ENERGY TRANSFORMATION
URUGUAY

National Energy Directorate
Ministry of Industry, Energy and Mining

7th MAIN LAC Dialogue
Mexico- February 2016
**OVERVIEW OF URUGUAY**

<table>
<thead>
<tr>
<th>Country name:</th>
<th>República Oriental del Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital city:</td>
<td>Montevideo</td>
</tr>
<tr>
<td>Political divisions:</td>
<td>19 Provinces</td>
</tr>
<tr>
<td>Surface area:</td>
<td>176.215 km²</td>
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<tr>
<td>Population:</td>
<td>3.4 million inhabitants</td>
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<tr>
<td>Density:</td>
<td>19.6 inhabitants/km²</td>
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<tr>
<td>Life expectancy:</td>
<td>76 years</td>
</tr>
<tr>
<td>Gross Domestic Product:</td>
<td>16,673 US$ per capita</td>
</tr>
<tr>
<td>Literacy:</td>
<td>98%</td>
</tr>
<tr>
<td>Electrification rate:</td>
<td>99.7 %</td>
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*Ministerio de Industria, Energía y Minería*
Uruguay’s economy has grown annually above 6 (average) last 10 years: Increasing energy demand

No proven reserves of oil, natural gas or coal

High dependency on imported oil, representing up to 27% of total imports

Almost no space for new large hydropower plants (>70% of the total electricity)

Strongly dependent on “El niño” events: vulnerability on Hydro energy
FRAMEWORK: CLIMATE DEPENDENCY (HYDROELECTRICITY)

GENERATION PER SOURCE

- Hydro
- Thermal (Biomass)
- Wind
- Thermal (Fossil)
- Imports

Close to 100%

40%

Year:
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014

GWh
ENERGY SUPPLY
- Energy mix diversification (sources and suppliers)
- Reduce share of imported oil
- Increase share of domestic sources-improve energy independence with regional integration
- Strong support to renewables, with no subsidies
- Building local capacities (technology transfer)
- Keeping low carbon footprint

INSTITUCIONAL
- Government defines and coordinates energy policy
- Public utility (UTE) and NOC (ANCAP) as the main tools
- Enhanced participation of private companies
- Transparent and stable regulatory framework
ENERGY DEMAND

- Strong support to energy efficiency in all energy sectors and all activities (transport, building, industry)
- The State as a paradigmatic example
- Promoting a cultural change

SOCIAL

- Adequate energy access to all citizens as a human right
- Energy policy embedded in national social policies to face vulnerability
INSTALLED POWER CAPACITY (MW) 1990 - 2014

Biomass

Wind

Solar PV

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INSTALLED CAPACITY (MW)
INSTALLED CAPACITY ELECTRIC ENERGY

% wind  wind  total

MW

9% 1% 1% 2% 2% 2% 13% 25% 33%
2,526 2,620 2,691 2,701 2,918 3,288 3,713 3,724 4,435

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0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50%
RE AND DISPATCH ORDER

✓ Energy dispatch order:

1. Wind, solar, biomass (Take or Pay)
2. Price of MWh: hydro, wind, solar, biomass, fossil thermal

• Hydro’s price is modelled to include present and future availability.

![Graph showing energy dispatch order]

Demand

Exports

Wind, Solar, Biomass

Hydro

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ELECTRICITY COST ACCORDING TO RAIN PROBABILITIES

DECREASING ENERGY COST AND SPREAD

DECREASING CLIMATE DEPENDENCY

73 US$/MWh

46 US$/MWh

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EMISSIONS (Gg CO₂)

Projected baseline scenery

Policy scenery

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ENERGY SUPPLY

ELECTRIC ENERGY PRODUCTION 2015 (PREL.)

Installed capacity by source

- Fossil fuels: 11%
- Hydropower: 42%
- Biomass: 13%
- Wind energy: 34%

2015

- Fossil fuels: 1%
- Hydropower: 19%
- Biomass: 4%
- Wind energy: 27%

55% Renewable

96% Renewable

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OVER 90% RE IN THE ELECTRICITY MATRIX - 1

HOW WAS IT ACHIEVED

✓ **ENERGY POLICY**, a long term state policy, with goals to achieve in the short, medium and long term.

✓ Public utility as the main instruments for implementation, making its own investments.

✓ Uruguay is a trustworthy country, where laws and contracts are highly respected

✓ **PPP** (public private partnerships) with a strong state partner

✓ Learning curve: it’s all about reaching agreements win-win.

✓ Development of shared knowledge

✓ High participation of academia, business associations, social organizations and labor unions
PRIMARY GLOBAL ENERGY MIX- 2014

Energy supply by source

- 36% Biomass
- 17% Natural gas
- 44% Electricity (from wind)
- 1% Oil and oil products

4,787 ktoe
URUGUAY
Intended Nationally Determined
Uruguay is a developing country, whose economy should continue to grow to ensure higher equity levels in its society.

INDC focuses on continuing its development with the lowest emission intensity possible while, at the same time, building resilience.

Energy sector (including Transport) represents 94% of CO$_2$ emissions in 2010.
<table>
<thead>
<tr>
<th>Gas</th>
<th>Sector/Activity</th>
<th>2030 Targets</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>With domestic resources</td>
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<tr>
<td><strong>CO₂</strong></td>
<td><strong>Net CO₂ removal by 2030 with domestic resources by means of the targets listed to the right</strong></td>
<td>LULUCF</td>
</tr>
<tr>
<td></td>
<td>Energy (Accounts for 94% of CO₂ emissions in 2010)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Industrial Processes (Accounts for 6% of CO₂ emissions in 2010)</td>
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<tr>
<td><strong>CH₄</strong></td>
<td><strong>Beef Production</strong> (Accounts for 78% of CH₄ emissions by 2010)</td>
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<td>Waste (Accounts for 7% of CH₄ emissions by 2010)</td>
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<td></td>
<td>Other sectors and activities (Accounts for 15% of CH₄ emissions by 2010)</td>
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<tr>
<td><strong>N₂O</strong></td>
<td><strong>Beef Production</strong> (Accounts for 61% of N₂O emissions by 2010)</td>
<td></td>
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<tr>
<td></td>
<td>Other sectors and activities (Accounts for 39% of N₂O emissions by 2010)</td>
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</tbody>
</table>
Thank you

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