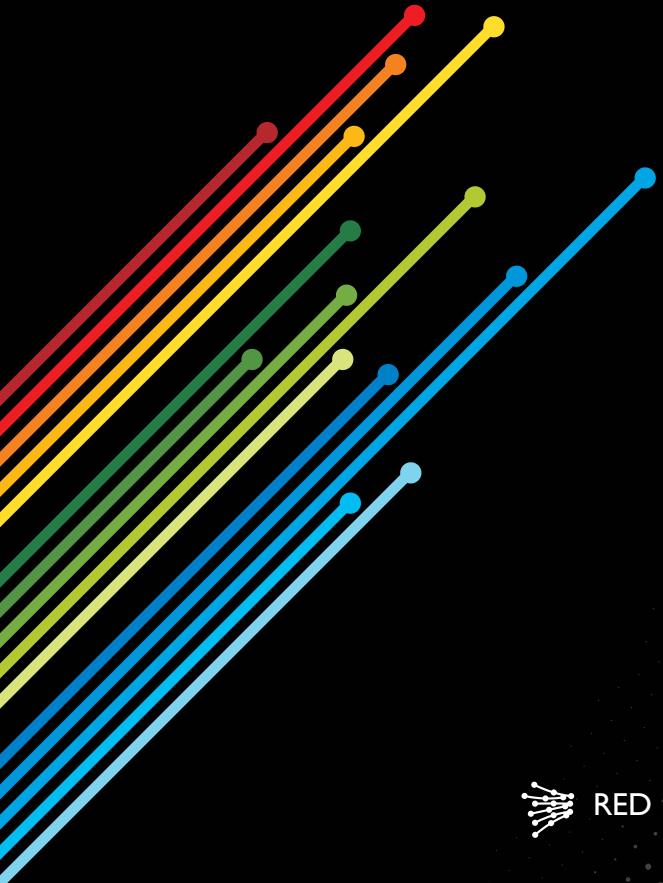


# the Spanish electricity system

preliminary  
report

2010



RED ELÉCTRICA DE ESPAÑA

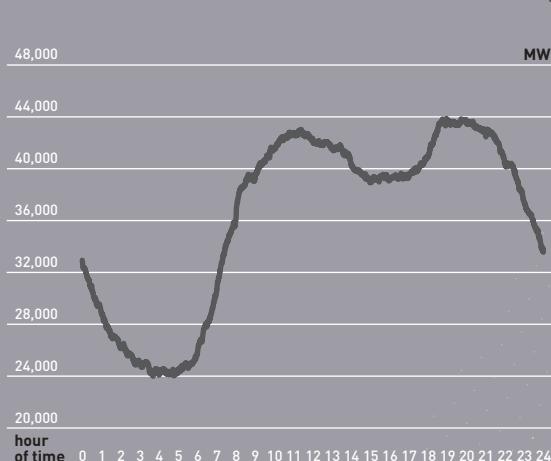


# the Spanish electricity system

preliminary  
report

2010

LOAD CURVE OF THE MAXIMUM DEMAND DAY JANUARY 11<sup>th</sup>





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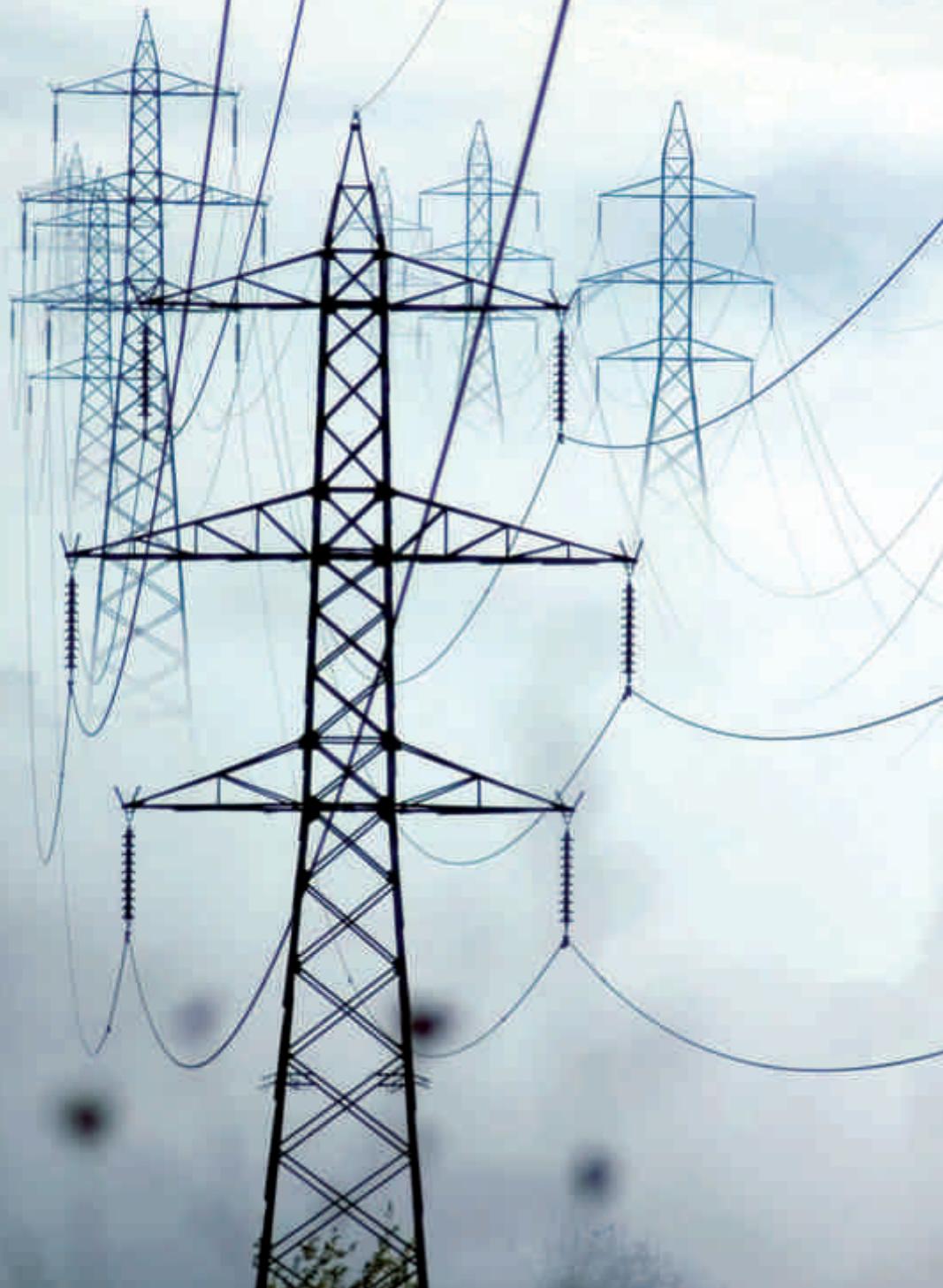
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# Introduction

