

# Assesment of cost and benefits of distributed energy resources options and business models in Spain at Iberdrola

**Vilnius, April 2008**  
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IBERDROLA DISTRIBUCIÓN ELÉCTRICA S.A.U.



**Eur 24,200 MM investment forecast in the period 2008-2010**

**Installed capacity of 40,000 MW  
7,822 MW of wind capacity**

**24 million supplying points**

**26,000 employees**

**Over Eur 17.5 Bn in Net Sales  
and more than Eur 2.35 Bn Net Profit 2007**

**Total assets over Eur 68 Bn with 42% leverage**

**Market capitalization: Eur 51 Bn**

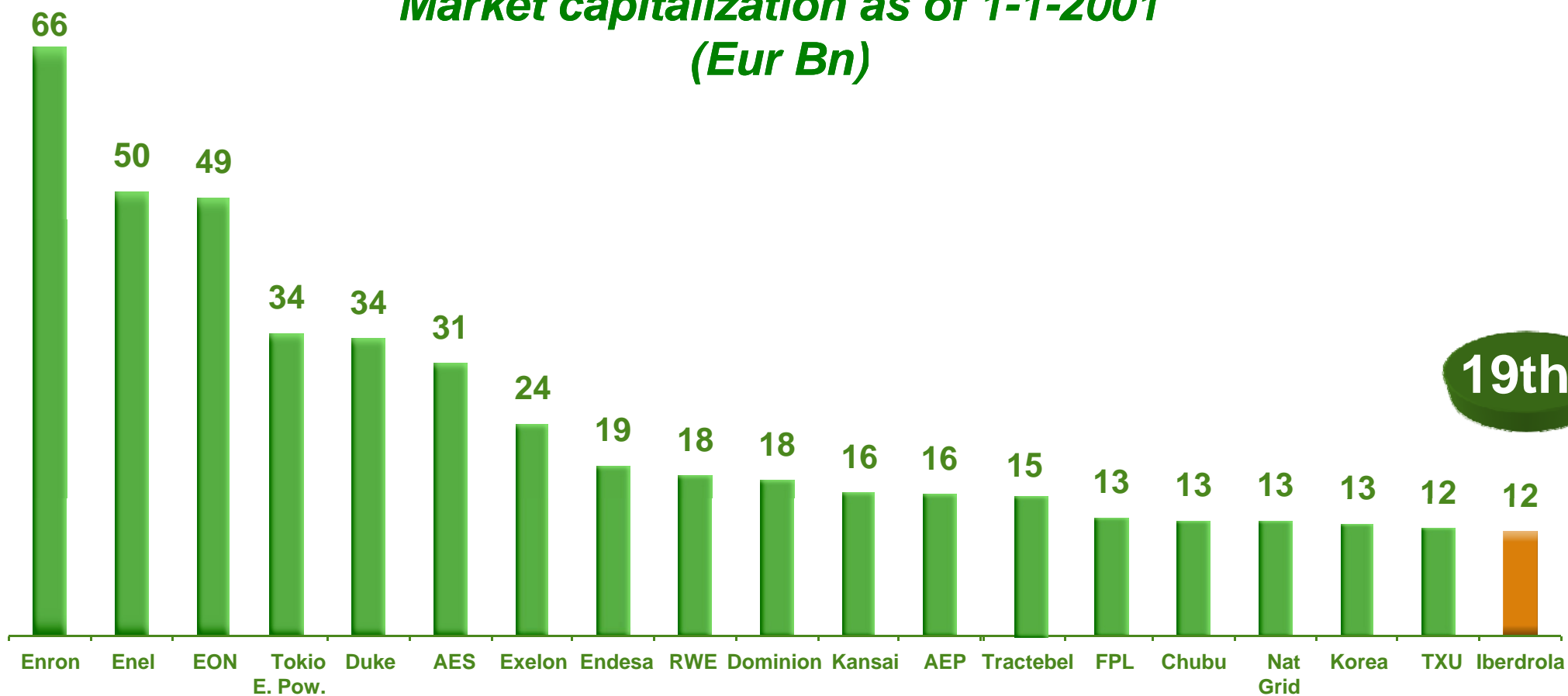
## Global presence: More than 30 countries



Offices in Belgium, Brazil, China, France, Germany, Greece, Italy, Mexico, Poland, Portugal, Qatar, Russia, Switzerland, the USA and United Kingdom

Improving position in the utility sector:  
from the 19th in 2001...

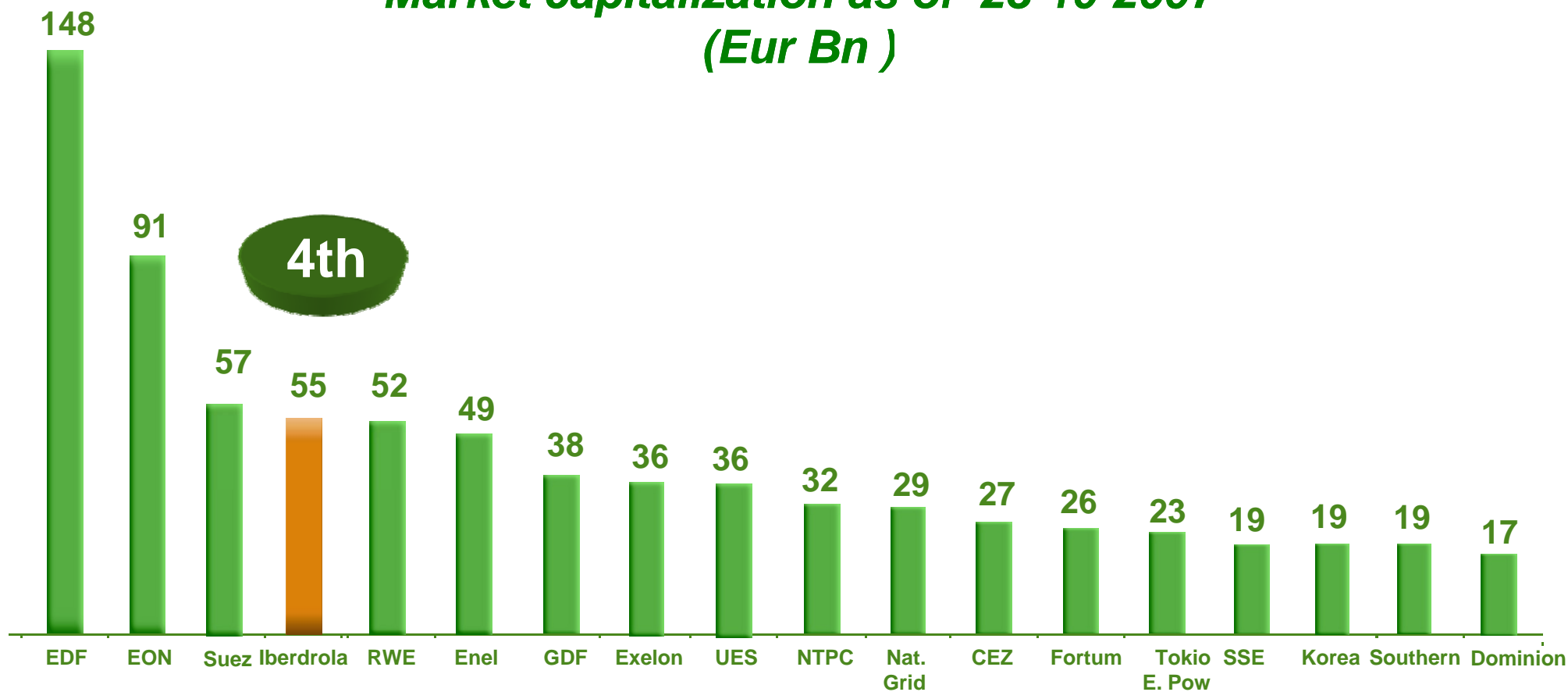
*Market capitalization as of 1-1-2001  
(Eur Bn)*



