

# Overview on the Chile's Electricity Market, and Nuclear Power

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# CONTENT

- **Introduction**
- National Electricity Market
- Final Comments

# CCHEN's infrastructure

## CEN LA REINA



**Research Reactor, RECH-1, 5 Mw**  
**Experimental radiators,  $^{60}\text{Co}$  and  $^{137}\text{Cs}$**

### **Laboratories:**

**RI & RP Production**

**Cyclotron**

**Neutron Activation Analysis**

**Environmental Radiation Surveillance**

**Radio-medicine**

**Radioactive Tracers**

**Agriculture**

**Dosimetry**

**Plasma Physics**

**Bank of Sterile tissues**

# CCHEN's infrastructure (contin...)

## CEN LO AGUIRRE



**Research Reactor, RECH-2, 15Mw**

**MTR Fuel Fabrication Plant**

**Multipurpose  $\gamma$ -Irradiation Facility 250 kCi**

**L&IL Waste Management Plant**

**Laboratories:**

**FRX Chemical Analysis**

**Geology and Mining**

# Government Organization for Energy Matters

**President of the Republic**

**Ministry of Mining  
and Energy / NRA**

**Ministry of  
Economy**

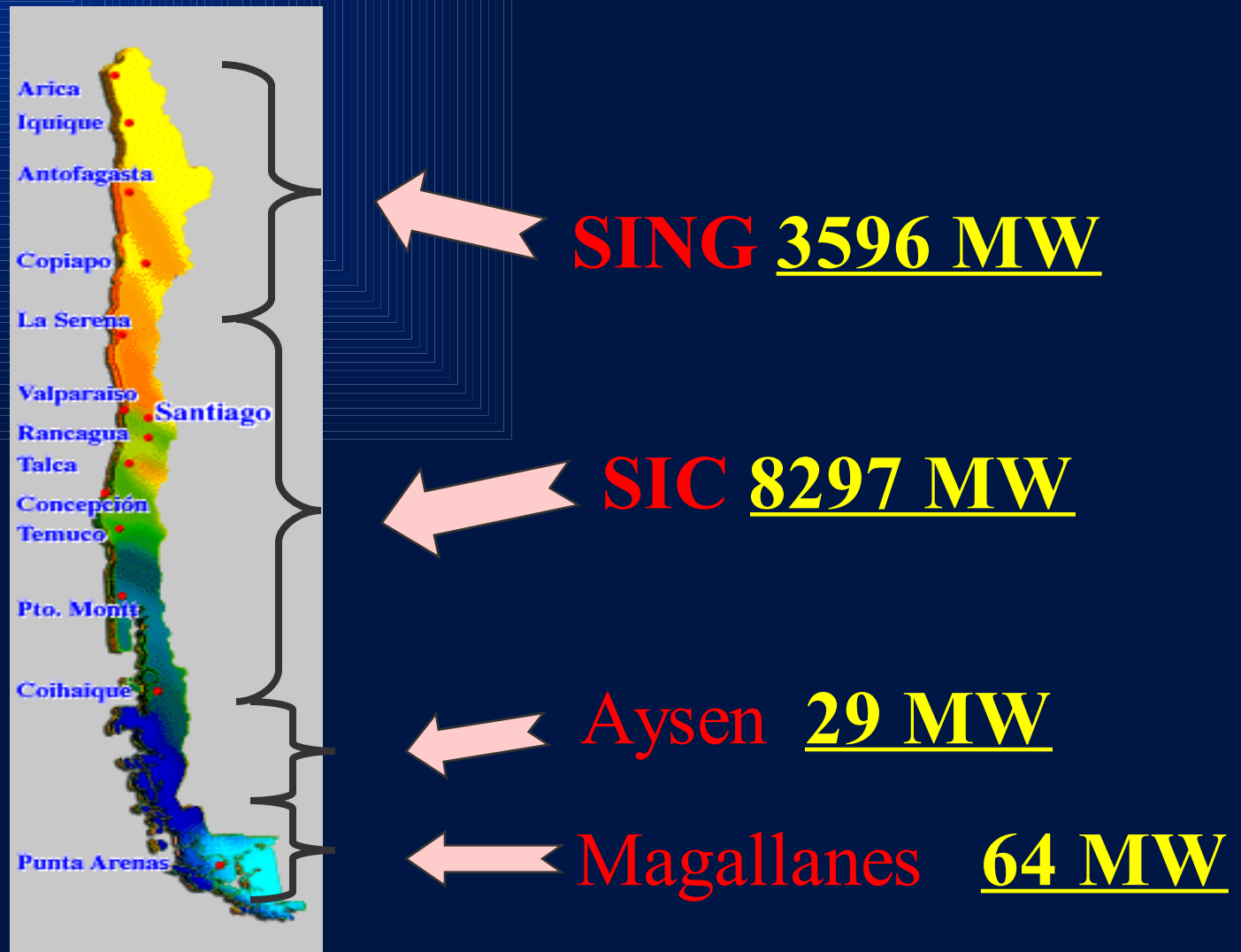
**Nuclear Energy  
Commission  
CCHEN**

**National Energy  
Commission  
CNE**

**National  
Environmental  
Commission  
CONAMA**

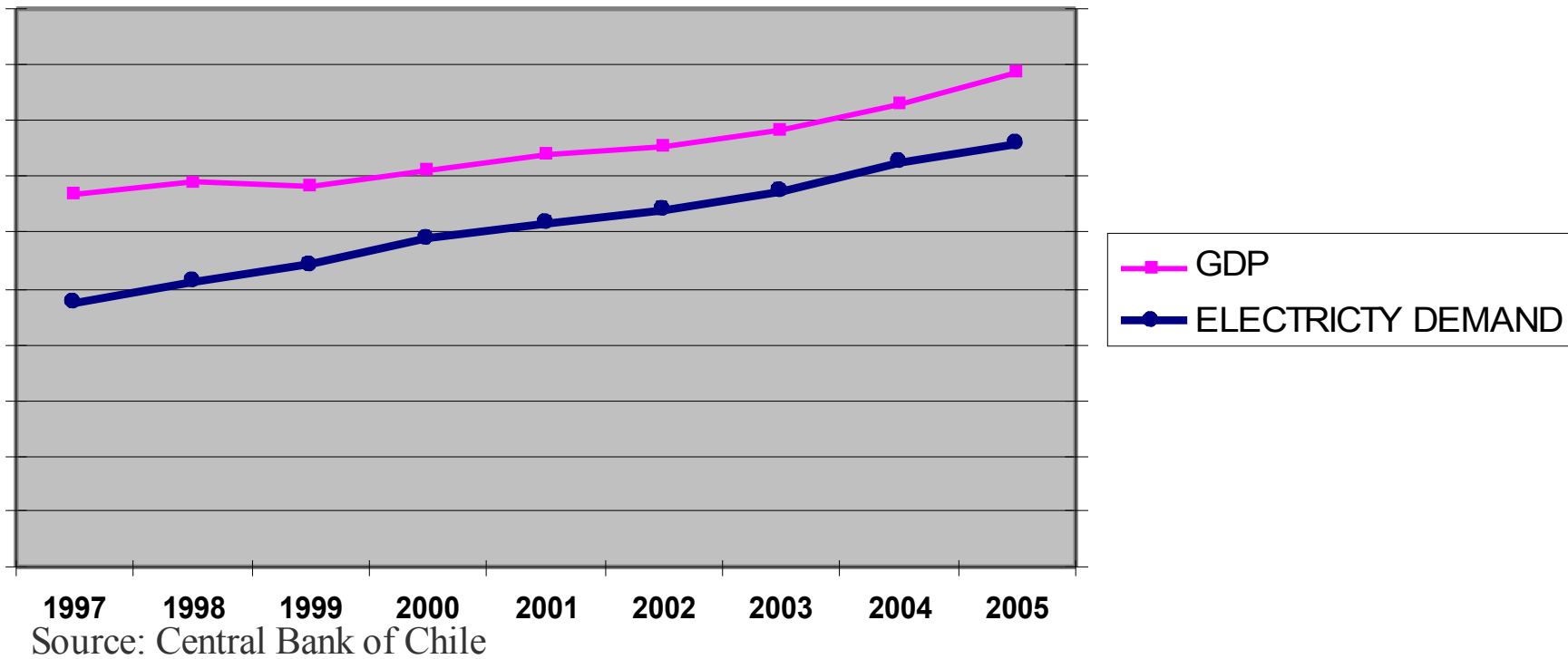
**Super-Int. of  
Electricity  
