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Energy Transition in Uruguay

Maldonado, 05 October 2016

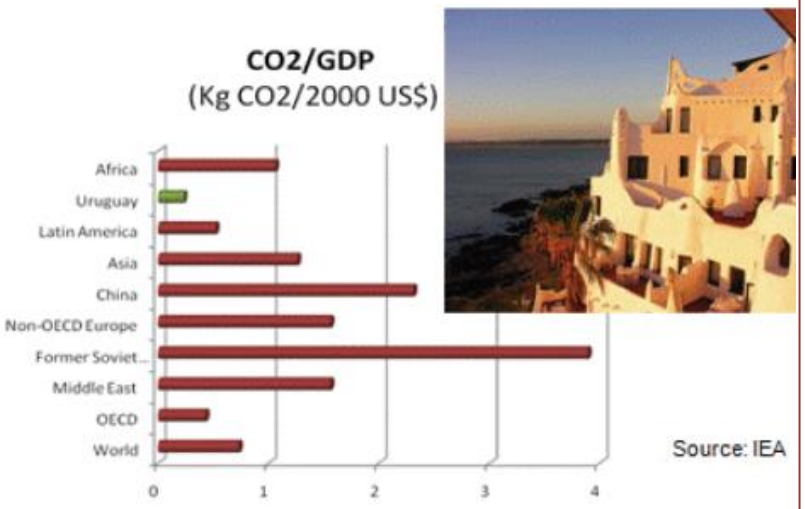
Overview of Uruguay

Country:	República Oriental del Uruguay
Area	176,215 km^2
Population:	3.3 MM
Density:	18.8 p/km^2
Life expectancy:	76 years
Infant mortality rate:	7.7/1.000
Energy Sector	
Mean annual power demand:	1.100 MW
Electrification:	99,6 %
Peak power demand:	1.918 MW (winter)

Socially sustainable

	Latin America	World
Democracy Index (Economist Intelligence Unit, 2013)	1	18
Global Peace Index (Institute for Economics & Peace, 2013)	1	24
Low Corruption (Transparency International, 2013)	1	19
Information Technology Development Index (International Telecommunication Union, 2013)	1	47
Prosperity Index (Legatum Institute, 2013)	1	30
Tourists arrival per capita (World Tourism Organization, 2012)	1	36
Economic Freedom (Heritage Foundation, 2013)	3	36
Human Development Index (United Nations Development Program, 2013)	3	51

Environmentally sustainable



UruguayNatural

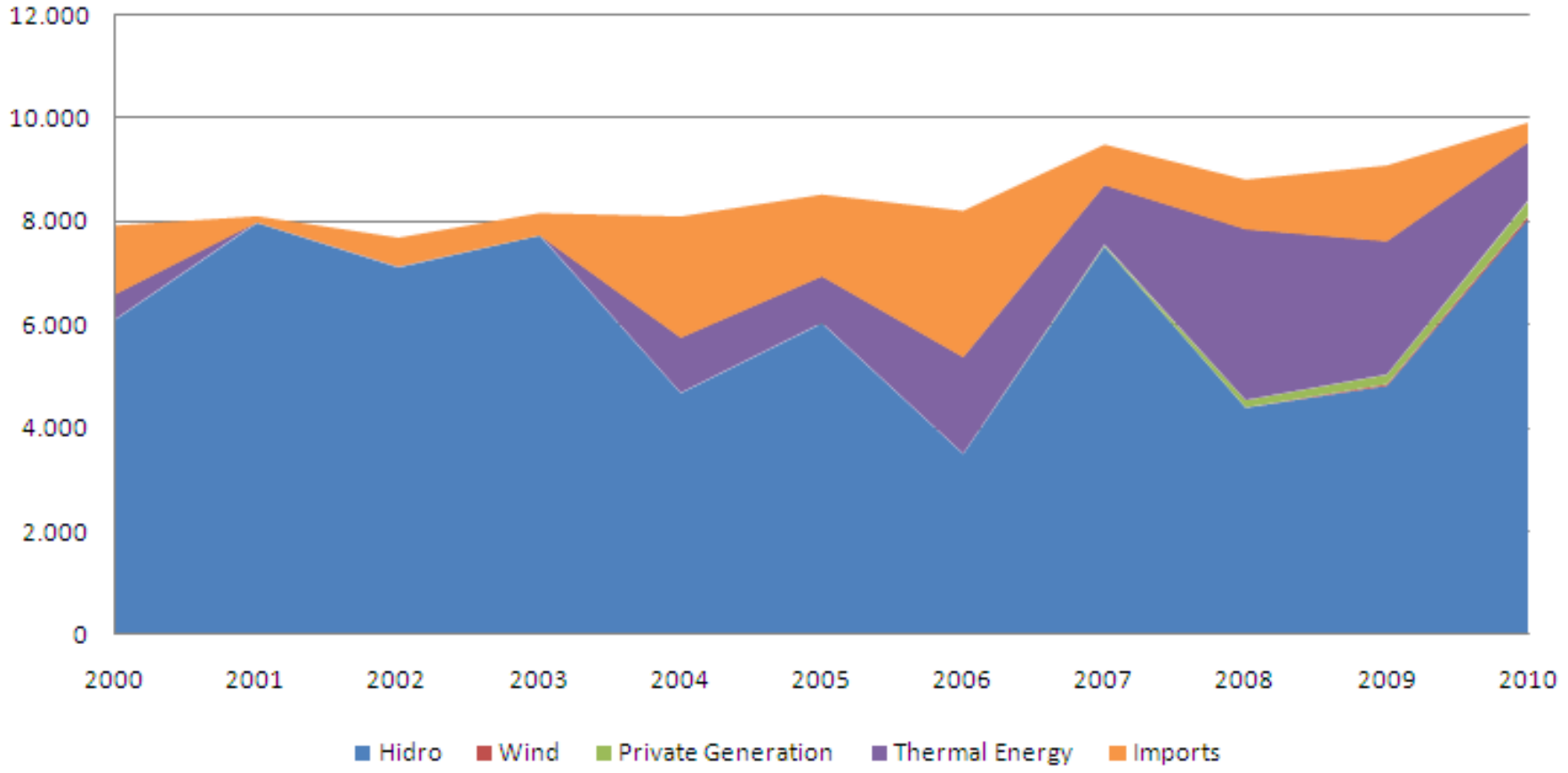
Energy Framework and Historical Background

- **Uruguay has:**
  - **NO** oil
  - **NO** natural gas
  - **NO** coal

- Almost no space for new large hydropower plants

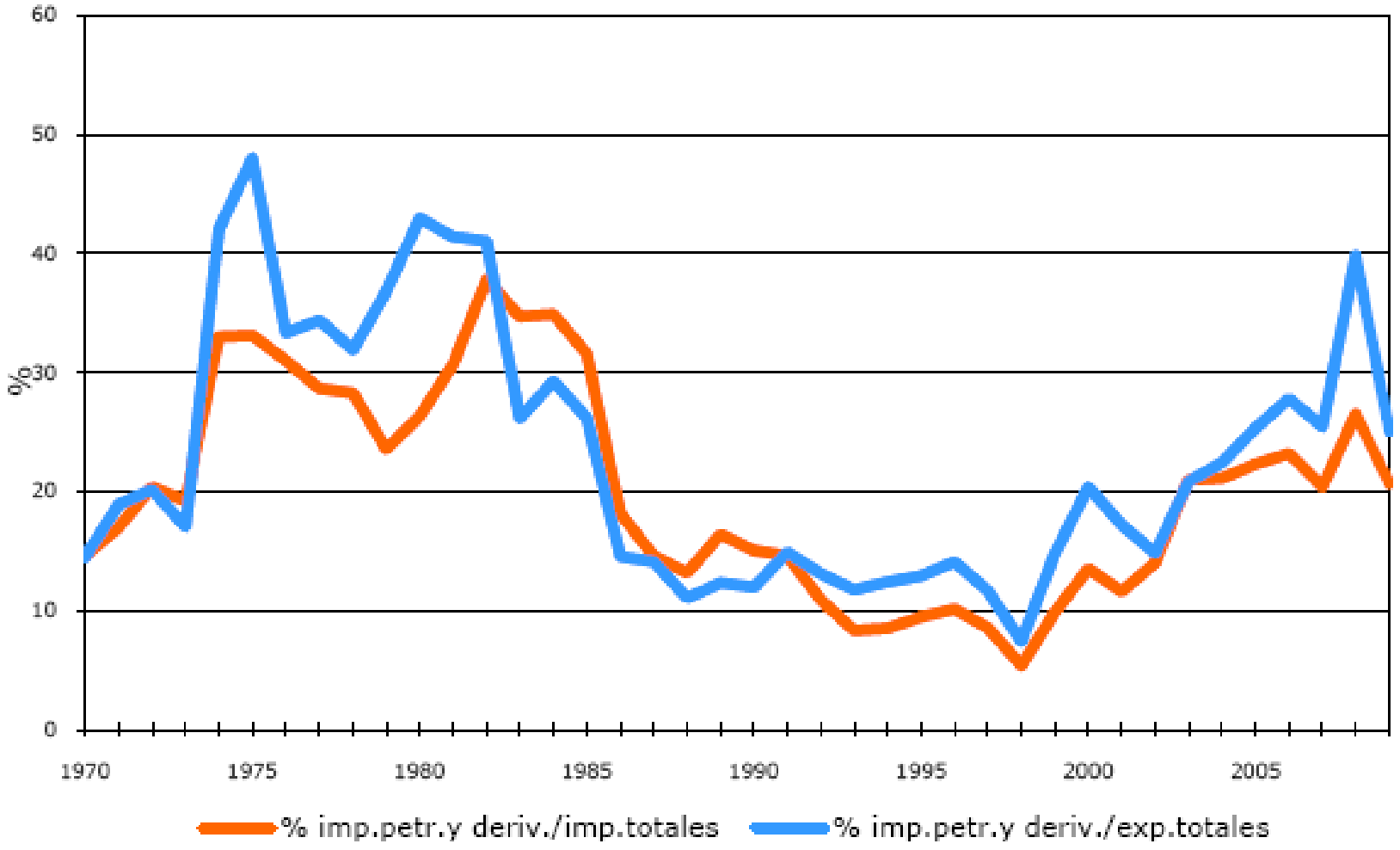
- Absence of culture in relation to Energy Efficiency.

