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Uruguay 2015

Paula Cobas

Energy Policy Course

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Uruguay: general facts

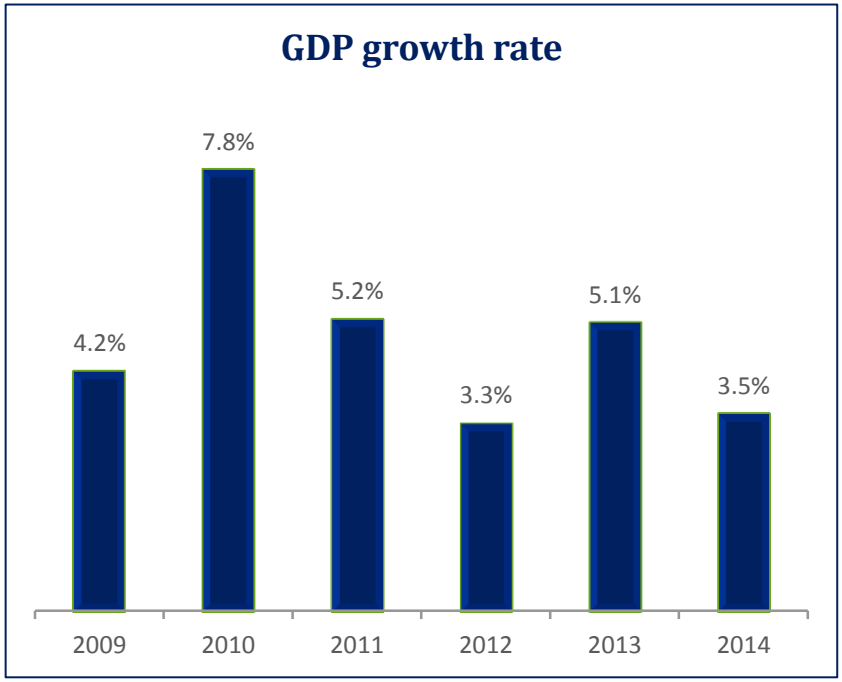
- Total extension of 176.000 Km2
- Total population 3.440.157
  - ✓ half lives in Montevideo
- Official language: Spanish
- Money: Uruguayan peso
  - ✓ 1USD= 27 UYU*
- Climate: subtropical
- Life expectancy: 78 for women and 73 for men
- Literacy rate 98%

Source: Google maps

*June 2015.

Uruguayan economy

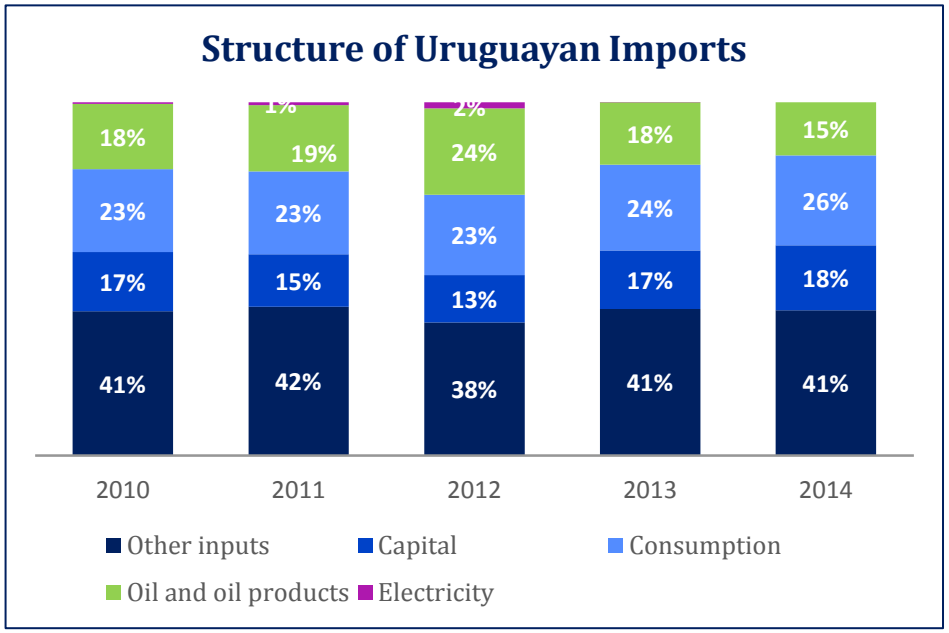
- GDP growth
  - ✓ 3,5% in 2014
  - ✓ average 2004-2014: 5%
  - ✓ GDP per capita 16.800 USD
- Unemployment: 6,5%
- Social indicators
  - ✓ access to electricity: 99%
  - ✓ access to drinking water: 98%