Presented in this preliminary report is the **provisional** statistical data regarding the behaviour of the Spanish electricity system during 2010.

## Peninsular System

- The **demand for electrical energy on the Spanish peninsula** finished the year at 259,940 GWh, 3.2 % higher than in 2009. Factoring in the effects of seasonal and working patterns, the annual growth was 2.9 %, compared to a fall of 4.8 % registered in 2009.
- The **yearly maximums** for hourly average power demand and daily energy demand were reached on 11 January with 44,122 MW and 12 January with 895 GWh respectively. With respect to the summer period, on 19 July a new historical record of an hourly average power of 40,934 MW was reached.
- **Installed power** in generating facilities showed a net growth of 3,717 MW during 2010, reaching a total of 97,447 MW, representing an increase of 4 % compared to the previous year. The majority of this increase comes from combined cycle which had a net growth of 2,154 MW in addition to renewable origin facilities (1,094 MW corresponded to wind and 540 MW to solar energy). Regarding decommissioning, a fuel generation plant with a power of 148 MW was closed.
- One of the most notable events has been the breaking of the trend in dry years which had been registered since 2004. Abundant rainfall registered throughout the majority of 2010 has placed **producible hydroelectric** at 36,568 GWh, the highest since 1997. This value is 30 % higher than the historical average value and 65 % above the 2009 figure.
- By year end the **water reserves in the reservoirs throughout** the peninsula were around 65 % of their total capacity, the highest value since 1997 and almost 14 points over the reserves registered at the end of 2009.
- Extremely noteworthy therefore in the **production mix** figures is the growth of over 59 % of hydroelectric generation with respect to the previous year, which has allowed 14 % of the 2010 demand to be covered by this technology, compared to 9 % in 2009. On the contrary, the groups of coal and combined cycle groups have registered reductions in production of 34 % and 17 %, respectively, in relation to last year.
- **Renewable energies**, favoured this year by the high level of reserves of water for hydroelectric power, covered, according to provisional data, 35 % of the demand in 2010, six points more than last year. By technologies, in addition to the aforementioned growth experienced by hydroelectric generation, noteworthy again is wind power generation which, with a growth of 18.5 % in its generation, increased its share of the demand coverage to 16 %.

# Introduction

- **Wind power energy** surpassed, on several occasions, the previous maximums of instantaneous power, hourly energy and daily energy. 9 November registered the latest daily energy record at 315,258 MWh, a production which allowed 43 % of the electricity demand on that day to be covered. Similarly, in February a monthly maximum of wind power energy was registered which covered 21 % of the demand of that month. Nevertheless, the variability which is characteristic of this energy has led to extreme situations such as that produced again on 9 November when 54 % of the demand was covered by this energy at 3:35 am, whereas on 26 June, at 10:32 am, it barely covered 1 %.
- On the other hand, the total potential wind power generation due to strong winds recorded during the first three months of the year forced certain limitations to production to be implemented during some demand valley hours, which has lead to a loss of almost 0.6 % of the annual producible.
- The increase of renewable energy generation on the one hand, and the lower production from thermal power plants on the other, have contributed to a **reduction of CO<sub>2</sub> emissions** from the electricity sector which has been estimated at 58.7 million tonnes, 20 % less than in 2009.
- The **balance of international exchanges** was as an exporter, with 8,490 GWh, 4.8 % higher than 2009. This increase is mainly due to the complete change in the net exchange balance with France, which now is of exporter as a result not only of an increase of 45 % in exports, but also from a decrease of 49 % in imports.
- During 2010, 686.3 km of line was commissioned, which meant that at the end of the year the **Spanish peninsula transmission grid** had circuits totalling 35,797 km. Similarly, transformer capacity increased 2,000 MVA.

## Extra-peninsular Systems

The **annual demand** for electrical energy in extra-peninsular systems on a whole fell 1.3 % with respect to the previous year. In the Balearic Islands, the fall was 1.7 % and in the Canary Islands it was 1.3 %. On the contrary, Ceuta and Melilla registered growths of 3.9 % and 2.7 % respectively



# Electric power balance and installed capacity

## Annual electric power balance

	Peninsular system		Extra-peninsular systems		National total	
	GWh	% 10/09	GWh	% 10/09	GWh	% 10/09
Hydro	38,001	59.3	0	-	38,001	59.3
Nuclear	61,944	17.4	-	-	61,944	17.4
Coal	22,372	-33.9	3,479	0.9	25,851	-30.7
Fuel / gas <sup>(1)(2)</sup>	1,847	-11.3	7,777	-2.5	9,624	-4.3
Combined cycle	64,913	-17.1	3,916	-1.1	68,828	-16.3
<b>Gross production</b>	<b>189,076</b>	<b>-0.9</b>	<b>15,171</b>	<b>-1.4</b>	<b>204,247</b>	<b>-1.0</b>
Self-consumption	-6,670	-6.3	-885	0.3	-7,555	-5.6
<b>Special regime</b>	<b>90,462</b>	<b>13.0</b>	<b>1,026</b>	<b>0.6</b>	<b>91,488</b>	<b>12.8</b>
Wind	42,656	18.5	319	-6.1	42,976	18.3
Solar	6,910	19.6	365	55.9	7,276	21.0
Rest special regime	40,896	6.7	341	-23.3	41,237	6.4
<b>Net production</b>	<b>272,868</b>	<b>3.4</b>	<b>15,312</b>	<b>-1.3</b>	<b>288,180</b>	<b>3.2</b>
Pump storage consumption	-4,439	18.8	-	-	-4,439	18.8
International exchanges <sup>(3)</sup>	-8,490	4.8	-	-	-8,490	4.8
<b>Demand</b>	<b>259,940</b>	<b>3.2</b>	<b>15,312</b>	<b>-1.3</b>	<b>275,252</b>	<b>2.9</b>

(1) GICC (Ercogás) enclosed. (2) Generation by auxiliary units is included in the Balearic and Canary Islands electricity systems. (3) Positive value: import balance; negative value: export balance.

