

32 Spain



32.1 Summary of Coal Industry

32.1.1 ROLE OF COAL IN SPAIN

Spain has experienced significant industrialization since the 1970s, spurred on by its European Union (EU) membership in 1986. These factors have contributed to a 100 percent increase in energy demand since the mid-1970s. Spain is Europe's fifth largest energy consumer and has virtually no domestic production of liquid fuels or natural gas, so it depends upon imports for the bulk of its energy needs (EIA, 2014a). Coal represented more than 12 percent of the nation's primary energy supply in 2012 (EURACOAL, 2013).

Coal is Spain's most plentiful indigenous energy source, with reserves estimated at 530 million tonnes (Mmt). In 2012, Spain produced 6.15 Mmt of coal, while consuming 28.7Mmt, relying on imports for the balance (EIA, 2014b). Table 32-1 summarizes Spain's coal reserves and production.

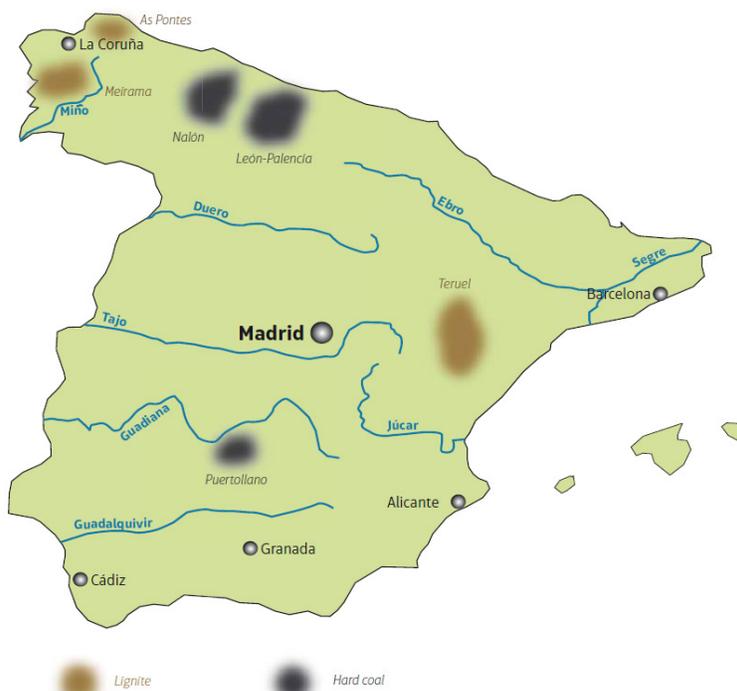
Table 32-1. Spain's Coal Reserves and Production

Indicator	Anthracite & Bituminous (million tonnes)	Sub-bituminous & Lignite (million tonnes)	Total (million tonnes)	Global Rank (# and %)
Estimated Proved Coal Reserves (2011)	200	330	530	33 (0.06%)
Annual Coal Production (2012)	6.15	0.0	6.15	32 (0.08%)

Source: EIA (2014b)

Spain's hard coal mining occurs primarily in northwestern Spain in Asturias, Castilla-León, Aragón, and León-Palencia, and also in the southern areas of Ciudad Real and Cordoba. The important opencast operations are located in Aragón, Ciudad Real, and at the border between Asturias and León. Teruel has the largest sub-bituminous coal reserves in the country, while most of the lignite is located in Galicia (see Figure 32-1). In recent years, high extraction costs have led to the gradual closure of mines, including the lignite mines in Galicia (EURACOAL, 2013).

Figure 32-1. Spain’s Coal Fields



Source: EURACOAL (2013)

32.1.2 STAKEHOLDERS

Table 32-2 lists Spain’s key stakeholders in the development of coal mine methane (CMM) industry.

Table 32-2. Key Stakeholders in Spain’s CMM Industry

Stakeholder Category	Stakeholder	Role
Mining Companies	HUNOSA (Huelleras del Norte S.A.) Endesa, S.A. UMINSA (Unión Minera del Norte S.A.)	Project host
Developers	See http://www.epa.gov/coalbed/networkcontacts.html	Project opportunity identification and planning
Engineering, Consultancy, and Related Services	See http://www.epa.gov/coalbed/networkcontacts.html	Technical assistance
Universities/Research Establishments	Geological and Mining Institute of Spain (Instituto Geológico y Minero de España)	Technical assistance
Government Groups	Ministry of Industry, Energy, and Tourism – Directorate of Energy Policy and Mines	Regulatory

32.1.3 STATUS OF COAL AND THE COAL MINING INDUSTRY

Government-owned companies produce most of the coal in Spain. One of the main public companies is Hulleras del Norte, S.A. (abbreviated as HUNOSA), which is 100 percent owned by the government through the Sociedad Estatal de Participaciones Industriales (SEPI) holding company.

HUNOSA, the major producer of hard coal in the central Asturian basin, was founded in 1967 to direct most of Spain's coal mining, and it gradually took over the larger coal companies. There are a few remaining private companies, however, the largest of which is Unión Minera del Norte S.A. (UMINSA) that resulted from a merger of 15 independent companies (OECD, nd). Endesa, the leading lignite producer, is also the largest power generating and distributing company in Spain, with nearly 40,000 megawatts (MW) of installed generating capacity (Endesa, 2014).

