

RENEWABLE ENERGY IN ENERGY POLICY URUGUAY 2030



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Authority (since 2015)

Former Director of Energy
of Uruguay (2008-2015)

Buenos Aires, May 2015

FRAMEWORK AND HISTORICAL BACKGROUND

- Uruguay has no proven reserves of oil, natural gas or coal
- No access to natural gas in the region
- No space for new large hydropower plants

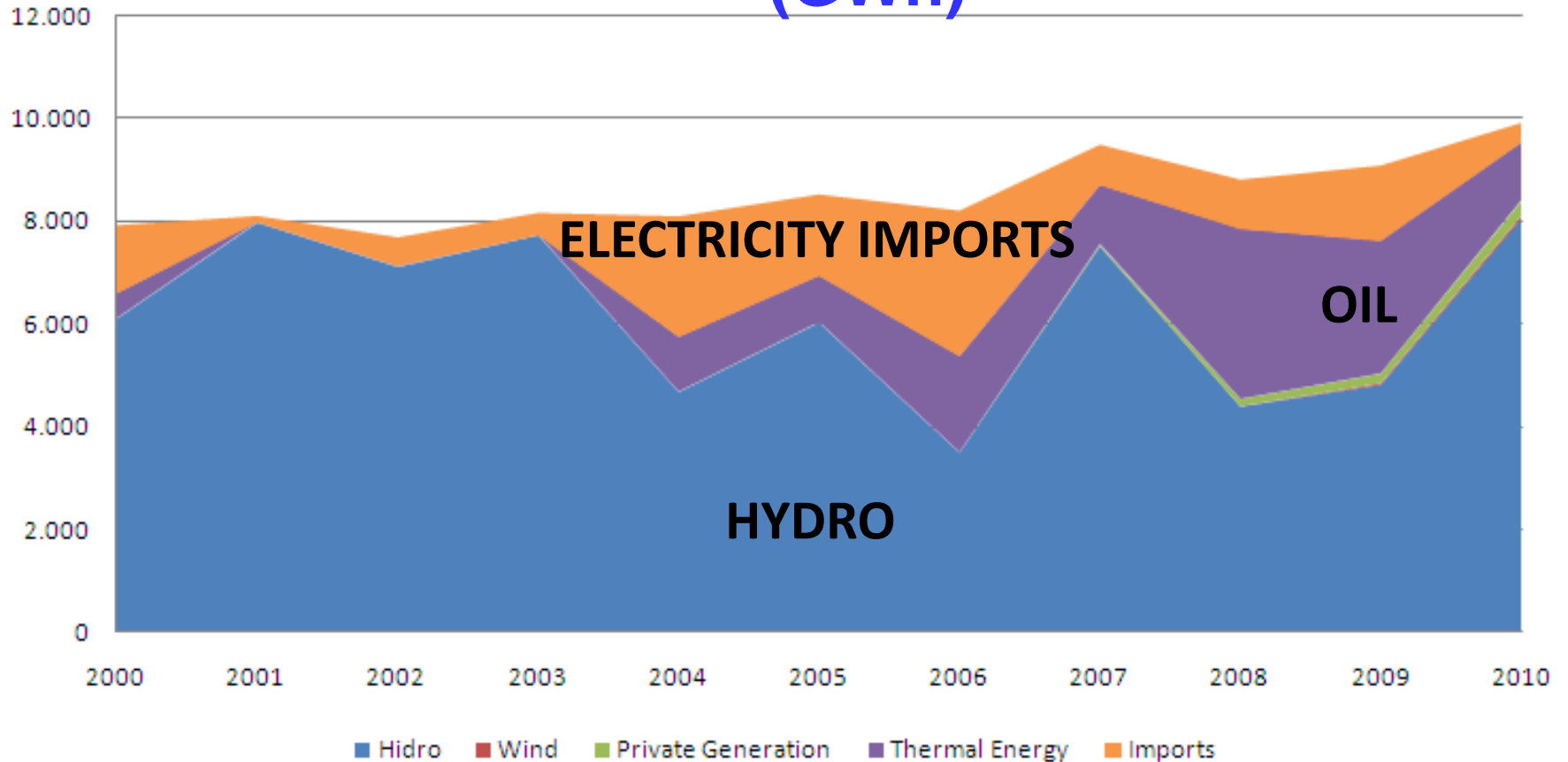


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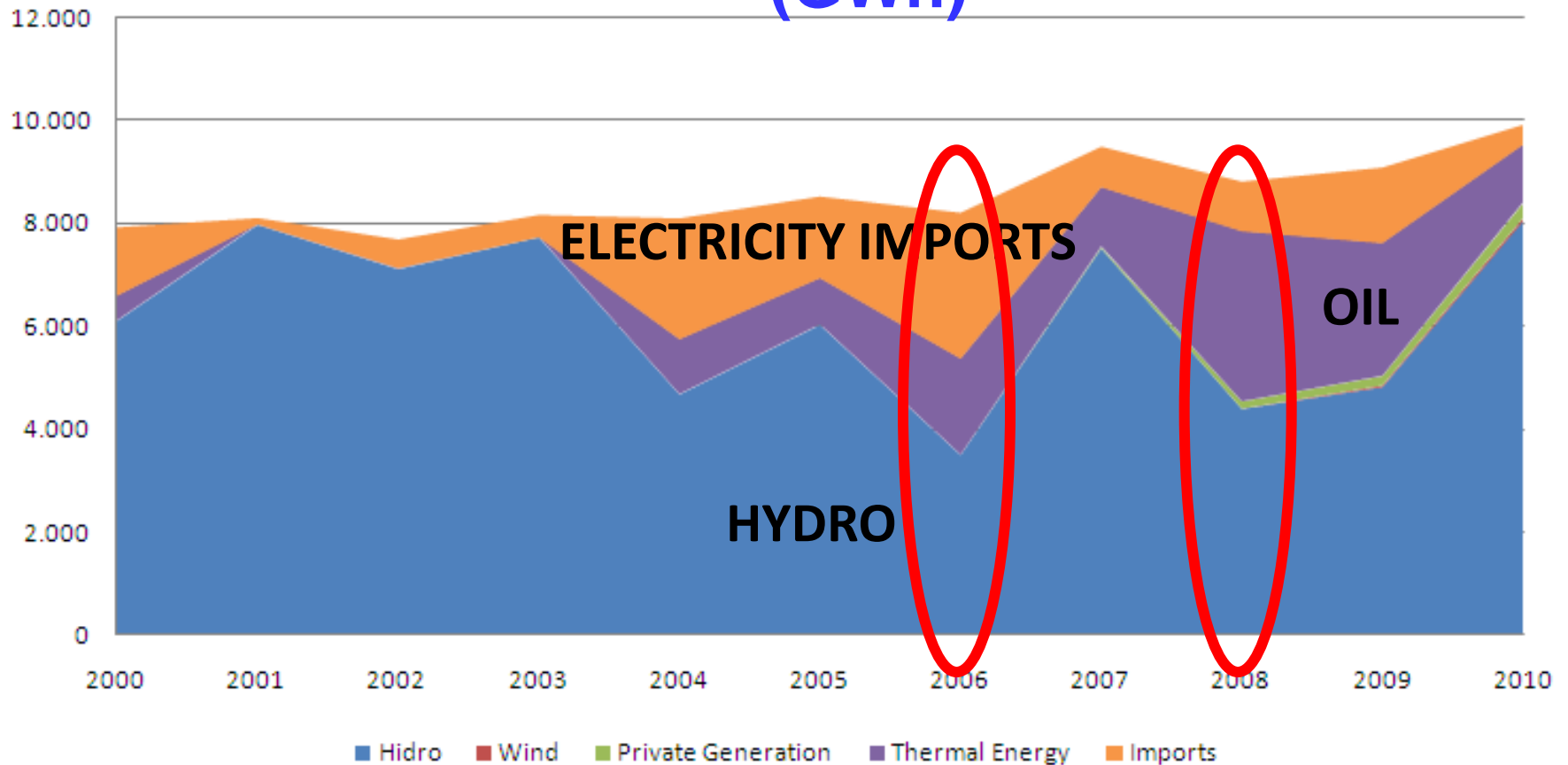
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Increasing dependence on climate vulnerability (“El Niño”)



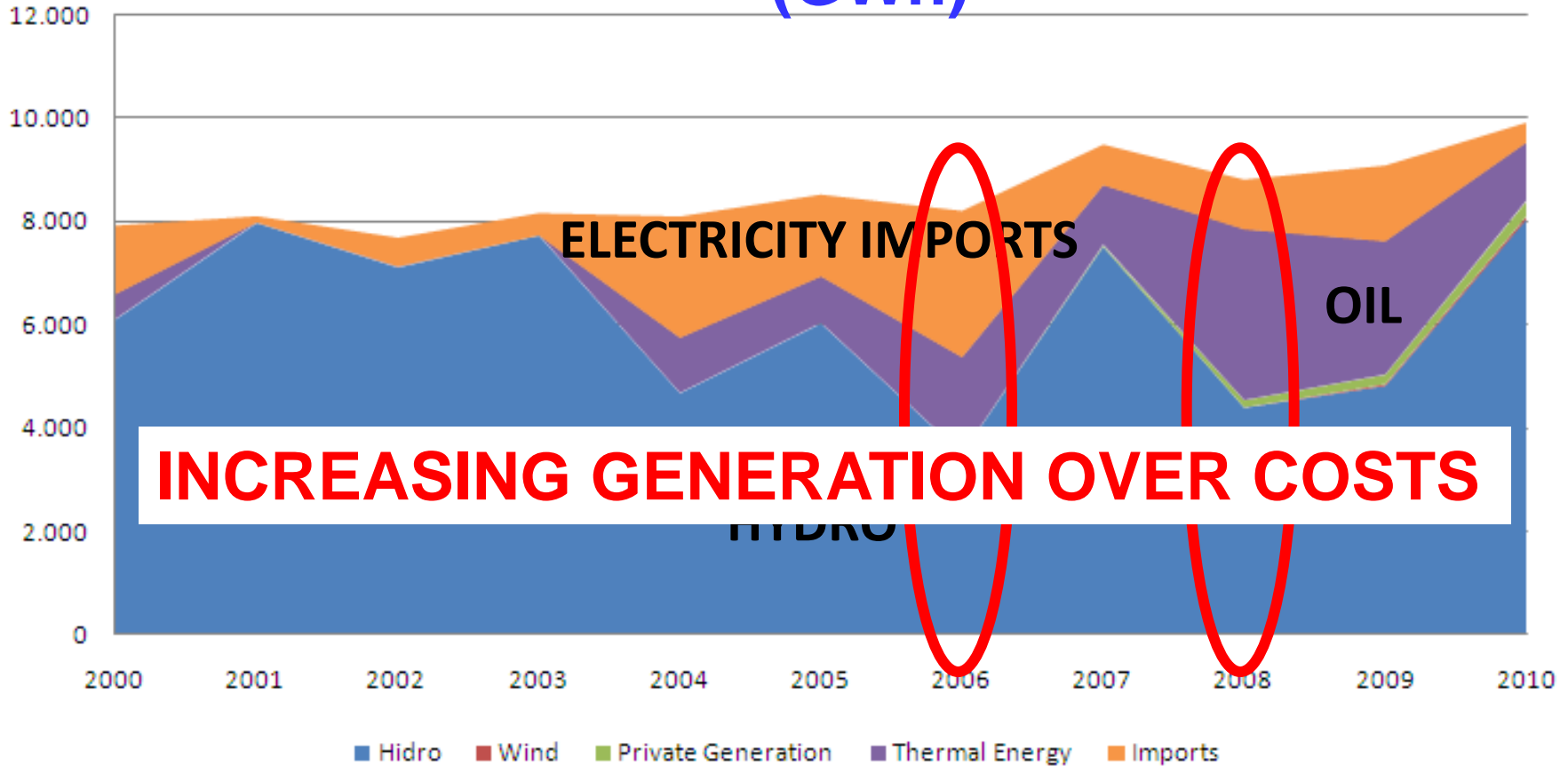
Energy source in the power sector (GWh)