19th

...to become one of the five largest utilities worldwide

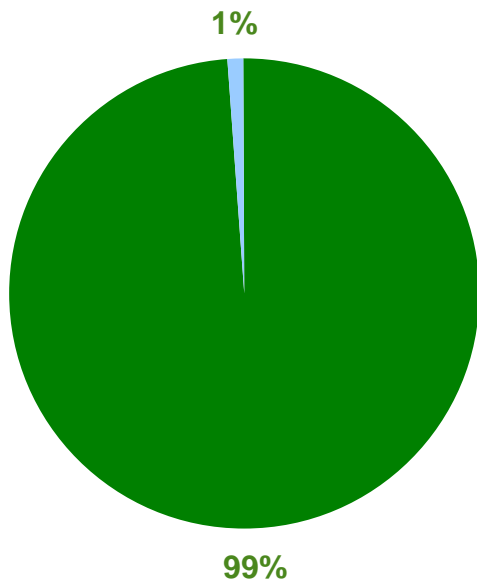
**Market capitalization as of 23-10-2007  
(Eur Bn )**



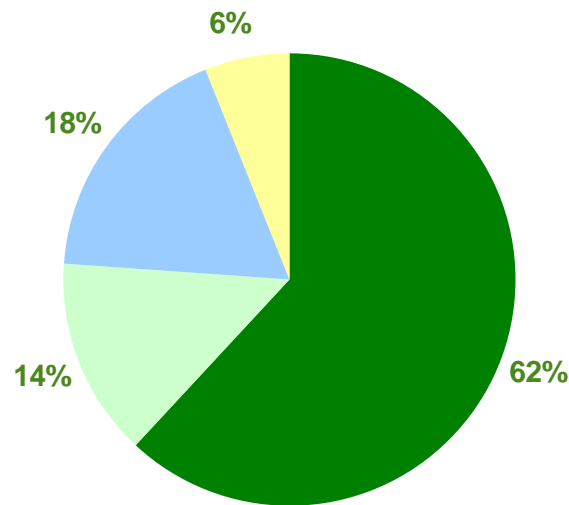


## Boost to internationalisation

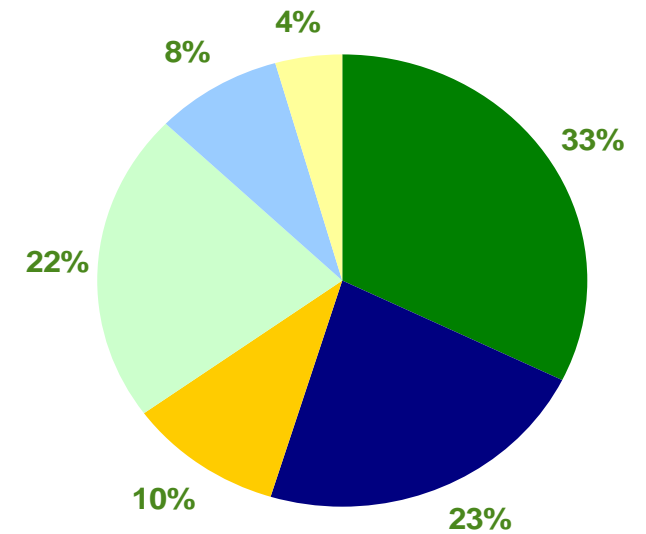
*EBITDA 2000*



*EBITDA 2006*



*EBITDA 2010*



- Spain energy
- ScottishPower
- USA & Canada
- Renewables
- Latam
- Rest

# Iberdrola's organization structure dealing with DER&RES



| AREA                      | TASK  | HHRR            |
|---------------------------|---|-----------------|
| RENEWABLES                | Wind, Mini-hydro, Solar, Biomass.   | 1,039 in 2007   |
| ENGINEERING & CONSULTANCY | Engineering of the group developing renewable facilities                    | No data         |
| COGENERATION              | Completely committed to CHP; building and managing                          | 83 (96) in 2007 |
| RETAILING                 | Seeking new ways of trading energy in the liberalized market (Green Energy) | No data         |
| DISTRIBUTION              | Managing the system for efficiency and reliability of supply                | 85 in 2005      |

Renewable energies are one of the basic pillars of Iberdrola's growth strategy



**First electric company having a stake in renewable energies as a fundamental strategic plan ...**

**... which made Iberdrola world leader of the sector ...**

**... opting for the most developed renewable energies ...**

**... developing emerging technologies ...**

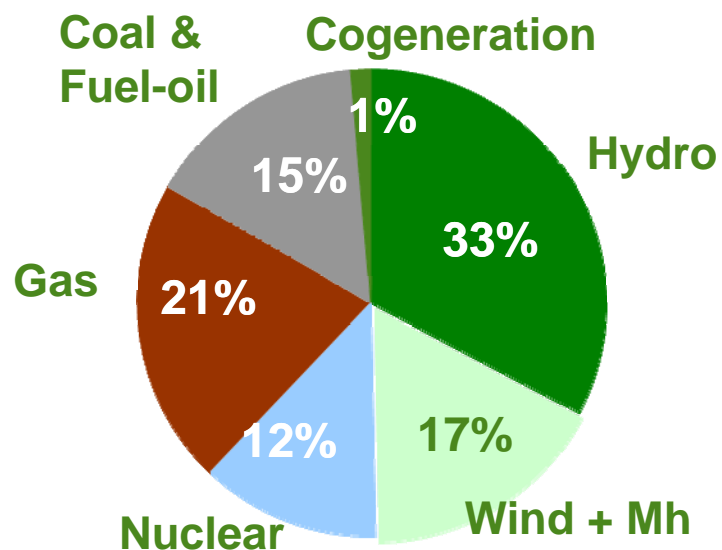
**... being pioneer in integrating renewable energies within the system and improving their efficiency...**