## Installed capacity as of 31<sup>st</sup> December

	Peninsular system		Extra-peninsular systems		National total	
	MW	% 10/09	MW	% 10/09	MW	% 10/09
Hydro	16,657	0.0	1	0.0	16,658	0.0
Nuclear	7,716	0.0	-	-	7,716	0.0
Coal	11,380	0.2	510	0.0	11,890	0.2
Fuel / gas <sup>(1)(2)</sup>	2,860	-4.9	3,029	2.3	5,889	-1.3
<b>Combined cycle</b>	<b>25,220</b>	<b>9.3</b>	<b>1,624</b>	<b>17.0</b>	<b>26,844</b>	<b>9.8</b>
Ordinary regime	<b>63,833</b>	<b>3.3</b>	<b>5,164</b>	<b>6.3</b>	<b>68,997</b>	<b>3.5</b>
Wind	19,813	5.8	146	0.0	19,959	5.8
Solar	4,018	15.5	169	11.1	4,188	15.3
Rest special regime	9,783	0.6	160	34.8	9,942	1.0
<b>Special regime</b>	<b>33,614</b>	<b>5.3</b>	<b>475</b>	<b>13.9</b>	<b>34,089</b>	<b>5.4</b>
<b>Total</b>	<b>97,447</b>	<b>4.0</b>	<b>5,639</b>	<b>6.9</b>	<b>103,086</b>	<b>4.1</b>

(1) GICC (Ercogás) enclosed.



the Spanish electricity system

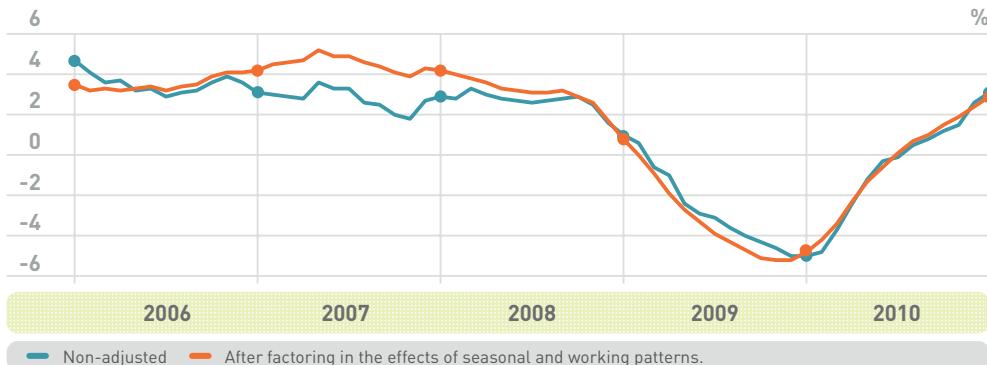
## 2 Peninsular system 2.1 Demand

### Demand evolution

Año	GWh	Annual Δ (%)	Adjusted annual Δ(*) (%)
2006	255,015	3.1	4.2
2007	262,528	2.9	4.2
2008	265,281	1.0	0.8
2009	251,966	-5.0	-4.8
<b>2010</b>	<b>259,940</b>	<b>3.2</b>	<b>2.9</b>

(\*) Adjusted for workdays and temperature effects.

### Annual demand growth (last 12 months)



### Monthly demand growth (%)

	E	F	M	A	M	J	J	A	S	O	N	D
Monthly <sup>(*)</sup>	-0.3	5.0	9.3	4.4	4.7	0.2	3.3	1.4	1.0	0.3	6.3	3.0
Cummulative	-0.3	2.2	4.4	4.4	4.5	3.8	3.7	3.4	3.1	2.9	3.2	3.2

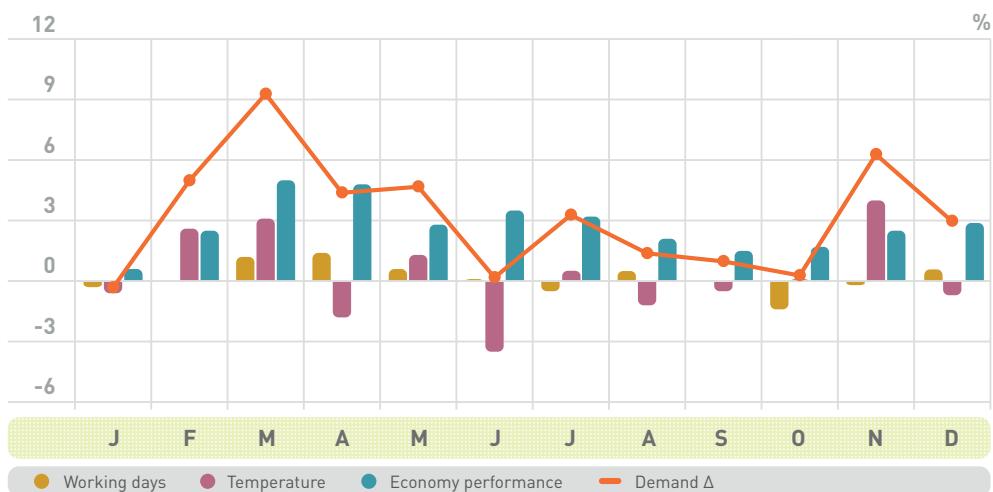
(\*) Variation as compared to same month of previous year.