Source: Central Bank of Uruguay

- Productive activities:
  - ✓ agriculture (soy and cereals)
  - ✓ cattle and related industries (meat and wool processing mainly)
  - ✓ forestry
  - ✓ dairy industry
  - ✓ tourism

Energy background: oil and rain dependence



Source: Central Bank of Uruguay

- Not proven reserves of oil, natural gas or coal
- 4 Hydropower plants
- Thermal generation: Imported fossil fuels : high vulnerability

- Imports of oil in 2014:
  - ✓1929 ktoe of oil and 615 ktoe of oil products
  - ✓2054 million USD (18% of total imports)

- Oil imports varies with each year´s rainfall

Energy Policy 2010- 2030: Guidelines

I. Institutional:
Government's role as policy director

- ✓ Coordination
- ✓ Regulation
- ✓ Stable regulatory framework

II. Supply:
Diversification with national component

- ✓ Reduce oil dependence
- ✓ Increase renewable authoctonus sources
- ✓ Capacity building

III. Demand:
Energy efficiency

- ✓ In all sectors
- ✓ Regulatory framework
- ✓ Funding mechanisms

IV. Social:
Energy policy as a social policy:

- ✓ Adequate energy access (security and price)
- ✓ Tool for social integration




Energy Policy 2010 - 2030: Goals

	Supply	Demand	Social
Short term (2015)	50% of renewable energy in the global primary energy matrix	Decrease of 15% in oil consumption in the transport sector	100% rural electrification
Medium term (2020)	Optimal use of renewable energy and natural gas in energy matrix is achieved	Decrease of 20% in energy consumption due to energy efficiency measures	Adequate access for all citizens
Long term (2030)	At least 10.000 million USD savings due to source substitution and energy efficiency	Energy intensity of the country is placed among the best in the world	

Energy Policy 2010 - 2030: implementation

➢ **Wind:**

- 532 MW of generation capacity installed and delivering
- By 2015: additional 470 MW are expected to be operative
- Competitive bidding process (prices of 65-80 USD/MWh)
- 20 years power purchase agreements

➢ **Solar**

- Thermal: capacity in operation of 14 m3 by 1000 inhabitants
- Photovoltaic :
  - first plant installed in 2014: 486 KWp
  - 3.4 MW of micro-generation installed capacity (less than 150 kw)
  - by 2016 is expected to become operative 240 MW of installed capacity of large scale solar farms
  - Competitive bidding process (around 90 USD/MWh) and 20 years power purchase agreements

Energy Policy 2010 - 2030: implementation

➢ **Biomass heat and power**

- 33% participation in primary energy matrix (wood and forestry)
- 410 MW of installed power generation capacity by 2014
- 10 generation plants
- Feed-in-tariffs (around 110 USD/MW)
- 20 year period power purchase agreements

➢ **Biofuels**

- Produced in Uruguay since 2010, mainly for transport use
- Installed capacity for ethanol is 95.000 ton/year from sugar cane
- Installed capacity for Biodiesel 90.000 ton/year, mainly from soy
- Currently
  - 5% mix of ethanol in gasoline, and it is expected to increase to 10% by 2015,
  - 7% mix of biodiesel in Gas Oil

Energy Policy 2010 - 2030: implementation

➢ **Energy Efficiency**

- Energy efficiency law
- Tax incentives for hybrid and electric cars
- Incandescent Lighting Replacement: 2.3 million light bulbs
- Labelling program: water heaters, refrigerators and air conditioning systems