Historical background - Electric mix source (GWh)

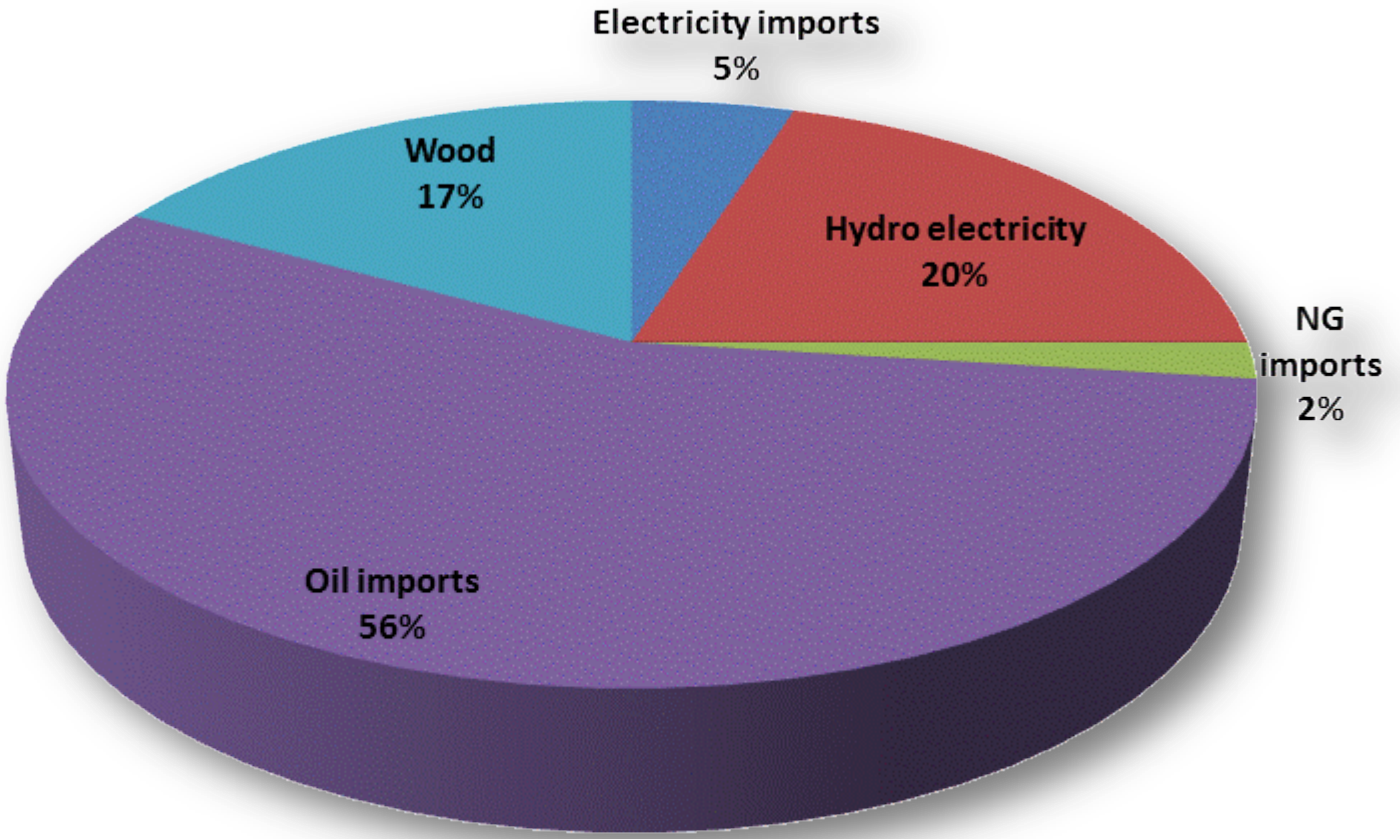


Climate dependence:
Huge variations of hydropower!

Share of oil imports in total Uruguay imports/exports



Primary global energy mix (2001-2006)



Source: DNE - MIEM

63 % IMPORTS

ENERGY POLICY. URUGUAY - 2030

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Long term Energy Policy (2030)

2008: Council of Ministers

2010: **State Policy**

Special Committe including all Political Parties in the Congress.

Multidimensional and integrated vision, including technological, economic, geopolitical, environmental, ethical, cultural and social issues

Energy Policy – Strategic guidelines

Institutional

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 Supply

Energy mix diversification, Reduce share of imported oil, Increase share of domestic sources, **Strong support to renewables**, with **no subsidies**, Building local capacities, Keeping low carbon footprint.

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.

Energy Policy – Short term goals (2015)

Short term goals - medium term goals - long term goals

Supply

50% renewables in primary energy mix

25% ERNC in power sector

Demand

6% reduction of global energy consumption*

15% reduction of oil in transport *

*Based on BAUS

Social

100% electrification

Energy supply and Renewable energies

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WHY RENEWABLES?

- To keep low carbon emissions
- To avoid fossil fuel imports
- To drop and stabilize energy prices
- To build local capacities
- **To improve energy independence**

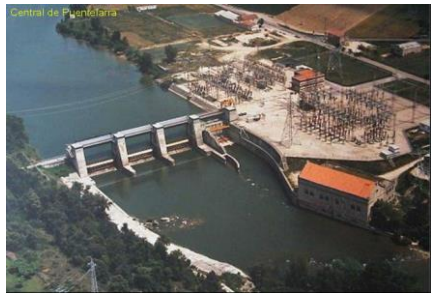
WHICH RENEWABLES?

- Those which allow a social use, and are environmental and economically sustainable.

Today:

Bio energy (power, heat, biofuels)
Solar Thermal (water heaters)
Small Hydro Power
Wind Power
Solar PV

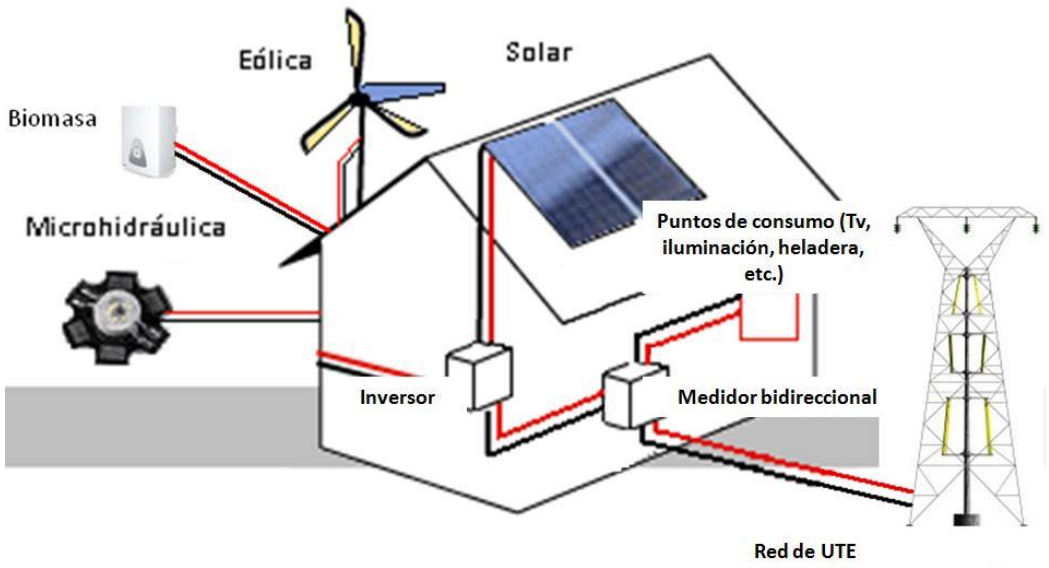
NO SUBSIDIES



MICROGENERATION & SELF CONSUMPTION

MICROGENERATION

- Since 2010 Uruguay enable grid-connected **renewable microgeneration**.
- Net metering contract



