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE"

-LAW N °. 2748/2005, "TO PROMOTE BIOFUELS"

-Law No. 5444/2015 "On the Promotion of Fuel Alcohol and Absolute Alcohol", which allows Alcohol Producers that are not Sugar Mills to market their products.

-PRESIDENTIAL DECREE N ° 3667/2009 "By which regulates the" Plan of incentives to promote the development of biofuels in the country "

-PRESIDENTIAL DECREE N ° 10703/2013 "BY WHICH LAW N ° 2748/05 IS REGULATED"

-DECREE Nº 4562/2015 "By which the maximum percentage of absolute ethanol is established 25% in volume with gasoline of 85 and 95 octane"
**DECREE Nº 3668/2013 - TAX INCENTIVES**

- 0% ISC (Selective Consumption Tax)
- 2% VAT (Value Added Tax)
- Investment Incentives Law No. 60/90

**Ethanol**
- 0% ISC (Selective Consumption Tax)
- 2% VAT (Value Added Tax)
- Investment Incentives Law No. 60/90

**Vehicles Flex Fuel**
- 0% Import Tariff
  All government vehicles must be flex fuel, having to start transforming the Automotive Park with at least 30%.
LOCATION OF ETHANOL PRODUCING INDUSTRIES

USINA PARAGUAYA S.A.
Localización: Nueva Italia, Dpto. Central

ALMIDONES S.A.
Localización: Ciudad de Capiatá, Dpto. Central

ALCOUSINAS ITURBE S.A.
Localización: Ciudad de Iturbe, Dpto. Guairá

GRIVILSIS.A
Localización: Ciudad de Borja, Dpto. Guairá

PETRÓLEOS PARAGUAYOS - PETROPAR
Localización: Mauricio Jose Troche, Dpto. del Guairá

AZUCARERA PARAGUAYA S.A. (AZPA)
Localización: Tebicuary, Dpto. del Guairá

AZUCARERA ITURBE S.A.
Localización: Iturbe, Dpto. del Guairá

ALCOHOLERA PARAGUAYA S.A. (ALPASA)
Localización: Colonia Santa Isabel, Dpto. de Paraguari

INDUSTRIA PARAGUAYA DE ALCOHOLES S.A. (INPASA)
Localización: San Pedro, Dpto. de San Pedro

ALCOHOLERA PARAGUAYA S.A. (ALPASA)
Localización: Ciudad de Bella Vista Norte, Dpto. de Amambay

AZUCARERA Y ALCOHOLERA SAN LUIS S.A.C.I.
Localización: Col. Francisco Caballero Alvarez, Dpto. de Canindeyú

INDUSTRIA PARAGUAYA DE ALCOHOLES S.A. (INPASA)
Localización: Col. Nueva Esperanza, Dpto. de Canindeyú

NEUALCO S.A.
Localización: Km. 206, Ruta 7, Dpto. Caaguazú

EXPELLER S.R.L.
Localización: Ruta 2 Km. 188, Ciudad de J. E. Estigarribia, Dpto. de Caaguazú

ALCOTEC S.A.
Localización: Ruta 2 Km. 198, Ciudad de Caaguazú, Dpto. de Caaguazú

ALCOUSINAS ITURBE S.A
Localización: Ciudad de Iturbe, Dpto. Guairá

ALMIDONES S.A
Localización: Ciudad de Capiatá, Dpto. Central

INDUSTRIA PARAGUAYA DE ALCOHOLES S.A. (INPASA)
Localización: San Pedro, Dpto. de San Pedro

HABILITADOS POR EL MIC

EN TRÁMITE DE HABILITACIÓN

Elaboración: Dirección General de Combustibles
Fuentes: Dirección Combustibles Alternativos y Renovables
LOCATION OF BIODIESEL PRODUCING

- **DPTO. CENTRAL**
  - FRIGORIFICO GUARANI S.A.
  - ENERCO S.A.
  - BIOENERGÍA S.A.E.C.A.
  - SEBO PORA IMPORT - EXPORT S.R.L.
  - BIO ENERGY PARAGUAY S.A.
  - MULTIAGRO C&A S.R.L.
  - BIOSINERGY PARAGUAY S.A.

- **CONCEPCIÓN**
  - FRIGORIFICO CONCEPCIÓN S.A.

- **CAAGUAZÚ**
  - AGRO GF S.A.

- **CANINDEYÚ**
  - RAFAELI S.R.L.

- **ITALO PARANA**
  - HERMANOS GALHERA AGRO VALLE DEL SOL S.A.

- **ITAPÚA**
  - ALBERTO GILES AGRO EXPORTADORA C.I.S.A. (ALGISA)

- **PARAGUARI**
  - INDUPALMA S.A.
**PERCENTAGE OF BIOFUELS MIX IN SOUTH AMERICA**

### Gasoil

- **Argentina**: 10%
- **Bolivia**: 0%
- **Brasil**: 7%
- **Chile**: 2%
- **Colombia**: 5%
- **Paraguay**: 1%
- **Uruguay**: 7%

### Gasolina

- **Argentina**: 10%
- **Bolivia**: 0%
- **Brasil**: 27%
- **Chile**: 5%
- **Colombia**: 10%
- **Paraguay**: 25%
- **Uruguay**: 10%

**Fuente:**
- XII Reunión del Grupo AD HOC sobre Biocombustibles. MERCOSUL/GAHB/ATA Nº 01/2015.
- Administración Nacional de Combustibles Alcohol y Portland.
- Agencia Nacional de Hidrocarburos – Bolivia.
- Sistema de Información Minero Energético Colombiano.

Elaboración: Dirección General de Combustibles
Fuentes: Dirección Combustibles Alternativos y Renovables
POTENTIAL FOR REGIONAL ENERGY INTEGRATION

El Mayor Generador de Energía Hidroeléctrica del Mundo.

El 2º Mayor Productor de ETANOL del Mundo.

La 2ª Mayor Reserva de Agua Dulce en el Mundo.

La 5ª Mayor Reserva de Petróleo del Mundo.
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THANKS YOU