and Fuel  
SEC**

# ELECTRIC NETWORK



# GDP AND ELECTRICITY CONSUMPTION in CHILE

## GDP & ELECTRICITY DEMAND



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# Legal Framework for Electricity System

- ❖ DFL 1/1982 1<sup>st</sup> Market Regulation; creates Load Economic Dispatch Centre (CDEC)
- ❖ DS 6/1985 Regulates for Energy Dispatch Coordination
- ❖ Law 18922/1990 Traffic tariff
- ❖ DS 327/1998 Regulates for Electrical Services
- ❖ Law 19613/99 Responsibilities for Generators: incentives and penalties
- ❖ Law 19940/2004 Regulates Energy transport System, modifies traffic tariff
- ❖ Law 20108/2005 Modifies electricity “node price”

# Electricity Market

- ❖ Chile is an energy importer: NG, oil, coal;
- ❖ Private sector: in Generation, Transport and Distribution of electricity
- ❖ State regulates energy price to foster private investment, and to oversee fair and reasonable pricing for consumers
- ❖ State's Subsidiary role

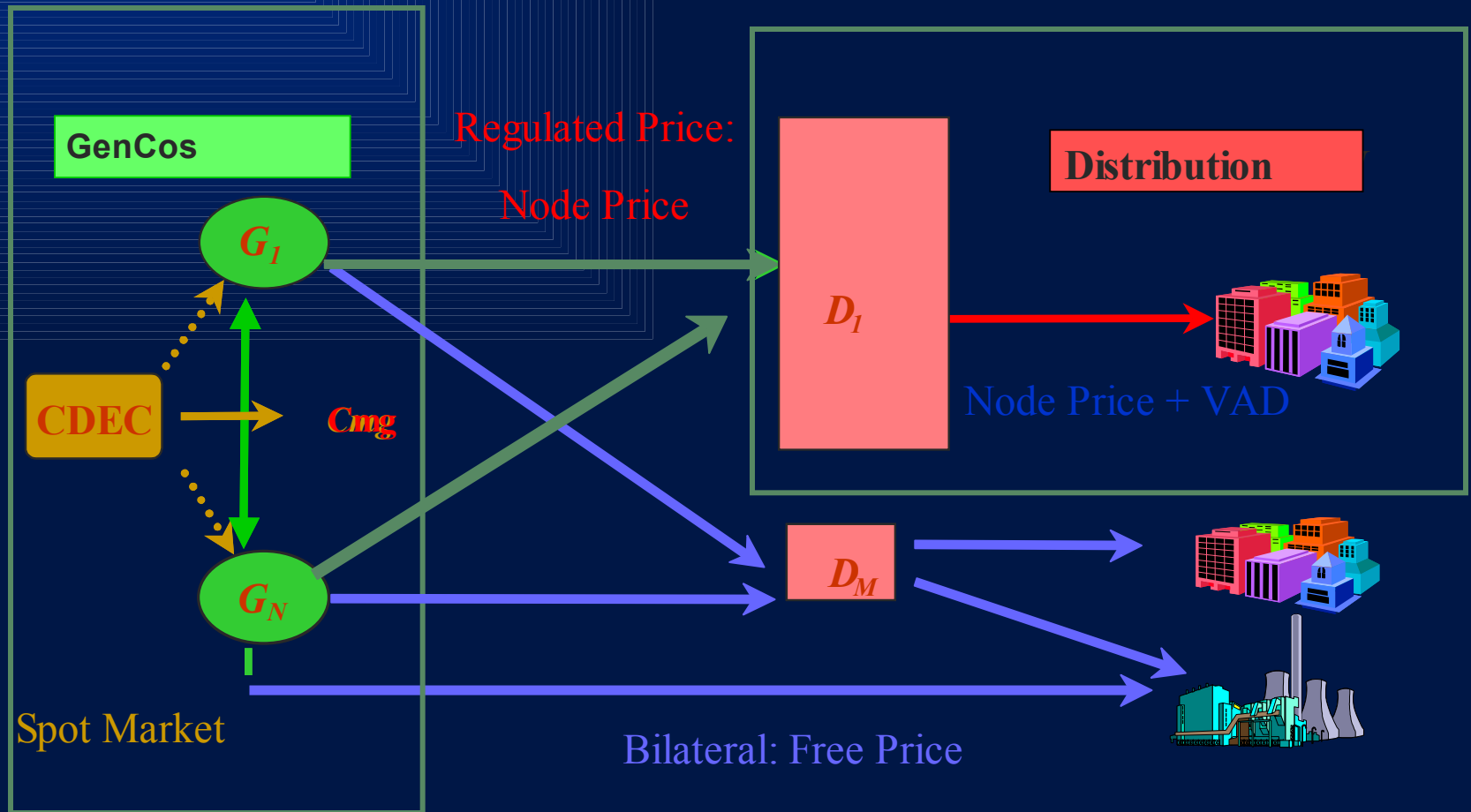
# Electricity Market

- ❧ Pillars: Diversification, and Security on supply supply, and Environment respect
- ❧ Permanent demand growing:
  - increasing prices
  - volatility in availability: NG, hidro
  - volatility in price: coal, oil
- ❧ Reserves in hydro power: new 2400MW
- ❧ Needs on diversification