- Maximum power 150 kW
- Low tension conection

SELF CONSUMPTION

Decree 114/2014

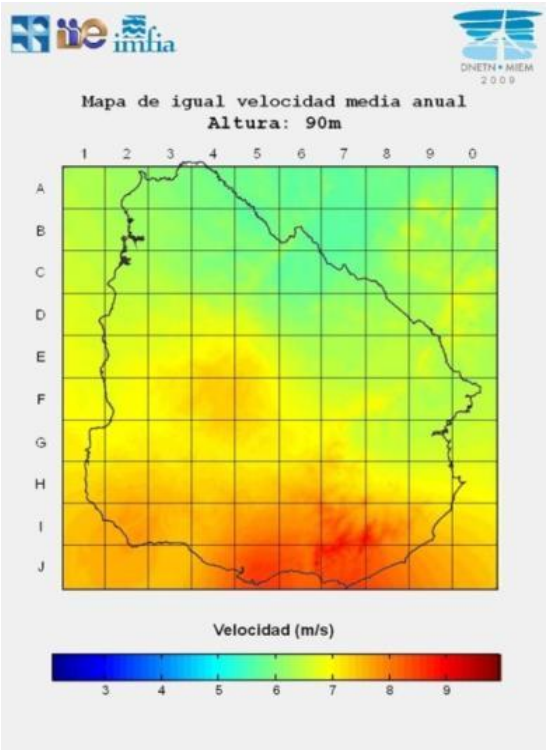
- Prosumers (generates and consumes electricity)
- Not allowed to inject electricity to the grid (only self consumption)
- Customer remains regulated

WIND POWER

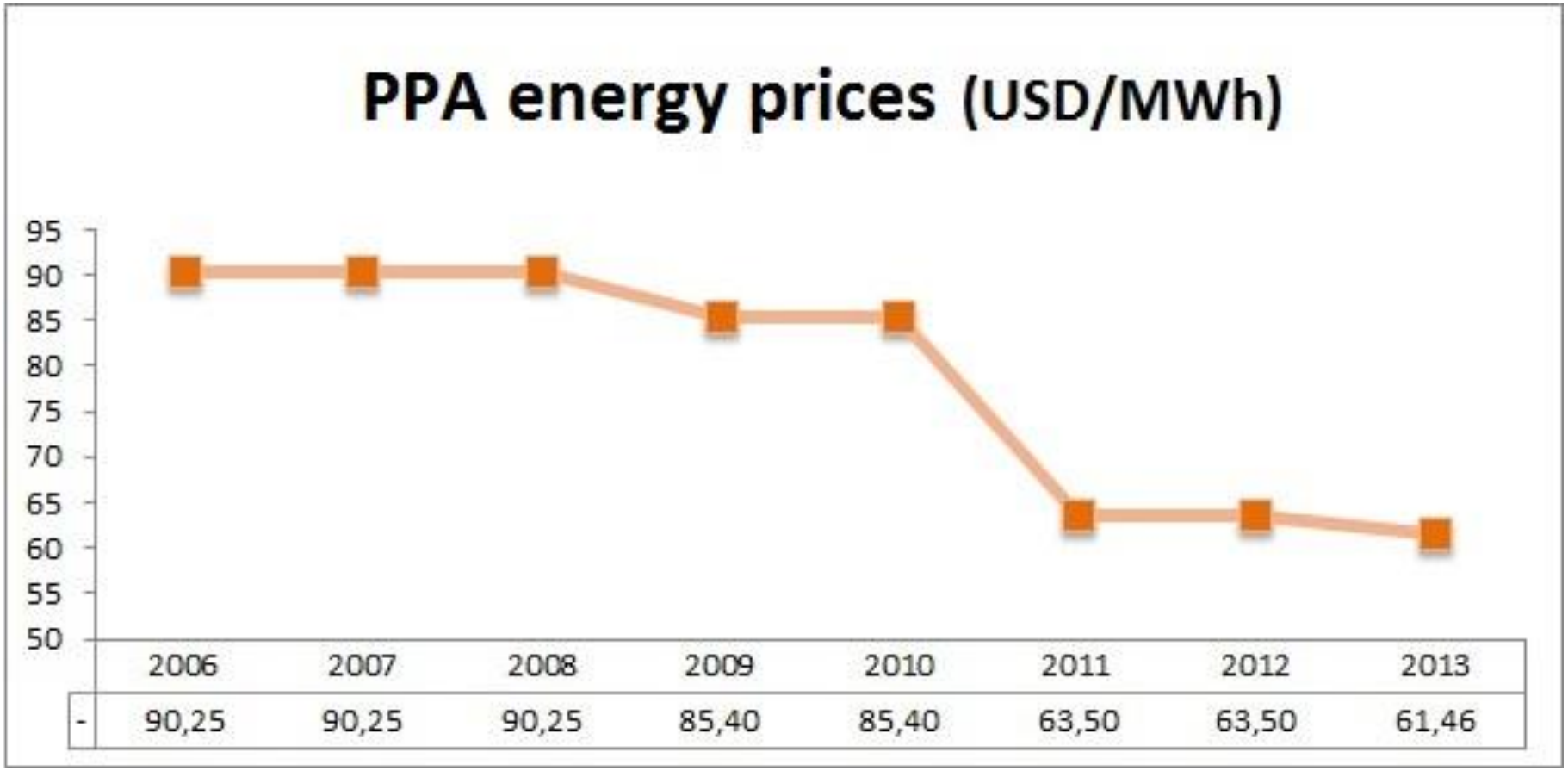
Wind Energy

Start point: 0 MW in 2007

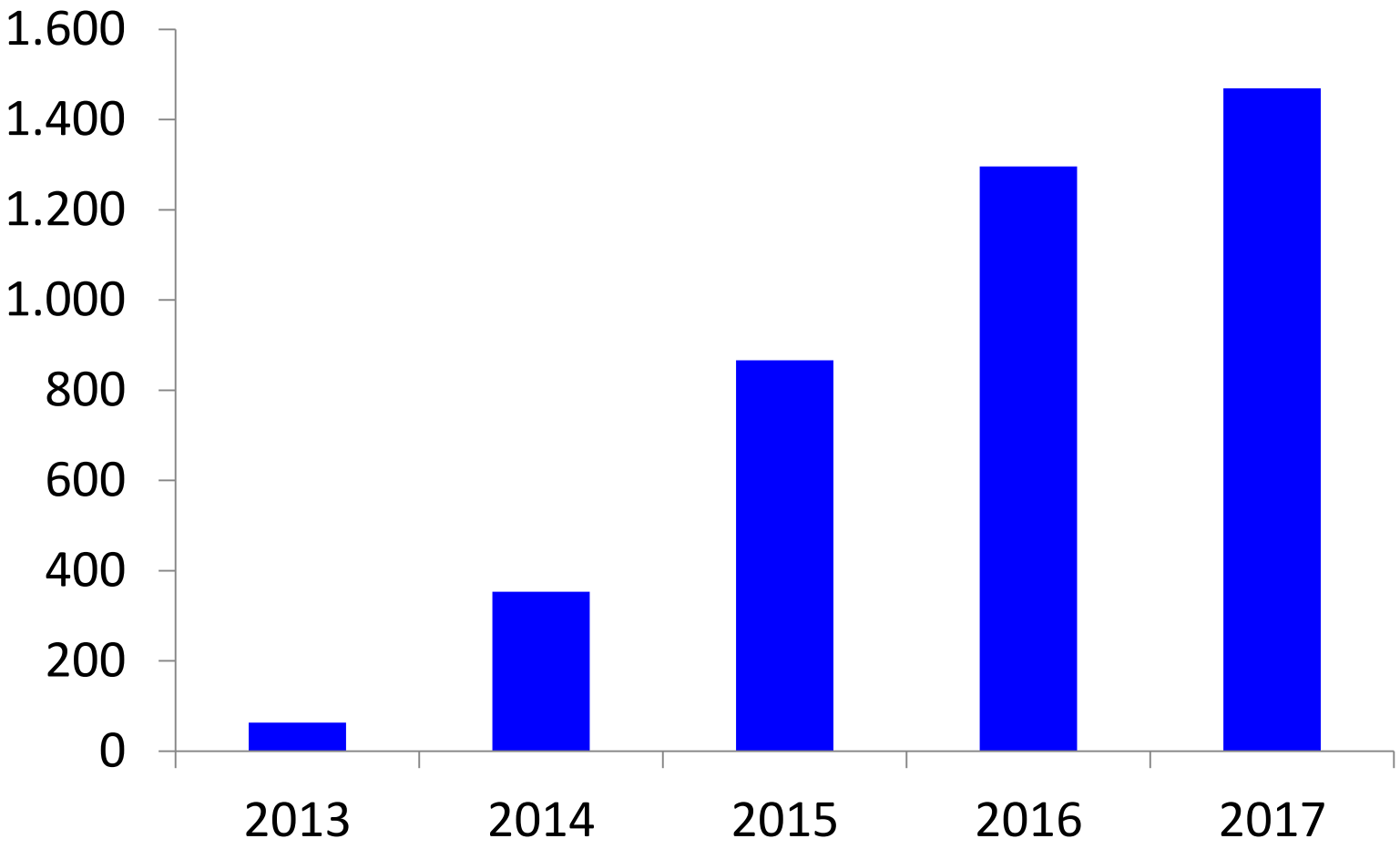
- Wind power map, 2009
- Complementary with hydro
- 1,000 MW Wind farm installed
  (90% of average power demand)
- Year 2017: 1.500 MW
  (35% electricity from wind power)
- Tender process / PPA, 20 years
- 20% - 44% local participation