**... opting for the international expansion to the rest of the EU, USA and Latin America.**

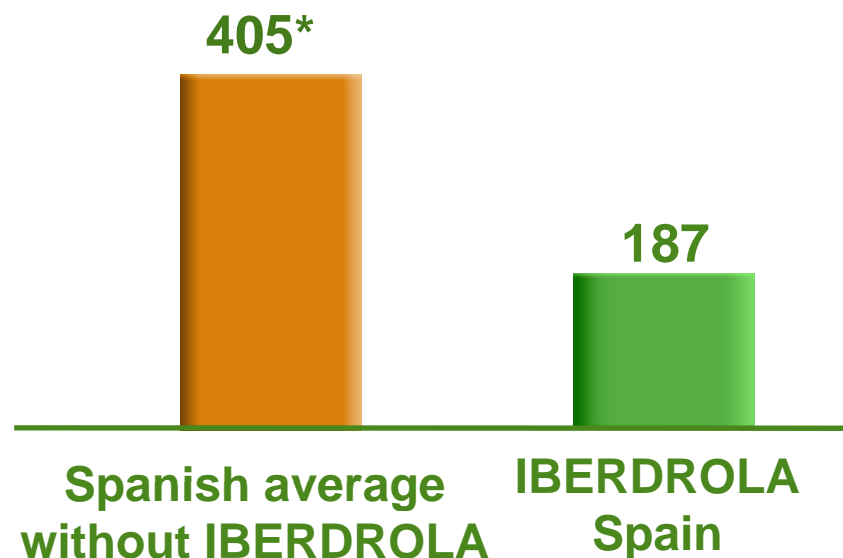


## Contributing to the energy policy objectives

*Installed capacity Mw  
End 2007*



*CO<sub>2</sub> emissions per GWh*

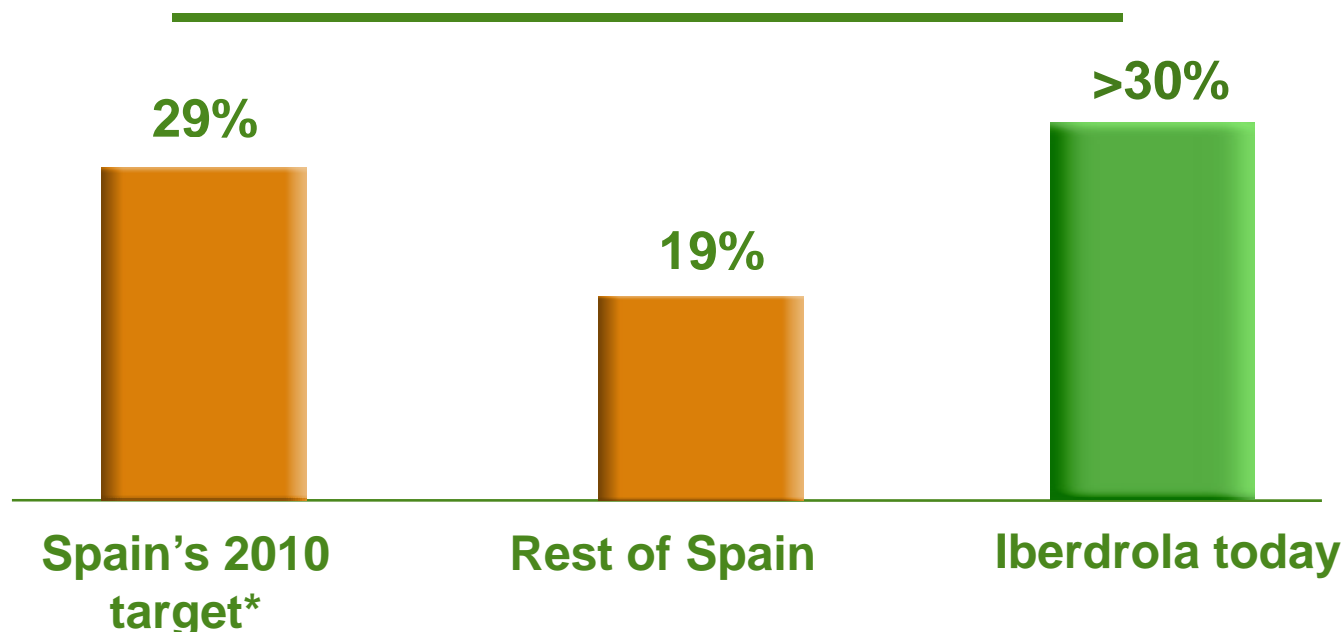


- More than 50% of renewable capacity
- 2/3 of the installed capacity without emissions