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 - **Huge potential over costs**
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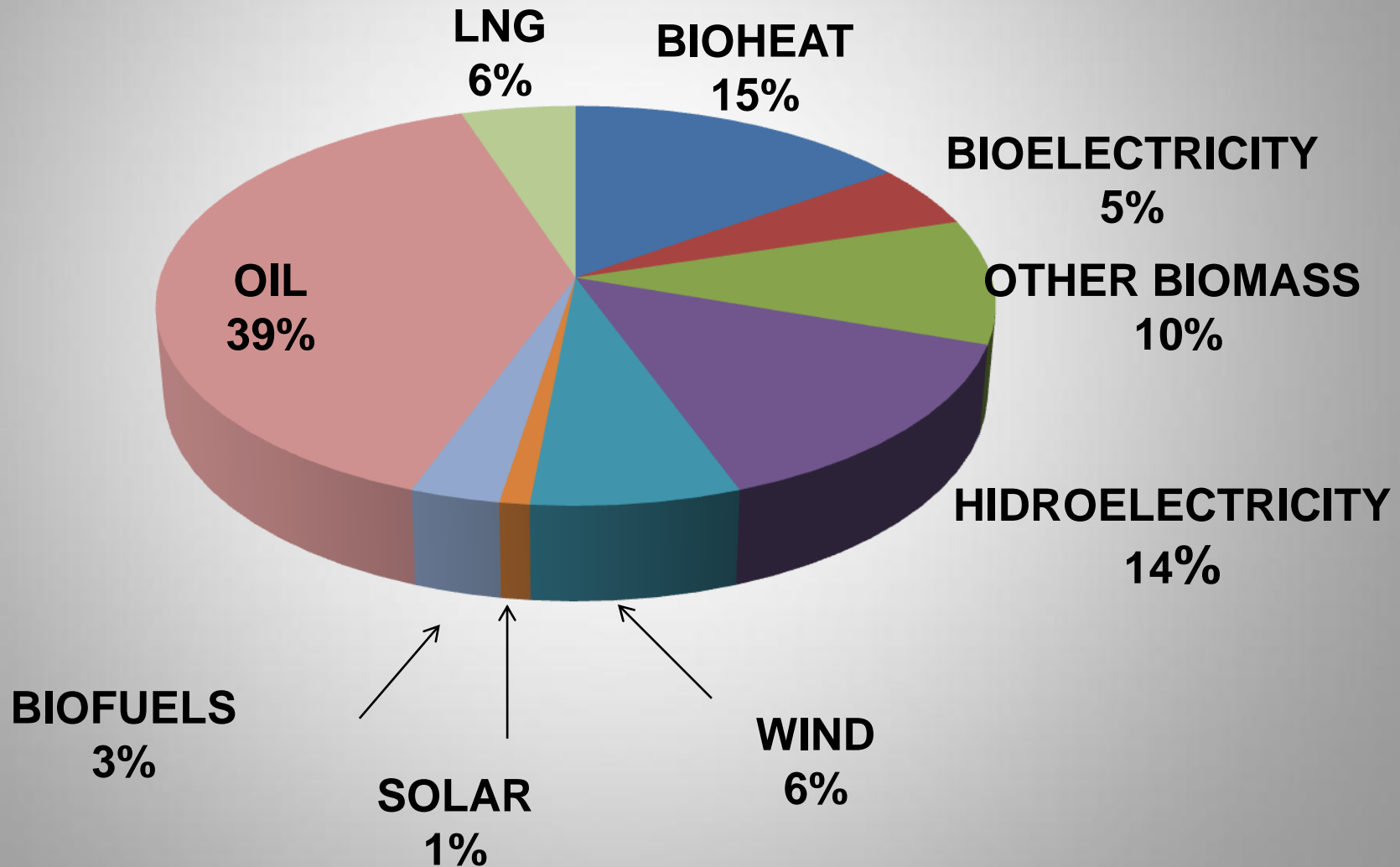
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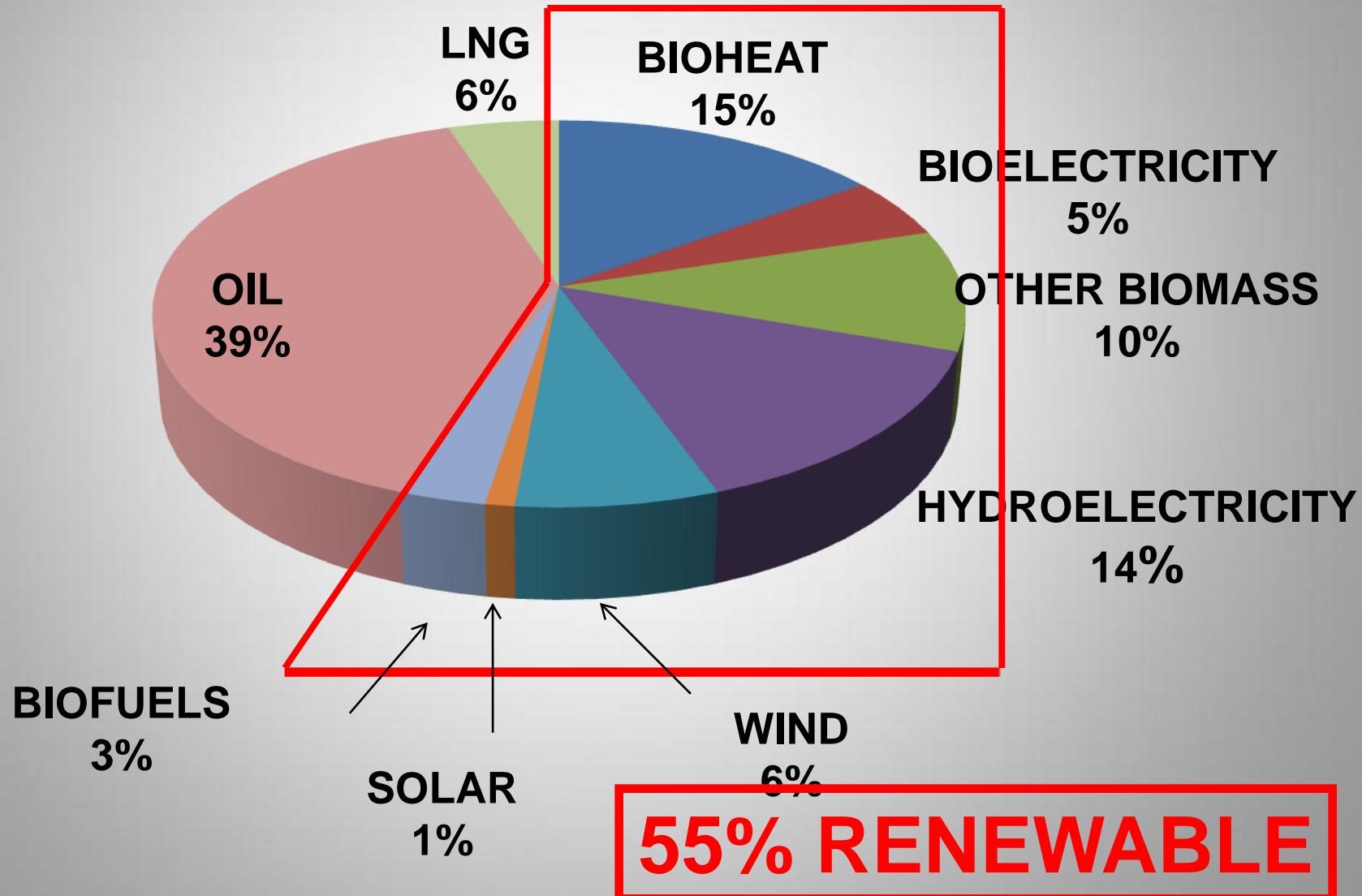
ADAPTATION RATHER THAN MITIGATION