Wind Energy price evolution



Wind Energy installed power (MW)

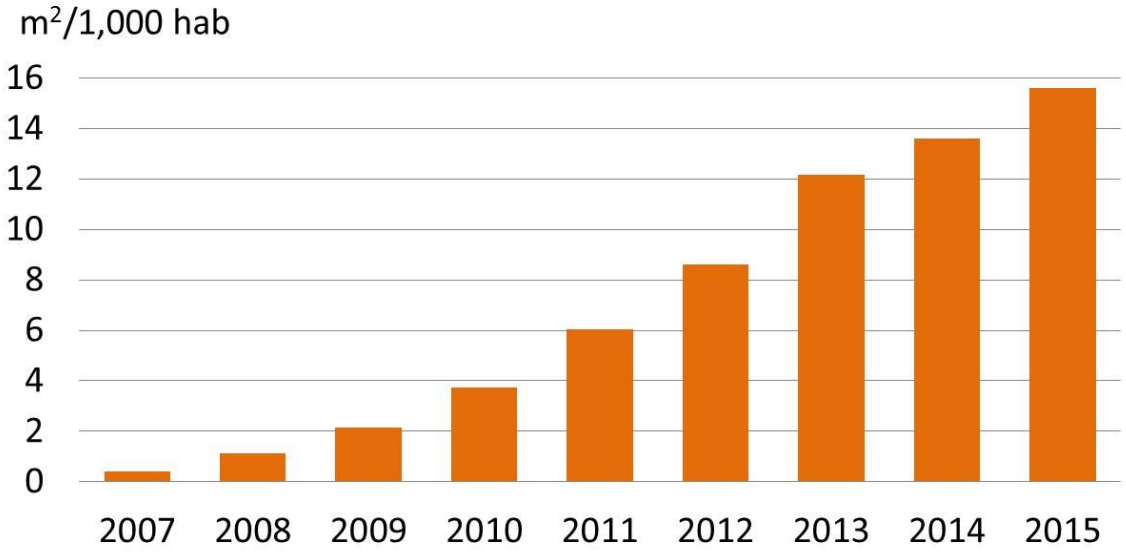


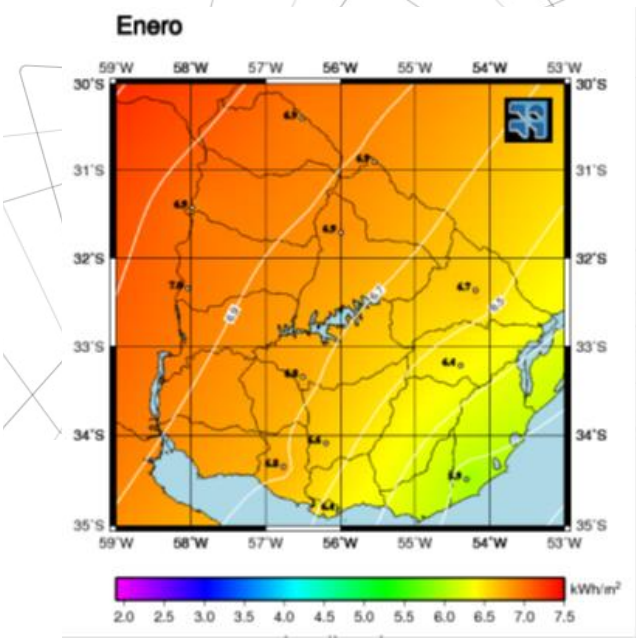
SOLAR ENERGY

Solar Thermal

- **Law No. 18.585** “Solar Thermal energy law”

- **Solar Plan**, Solar Thermal promotion, in residential sector





FV - Microgeneration

Solar PV

Decree - introduction of Solar energy PV in Uruguay. May 2013

IE/ 840.

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MINISTERIO DE ECONOMÍA Y FINANZAS

SECRETARIA DE ESTADO
SIRVASE CITAR
19/13

Montevideo, 02 MAY 2013

VISTO: el crecimiento de la demanda de energía eléctrica y por consiguiente la necesidad de incorporar potencia de generación eléctrica al sistema nacional, dinamizando las formas alternativas de generación y fomentando el desarrollo tecnológico nacional asociado.----------

RESULTANDO: I) que la normativa del sector eléctrico establece la forma en que deben realizarse los contratos de compraventa de energía eléctrica por parte del distribuidor en el mercado mayorista, previendo la posibilidad de celebrar contratos especiales;----------

II) que en función de la Política Energética 2005 - 2030 y

Three bands:

-Tender from 0,5 MW to 1 MW
-Tender from 1 MW to 5 MW

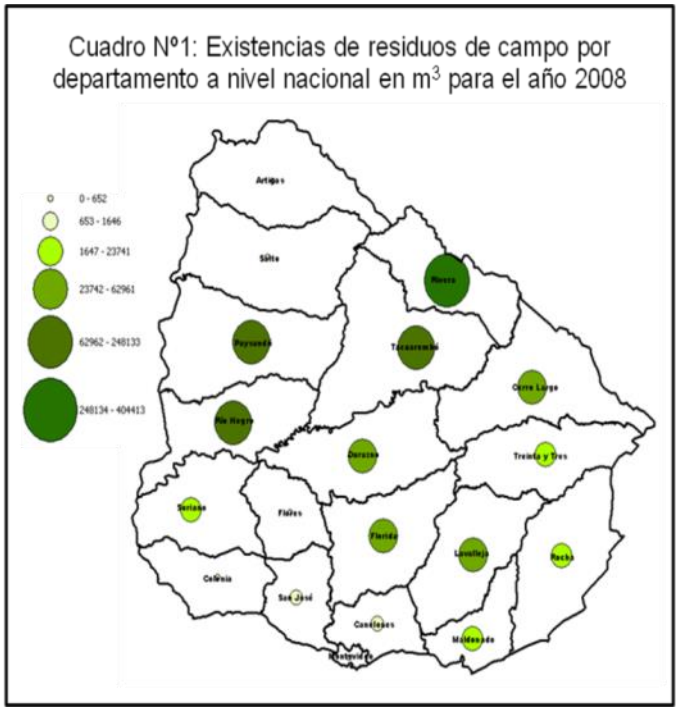
-FIT from 5 MW to 50 MW
- Price 86 – 91 USD/MWh

236 MW Solar PV plants signed

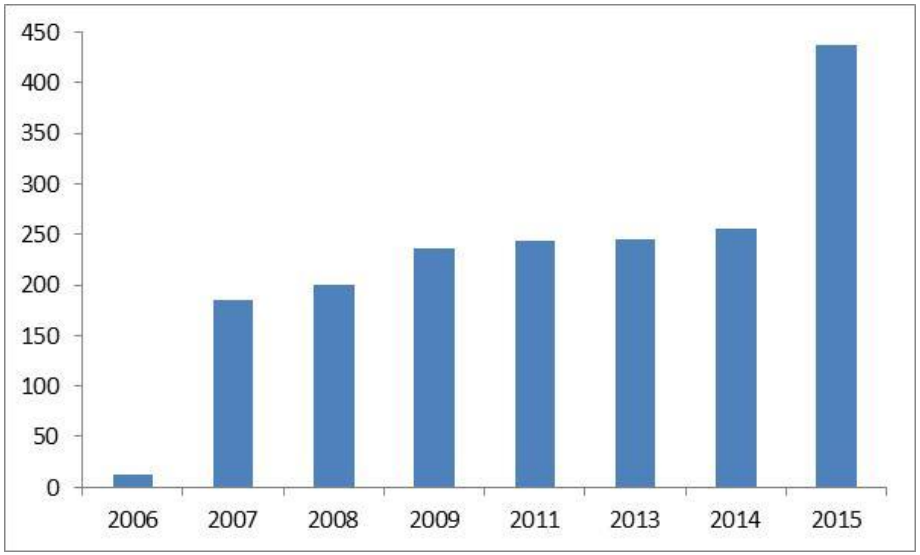
Solar PV Plant 50 MW – Salto, Uruguay

BIO ENERGY

BIOMASS



- 437 MW installed
- Raw materials: forestry residues, rice husks, bagasse, black liquor.
- 50% - 60% national component