# Electricity Market

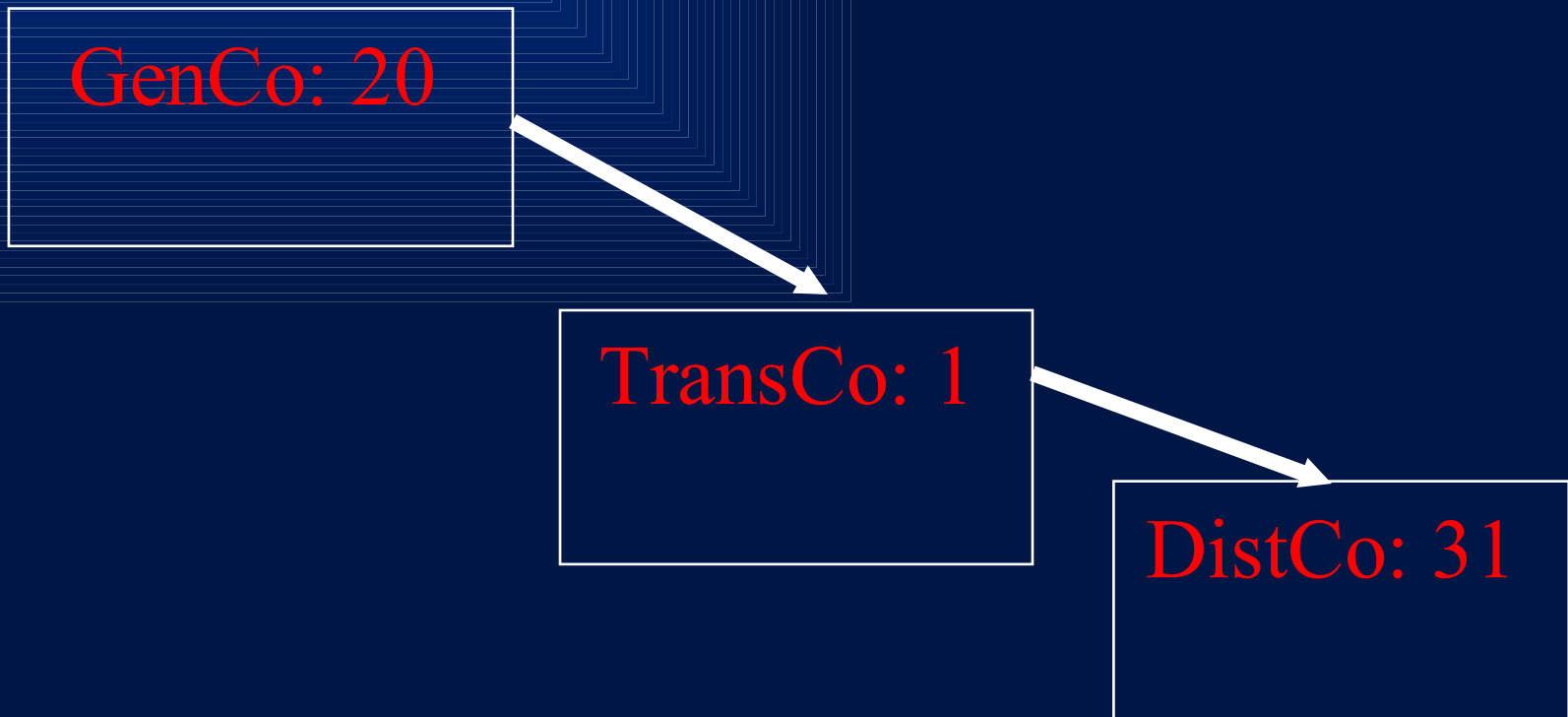
- ❧ Transparency in Regulatory regime
- ❧ Energy prices must reflect actual economics costs for any option of energy supply

