

2.4.33 Spain

2.4.33.1 Industry structure

Spain was one of the first countries in Europe to have liberalised its electricity sector. Generation facilities in Spain operate either under the Spanish “ordinary regime” (mostly conventional energy facilities) or the Spanish “special regime” (consisting of small or renewable energy facilities). Special regime generators supply power at fixed tariffs (which are generally higher than the Spanish market prices), while ordinary regime generators provide electricity at market prices to the Spanish wholesale “pool” and under bilateral contracts to “qualified” consumers and other suppliers.

Empresa Nacional de Electricidad, S.A. (Endesa) and Iberdrola are two of the leading electricity generation companies in Spain. Energias de Portugal (EDP), Unión Fenosa, Hidrocarbónico and E.ON, along with Endesa and Iberdrola, are the main electricity distributors in Spain. Red Eléctrica de España (REE) is the sole transmission system owner and operator in Spain.

Transmission companies and regulated distributors are required to provide network access to all consumers that have chosen to buy power in the free market, for they pay an “access” tariff to the distribution companies.

The liberalised suppliers are free to set a price for their consumers. Electricity generators and liberalised suppliers or qualified consumers may also enter into bilateral contracts without participating in the wholesale market.

With the coming into force of the new legislation in July 2009, the integral tariff system has been replaced by a last-resort tariff system. The five last-resort suppliers – Endesa, Iberdrola, Unión Fenosa, Hidrocarbónico and E.ON – are required to supply electricity at a regulated tariff to the last-resort consumers (low-voltage electricity consumers whose contracted power is less than or equal to 10 kW). Since the coming into force of the new legislation, electricity marketing companies instead of distributors have been supplying electricity to consumers, while the distribution companies continue to operate the facilities.

OMEL is the electricity market operator, while Comisión Nacional de Energía (CNE) is the energy sector regulator in Spain.

2.4.33.2 Existing capacity and generation

Spain had a total installed capacity of over XX GW as of December 2010. The capacity has grown at a compound annual growth rate (CAGR) of about XX per cent since 2005.

Spain is heavily dependent on thermal power plants to meet its electricity needs. However, in the last five years, it has been ramping up its renewable energy resources, especially wind energy, to combat the effects of climate change.

Table 2.4.33.2.1: Installed capacity (MW)

	2005	2006	2007	2008	2009	2010*
Ordinary regime						
– Hydro	XXX	XXX	XXX	XXX	XXX	XXX
– Nuclear	XXX	XXX	XXX	XXX	XXX	XXX
– Coal	XXX	XXX	XXX	XXX	XXX	XXX
– Fuel/gas	XXX	XXX	XXX	XXX	XXX	XXX
– Combined cycle	XXX	XXX	XXX	XXX	XXX	XXX
Total ordinary regime	XXX	XXX	XXX	XXX	XXX	XXX
Special regime						
– Wind	XXX	XXX	XXX	XXX	XXX	XXX
– Rest of special regime	XXX	XXX	XXX	XXX	XXX	XXX
Total special regime	XXX	XXX	XXX	XXX	XXX	XXX
Total	XXX	XXX	XXX	XXX	XXX	XXX
Annual growth rate (%)	-	XXX	XXX	XXX	XXX	XXX

*Preliminary figures

Source: XXXX

Table 2.4.33.2.2: Electricity generation and consumption (GWh)

	2005	2006	2007	2008	2009	2010*
Ordinary regime						
– Hydro	XXX	XXX	XXX	XXX	XXX	XXX
– Nuclear	XXX	XXX	XXX	XXX	XXX	XXX
– Coal	XXX	XXX	XXX	XXX	XXX	XXX
– Fuel / gas	XXX	XXX	XXX	XXX	XXX	XXX
– Combined cycle	XXX	XXX	XXX	XXX	XXX	XXX
Ordinary regime gross generation	XXX	XXX	XXX	XXX	XXX	XXX
Special regime						
– Wind	XXX	XXX	XXX	XXX	XXX	XXX
– Rest of special regime	XXX	XXX	XXX	XXX	XXX	XXX
Special regime gross generation	XXX	XXX	XXX	XXX	XXX	XXX
Total generation	XXX	XXX	XXX	XXX	XXX	XXX
Annual growth in generation (%)	XXX	XXX	XXX	XXX	XXX	XXX
Imports	XXX	XXX	XXX	XXX	XXX	XXX
Exports	XXX	XXX	XXX	XXX	XXX	XXX
Consumption	XXX	XXX	XXX	XXX	XXX	XXX
Annual growth in consumption (%)	XXX	XXX	XXX	XXX	XXX	XXX

* Preliminary figures

Source: XXXX

2.4.33.3 Expected addition to generation capacity

Spain plans to add about XXX MW of capacity over the five-year period of 2011–15, of which around XXX MW will be based on renewable energy.