Biomass plants operating





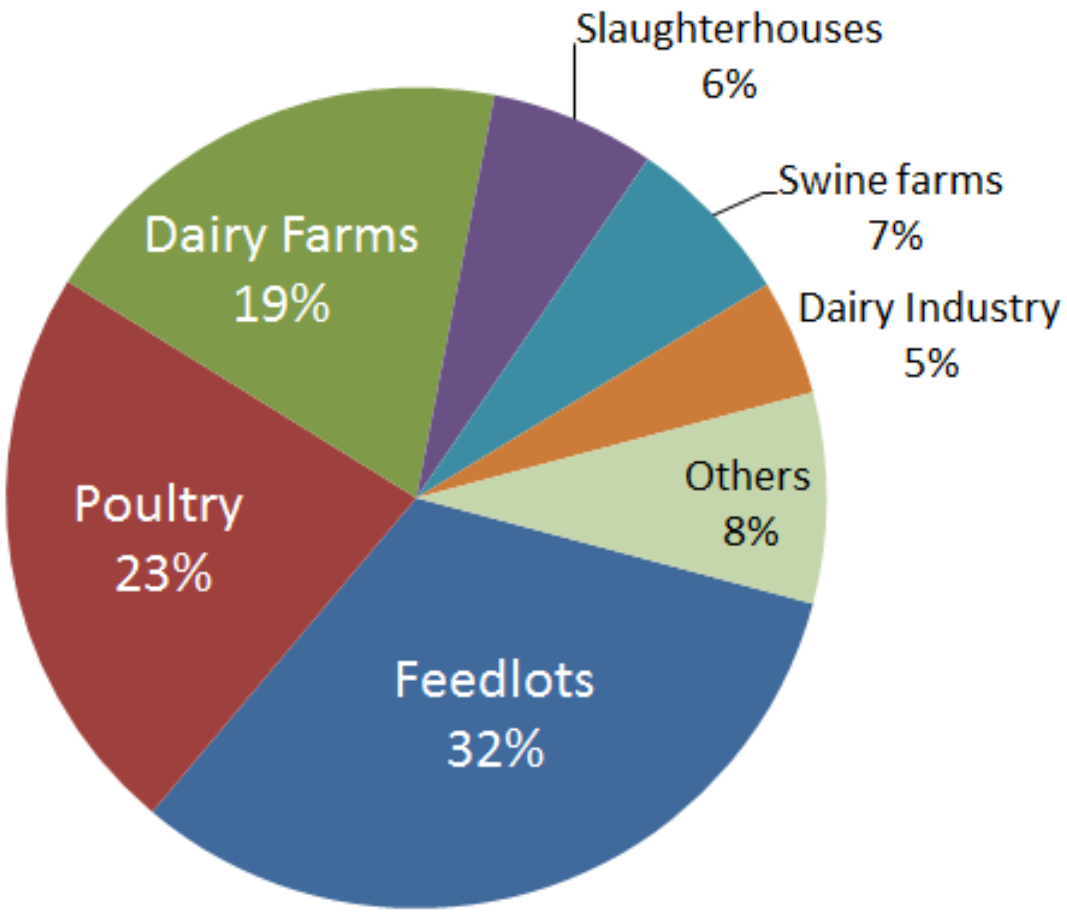





437 MW

Waste valorization (BioValor GEF Proyect)

Waste generation (BioValor GEF Proyect)

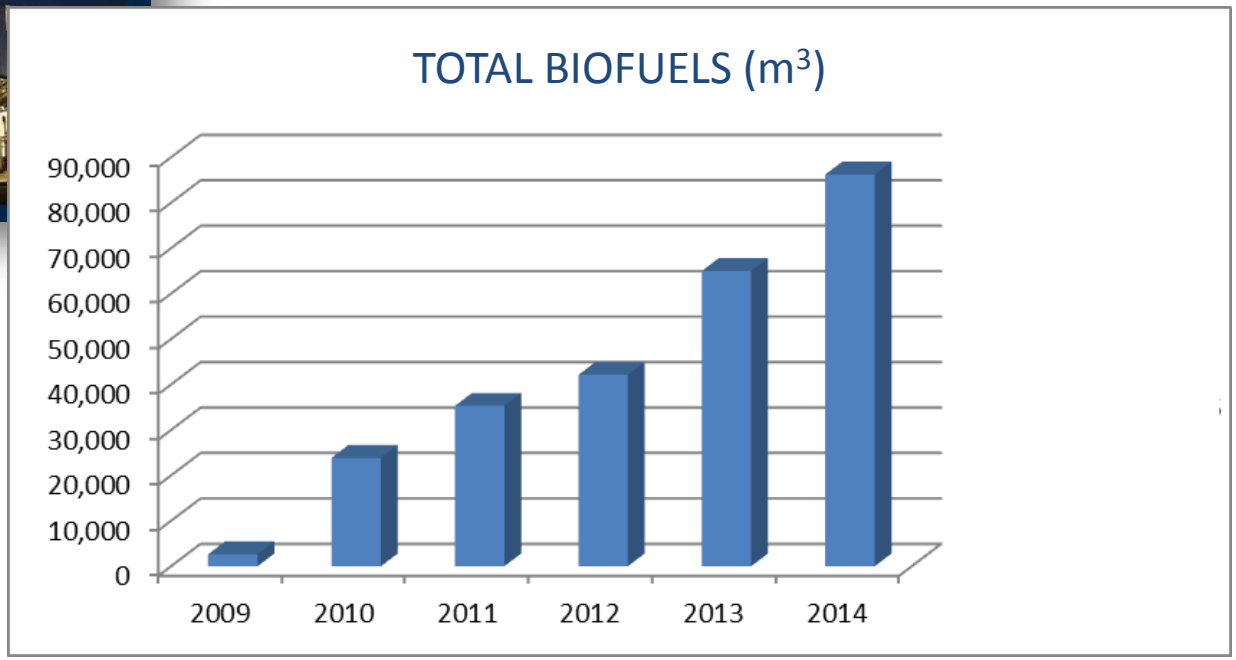


BIOFUELS

Biofuels Law (2007)

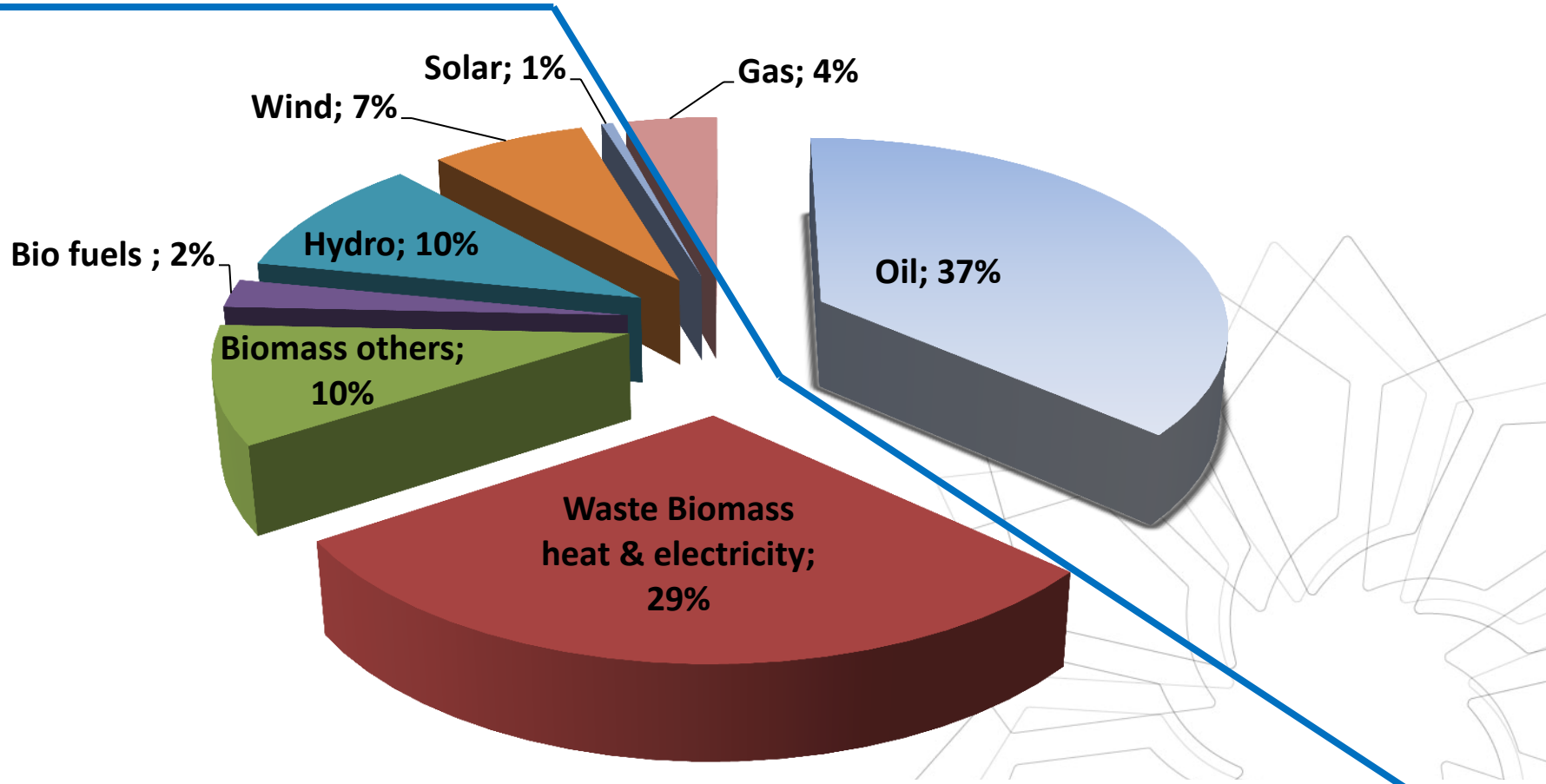
Biofuels (1st generation)
+ Food
+ Power (co-generation)
+ Feeds