# Electricity Market



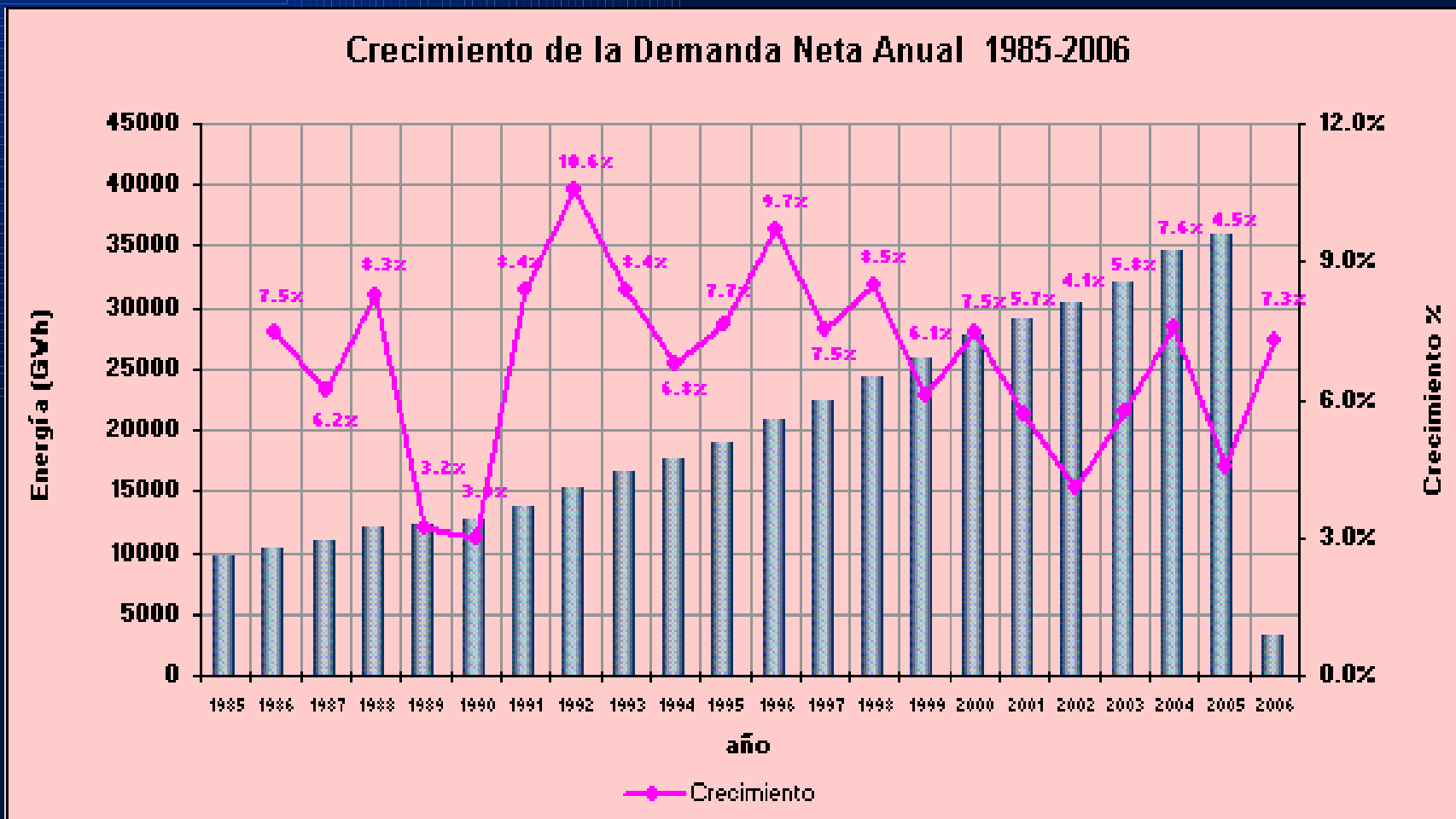
Source: Alexander Galetovic

# SIC Market Participation



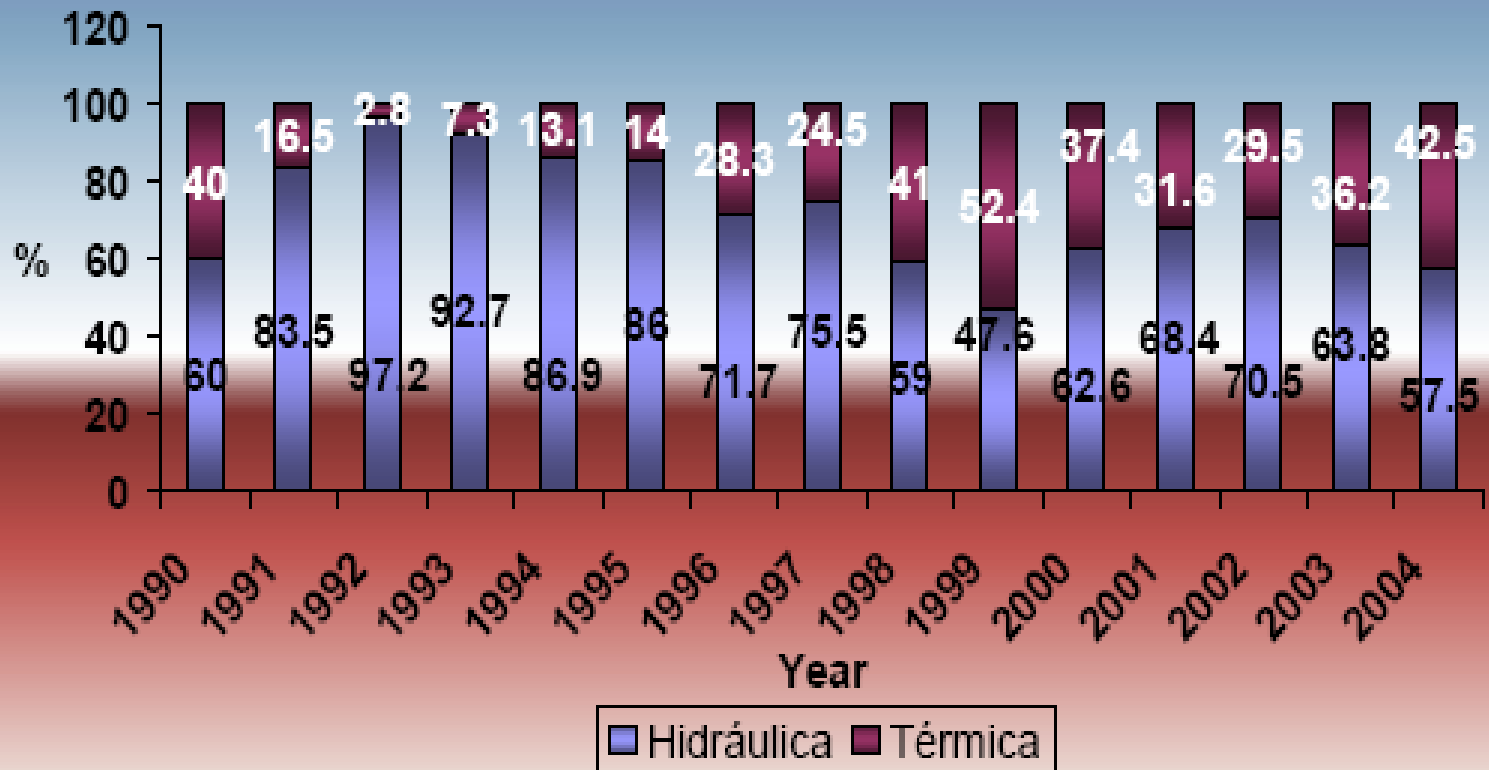
Source: CNE

# SIC- Electricity Demand Growth



# SIC- Technologies

## Participación Historica



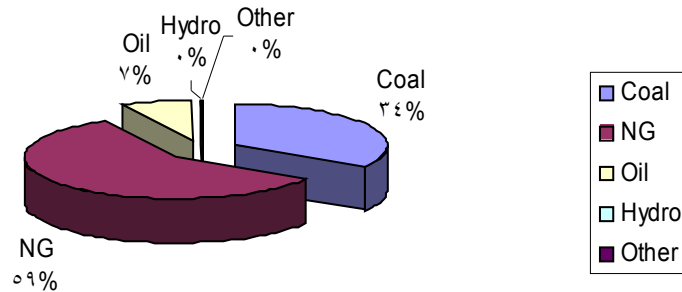
Source: CNE



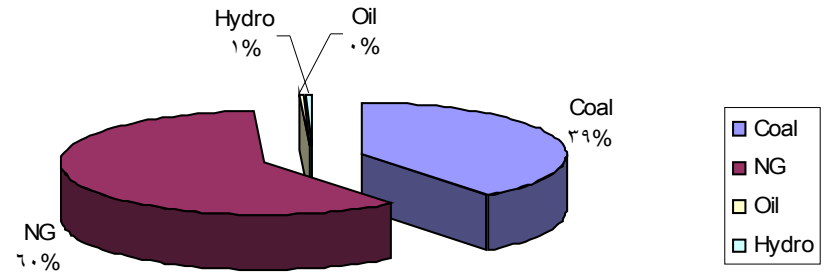