The smallest CO<sub>2</sub> producer in Spain

## Iberdrola already complies with Spain's 2010 environmental targets

*Renewable Production vs Total*



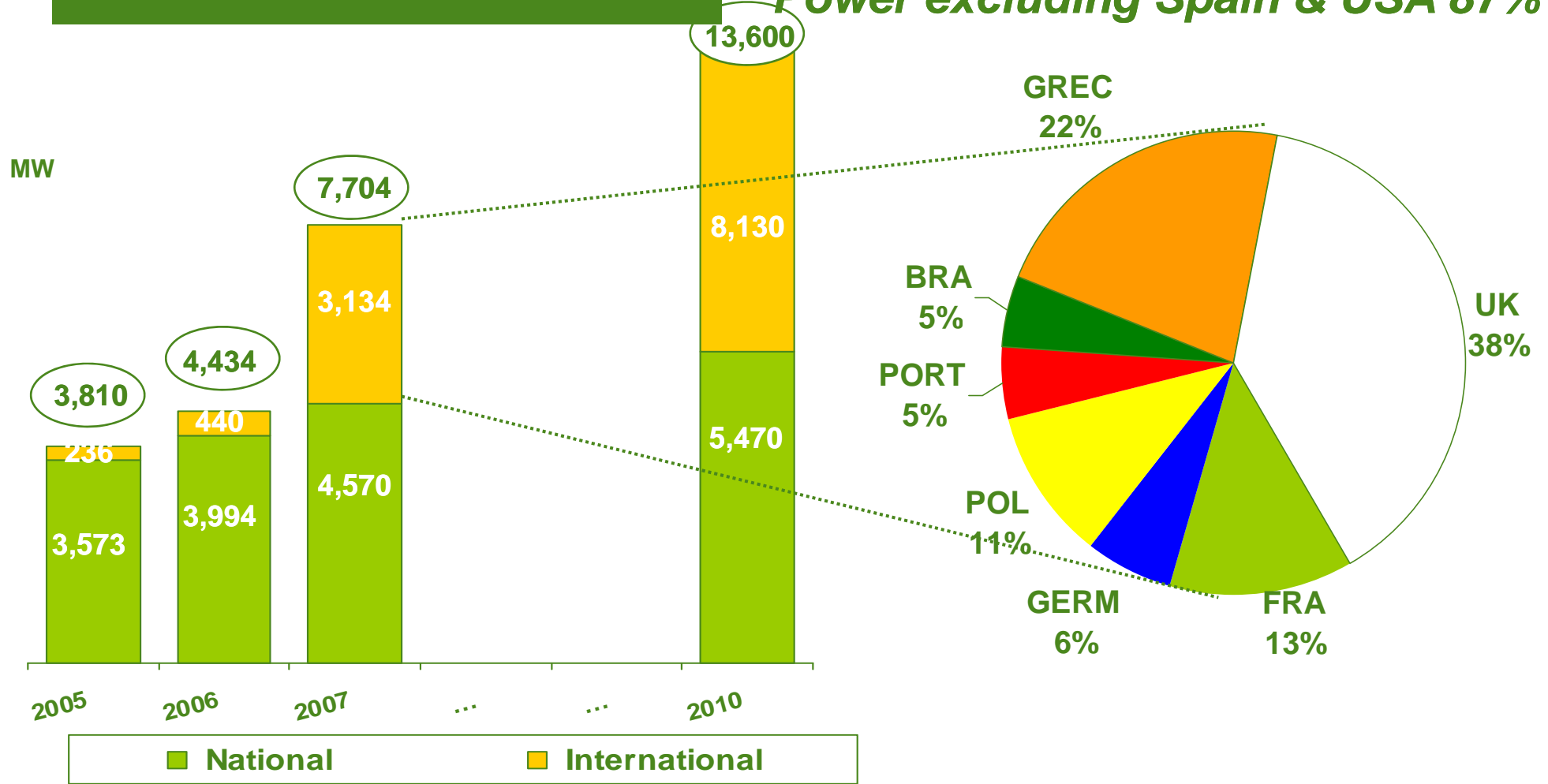
*\*DIRECTIVE 2001/77/EC of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market*

Iberdrola is one of the world leaders in renewable energies.



**Evolution of installed power and targets**

**Power excluding Spain & USA 87%**

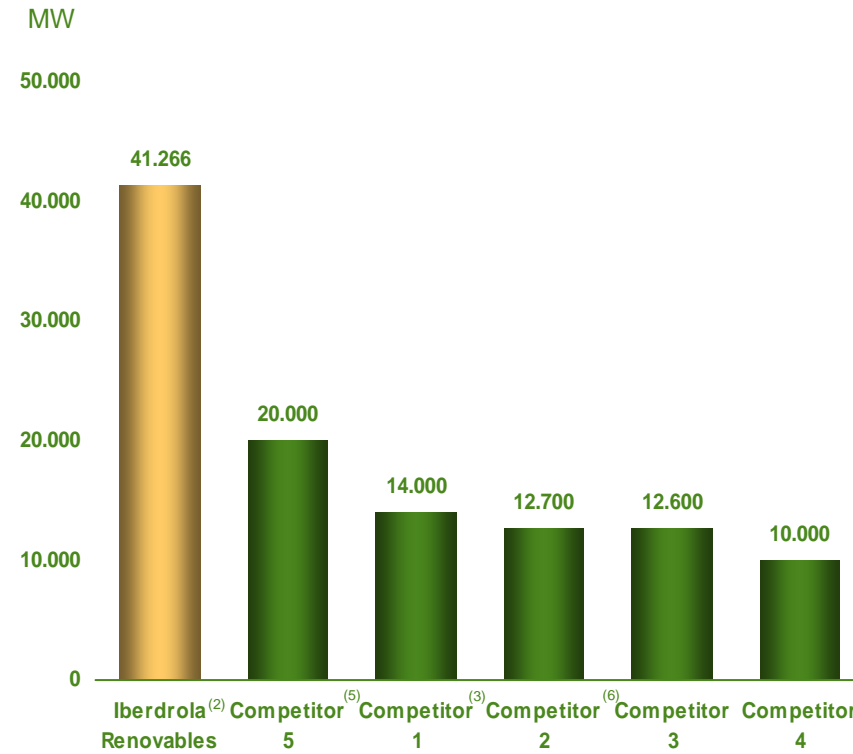
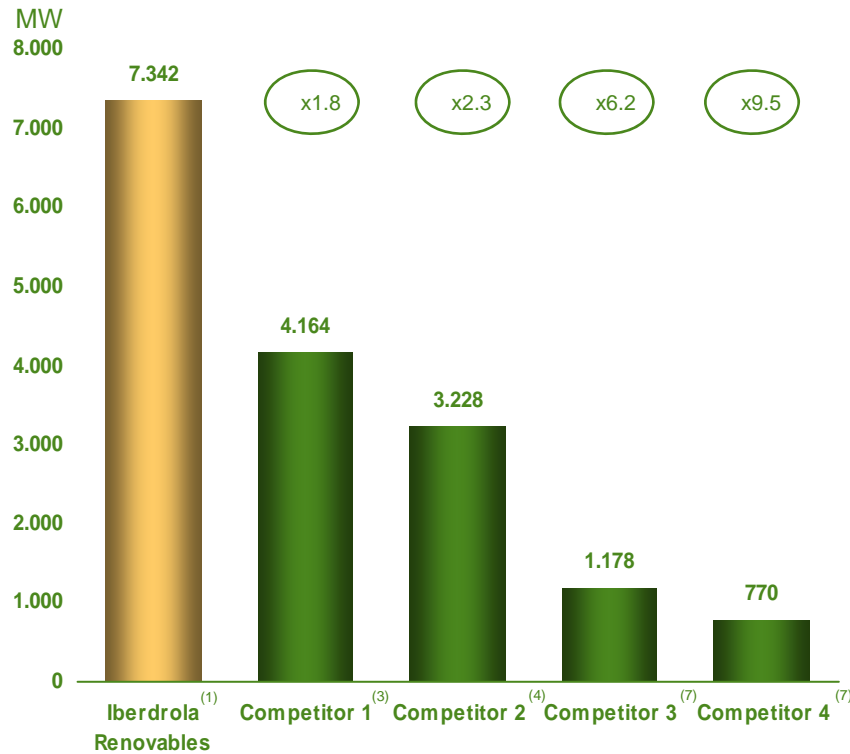


# The Largest Operating Renewable Asset Base Worldwide Combined with the Largest Renewable Pipeline



7,342 MW of Installed Capacity as of 30 September 2007(1)

41,266 MW of Pipeline as of 30 September 2007(1,8)