2015:
Goal: E5/B5
Production: E10/B7



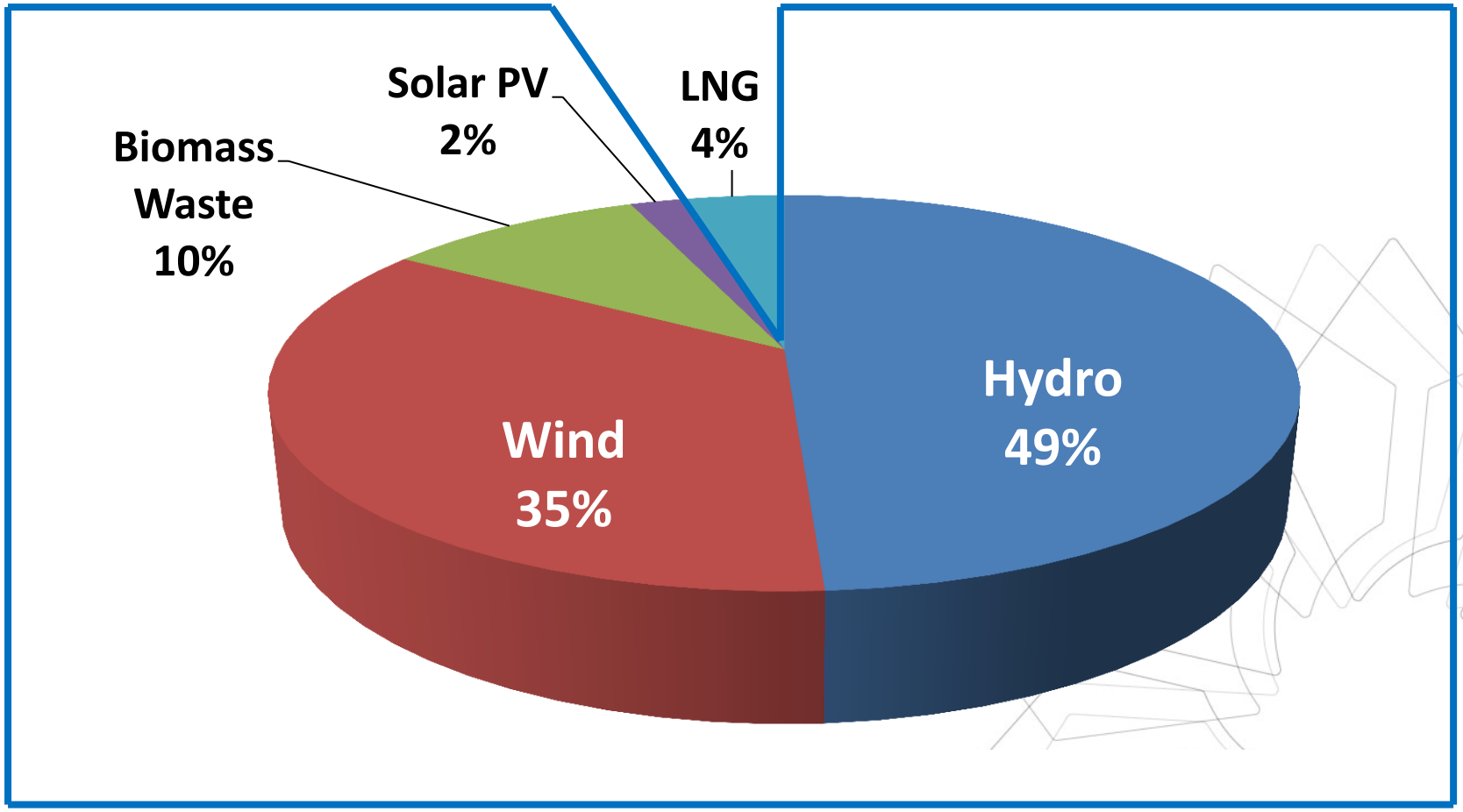
EXPECTED IMPACT OF THESE POLICIES

Primary global energy mix 2017



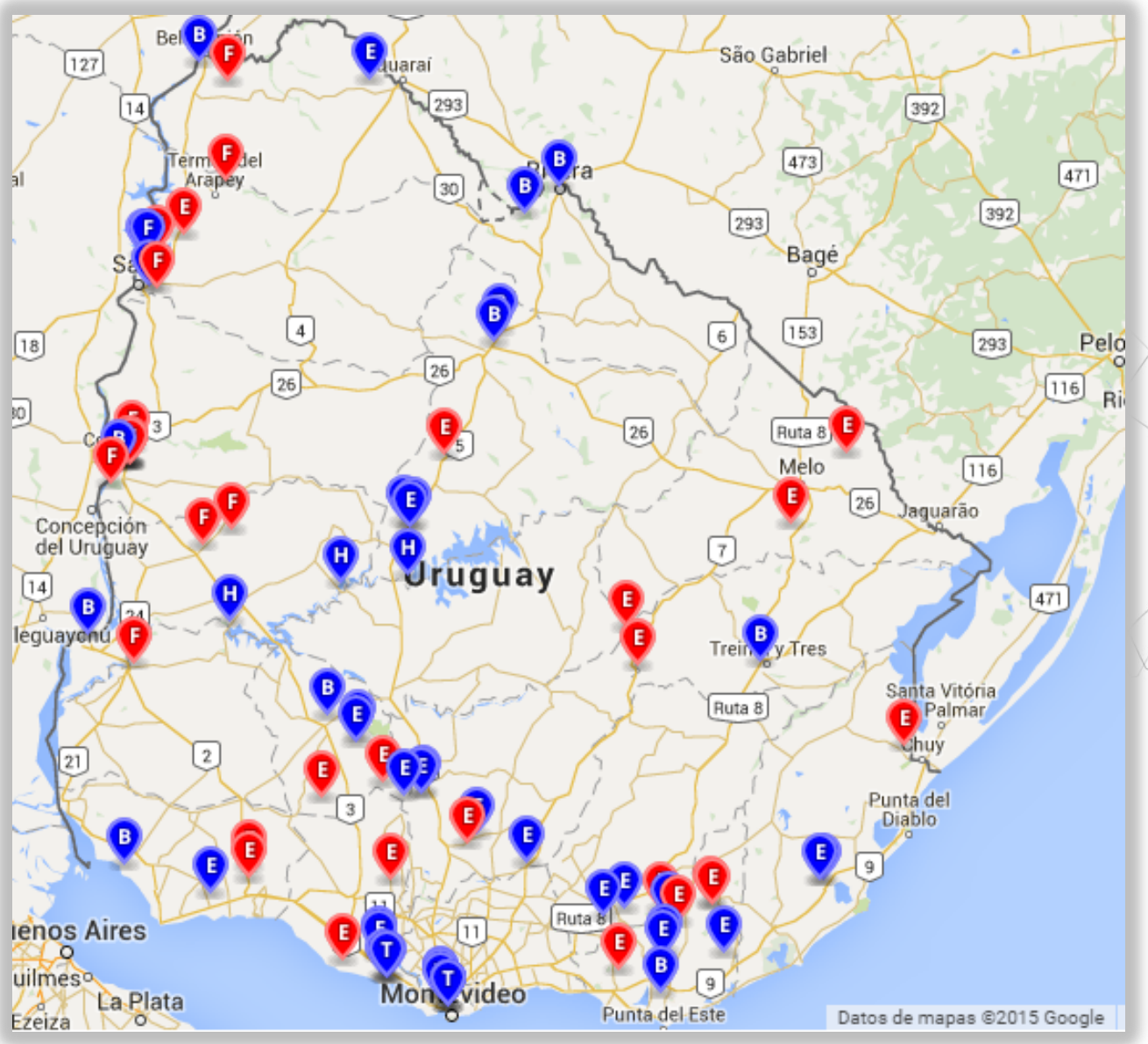
> 50% RENOVABLE

Electric mix - 2017

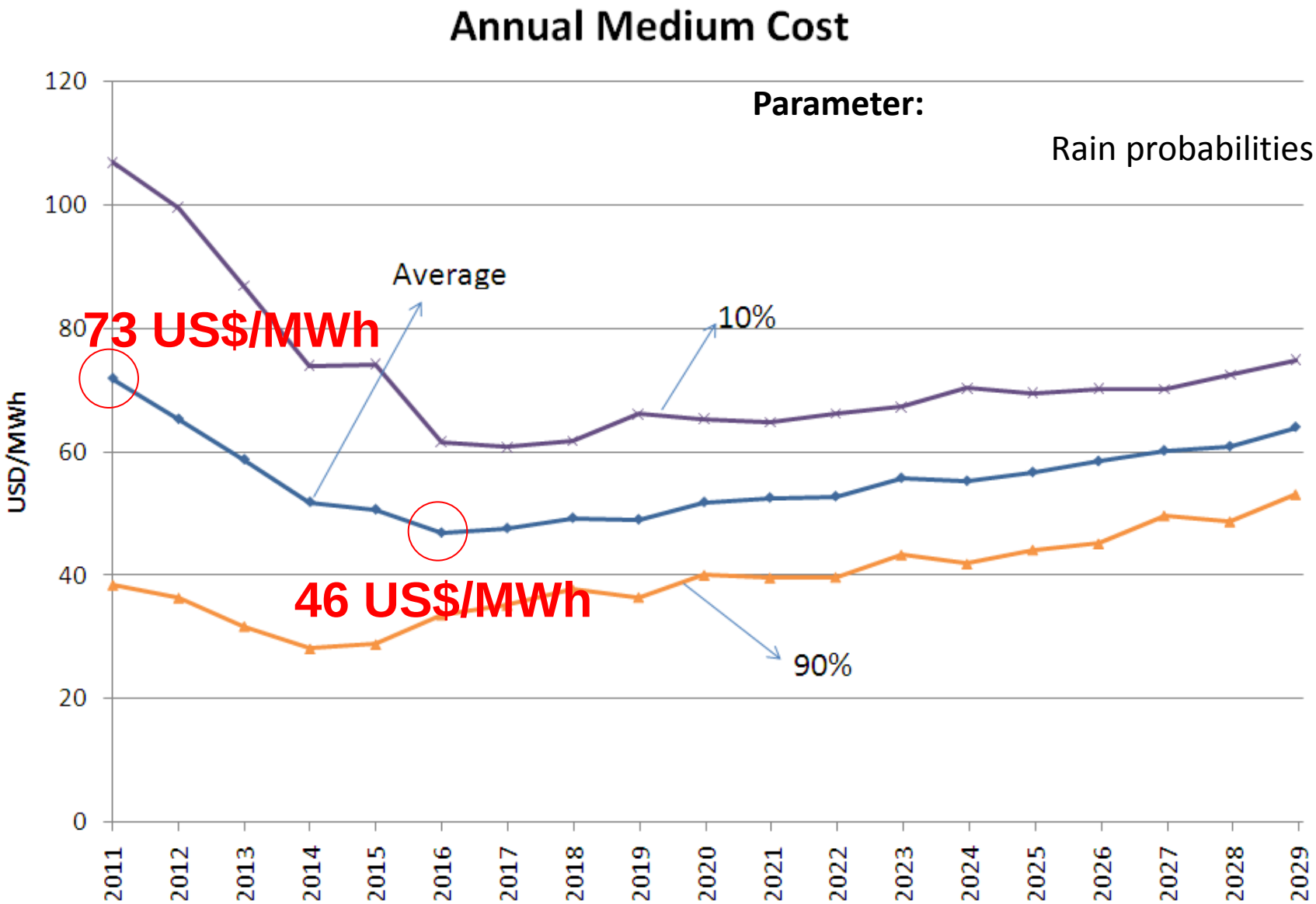


More than 90 % Renewable

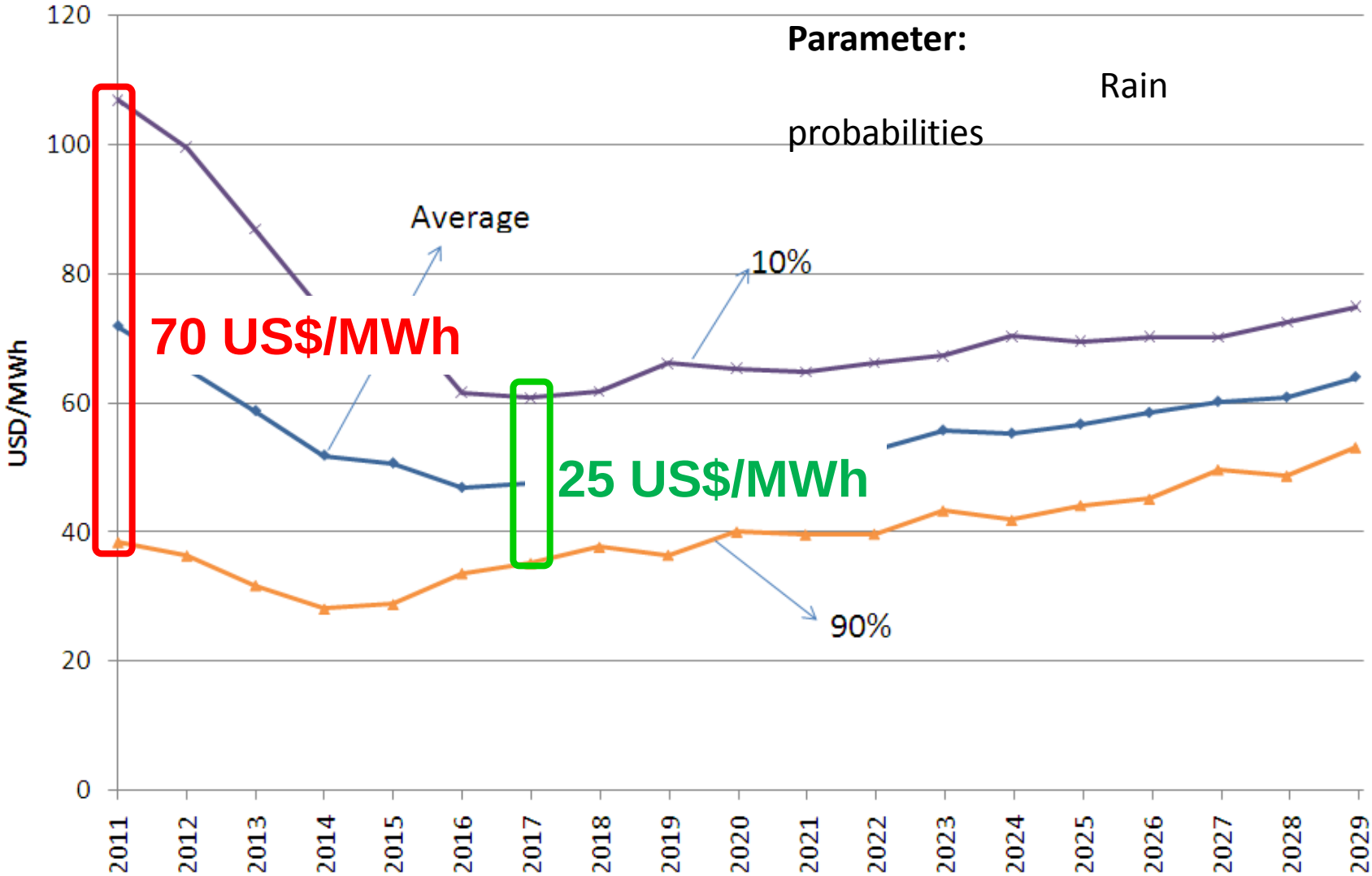