# Peninsular system

## 2.1 Demand

2

### Demand growth components



### Gross production structure in ordinary regime





## 2 Peninsular system

### 2.1 Demand

#### Installed capacity as of 31<sup>st</sup> December (97,447 MW)

Rest S.R. 10 %

Solar S.R. 4 %

Wind S.R. 20 %

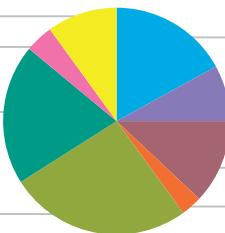
Combined cycle 26 %

Hydro 17 %

Nuclear 8 %

Coal 12 %

Fuel / gas 3 %



S.R.: Special regime.

#### Demand coverage

Rest S.R. 15 %<sup>(1)</sup>

Solar S.R. 2 %

Wind S.R. 16 %

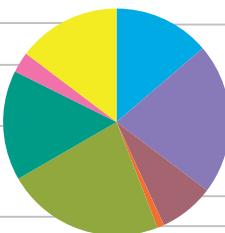
Combined cycle 23 %

Hydro 14 %

Nuclear 21 %

Coal 8 %

Fuel / gas 1 %



S.R.: Special regime. (1) Includes cogeneration (12 %) and other renewables (3 %).

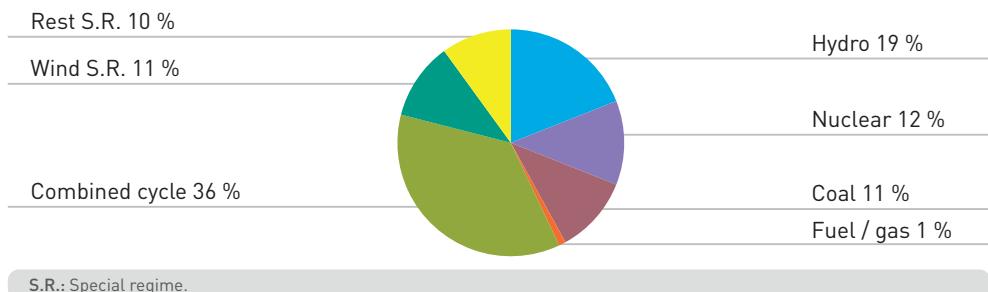
# Peninsular system

## 2.1 Demand

2



### Maximum peak load coverage 44,122 MW January 11<sup>st</sup> (7-8pm)



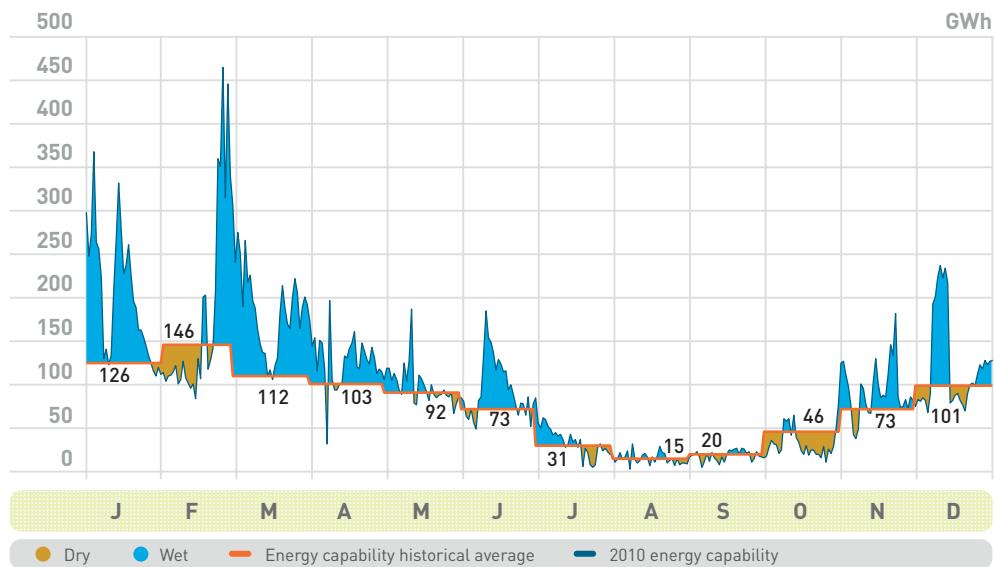
### Maximum peak load and maximum daily demand



# 2 Peninsular system

## 2.2 Hydroelectric energy

### Daily energy capability compared to the energy capability average



### Annual energy capability

Year	GWh	Factor	Probability being exceeded (%)
2006	23,286	0.82	74
2007	18,263	0.64	93
2008	18,788	0.67	91
2009	22,110	0.78	77
<b>2010</b>	<b>36,568</b>	<b>1.30</b>	<b>16</b>