Source Annual Reports 2006. Company Data

- Notes
- (1) Proforma Scottish Power as of 30 September 2007. Includes 606 MW PPA with FPL
  - (2) Proforma Scottish Power as of 30 September 2007
  - (3) Does not include hydro energy. Renewables pipeline only (does not include other generation technologies)
  - (4) Does not include cogeneration. As of 31 December 2006
  - (5) 18% owned by Iberdrola
  - (6) Renewables pipeline only (does not include other generation technologies). As of 31 December 2006
  - (7) As of 31 December 2006
  - (8) Pipeline might be categorised / calculated differently by each competitor

Iberdrola's Renewable Energies Operations Centre, in Toledo, is designed to help bring these energies onto the electricity grid and to improve their efficiency



- Iberdrola's renewable energy operations centre (CORE) is a pioneer initiative in the industry due to its technology and scope.
- It allows Iberdrola to improve the management and operation of renewable energy installations.
- The centre helps to bring these energies into the system and to eliminate possible obstacles to their development

# COGENERATION IN SPAIN IN 2007



TOTAL INSTALED POWER:

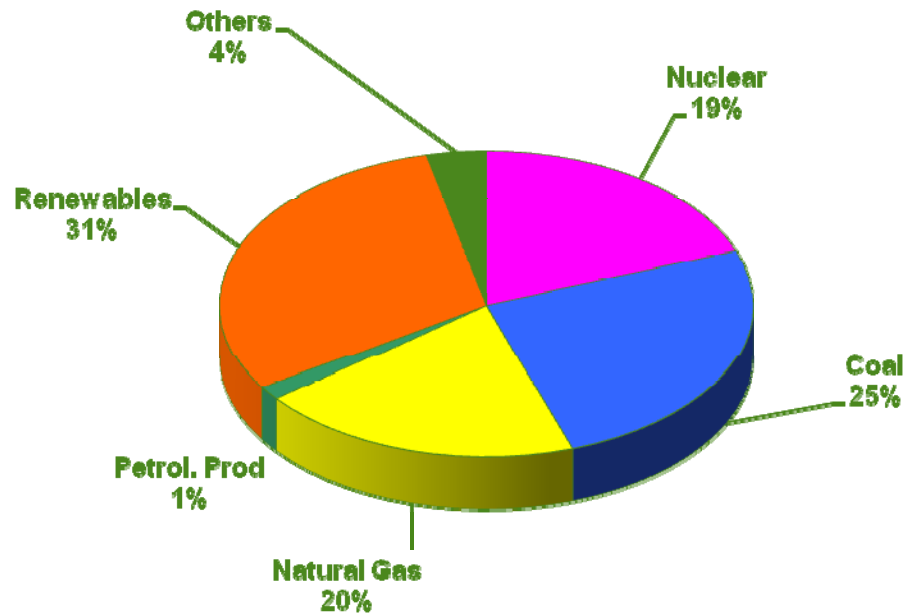
6,500 MW

| <u>PROMOTER COMPANY</u>  | <u>POWER MW</u> | <u>%</u> | <u>PARTICIPATION</u> | <u>Nº DE PLANTAS</u> |
|--------------------------|-----------------|----------|----------------------|----------------------|
| IBERDROLA (IBCOG)        | 495,7           | 7,70     | MAYORITY             | 28                   |
| REPSOL                   | 557             | 8,66     | MAYORITY             | 19                   |
| ENDESA (ECYR)            | 486             | 7,55     | MINORITY             | 70                   |
| ACCIONA (ALABE)          | 158             | 2,46     | MAYORITY             | 8                    |
| ABENGOA (SEIMA)          | 200             | 3,11     | MAYORITY             | 6                    |
| SAICA                    | 200             | 3,11     | MAYORITY             | 3                    |
| UNION FENOSA (UFEE)      | 115             | 1,79     | MAYORITY             | -                    |
| HIDROCANTABRICO (SINAE)  | 115             | 1,79     | MAYORITY             | 14                   |
| GAS NATURAL (LA ENERGIA) | 80              | 1,24     | MINORITY             | -                    |
| REST                     | 4,027           | 62,59    | -                    | -                    |

# Energy Production in Spain

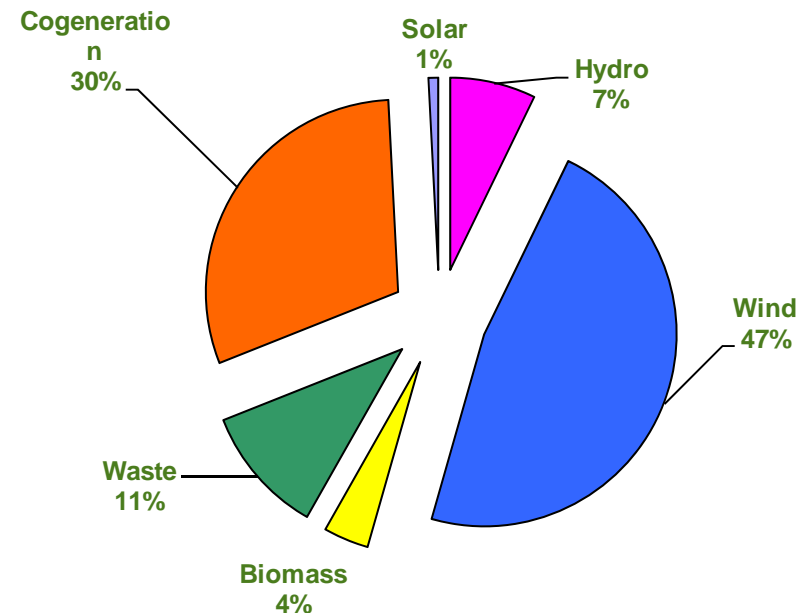
## TOTAL PRODUCTION

Year 2007: 274.518 GWh



## SPECIAL REGIME PRODUCTION

Year 2007: 56.831 GWh



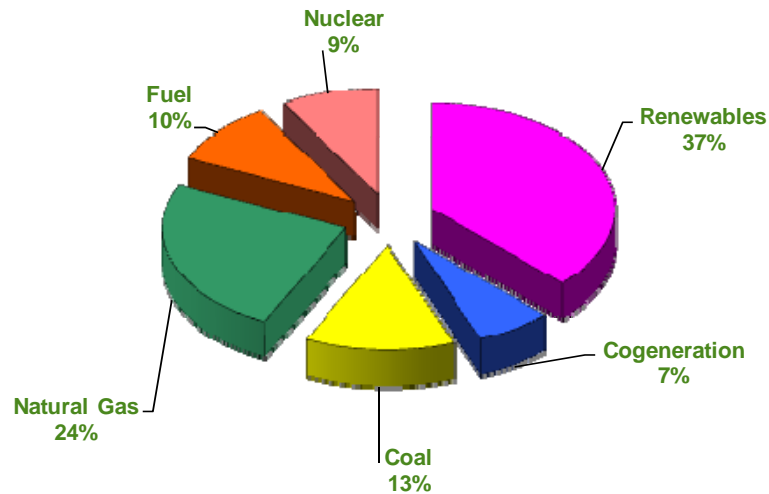
**SPECIAL REGIME SALES WERE 22,4 % IN AUGUST 2007.**