Table 2.4.33.3.1: Expected addition to generation capacity (MW)

	2011–15*
Capacity addition (MW)	XXX

*Estimated

Source: Ministry of Industry, Tourism and Commerce, Spain; Global Transmission Research

2.4.33.4 Existing transmission network

Spain has a total transmission line length of about XXX km. It has added over XXX km of lines in the last six years, representing a growth rate of over XXX per cent.

Spain has 18 high voltage cross-border links with its neighbouring countries: 10 with Portugal; seven with France; and one with Morocco.

Table 2.4.33.4.1: Transmission line length (km)

Voltage (kV)	2005	2006	2007	2008	2009	2010
Peninsular network	XXX	XXX	XXX	XXX	XXX	XXX
– 400	XXX	XXX	XXX	XXX	XXX	XXX
– 200	XXX	XXX	XXX	XXX	XXX	XXX
Extra-peninsular network	XXX	XXX	XXX	XXX	XXX	XXX
– 200	XXX	XXX	XXX	XXX	XXX	XXX
– 132	XXX	XXX	XXX	XXX	XXX	XXX
– <132	XXX	XXX	XXX	XXX	XXX	XXX
Total	XXX	XXX	XXX	XXX	XXX	XXX

Source: XXXX

Table 2.4.33.4.2: Transformer capacity (MVA)

	2005	2006	2007	2008	2009	2010
Peninsular system (400 kV/HV)	XXX	XXX	XXX	XXX	XXX	XXX
Canary Islands	XXX	XXX	XXX	XXX	XXX	XXX
Balearic Islands	XXX	XXX	XXX	XXX	XXX	XXX
Total	XXX	XXX	XXX	XXX	XXX	XXX
Annual growth rate (%)	XXX	XXX	XXX	XXX	XXX	XXX

HV: High voltage

Source: XXXX

Table 2.4.33.4.3: Number of transformers*

Voltage (kV)	2005	2006	2007	2008	2009	2010
400	XXX	XXX	XXX	XXX	XXX	XXX
220	XXX	XXX	XXX	XXX	XXX	XXX
Total	XXX	XXX	XXX	XXX	XXX	XXX

*XXX.

Source: Red Eléctrica de España

Table 2.4.33.4.4: Existing cross-border electricity interconnections

Interconnection	Voltage (kV)	Type
Vic (Spain)–Baixas (France)	XXX	Single circuit
Hernani (Spain)–Argia (France)	XXX	NA
Arkale (Spain)–Argia (France)	XXX	Single circuit
Biescas (Spain)–Pragnères (France)	XXX	Single circuit
Irún (Spain)–Errondenia (France)	XXX	Single circuit
Benós (Spain)–Lac d’Oo (France)	XXX	Single circuit
Adrall (Spain)–Margineda (France)	XXX	NA
Brovales (Spain)–Alqueva (Portugal)	XXX	Single circuit
Cedillo (Spain)–Falagueira (Portugal)	XXX	Single circuit
Cartelle (Spain)–Alto Lindoso (Portugal)	XXX	Double circuit
Aldeadávila (Spain)–Alto Lindoso (Portugal)	XXX	Single circuit
Aldeadávila (Spain)–Lagoaça 3 (Portugal)	XXX	Single circuit
Aldeadávila (Spain)–Lagoaça 2 (Portugal)	XXX	Single circuit
Saucelle (Spain)–Pocinho (Portugal)	XXX	Single circuit
Las Conchas (Spain)–Lindoso (Portugal)	XXX	Single circuit
Puerto de la Cruz (Spain)–Melloussa (Morocco)	XXX	Double circuit

NA: Not available

Source: European Network of Transmission System Operators for Electricity; Red Eléctrica de España

2.4.33.5 Expected addition to transmission network

Spain plans to add around XXX km of transmission lines and XXX MVA of high voltage transformer capacity between 2011 and 2015. About XXX new substations at 400 kV and 220 kV levels are planned to be built. The upgradation of XXX high voltage substations is also planned during the same period.

Table 2.4.33.5.1: Expected addition to transmission line length (km)

Voltage (kV)	2011–15
400	XXX
220	XXX
Total	XXX

Note: Line length addition includes upgradation and modernisation of lines.

Source: Ministry of Industry, Tourism and Commerce, Spain

Table 2.4.33.5.2: Expected addition to transformer capacity (MVA)

Voltage (kV)	2011–15
400	XXX
220	XXX
Total	XXX

Source: Ministry of Industry, Tourism and Commerce, Spain; Global Transmission Research

Table 2.4.33.5.3: Expected new and refurbished substations (No.)*

Voltage (kV)	New substations	Upgradation
400	XXX	XXX
220	XXX	XXX

*For the period 2011–15.

Source: Ministry of Industry, Tourism and Commerce, Spain