➢ **Hydrocarbons**

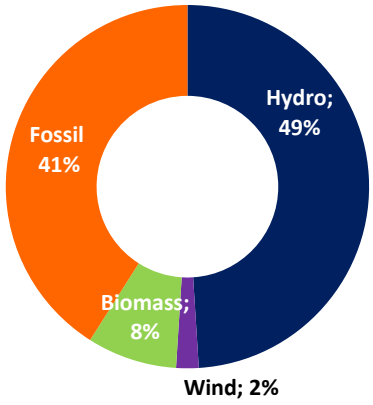
- Exploration projects are being conducted since 2009, both onshore and offshore
- Construction of a regasification plant is under development
- Terminal operative by 2016
- Storage capacity of 267.000 m3 of LNG
- Nominal send-out 10 Mm3/day

Energy Supply:

➢ Electricity generation

- UTE: Natonal Utility Company
  - State owned
  - Monopoly of transmission and distribution
- Generation:
  - 4 hydropower plants: 1538 MW
  - Thermal (Fuel oil and gas): 1173 MW
  - Renewable energy:
    - ✓ Private generators
    - ✓ 532 MW wind
    - ✓ 410 MW biomass
    - ✓ 240 solar (under construction)
- International connexion: Argentina 2000 MW and Brazil 70 MW (under expansion to 500 MW)

Electricity matrix: installed capacity (2013)



Source: National Directorate of Energy

Energy Supply:

➢ Hydrocarbons

- ANCAP: National Oil Company
  - Monopoly of oil imports and production of oil products
  - One refinery with capacity for 50.000 barrels per day

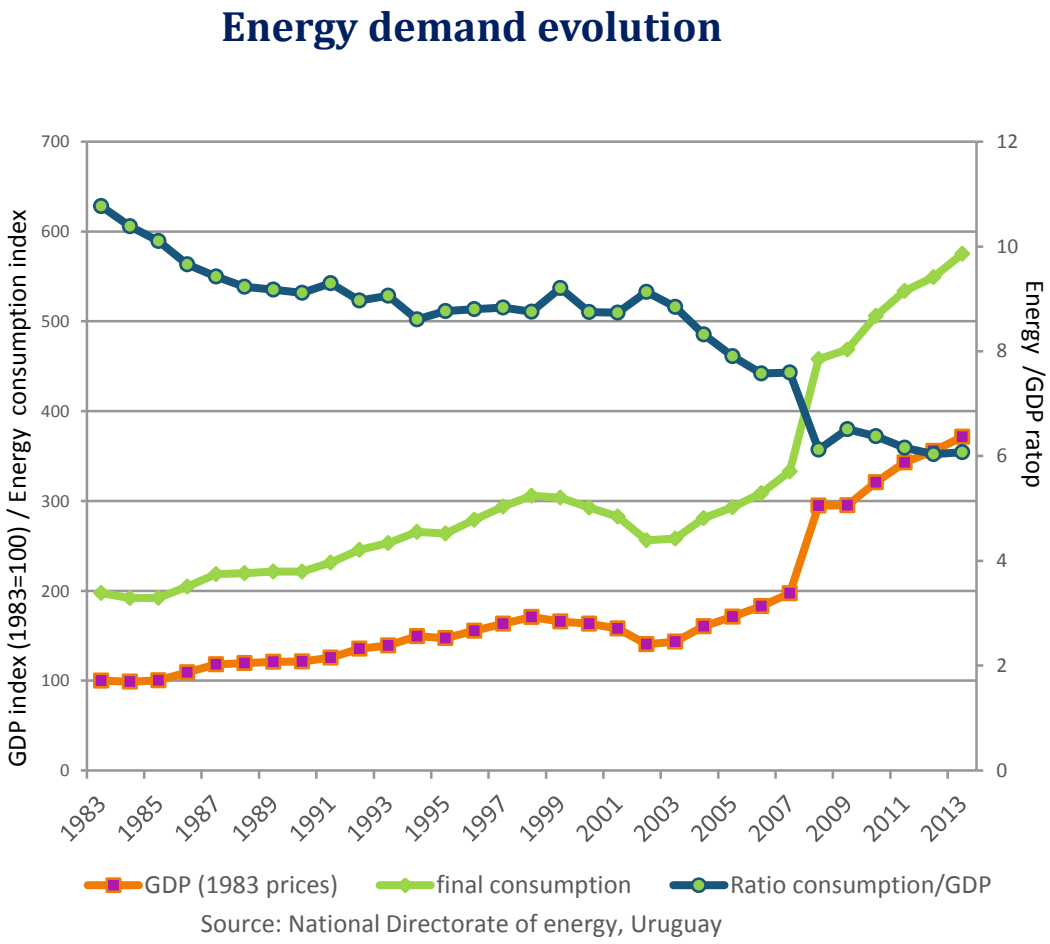
✓ Oil products for electricity generation: imported
(large quantities required and technical characteristics)