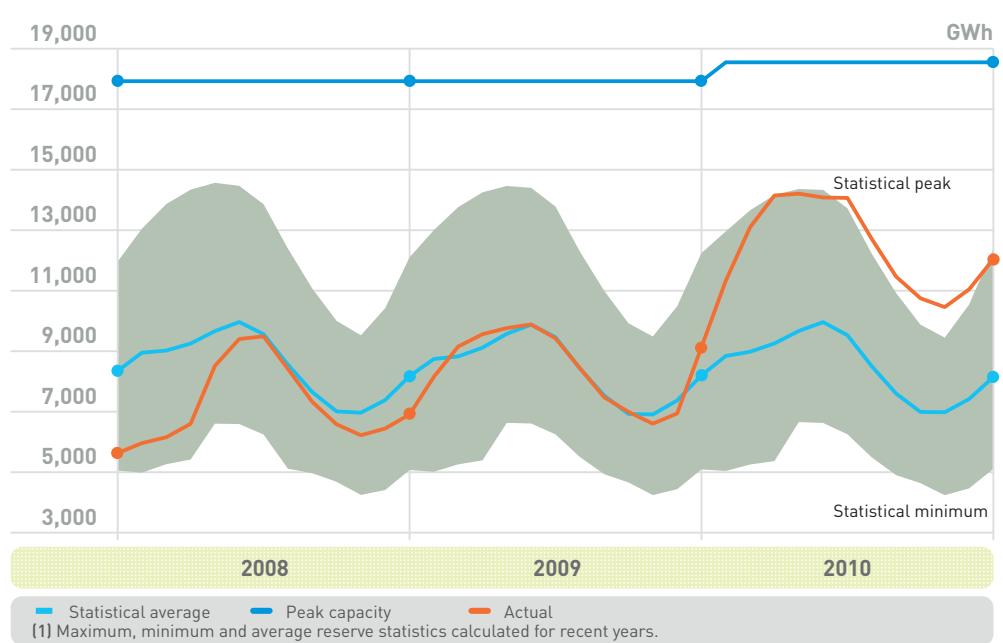
## Peninsular system

### 2.2 Hydroelectric energy

2



#### Hydroelectric reserves evolution<sup>(1)</sup>



#### Hydroelectric reserves as of 31<sup>st</sup>

	Capacity	2009		2010	
		GWh	% of maximum capacity	GWh	% of maximum capacity
Annual operating conditions	9,007	5,089	60.7	5,176	57.5
Hiperannual operating conditions	9,544	4,048	42.4	6,821	71.5
<b>Global</b>	<b>18,551</b>	<b>9,137</b>	<b>51.0</b>	<b>11,197</b>	<b>64.7</b>



## Peninsular system

### 2.3 Facilities. Generation and transmission

#### New generation facilities under ordinary operating conditions

	Connected		Disconnected	
	Type	MW	Type	MW
Besós 5(1)	Combined cycle	859		
Castejón 1	Combined cycle	30		
Los Barrios	Coal	21		
Puerto de Barcelona 1	Combined cycle	413		
Puerto de Barcelona 2(1)	Combined cycle	435		
Soto de la Ribera 5(1)	Combined cycle	432		
Escatrón Peaker	Combined cycle			15
Cristóbal Colón 2	Fuel / gas			148
<b>TOTAL</b>		<b>2,190</b>		<b>163</b>

(1) Trial run unit.

#### New 400 kV transmission lines

	No. of circuits	Circuit in km
E/S en Minglanilla L/Olmedilla-Catadau	1	3.00
E/S en Minglanilla L/Morata-Cofrentes	1	1.02
E/S Carmona L/D.Rodrigo-Valdecaballeros	2	0.43
L/Segovia-Entronde Galapagar	2	25.77
E/S Villanueva Escuderos L/Trillo-Olmedilla	2	3.61
L/Cabra-Guadame	2	146.00
E/S en Belinchon L/Morata-Cofrentes	2	0.59
E/S en Torrente L/Catadau-Eliana	2	15.90
L/Arcos-La Roda	2	286.83
L/Abanto-Zierbena	2	10.40
E/S en Maials L/Rubí-Mequinenza	1	0.58
Aguayo-L/Penagos-Güeñes (E/S en Aguayo)	1	0.23
Aguayo-L/Penagos-Güeñes (E/S en Penagos)	1	0.59
Compactación Soto-Penagos	2	13.23
L/Pierola-Vic (1ª fase)	1	48.57
L/Pesoz-Sanzo	2	2.20
L/Aldeadávila-Frontera Portuguesa	1	1.80
<b>TOTAL</b>		<b>560.74</b>

# Peninsular system

## 2.3 Facilities. Generation and transmission



### New 220 kV transmission lines

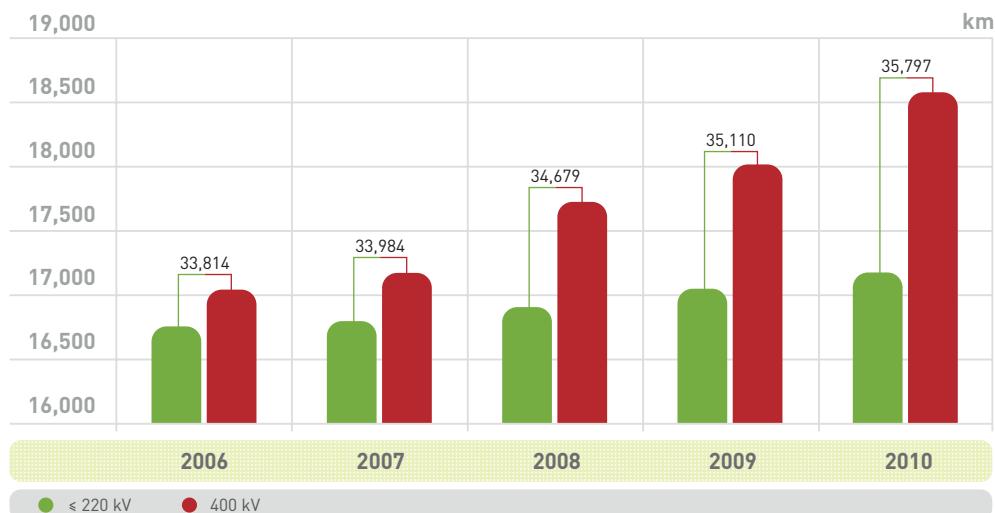
	No. of circuits	Circuit in km
E/S en Carmona L/Santiponce-Villanueva Rey	1	0.24
E/S en Galapagar L/Majadahonda-Otero	1	3.56
L/Puerto Real-Gazules	1	30.32
L/Puerto Real-Gazules (underground)	1	0.12
E/S en Carmona L/Guillena-Dos Hermanas	2	1.97
E/S en Carmona L/Guillena-Alcores	2	1.97
E/S en Carroyuelas L/Aceca-La Paloma	2	3.86
L/Melancólicos-Mazarredo (underground)	1	0.64
L/Ventas-Melancólicos (underground)	1	4.73
L/Arganzuela-Melancólicos (underground)	1	2.23
L/Villaverde-Parque Ingenieros (underground)	1	4.09
L/Parque Ingeniero-Antonio Leyva (underground)	1	5.36
L/Arganzuela-Antonio Leyva (underground)	1	2.82
E/S en Don Rodrigo L/Aljarafe-Qintos (antigua Santiponce-Qintos)	2	25.80
E/S en Prado de Santo Domingo L/Villaviciosa-Getafe (underground)	2	0.39
L/Pilar-Fuencarral (underground)	2	16.82
E/S en Haro L/Miranda-Laguardia	2	18.42
E/S en Beniferri L/Eliana-Torrente 1	2	0.48
E/S en Anoia L/Pont de Suert-Rubí	2	1.60
E/S en Anoia L/Pont de Suert-Rubí (underground)	2	0.18
<b>TOTAL</b>		<b>125.59</b>