**IN SEPTEMBER 2007 95% OF WIND POWER WAS ON MARKET**

# Installed Power in Spain

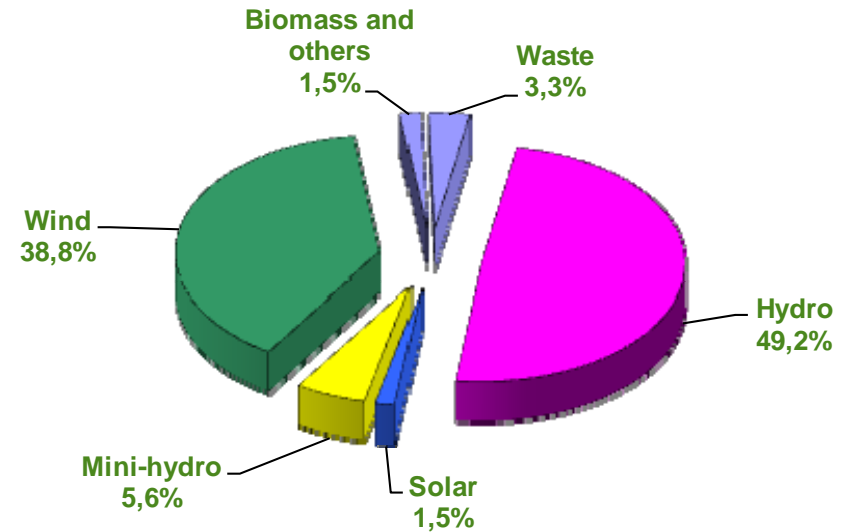
## INSTALLED POWER

Year 2007: 90.309 MW



## INSTALLED POWER RENEWABLES AND WASTE

Year 2007: 33.829 MW



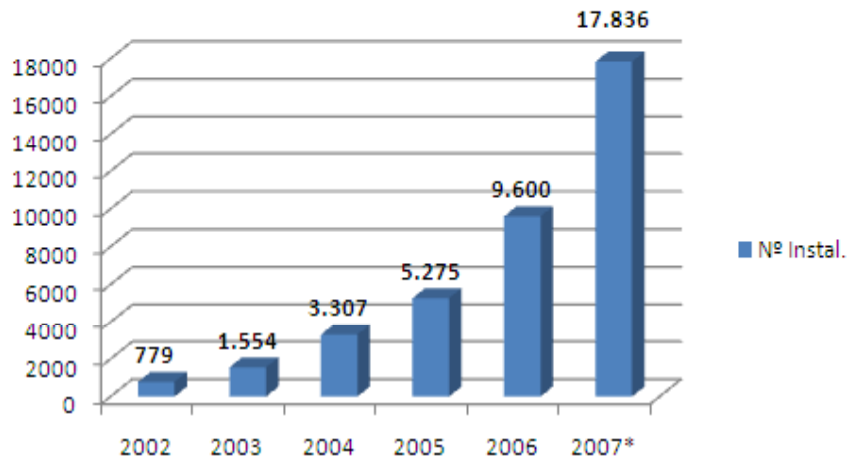


# Grid connected solar photovoltaic installations in Spain

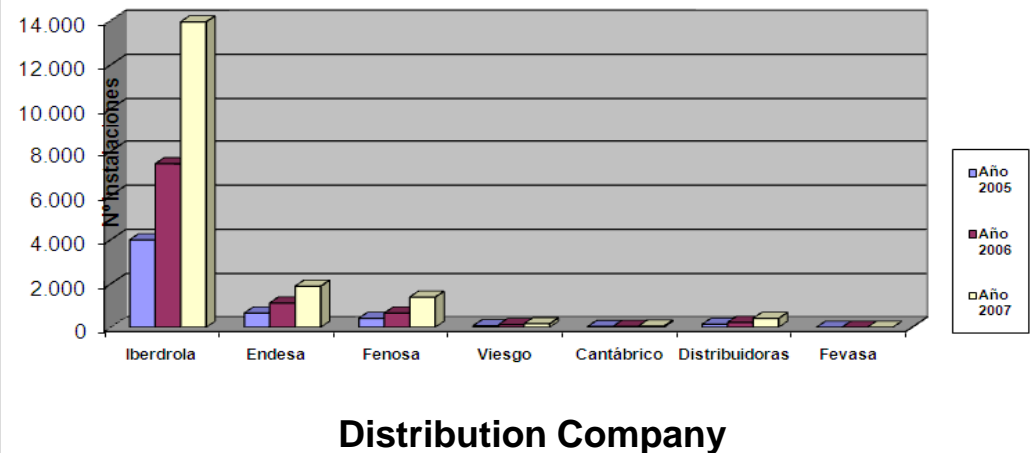


| Distribution company | 2005         |                      |                      | 2006         |                      |                      | 2007         |                      |                      | % en 2007    |                      |                      |
|----------------------|--------------|----------------------|----------------------|--------------|----------------------|----------------------|--------------|----------------------|----------------------|--------------|----------------------|----------------------|
|                      | Energy (GWh) | Installed Power (MW) | Number Installations | Energy (GWh) | Installed Power (MW) | Number Installations | Energy (GWh) | Installed Power (MW) | Number Installations | Energy (GWh) | Installed Power (MW) | Number Installations |
| Iberdrola            | 30           | 33                   | 3.990                | 77           | 102                  | 7.432                | 300          | 401                  | 13.941               | 68           | 74                   | 78                   |
| Endesa               | 6            | 6                    | 642                  | 17           | 26                   | 1.128                | 96           | 87                   | 1.887                | 22           | 16                   | 11                   |
| Unión Fenosa         | 4            | 3                    | 405                  | 8            | 7                    | 640                  | 32           | 23                   | 1.390                | 7            | 4                    | 8                    |
| Viesgo               | 0            | 1                    | 69                   | 1            | 1                    | 122                  | 2            | 2                    | 159                  | 0            | 0                    | 1                    |
| Cantábrico           | 0            | 0                    | 31                   | 3            | 0                    | 40                   | 1            | 1                    | 55                   | 0            | 0                    | 0                    |
| Distribuidoras DT 11 | 1            | 1                    | 133                  |              | 4                    | 220                  | 12           | 31                   | 403                  | 3            | 6                    | 2                    |
| Fevasa               |              |                      |                      |              |                      |                      |              |                      | 1                    | 0            | 0                    | 0                    |
| <b>TOTAL . . .</b>   | <b>42</b>    | <b>44</b>            | <b>5.270</b>         | <b>106</b>   | <b>140</b>           | <b>9.582</b>         | <b>443</b>   | <b>545</b>           | <b>17.836</b>        | <b>100</b>   | <b>100</b>           | <b>100</b>           |