DRAMATIC CHANGES IN RECENT YEARS

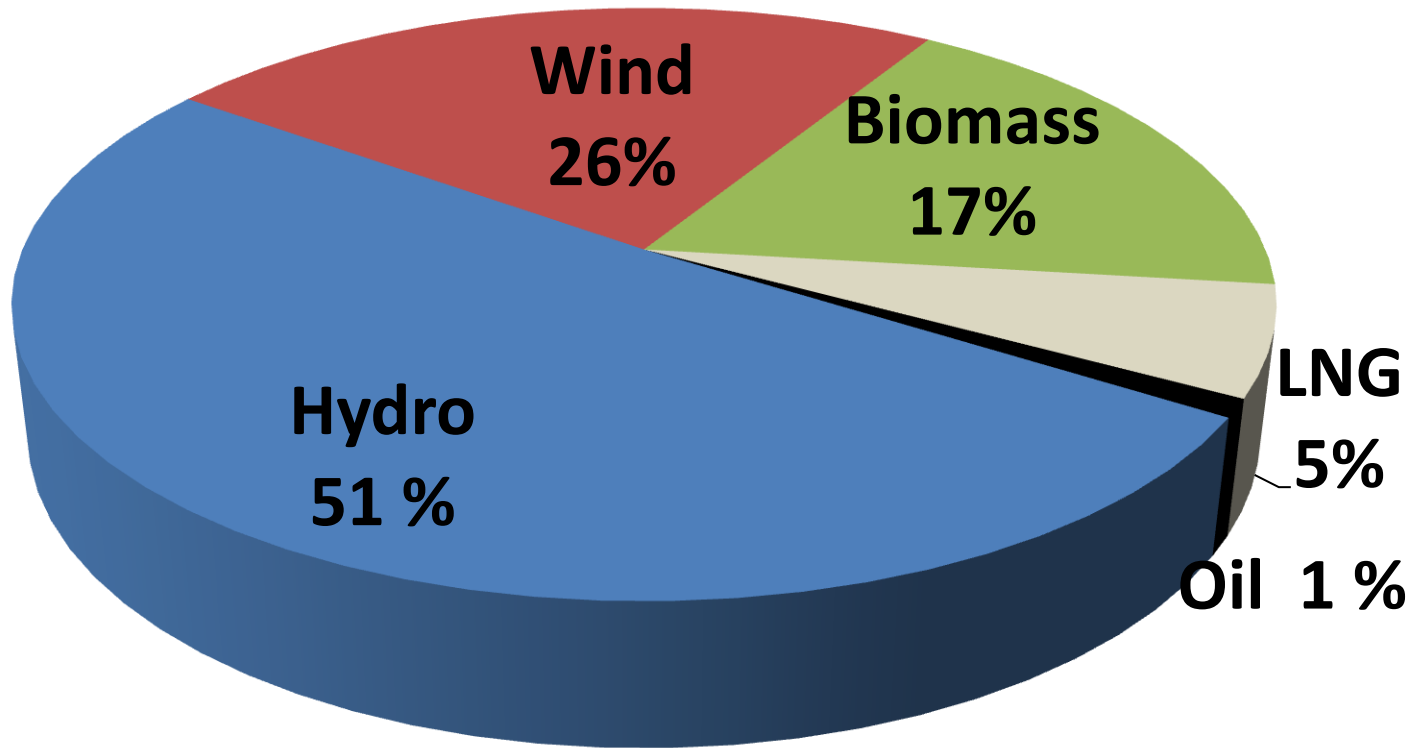
GLOBAL PRIMARY MIX 2016



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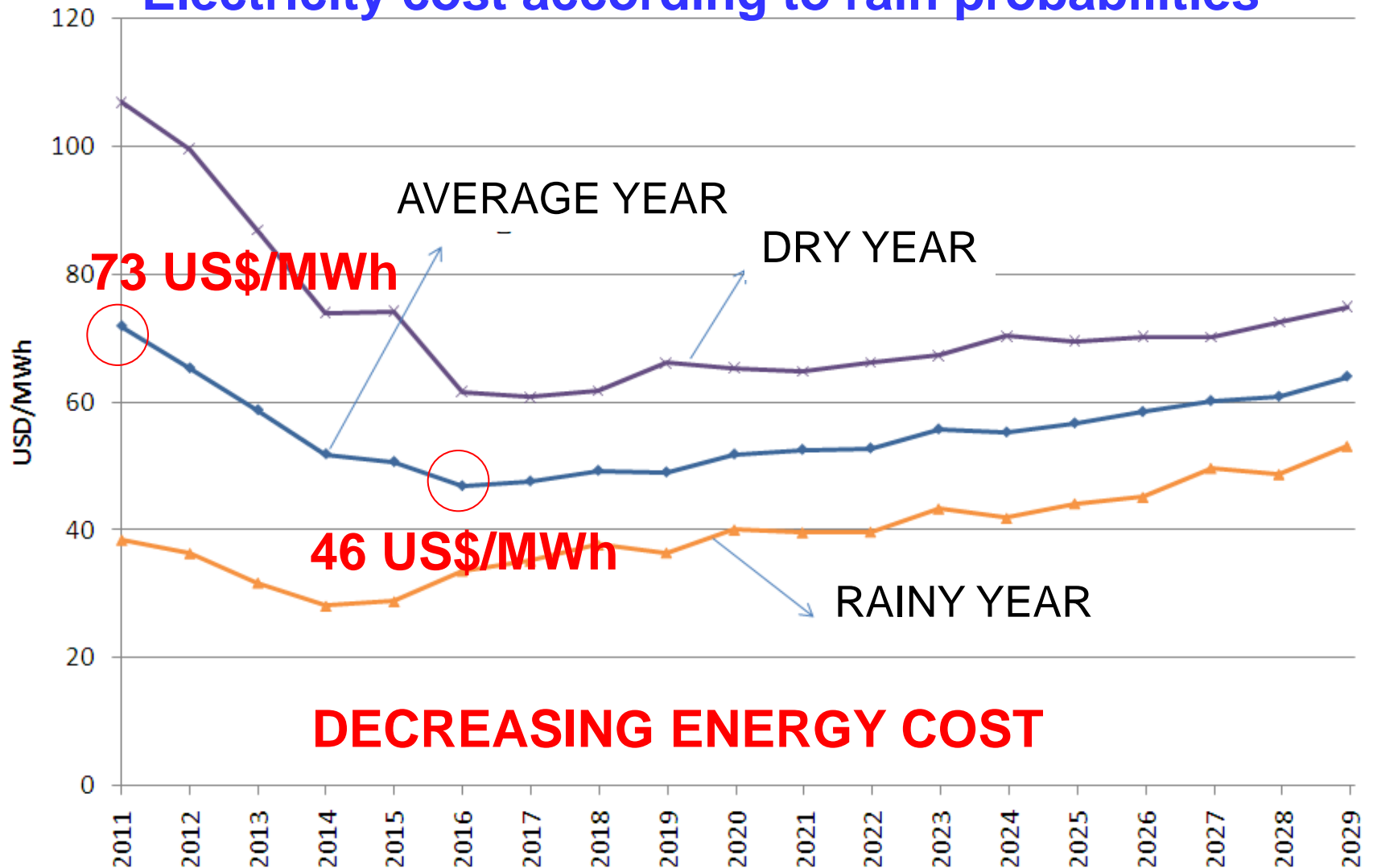