### New 400/220 kV substations

	Voltage kV		Voltage kV
Belinchón	400	Anoia	220
Bescanó	400	Beniferri	220
Maials	400	Buenavista	220
Minglanilla	400	Carroyuelas	220
Torrente	400	Guixeres	220
Villanueva de los Escuderos	400	Melancólicos	220
		Prado de Santo Domingo	220
		Vaguadas	220



## Evolution of the transmission grid



## Evolution of the powertransmission system

	2006	2007	2008	2009	2010
Circuit 400 kV (km)	17,042	17,172	17,724	18,015	18,576
Circuit <220 kV (km)	16,772	16,813	16,955	17,095	17,221
Transforming capacity 400/HV (MVA) <sup>(1)</sup>	56,809	59,259	63,659	67,059	69,059

(1) The data for 2010 reflects three transformers inventoried during this fiscal year with a joint capacity of 2,000 MVA.

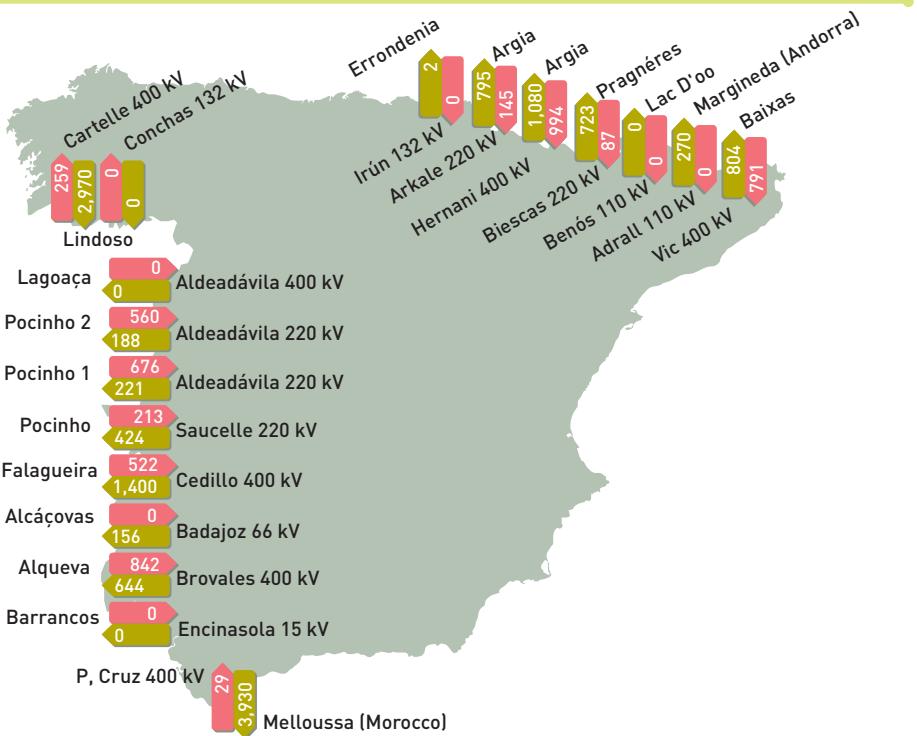
NB: In accordance with that established in the 9th Transitory Provision of Law 17/2007, of 4 July, Red Eléctrica acquired, in 2010, peninsular transmission assets, as well as the extra-peninsular transmission assets of the Balearic and Canary Islands, which were property of the electricity companies.

# Peninsular system

## 2.4 International exchanges

2

### International physical exchanges (GWh)



### Exchanges balances (GWh)

	Francia	Portugal	Andorra	Marruecos	Total
2006	4,410	-5,458	-229	-2,002	-3,280
2007	5,487	-7,497	-261	-3,479	-5,750
2008	2,889	-9,439	-278	-4,212	-11,040
2009	1,590	-4,807	-299	-4,588	-8,104
<b>2010</b>	<b>-1,387</b>	<b>-2,931</b>	<b>-270</b>	<b>-3,902</b>	<b>-8,490</b>

Positive value: import balance; negative value: export balance.

# 3 Extra-peninsular systems

## 3.1 Demand

### Electricity balance from extra-peninsular systems

	Balearic Islands GWh	% 10/09	Canary Islands GWh	% 10/09	Ceuta GWh	% 10/09	Melilla GWh	% 10/09
Hydro	0	-	0	-	0	-	0	-
Coal	3,479	0.9	0	-	0	-	0	-
Fuel / gas	1,335	-1.1	5,976	-2.7	238	3.0	221	4.8
Combined cycle	1,137	-15.7	2,779	6.4	0	-	0	-
Auxiliary generation <sup>(1)</sup>	7	20.2	0	-	0	-	0	-
<b>Ordinary regime</b>	<b>5,958</b>	<b>-3.2</b>	<b>8,755</b>	<b>-0.4</b>	<b>238</b>	<b>3.0</b>	<b>221</b>	<b>4.8</b>
Self-consumption	-376	0.9	-478	0.2	-18	-6.8	-13	1.3
<b>Special regime</b>	<b>306</b>	<b>44.2</b>	<b>716</b>	<b>-10.4</b>	<b>0</b>	<b>-</b>	<b>4</b>	<b>-54.1</b>
Wind	8	45.2	311	-7.0	0	-	0	-
Solar	121	49.7	245	59.2	0	-	0	-
Rest special regime	177	40.6	160	-48.5	0	-	4	-54.1
<b>Demand (b.c.)</b>	<b>5,887</b>	<b>-1.7</b>	<b>8,993</b>	<b>-1.3</b>	<b>220</b>	<b>3.9</b>	<b>212</b>	<b>2.7</b>

(1) Auxiliary generation: a series of emergency units were installed in the Balearic Islands electricity system in order to make up for the generation deficit with regard to the planned generation during the summer 2010 peak.