✓ Oil products for other uses (transport, industry, residential): refined domestically

- Since 2010, biofuels are being produced, and mixed with gasoline and gas oil, for transport use

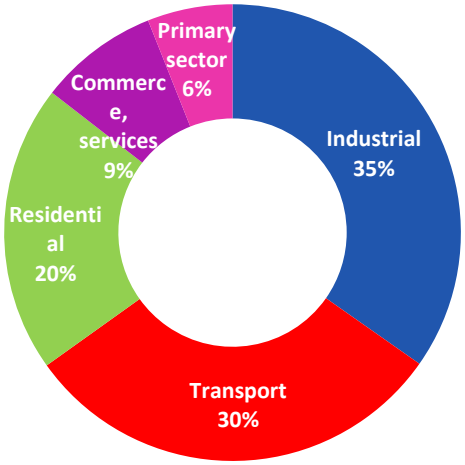
Energy Demand:

- Increasing trend in line with GDP
- Last decade: average annual growth: 5.9%
- Expected growth rate: 2.5%
- Elasticity electricity to GDP of 0.8



Energy Demand:

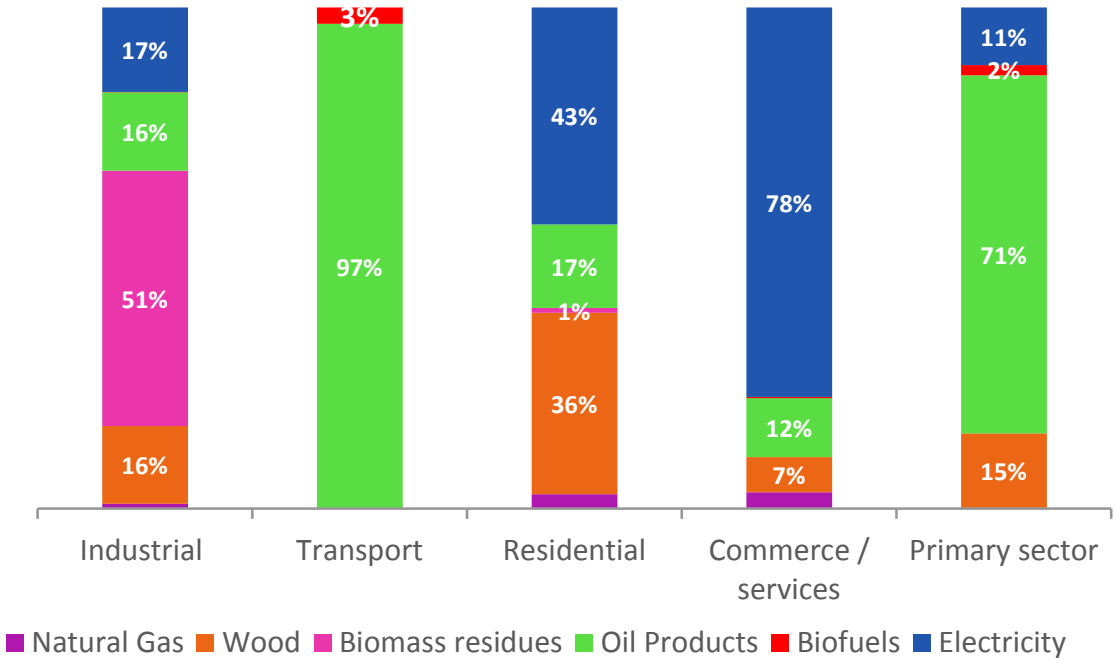
Energy Consumption by sector - 2013



Source: National Directorate of Energy, Uruguay

Main demand: Industry and transport

Energy demand by sector

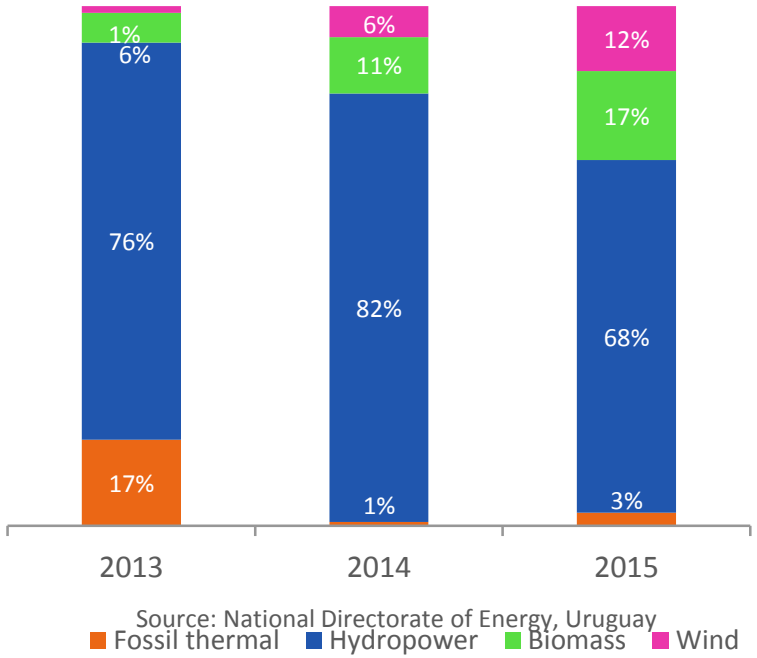


Source: National Directorate of Energy, Uruguay

Demand and Supply Outlook

- Supply
  - Measures taken:
    - ✓ Diversification of power generation
    - ✓ Currently over 90% of power generation from renewables
  - Next steps:
    - ✓ Optimization of all sources, including Natural Gas from storage and regasification terminal
    - ✓ Scenario in case of confirming Hydrocarbons reserves?

Renewables in power mix



Demand and Supply Outlook

- Demand:
  - Measures taken
    - ✓ Funding for households and firms to incorporate energy efficiency measures
    - ✓ Light bulbs replacing campaign
    - ✓ Labelling: water heaters, refrigerators

- Next steps:

  - National Laboratories with capacity to verify and label home appliance and vehicles

  - Demand management
    - ✓ price incentives
    - ✓ smart grids?

The main challenges ahead

- Transformation process aiming at diversification of energy supply: based on incorporating significant capacity of intermittent sources such as wind and solar
  - Need to be prepared: improving transmission and management

- Uruguay engaged in hydrocarbon exploration activities. In case of confirming hydrocarbons reserves in the country, issues need to be addressed:
  - How exploitation is going to be carried out?
  - How this new source of energy will be incorporated in the supply mix?
  - What use should be given to potential economic profits?

- Measures for promoting energy efficiency have had low impact:
  - Need to foster cultural change
    - ✓ Revising policy incentives
    - ✓ Educational campaigns

- Agricultural and Urban Solid Waste management: to produce biogas for heat and power

Thank you!

paula.cobas@dne.miem.gub.uy

Contact：report@tky.ieej.or.jp