Distributed Power Generation



Medium Supply Demand Cost



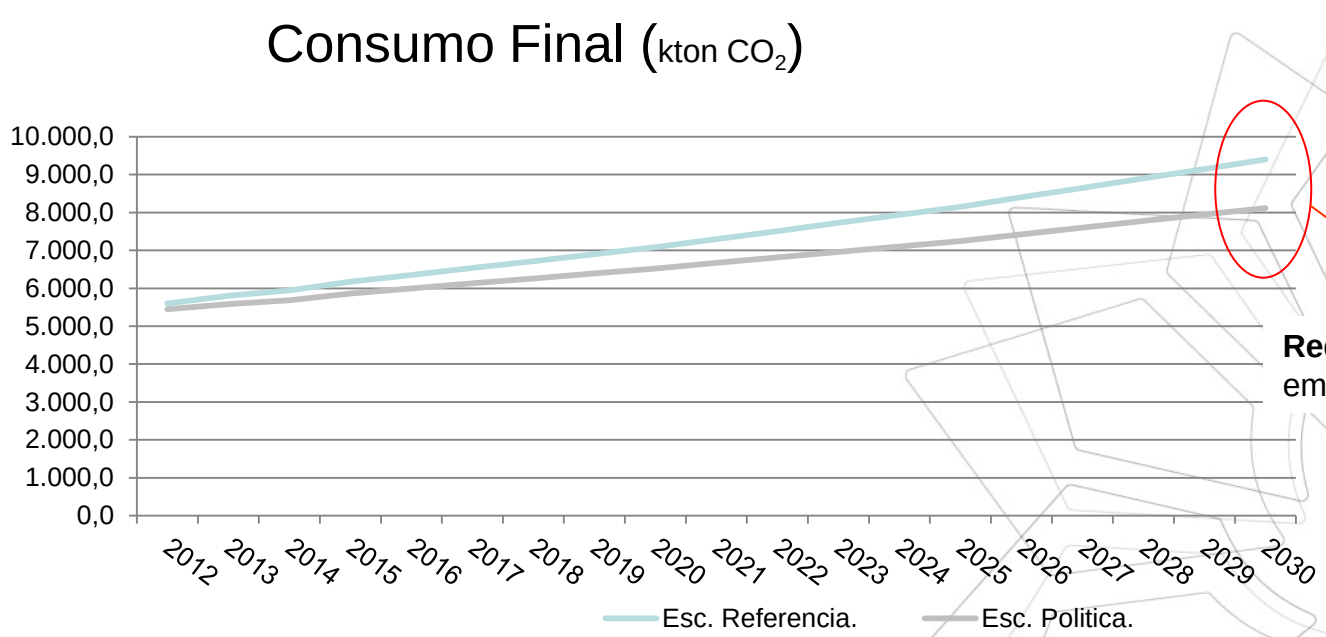
Variability of supply demand cost



IMPACT OF THESE POLICIES IN REDUCING EMISSIONS

REDUCING EMISSION - Energy Demand

energy efficiency actions



Reduction 14% 2030 emissions. Based on BAU

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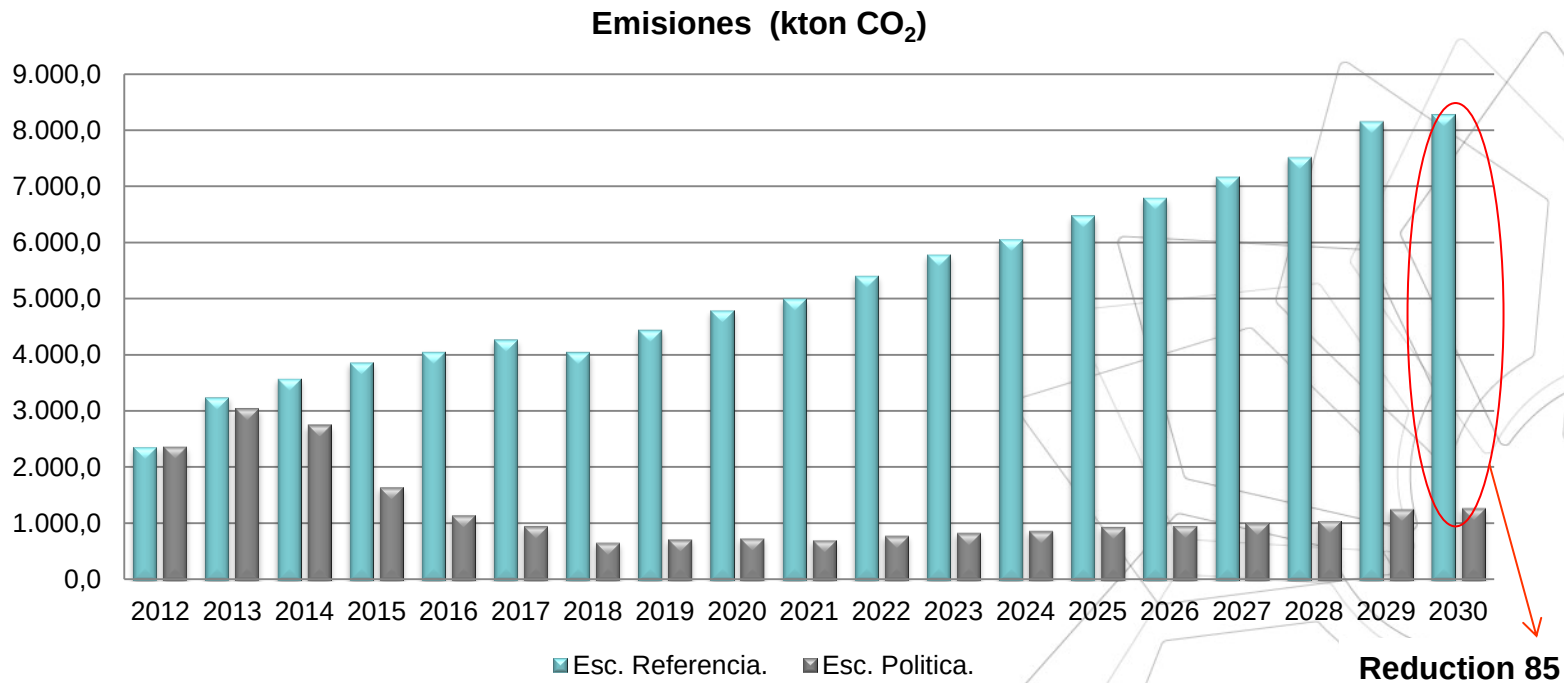