### Installed capacity as of 31<sup>st</sup> December

	Balearic Islands MW	% 10/09	Canary Islands MW	% 10/09	Ceuta MW	% 10/09	Melilla MW	% 10/09
Hydro	0	-	1	0.0	0	-	0	-
Coal	510	0.0	0	-	0	-	0	-
Fuel / gas	819	-16.1	2,029	11.7	96	35.3	85	0.0
Combined cycle	933	34.0	691	0.0	0	-	0	-
Auxiliary generation <sup>(1)</sup>	0	-	0	-	0	-	0	-
<b>Ordinary regime</b>	<b>2,262</b>	<b>3.6</b>	<b>2,722</b>	<b>7.9</b>	<b>96</b>	<b>35.3</b>	<b>85</b>	<b>0.0</b>
Wind	4	0.0	142	0.0	0	-	0	-
Solar	57	10.3	112	11.5	0	-	0	-
Resto régimen especial	84	95.6	73	0.0	0	-	2	0.0
<b>Special regime</b>	<b>145</b>	<b>47.1</b>	<b>328</b>	<b>3.6</b>	<b>0</b>	<b>-</b>	<b>2</b>	<b>0.0</b>
<b>Total</b>	<b>2,407</b>	<b>5.5</b>	<b>3,049</b>	<b>7.5</b>	<b>96</b>	<b>35.3</b>	<b>87</b>	<b>0.0</b>

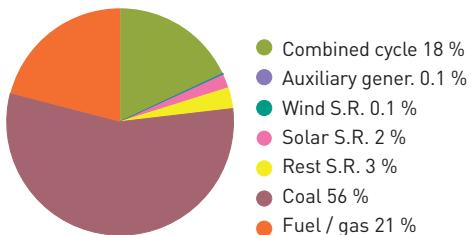
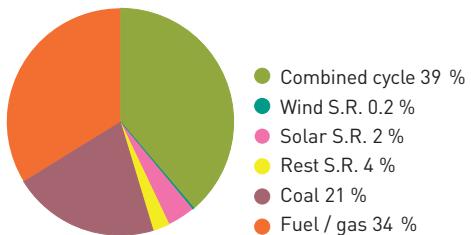
## Extra-peninsular systems

### 3.1 Demand

#### Balearic Islands

Installed capacity  
as of 31<sup>st</sup> December  
2009 (2,407 MW)

Demand  
coverage

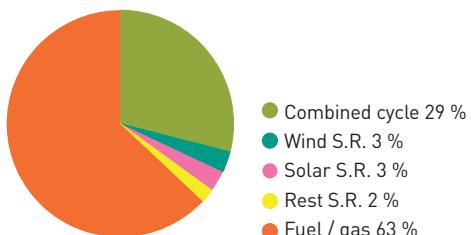
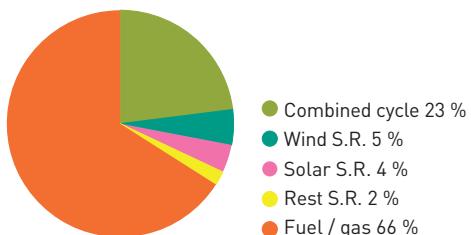


S.R.: Special regime.

#### Canary Islands

Installed capacity  
as of 31<sup>st</sup> December  
2009 (3,019MW)

Demand  
coverage



S.R.: Special regime.

# 3 Extra-peninsular systems

## 3.1 Demand

### Monthly demand growth (%)

	J	F	M	A	M	J	J	A	S	O	N	D
Balearic Islands	-4.4	0.5	3.5	-4.5	-2.9	-8.7	-2.7	-4.6	-0.5	0.3	4.1	2.7
Canary Islands	-2.3	-2.4	-0.1	-0.4	-1.1	-2.3	-7.4	-3.3	2.0	-0.8	1.3	1.6
Ceuta	-3.1	3.9	1.3	6.1	7.3	2.6	2.7	8.9	5.4	1.4	6.7	4.9
Melilla	-5.2	0.5	5.3	5.1	2.5	3.2	1.3	5.8	7.8	-0.5	4.3	3.4

Variation as compared to same month of previous year.

### Maximum peak load and maximum daily demand

Power (MW)		Energy (MWh)	
1,104	10th March (8-9pm)	Balearic Islands	10th March 20,138
1,157	27th August (9-10pm)		22nd July 23,368
1,400	28th January (8-9pm)	Canary Islands	9th March 28,170
1,436	12th August (9-10pm)		29th September 29,246
41	11th January (9-10pm)	Ceuta	11th January 710
38	12th August (1-2pm)		1st September 700
38	27th January (9-10pm)	Melilla	27th January 652
39	12th August (1-2pm)		31st August 763

● Summer (June-September) ● Non-available data.

### Demand evolution

	Balearic Islands		Canary Islands		Ceuta		Melilla	
	GWh	Annual Δ (%)	GWh	Annual Δ (%)	GWh	Annual Δ (%)	GWh	Annual Δ (%)
2006	5,828	2.9	8,819	4.0	-	-	-	-
2007	5,977	2.6	9,212	4.5	203	-	193	-
2008	6,121	2.4	9,352	1.5	210	3.5	205	6.2
2009	5,992	-2.1	9,112	-2.6	212	0.9	206	0.6
<b>2010</b>	<b>5,887</b>	<b>-1.7</b>	<b>8,993</b>	<b>-1.3</b>	<b>220</b>	<b>3.9</b>	<b>212</b>	<b>2.7</b>

(-) Non-available data.