# PRESENT TECHNOLOGIES MIX

**SING INSTALLED POWER**

3090,8MW

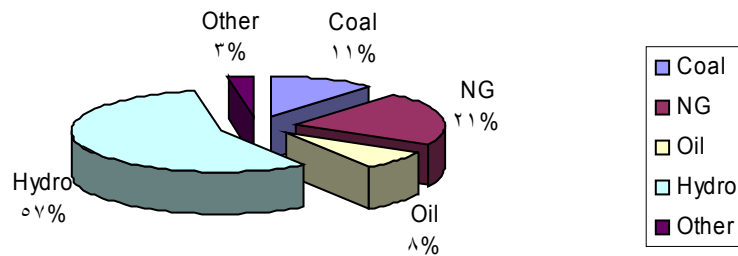


**SING GENERATION**

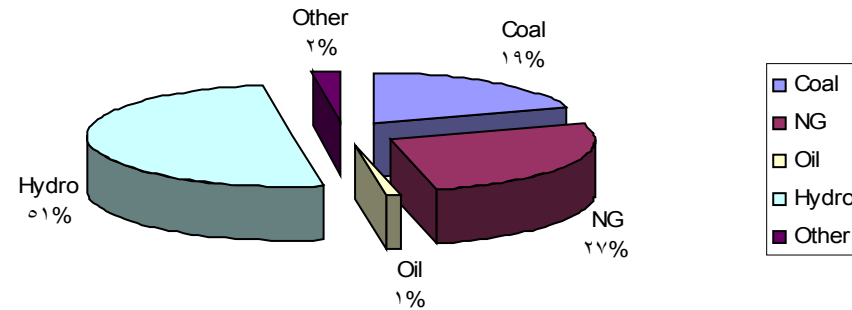


**SIC INSTALLED POWER**

8297MW



**SIC GENERATION**



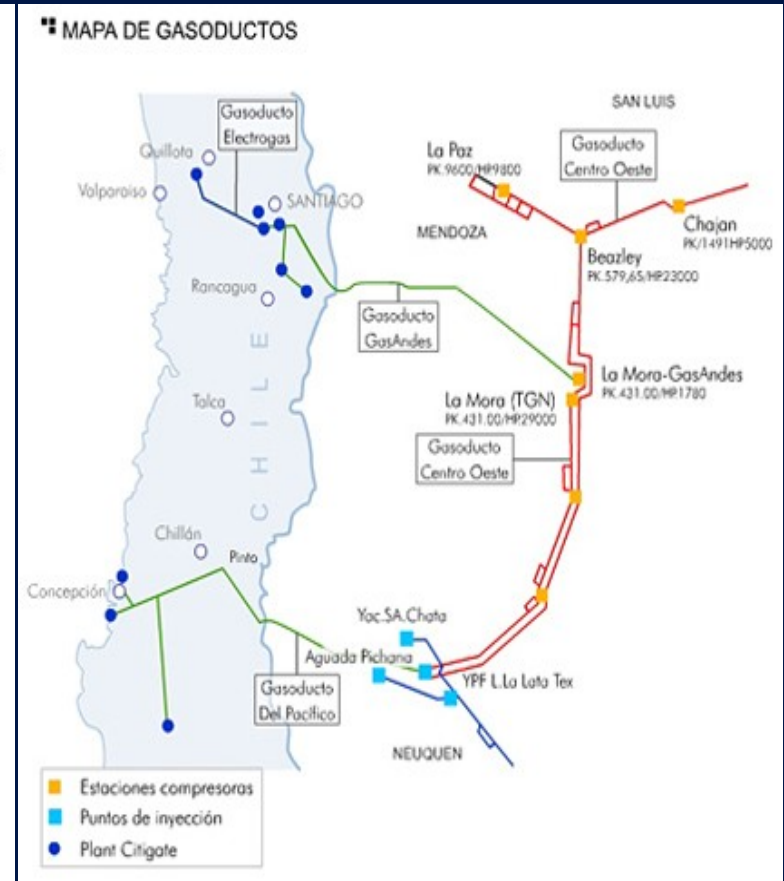
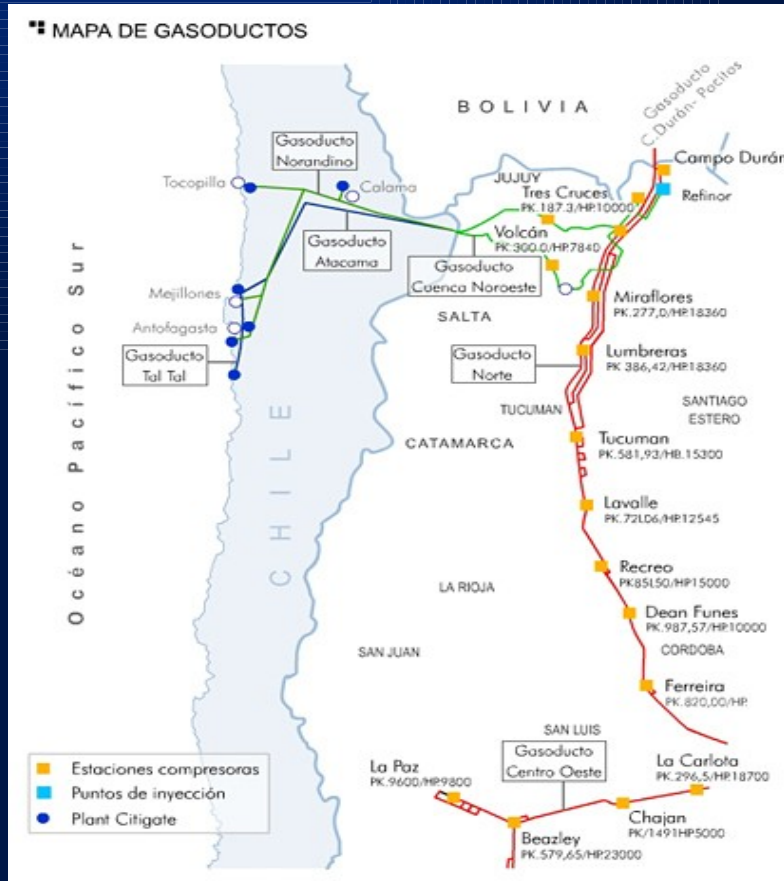
Source: CNE

# NATURAL GAS PIPELINES

Consumption = 37 Mm<sup>3</sup>/d

Private Investment 1997-2001:

MUS\$4000

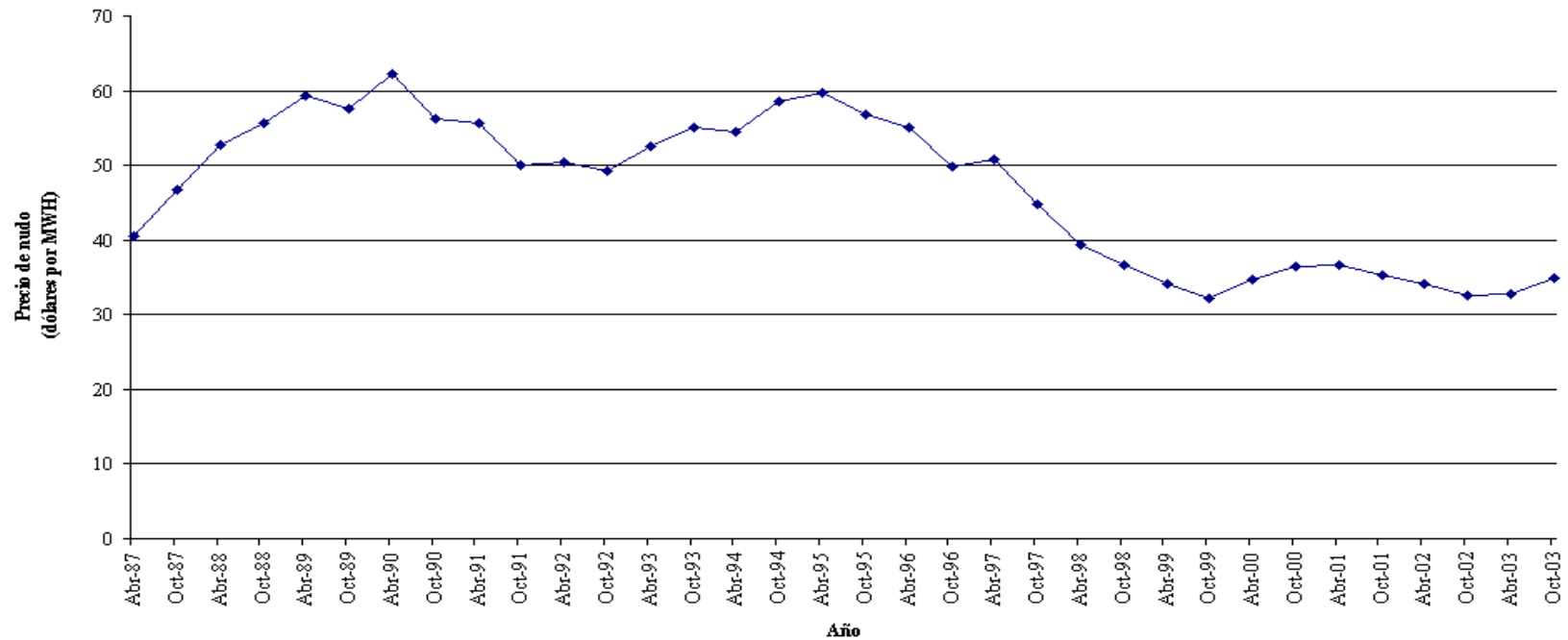


Source: CNE



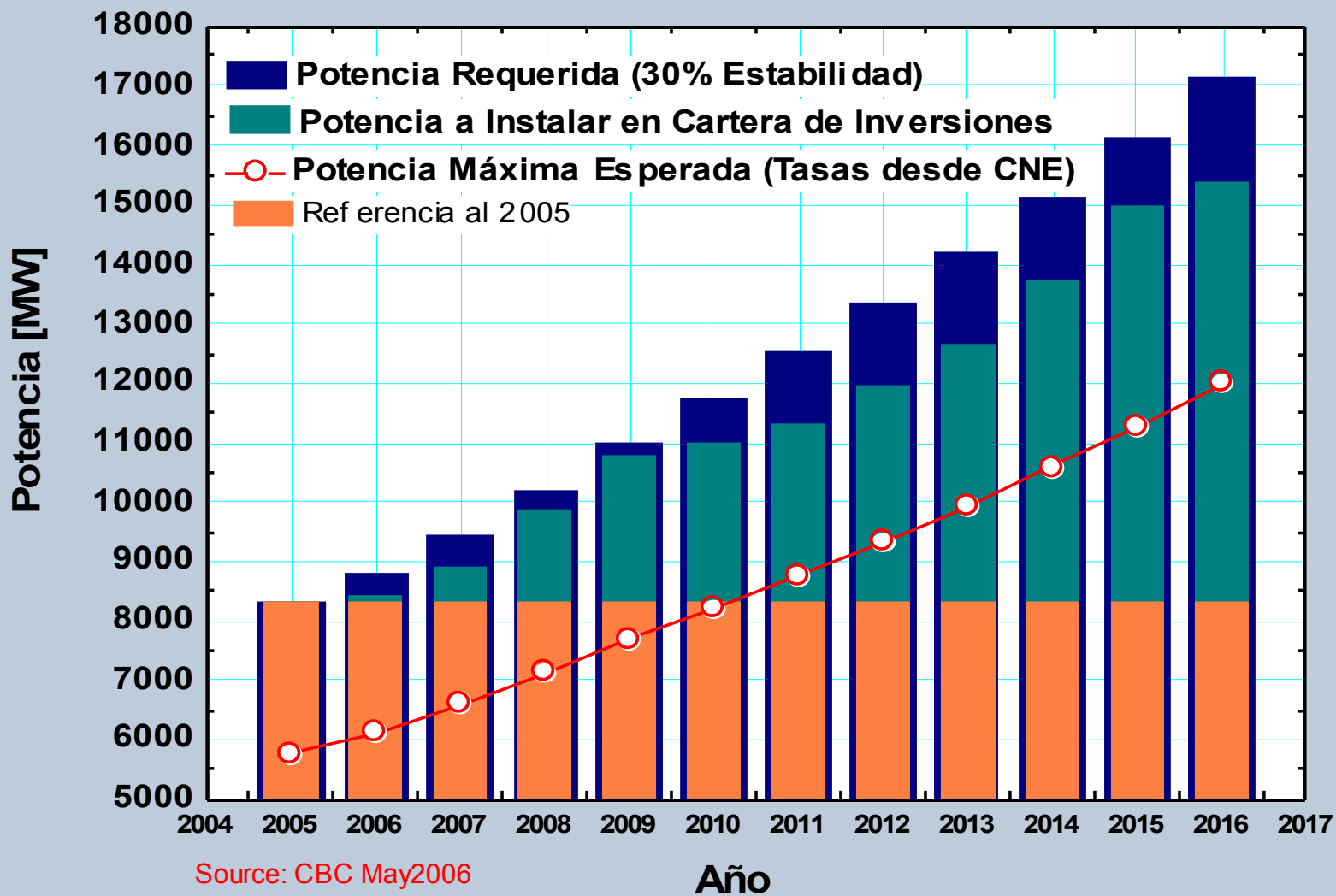
# ELECTRICITY “Node Price” EVOLUTION 1987-2003