REDUCING EMISSION - Energy Supply

Introduction of renewable energies



Reduction 85 % for 2030.
Based on BAU

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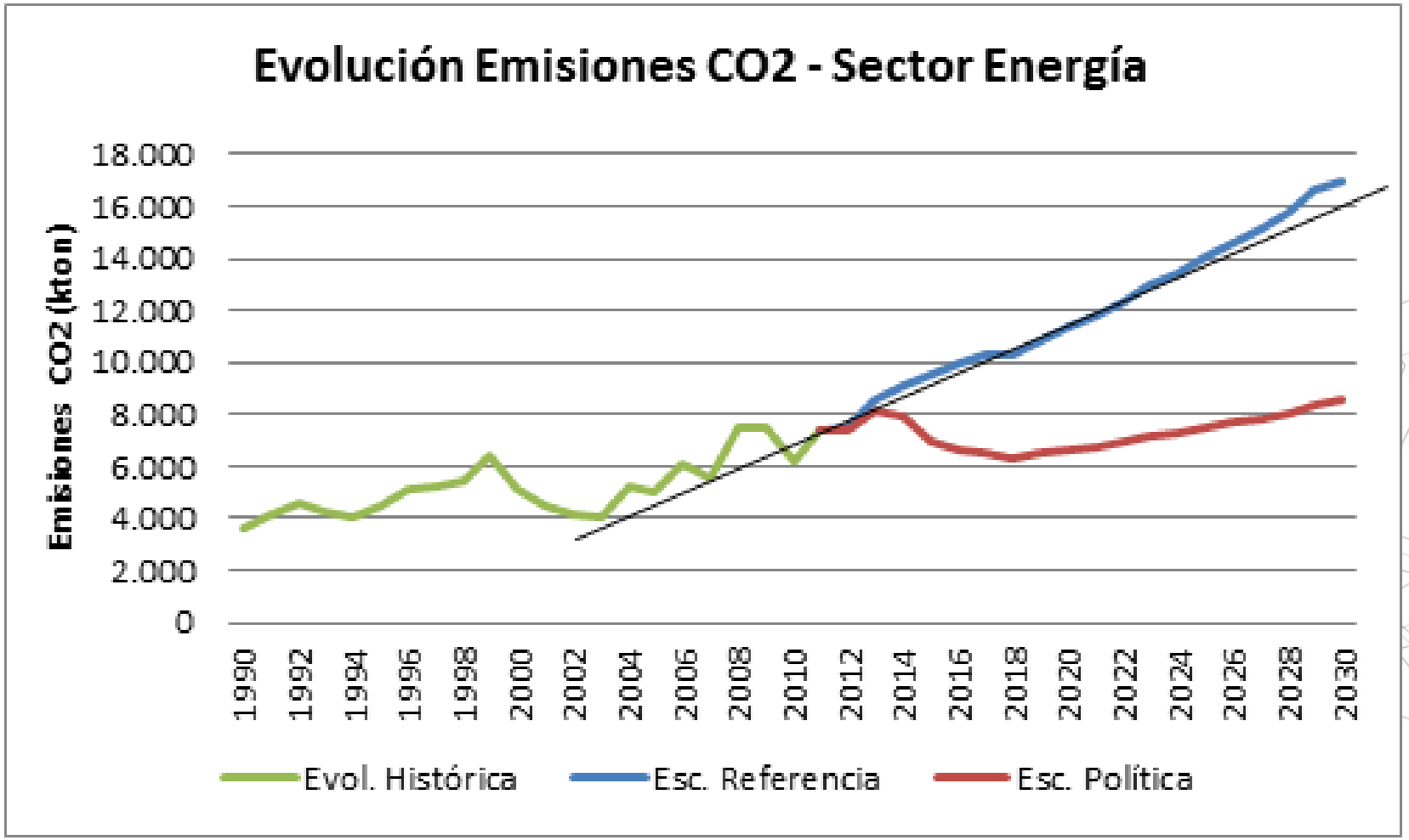
Emission reduction in Energy Sector



Thank you for your attention…

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