ELECTRIC MIX 2016

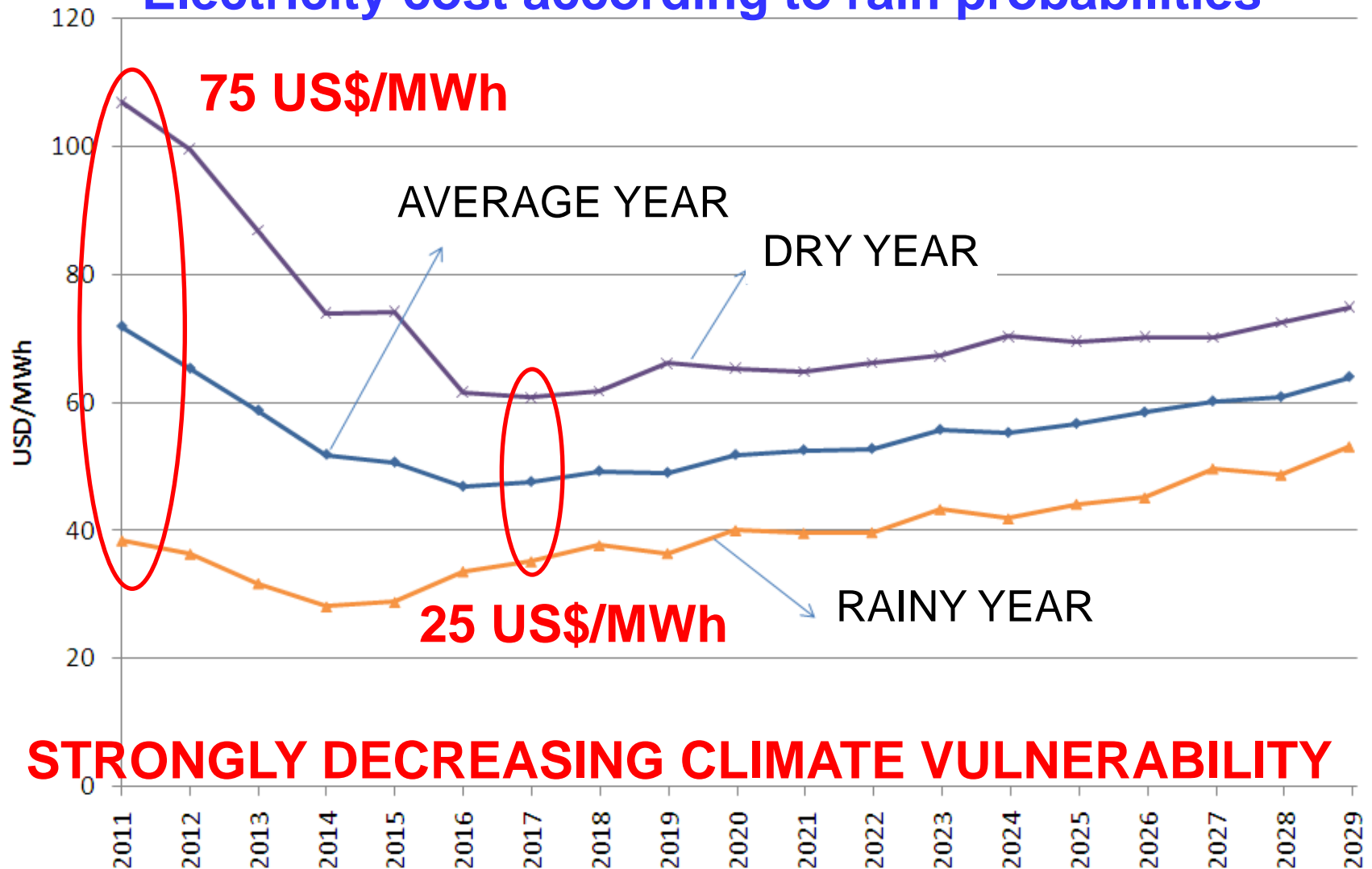


94% RENEWABLE

Electricity cost according to rain probabilities

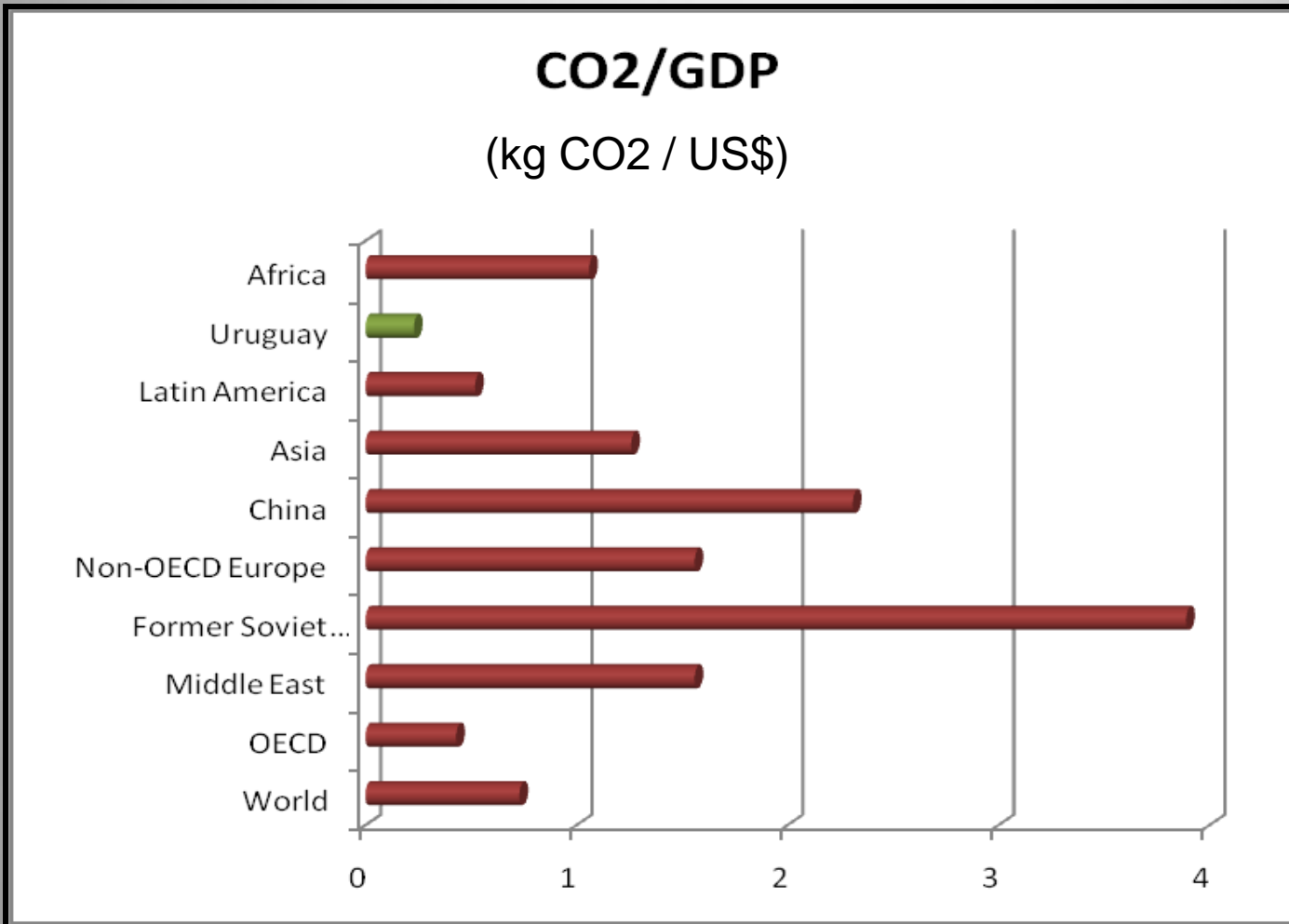


Electricity cost according to rain probabilities



STRONGLY DECREASING CLIMATE VULNERABILITY

VERY LOW GHG EMISSION INTENSITY



Source: IEA

VERY LOW GHG EMISSION INTENSITY

CO₂/GDP

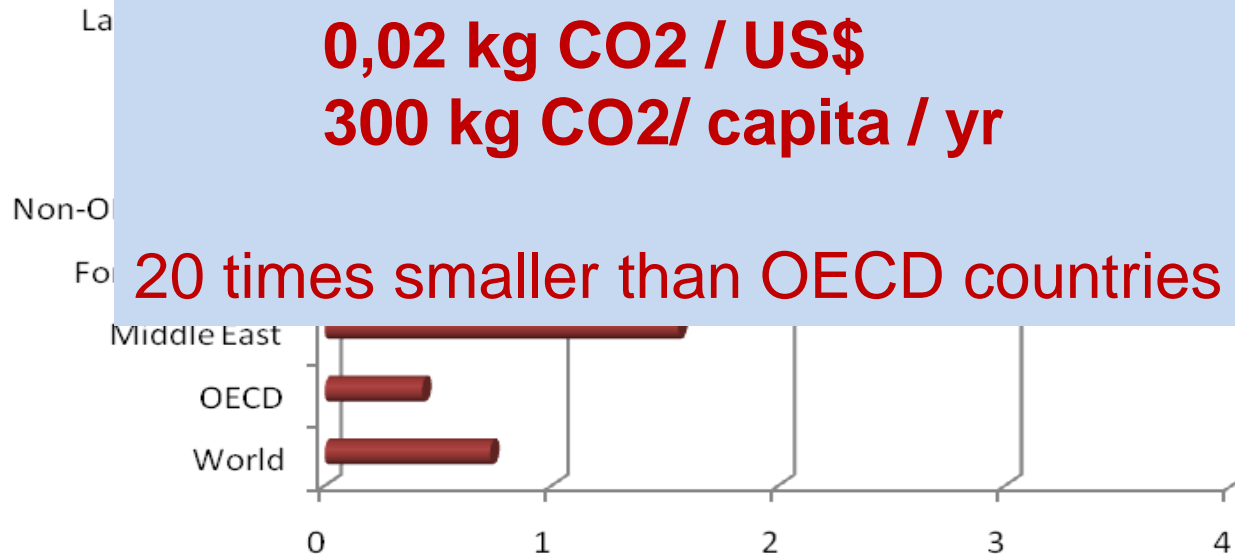
(kg CO₂ / US\$)

POWER SECTOR EMISSIONS:

0,02 kg CO₂ / US\$

300 kg CO₂/ capita / yr

20 times smaller than OECD countries



Source: IEA

WHAT HAPPENED?

THE MAIN INGREDIENTS

- A **long term (2030) global energy policy**, including economic, environment, cultural and social issues was defined in 2008
- The policy was backed in 2010 by **all political parties** and it has a **strong social support**
- The adequate framework (legal, institutional, regulatory, capacity building) was build
- Ad-hoc Public-Private Parternships (with the Public Utility and the National Oil Company): looking for win-win oportunities

ENERGY POLICY URUGUAY 2030

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

- Four “Strategic Guidelines”
- Short, medium and long term goals
- An evolving set of tools



INVESTMENTS (2010-2015)

7.1 billion dollars

- 2.4 billion public sector
(Public Utility and National Oil Company)
- 4.7 billion public-private partnership

3% of GDP per year (5 times Latin American average)

THE MAIN ACTIONS

- 1) Fast introduction of non-traditional renewable sources
- 2) LNG regasification terminal
- 3) Structural transformation of the electric sector
- 4) Domestic oil and gas exploration
- 5) Strong enhancement of energy efficiency
- 6) Energy access (defined as a “human right” in Uruguay)

RENEWABLE COSTS

- Wind energy: 62 US\$/MWh (2011)
- PV: 86 US\$/MWh (2014)
- Biomass: 92 to 112 US\$/MWh (it includes up to 33 US\$/MWh of externalities)

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NO SUBSIDIES

**ONLY THE APPROPRIATE FRAMEWORK
TO COMPETE (AUCTIONS)**

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- PV: 86 US\$/MWh (2014)
- Biomass: 92 to 112 US\$/MWh (it includes up to 33 US\$/MWh of externalities)
- Renewable energies **reduce and stabilize electricity costs:**
 - average generation cost: 45 US\$/MWh
 - no commodity
 - long term PPA