Gráfico 1  
Precio de nudo monómico, 1987-2003  
(en dólares por MWh)



Source: A. Galetovic

# Projected Scenario



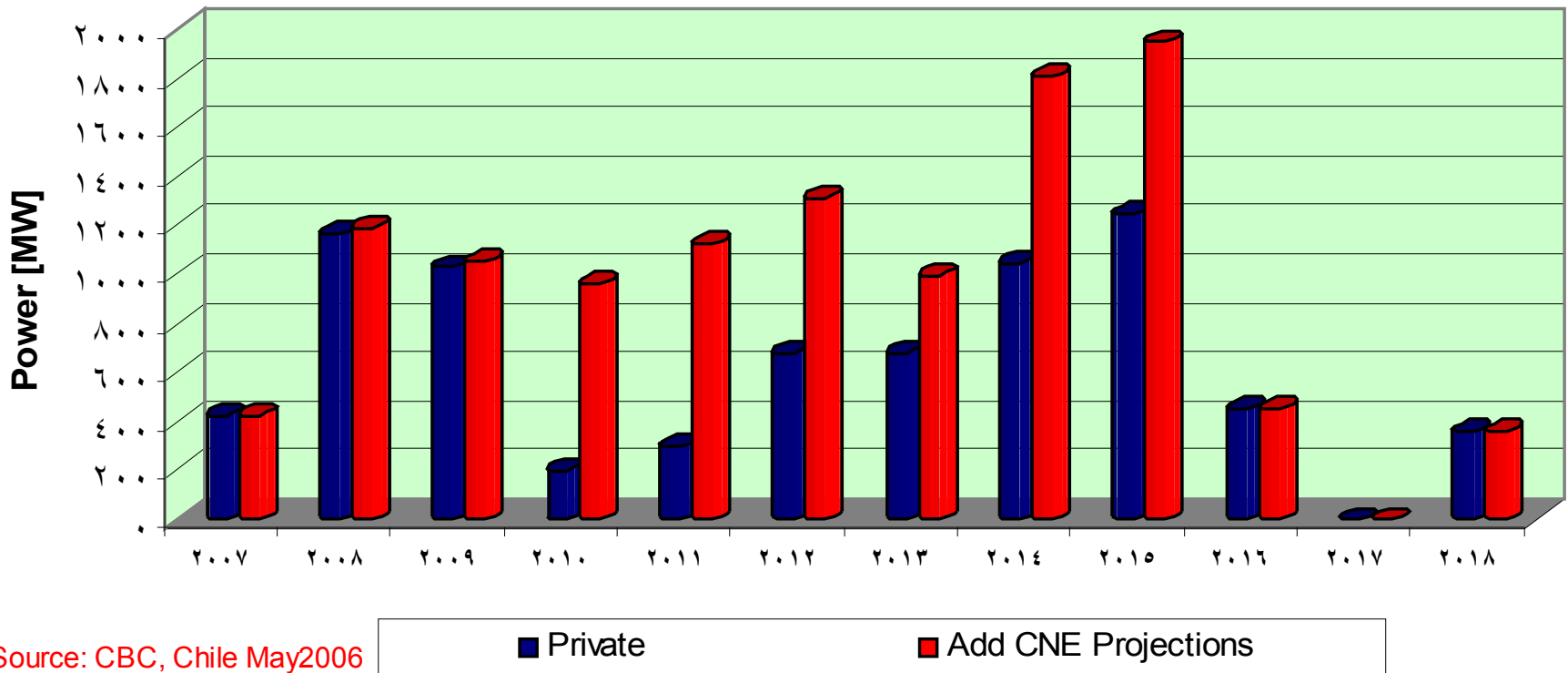
Source: CBC May2006

CNE April 2006

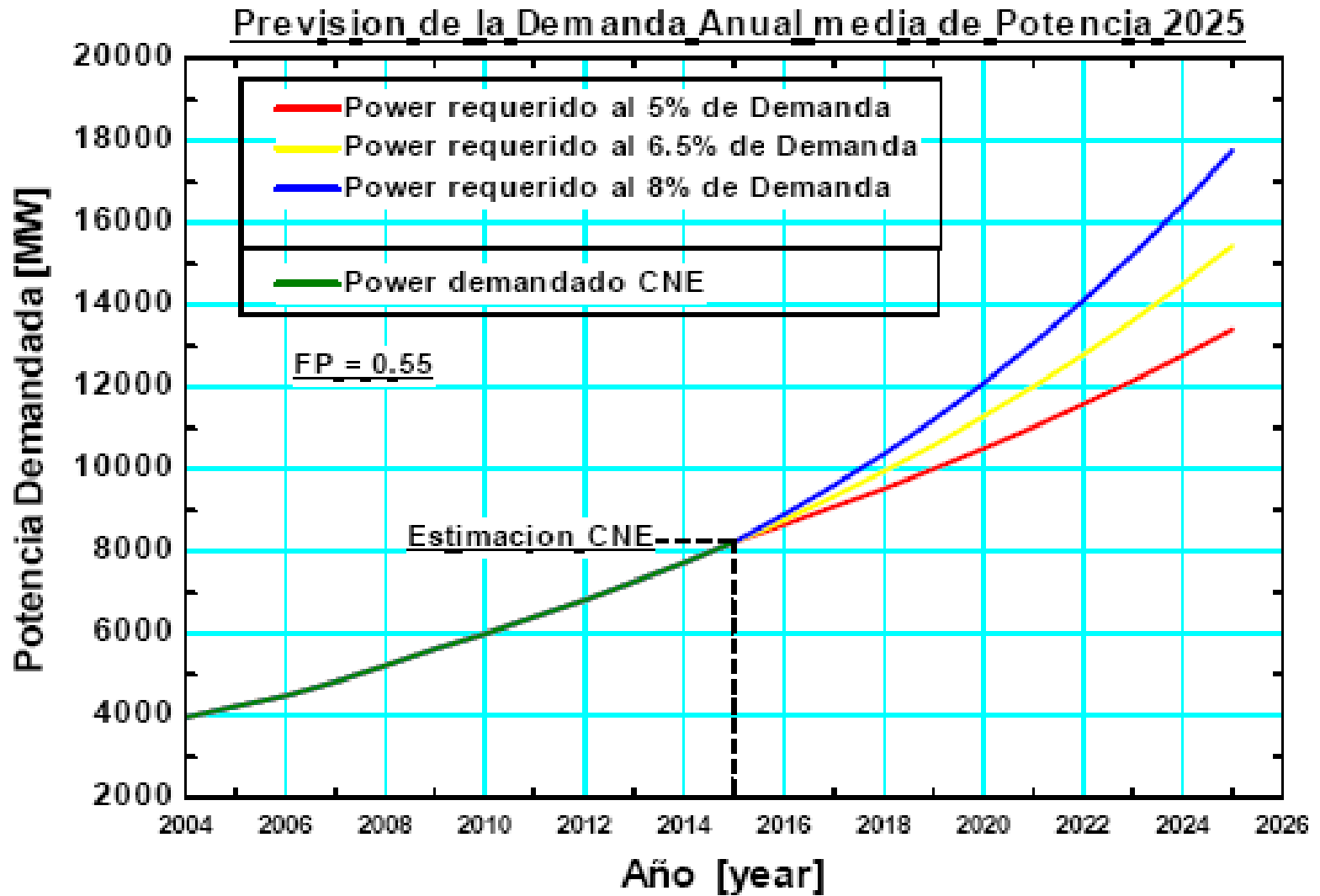
Symposium LAS/ANS Buenos Aires, J

# Planned Investment in Generation 2006-18

## Incremental Power



# Demand Projection (theoretics)



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# Short & Long Term Projections

## SING

→ 2008: CC Diesel / GT  
2009-2015: Coal / Renewal Energies  
2015 → : Nuclear / Interconnection

## SIC

→ 2008: CC Diesel / GT  
2009-2011: C / RE  
2011 → : Hydro / Nuclear / Interconnection



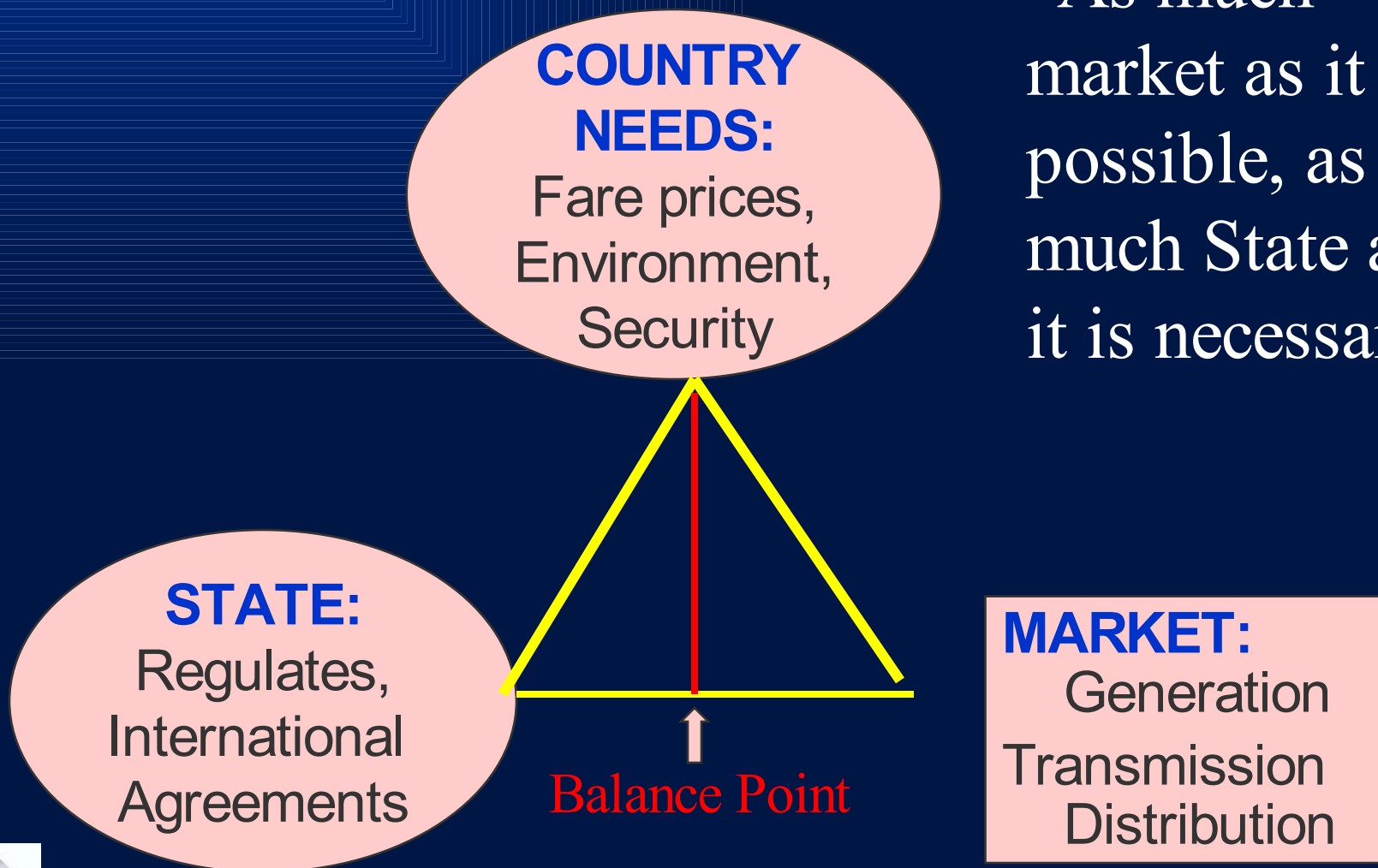
# Main Requirements for Energy Options

- ❖ Competitiveness in a restructured market
- ❖ Public involvement and Environmental commitment
- ❖ Diversification in fuels and technologies

❖ **¿Nuclear? No, by now, but:**

- ✓ **Adequate Regulatory framework**
- ✓ **Be cost effective**
- ✓ **Spent fuel and HL waste management & disposal**

# For Facing N-P Option



“As much market as it is possible, as much State as it is necessary”

# Challenges for the LA&C Region

- ❖ NG as a sustainable option?
- ❖ Can nuclear power be developed incorporating Regional approaches?
- ❖ How electricity interconnection can be expanded?
- ❖ Can be MERCOSUR a bearing framework for energy approaches?
- ❖ **HOW?**
  - POLITICAL: BUILD CONFIDENCE
  - NG : PIPELINE NETWORK , LNG TRANSPORT + R-G PLANTS
  - ELECTRICITY INTERCONNECTION
  - LEVELIZED REGULATIONS: ENVIRONMENT, NUCLEAR SAFETY AND SECURITY

That's all.

THANKS FOR YOUR ATTENTION