Evolution of solar photovoltaic installations in Spain



No. of grid connected photovoltaic installations in Spain



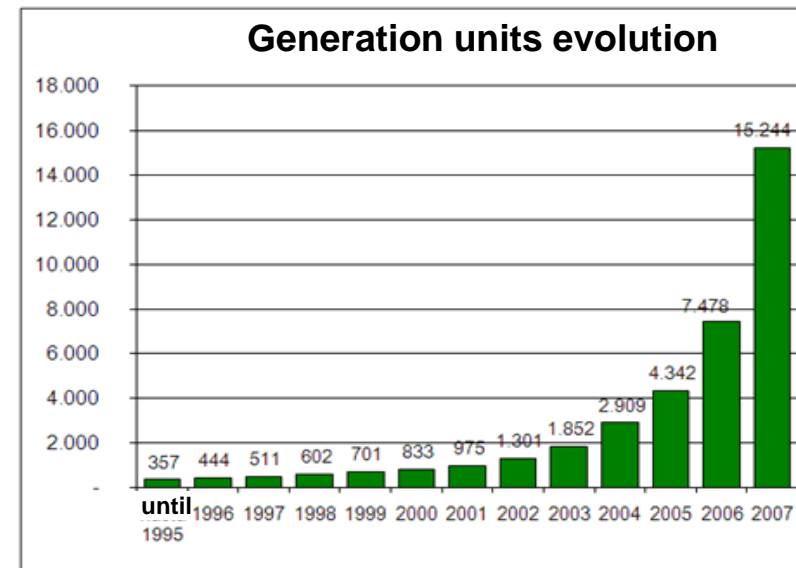
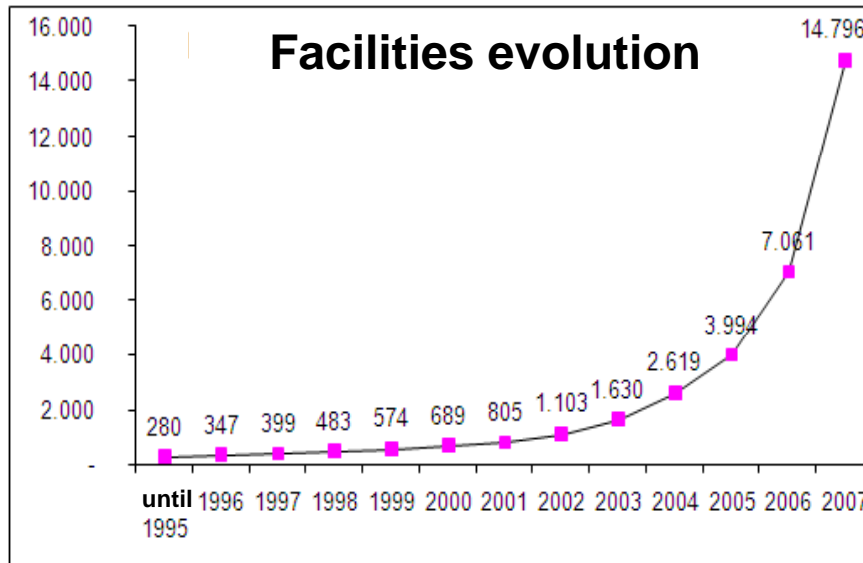
( Source: CNE – Inf. January 2008. Information for Iberdrola 2007 comes from Iberdrola’s Special Regime department

# Units and Installed Installations and Annual Evolution



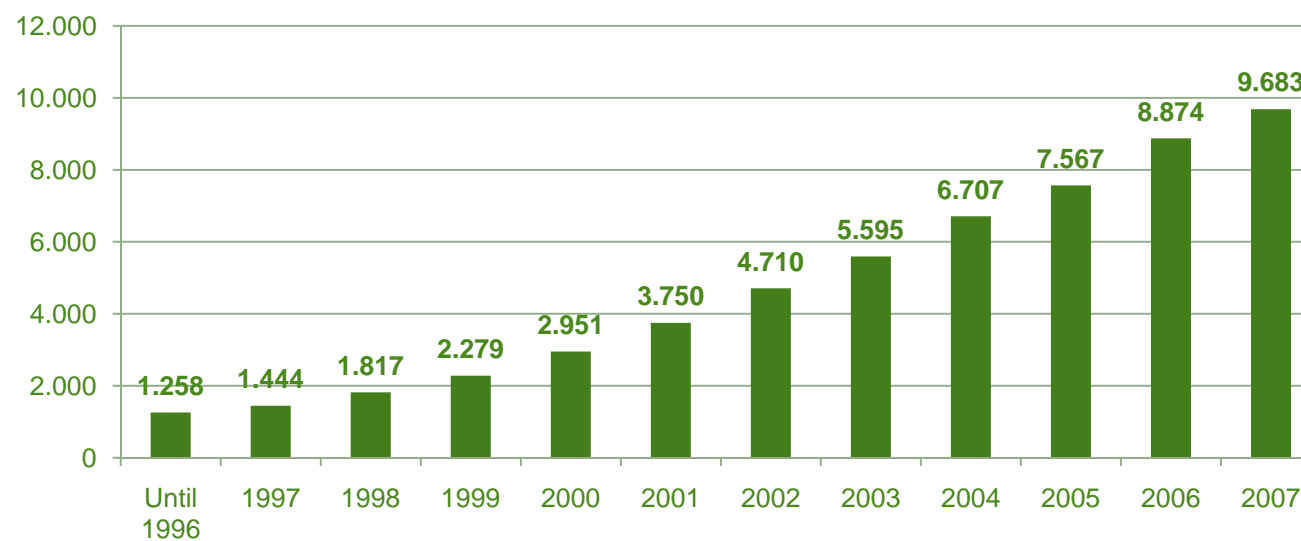
| Type                          | Generation Units (cumulative) |               |              |               |
|-------------------------------|-------------------------------|---------------|--------------|---------------|
|                               | 31/12/2006                    | 31/12/2007    | Increase     | Annual %      |
| Cogeneration                  | 482                           | 499           | 17           | 3,53%         |
| Solar (Photovoltaic, Thermal) | 7.432                         | 13.941        | 6.509        | 87,58%        |
| Wind (+tidal, etc...)         | 295                           | 320           | 25           | 8,47%         |
| Hydro                         | 415                           | 420           | 5            | 1,20%         |
| Biomass                       | 39                            | 40            | 1            | 2,56%         |
| Waste                         | 24                            | 24            | -            | 0,00%         |
| <b>TOTAL Units</b>            | <b>8.687</b>                  | <b>15.244</b> | <b>6.557</b> | <b>75,48%</b> |

|                         |              |               |              |               |
|-------------------------|--------------|---------------|--------------|---------------|
| <b>Total facilities</b> | <b>8.270</b> | <b>14.796</b> | <b>6.526</b> | <b>78,91%</b> |
|-------------------------|--------------|---------------|--------------|---------------|



