

12 France



12.1 Summary of Coal Industry

12.1.1 ROLE OF COAL IN FRANCE

Coal has become less important in France’s energy supply, constituting only 4 percent of the nation’s total energy consumption in 2011 (IEA, 2013). Nuclear power has replaced most of France’s coal-fired power plants. France consumed 17.3 million tonnes (Mmt) of coal in 2012 (EIA, 2014).

France has negligible coal reserves (EIA, 2014) and the country’s coal production has virtually ceased, having closed its last coal mine in April 2004 (BBC, 2004). The country’s total coal production was 6.2 Mmt in 1999, but reduced to only 0.16 Mmt in 2004; the last year coal was mined.

Table 12-1. France’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)	0	0	0	Not applicable
Annual Coal Production (2012)	0	0	0	Not applicable

Source: EIA (2014)

12.1.2 STAKEHOLDERS

Table 12-2 lists key potential stakeholders in French coal mine methane (CMM) development.

Table 12-2. Key Stakeholders in France’s CMM Industry

Stakeholder Category	Stakeholder	Role
Mining companies	<ul style="list-style-type: none"> ▪ Charbonnages De France ▪ European Gas Limited (EGL) ▪ Future Corporation Australia ▪ PanTerra Geoconsultants ▪ Compagnie Nationale à Portefeuille S.A. ▪ Transcor Astra Group 	Project host
Natural Gas Transmission & Distribution Companies	<ul style="list-style-type: none"> ▪ Gaz De France 	Gas distribution
Developers	<ul style="list-style-type: none"> ▪ See http://www.epa.gov/coalbed/networkcontacts.html 	Project opportunity identification and planning

Table 12-2. Key Stakeholders in France's CMM Industry

Stakeholder Category	Stakeholder	Role
Engineering, Consultancy, and Related Services	<ul style="list-style-type: none"> ▪ See http://www.epa.gov/coalbed/networkcontacts.html 	Technical assistance
Government Groups	<ul style="list-style-type: none"> ▪ Ministry of the Economy, Industry and the Digital Sector ▪ Ministry of Ecology, Sustainable Development and Energy ▪ Commission of Regulation of the Energy (CRE) 	Regulatory

12.1.3 STATUS OF COAL AND THE COAL MINING INDUSTRY

There were three main coal-producing areas in France: the Nord-Pas de Calais, the Lorraine basin, and the Central Massif basins. As of now, France does not produce any coal. The country is left with many abandoned coal mines, however, since the coal mining industry in France dates back hundreds of years.

The steady decline in the country's coal sector over the past decades is attributable to cheaper imports replacing the domestic sources, its shift to nuclear power, and its concern for the environment. The state-owned coal monopoly, Charbonnages de France, closed its last production facility in April 2004.

12.2 Overview of CMM Emissions and Development Potential

12.2.1 CMM EMISSIONS FROM OPERATING MINES

Over the last century, there have been a number of CMM projects in France utilizing gob gas from active and abandoned mines for power generation and heating applications. However, these projects at active mines closed as the coal mining sector declined overall.

Before domestic production stopped, the majority of the CMM activity to date focused on the coal seams of the Nord-Pas de Calais basin. In 2000, methane emissions totaled 166.0 million cubic meters (m³) but in the years since, there have been no recorded emissions (USEPA, 2012).

12.2.2 CMM EMISSIONS FROM ABANDONED COAL MINES

In France, several CMM use projects are reported to be operating at abandoned mines. The Global Methane Initiative (GMI) International CMM Projects Database currently identifies three methane recovery and utilization projects at abandoned mines in France. Two projects utilize the recovered methane for industrial use and the third one for pipeline injection (GMI, 2014). Their level of methane emission mitigation is not reported. Updates on future CMM projects in France can be found at <https://www.globalmethane.org/coal-mines/cmm/index.aspx>.