Structural transformation of the electric sector to make this possible

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- Biomass and natural gas combined cycle complementing
- Dramatic redefinition of dispatch rules and grid expansion criteria, including smart grids to manage demand
- Increase of regional interconnection (2000 MW with Argentina; 570 MW with Brazil)

WIND ENERGY

- 0 MW in 2007
- 594 MW today
(45% of average power demand)
- 1200 MW by mid 2016
(**95% average power demand**)



WORK IN PROGRESS

- Energy storage
- Demand management (real time electric rate: irrigation, household electric appliances, smart grids)
- Transport sector

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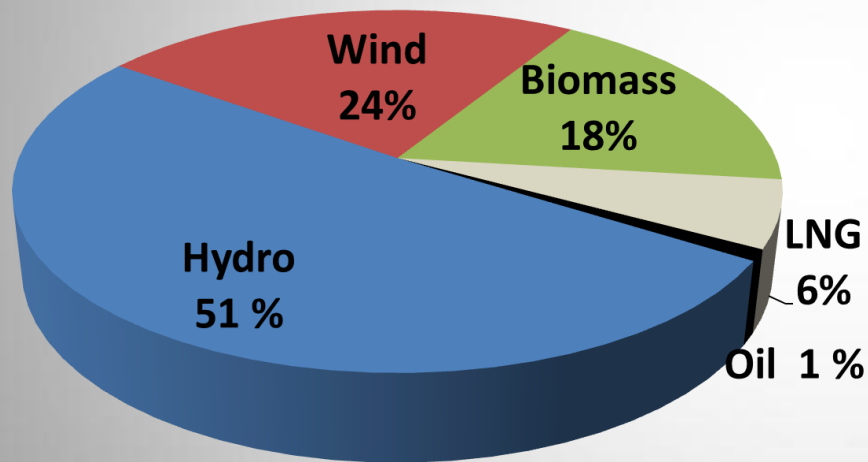
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- Renewables have lower costs
- Renewable share in the power sector can be close to 100%

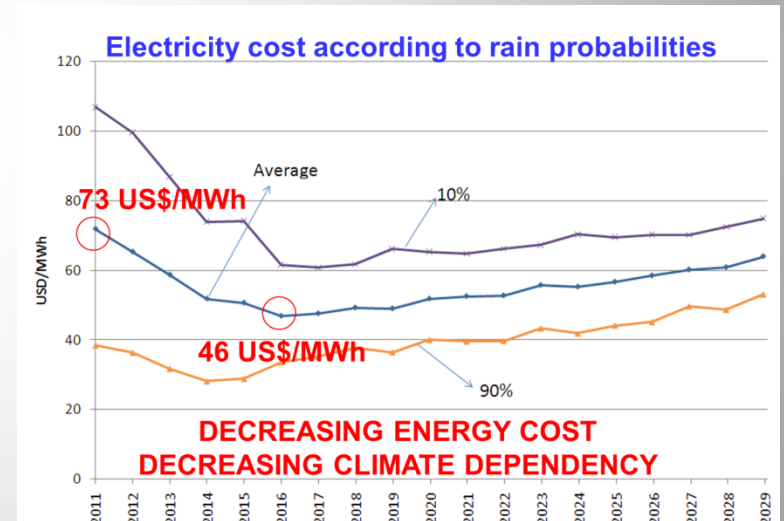
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- Renewables have lower costs
- Renewable share in the power sector can be close to 100%
- A strong public policy and State involvement attract the private sector
(IRENA, REN21, WWF: Uruguay at the top of the list in RE investments per capita)

Thank you!



94% renewable electricity



STRATEGIC GUIDELINES

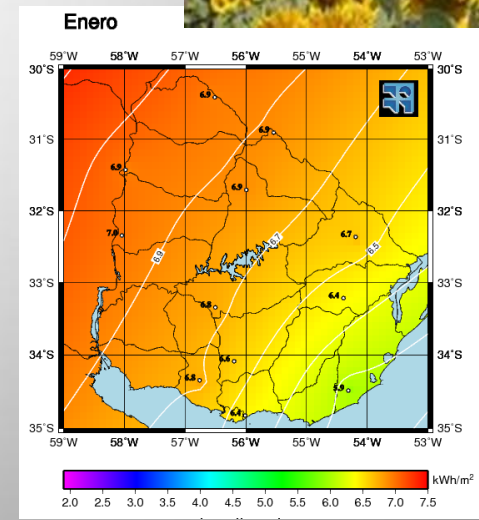


Institutional

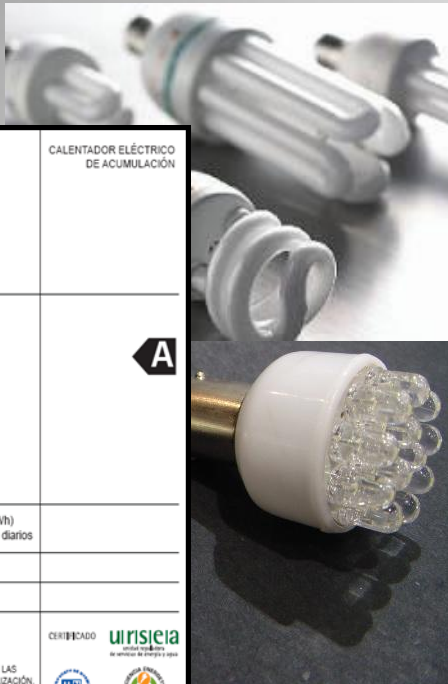
- Government defines and coordinates energy policy
- Public utility (UTE) and NOC (ANCAP) as the main tools
- Enhanced participation of private companies
- Transparent and stable regulatory framework

Supply

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



STRATEGIC GUIDELINES (continue)



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