## Installed Power and Annual Evolution

| Type                                 | Cumulative Installed Power (MW) |              |            |              |
|--------------------------------------|---------------------------------|--------------|------------|--------------|
|                                      | 31/12/2006                      | 31/12/2007   | Increase   | Annual %     |
| <b>Cogeneration</b>                  | <b>2.240</b>                    | <b>2.287</b> | <b>47</b>  | 2,10%        |
| <b>Solar (Photovoltaic, Thermal)</b> | <b>102</b>                      | <b>401</b>   | <b>299</b> | 293,14%      |
| <b>Wind (+tidal, etc...)</b>         | <b>5.606</b>                    | <b>6.029</b> | <b>423</b> | 7,55%        |
| <b>Hydro</b>                         | <b>537</b>                      | <b>540</b>   | <b>3</b>   | 0,56%        |
| <b>Biomass</b>                       | <b>101</b>                      | <b>101</b>   | <b>0</b>   | 0,00%        |
| <b>Waste</b>                         | <b>325</b>                      | <b>325</b>   | <b>0</b>   | 0,00%        |
| <b>TOTAL Units</b>                   | <b>8.911</b>                    | <b>9.683</b> | <b>772</b> | <b>8,66%</b> |



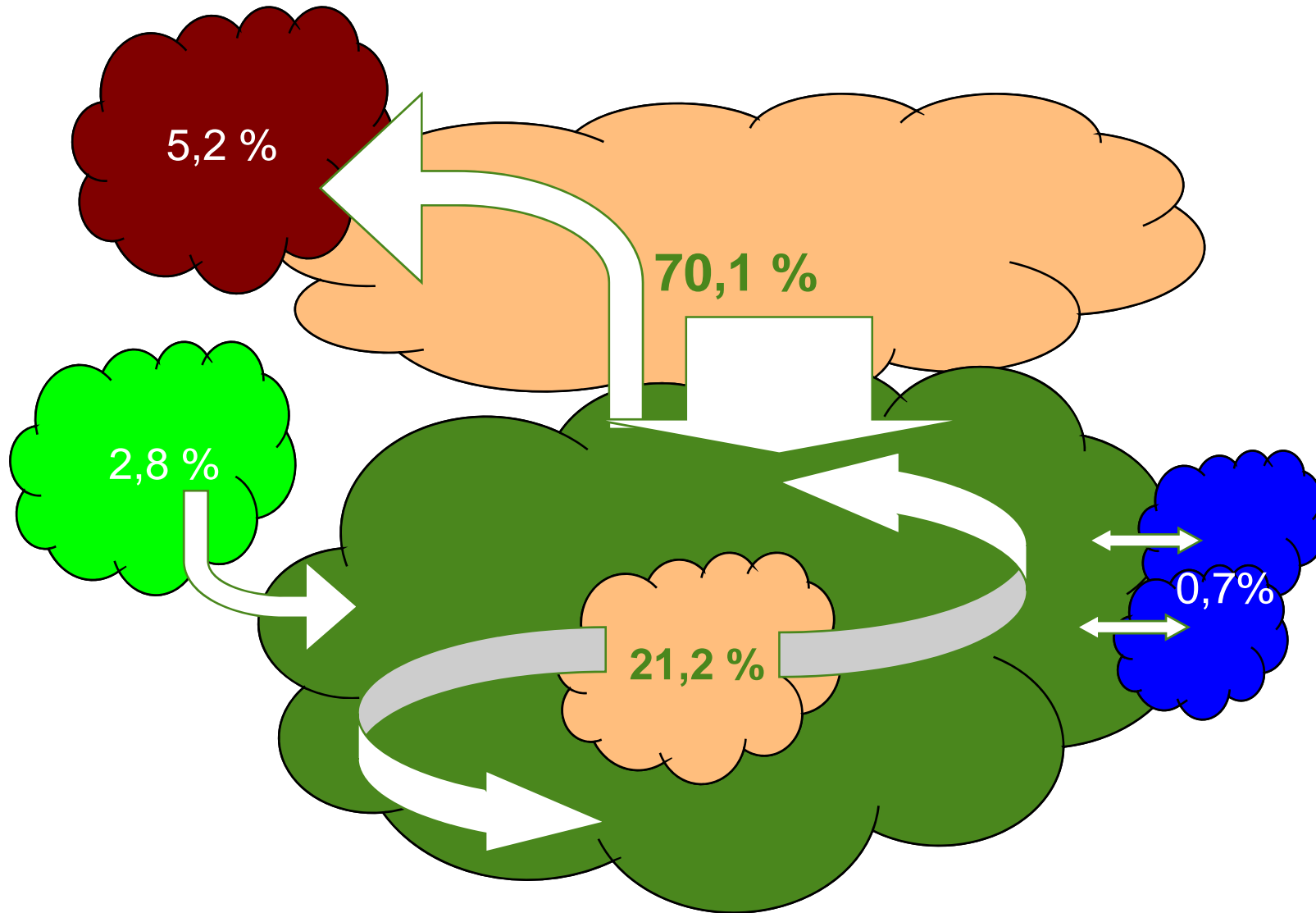
# Energy distributed by Iberdrola



|  | Total 2002    | Total 2006    | Total 2007     | % of distr.<br>Energy 2007 | Δ %2002-<br>2007 |
|--|---------------|---------------|----------------|----------------------------|------------------|
| <b>Customers in 400 or 220 kV</b>      | 4.120         | 5.037         | 5.369          | 5,2%                       | 30,3%            |
| <b>From Transport</b>                  | 64.268        | 72.603        | 71.821         | 70,1%                      | 11,8%            |
| <b>Balance with other distributors</b> | 399           | 520           | 762            | 0,7%                       | 91,0%            |
| <b>Generation ( &lt; 220 kV )</b>      | 2.593         | 2.744         | 2.864          | 2,8%                       | 10,5%            |
| <b>Gen. in special regime</b>          | 10.850        | 18.562        | 21.679         | 21,2%                      | 99,8%            |
| <b>Total Energy</b>                    | <b>82.230</b> | <b>99.466</b> | <b>102.495</b> | <b>100,0%</b>              | <b>24,6%</b>     |

Millions of kWh

# Energy distributed by Iberdrola



## Conclusions



**A clear stake is needed (State and Companies)**

**Whenever exists good regulatory support we can achieve great developments (Example of Iberdrola Renewables)**

**Regulatory support must be focused in all areas related to DER&RES otherwise a stopover could arise (Iberdrola Distribution)**

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