Among the projects at abandoned mines, Gazonor is a venture of European Gas Limited (EGL) acquired from Charbonnages de France. Several mines are sources for extraction, including Divion, Avion, and Désirée. EGL is permitted for 579 km² and further permits are under application for an additional 1500 km². Since CMM extraction began in 1979, a total of 2,189 million m³ have been extracted as of 2008 with an approximate methane content of 54 percent. Annual production for the last five years has averaged 72.1 million m³. As part of a restructuring announced in May 2011,

EGL has entered into a Production Sharing Agreement (PSA) in relation to two large production permits covering 766 km² in Northern France. The PSA is between EGL and Gazonor, EGL's former operating subsidiary, which is now owned by Transcor France (EGL, 2011).

EGL is also operating several wells at Lons le Saunier in eastern France, producing about 83.7 million m³ annually. At Lorraine, EGL estimates that 1,104 million m³ of methane is available. The permit covers 988 km², but actual production had not begun as of 2008. The Gardanne project in L'Arc Base, northeast of Marseille, is estimated to hold up to 20 seams with up to 2,800 million m³ of gas resource. However, further efforts to advance EGL's mine methane projects in France have been hampered by bureaucratic posturing (Reuters, 2013).

Figure 12-1. CMM Projects in France



Source: EGL (2010)

SNET, a subsidiary of Charbonnages de France, operates two power production facilities that utilize co-fired CMM—Hournaing and Emile Huchet Groupe V—comprised of three units with a design capacity of 253 MWe and six units with a design capacity of 1086 MWe, respectively (GEO, 2014).

12.2.3 CBM FROM VIRGIN COAL SEAMS

In an inventory of coal bed methane (CBM) in the Lorraine Basin, the gas in place was assessed at 11.8 billion m³ in the Saint Avold area and at 16.3 billion m³ in the Alsting area (EGL, 2005). No data quantifying CMM recovery from virgin coal seams are currently available.

12.3 Opportunities and Challenges to Greater CMM Recovery and Use

France signed and ratified the UNFCCC and Kyoto Protocol, as indicated in Table 12-3.

Table 12-3. France's Climate Change Mitigation Commitment

Agreement	Signature	Ratification
UNFCCC	June 13, 1992	March 25, 1994
Kyoto Protocol	April 29, 1998	May 31, 2002

Source: UNFCCC (2014)

France has put forth various climate strategies since 1995. These initial climate actions were followed by the National Programme for Combating Climate Change in 2000, which was followed by the country's National Strategy for Sustainable Development published in 2004 and updated in 2006 (Ecologic Institute/eclareon, 2013). The policy for combating climate change was strengthened in late 2007, and eventually named the *Climate Plan: 2004-2012* as France's action plan for meeting its Kyoto commitments.

In advance of its hosting the 2015 Conference of Parties (COP) in Paris, France proposed three climate policy goals, which included: defining an agreement applicable to all, adopting legally binding text, and aiming for an ambitious goal to keep global temperature increase below 2°C (Euractive, 2013).

12.3.1 MARKET AND INFRASTRUCTURE FACTORS

There are few companies involved in potential CBM project development in France. Schlumberger, a technology and project management company, offers CBM consulting services as well as its ECLIPSE CBM model, which examines CBM potential of a particular mining site (Schlumberger, 2010). Total S.A., the French petroleum giant, has expanded its portfolio to include CBM assets. In 2010, Total pursued its growth into unconventional gas by acquiring a stake in Australia's Gladstone LNG project, the very first CBM liquefaction project in the world (Total, 2014).

12.3.2 REGULATORY INFORMATION

France actively encourages its CMM development industry by including mine methane as recoverable energy in renewable tariffs; including it with landfill and sewage methane in renewables targets; treating it as a secure energy resource; and promoting CMM technology as climate change technology in world markets (ACMMO, 2007).

In France, CMM is covered under the Electricity Act 2000, which was modified to include recoverable energy from mine methane, landfills, biomass, and sewage digesters. The feed-in tariff with premium prices for renewable electricity generated from these sources has provided strong incentive to the methane mitigation industry and a large number of new projects are already under way (CRE, 2010; ACMMO, 2007; EREC, 2009).

12.4 Profiles of Individual Mines

Data profiling gassy mines in France are unavailable. The last active coal mine in France closed in 2004 (BBC, 2004).

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