Similar to other EU members, Spain's coal industry has struggled to remain competitive vis-à-vis imported coal and other energy sources. More than 60 percent of Spain's hard coal is mined in opencast mines, making indigenous hard coal competitive compared with imported coal (EURACOAL, 2013). The National Energy Plan (Plan Energético Nacional or PEN), the basic statement of official energy policy first formulated in 1978, was aimed at a rationalization of energy consumption and a reduction in Spain's dependence on imported energy. In line with the energy rationalization policies set by PEN, the government sought to increase the efficiency of the coal mining sector by closing down high-cost mines and by providing financial aid for the industry's modernization. To encourage the cement and other industries to convert from oil to coal, the government allowed them to import duty-free coal. The government also made efforts to substitute the use of oil for coal in urban areas.

Up until the 2008 economic recession, Spain was slowly phasing out its coal production subsidies in accordance with EU requirements. However, coal production and consumption increased in 2011 after the Spanish government introduced domestic coal production subsidies and gave preferential wholesale power market access to coal-powered generators in an attempt to reduce the country's imported coal dependence. This caused electricity producers to move away from renewable energy sources and back to coal. CARBUNION, the Spanish coal producers' federation, sought to maintain competitive indigenous coal production but in 2012, the government reduced mining subsidies by more than 80 percent, from 300 million Euros to 55 million Euros during 2011-2013. According to Spain's *Framework Plan for Coal Mines and Mining Communities 2013-2018*, coal production subsidies will end after 2018 (EIA, 2014a). The 2013-18 coal plan also aims to reduce coal production to 5.9 Mmt by 2018.

32.2 Overview of CMM Emissions and Development Potential

The Global Methane Initiative (GMI) International CMM Projects Database currently identifies no projects in Spain, in operation or development (GMI, 2014). Updates on future CMM projects in Spain can be found at <https://www.globalmethane.org/coal-mines/cmm/index.aspx>.

32.2.1 CMM EMISSIONS FROM OPERATING MINES

According to USEPA, methane emissions in Spain totaled 86.1 million cubic meters (m³) in 2000, but are expected to decrease by nearly half to 44.1 million m³ by 2015, and then anticipated to decrease slightly more to 42.7 million m³ by 2030. Table 32-3 summarizes Spain's CMM emissions.

Table 32-3. Spain's CMM Emissions (million cubic meters)

Emissions	2000	2005	2010	2015 (projected)
Total CH ₄ Emitted	86.1	64.4	46.2	44.1

Source: USEPA (2012)

32.2.2 CMM EMISSIONS FROM ABANDONED COAL MINES

At least 100 underground coal mines have been abandoned since 1970, but emissions from none of them are being exploited (Martinez, 2004).

32.2.3 CBM FROM VIRGIN COAL SEAMS

A “Spanish National Inventory of Coalbed Methane (CBM) Resources” was initiated in 2002 (Martinez, 2004). Although none of the CMM or abandoned mine methane emissions are being exploited in any coal basin, either in active or abandoned mines, future projects may emerge.

32.3 Opportunities and Challenges to Greater CMM Recovery and Use

As reflected in Table 32-4, Spain ratified the Kyoto Protocol as an Annex 1 country. The country's Kyoto emission reduction target is no more than 15 percent of its baseline emissions. As an Annex 1 country, Spain is eligible to host Joint Implementation (JI) projects but to date, its three JI efforts are focused on nitrous oxide abatement from nitric acid plants.

Table 32-4. Spain's Climate Change Mitigation Commitment

Agreement	Signature	Ratification
UNFCCC	June 13, 1992	December 21, 1993
Kyoto Protocol	April 29, 1998	May 31, 2002

Source: UNFCCC (2014)

The Spanish Strategy of Climate Change and Clean Energy (EECCCEL), adopted in 2007 and running through 2020, defines actions to fight climate change while achieving cleaner energy and is based on the “Spanish Strategy for the fulfillment of the objectives under the Kyoto Protocol” framework approved by Spain's National Climate Council in 2004 (Magrama, 2007). However, the 2007 Strategy was primarily based on promotion of renewable electricity generation via a feed-in tariff scheme (e.g., subsidies) that has been mostly abandoned, so it is unclear how effective the climate policy might be until the current situation is resolved (Ecologic Institute – eclareon, 2014).

32.3.1 MARKET AND INFRASTRUCTURE FACTORS

The 2008 economic crisis was particularly harsh in Spain, and the government was forced to introduce austerity measures (i.e., deep subsidy cuts) that directly impacted the coal industry. There are now coal mines operating without these subsidies, which represent a newly competitive mining industry in Spain. In September 2013, the Spanish government sought review of the EU's

directive on state aid to facilitate the closure of uncompetitive coal mines to allow those facilities that have achieved competitiveness to continue coal production beyond 2018 without having to repay past state aid (EURACOAL, 2013).

Spain's high levels and costs of gas imports ensure a significant market for any domestically produced natural gas that can compete on a cost basis with LNG imports and other high cost gas imports. Possible end uses for CMM in Spain include electric power generation and support for mine operations.

32.3.2 REGULATORY INFORMATION

Mineral resources (including gas) are owned by the state and licensed for production by quasi-private enterprises and private operators.

Current subsidies for coal production are being phased out, and there are no current subsidies known for coal bed methane or CMM production.

32.4 Profiles of Individual Mines

No individual mine profiles are available at this time for Spain.

32.5 References

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