# Extra-peninsular systems

## 3.2 Facilities. Generation and transmission

### Variations to the ordinary regime generation equipment

	Subscriptions		Cancellations	
	Type	MW	Type	MW
<b>Balearic Islands</b>				
Cas Tresorer TV6	Combined cycle	79		
Cas Tresorer TG4 (Future Combined cycle)	Combined cycle	79	Fuel / gas	79
Cas Tresorer TG5 (Future Combined cycle)	Combined cycle	79	Fuel / gas	79
<b>Total</b>		<b>236</b>		<b>158</b>
<b>Canary Islands</b>				
Granadilla Turbina de gas 5	Fuel / gas	81		
Granadilla Turbina de gas 6	Fuel / gas	81		
Twin Pack de Guía de Isora	Fuel / gas	50		
Grupos auxiliares de Gran Tarajal			Electrogen generator	12
<b>Total</b>		<b>212</b>		<b>12</b>
<b>Ceuta</b>				
Ceuta Gº 12	Turbine gas	13		
Ceuta Gº 13(1)	Gas-oil	12		
<b>Total</b>		<b>25</b>		<b>0</b>

(1) Unit/Facility undergoing testing.

### New transmission lines

	Company	No. of circuits	Circuit in km
<b>Balearic Islands</b>			
E/S Bossa-L/Ibiza-San Jorge (underground)	132 <sup>(1)</sup>	2	6.2
Desplazamiento Son Molines (underground)	66	1	0.1
E/S en Bit-L/Son Reus-Polígono	66	2	1.1
E/S en Bit-L/Son Reus-Polígono (underground)	66	2	0.2
Modificación Formentera-San Jorge (underground)	30	1	3.3
<b>Total</b>		<b>11.0</b>	
<b>Canary Islands</b>			
E/S La Paterna-L/Jinamar-Guanarteme 1 (underground)	66	2	0.5
Cuesta de la Villa-Icod (paso a DC)	66	1	17.0
Cuesta de la Villa-Icod (paso a DC) (underground)	66	1	9.8
<b>Total</b>		<b>27.3</b>	

(1) Functions/Operation at 66 kV.

# 3 Extra-peninsular systems

## 3.2 Facilities. Generation and transmission

### New substations

	Voltage kV	Transformer capacity	
		kV	MVA
<b>Balearic Islands</b>			
Bossa	132	-	-
Bit	66	15	-
<b>Canary Islands</b>			
Granadilla II	220	-	-
La Paterna	66	20	-

### Evolution of the power transmission system

		2006	2007	2008	2009	2010
220 kV (km)	Canary Islands	163	163	163	163	163
	Balearic Islands	177	177	177	185	185
	<b>Total</b>	<b>340</b>	<b>340</b>	<b>340</b>	<b>348</b>	<b>348</b>
132 kV (km)	Canary Islands	-	-	-	-	-
	Balearic Islands	199	199	199	199	206
	<b>Total</b>	<b>199</b>	<b>199</b>	<b>199</b>	<b>199</b>	<b>206</b>
<132 kV (km) <sup>(1)</sup>	Canary Islands	990	1,091	1,091	1,108	1,136
	Balearic Islands	804	827	848	857	861
	<b>Total</b>	<b>1,794</b>	<b>1,918</b>	<b>1,939</b>	<b>1,965</b>	<b>1,997</b>
Transforming capacity (MVA)	Canary Islands	1,000	1,250	1,250	1,375	1,375
	Balearic Islands	1,998	1,998	1,998	1,998	1,998
	<b>Total</b>	<b>2,998</b>	<b>3,248</b>	<b>3,248</b>	<b>3,373</b>	<b>3,373</b>

(1) Incluye enlace submarino.

RED ELÉCTRICA DE ESPAÑA



## Terminology index

**Combined cycle.** Technology for the generation of electrical energy in which two thermodynamic cycles coexist within one system: one involves the use of steam, and the other one involves the use of gas. In a power station, the gas cycle generates electrical energy by means of a gas turbine and the steam cycle involves the use of one or more steam turbines. The heat generated by combustion in the gas turbine is passed to a conventional boiler or to a heat-recovery element which is then used to move one or more steam turbines, increasing the yield of the process. Electricity generators are coupled to both the gas and steam turbines.

**Closed-cycle pumping generation.** Production of electrical energy carried out by the hydroelectric power stations whose higher elevation reservoir does not receive any type of natural contributions of water, but uses water solely from the lower elevation reservoir.

**Generation consumption.** Energy used by the auxiliary elements of power stations, necessary for the everyday functioning of the production facilities.

**Hydroelectric reserves.** The hydroelectric reserve of a reservoir is the quantity of electrical energy that could be produced in its own power plant and in all the power plants situated downstream, with the total drainage of its current useable water reserves and providing that drainage occurs without natural contributions. The annual regime reservoirs are those in which complete drainage would take place in less than one year. Hyper-annual regime reservoirs are those in which the total drainage time takes more than one year.

**International physical exchanges.** The movements of energy which have taken place across lines of international interconnection during a certain period of time. It includes the loop flow of energy as a consequence of the grid design.

**Ordinary regime.** The production of electrical energy from all those facilities which are not included under the special regime.

**Producible energy.** Maximum quantity of electrical energy that theoretically could be produced considering the water supplies registered during a specific period of time and once the supplies used for irrigation or uses other than the production of electrical energy have been deducted.

**Producible hydroelectric index.** This is the quotient between the producible energy and the average producible energy, both related to the same period and to the same hydroelectric equipment.

**Special regime.** Production of electrical energy which falls under a unique economic regime, originating from facilities with installed power not exceeding 50 MW whose production originates from cogeneration or other forms of electricity generation associated with non-electrical activities, if and when, they entail a high energy yield: Groups that use renewable non-consumable energies, biomass or any type of biofuel as a primary energy source: Groups which use non-renewable or agricultural waste, livestock and service sector waste as primary energy sources, with an installed power lower than or equal to 25 MW, when they entail a high energy yield.

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**RED ELÉCTRICA  
DE ESPAÑA**

Pº del Conde de los Gaitanes, 177  
28109 Alcobendas (Madrid) Spain  
[www.ree.es](http://www.ree.es)