

29 Romania



29.1 Summary of Coal Industry

29.1.1 ROLE OF COAL IN ROMANIA

Coal accounts for 29 percent of energy production in Romania (EIA, 2014). Romania's proven coal reserves are estimated at about 291 million tonnes (Mmt) and the country ranks 20th worldwide in coal production (see Table 29-1). More than 80 percent of Romanian lignite reserves can be mined profitably in opencast mines, while the remaining 20 percent require underground mining (Euracoal, 2014; WEC, 2000).

Table 29-1. Romania'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)	10.0	281.0	291.0	43 (0.033%)
Annual Coal Production (2012)	0.04	33.99	34.03	20 (0.43%)

Source: EIA (2014)

Figure 29-1 shows the distribution of lignite and hard coalfields in Romania. The coal deposits are grouped into four zones:

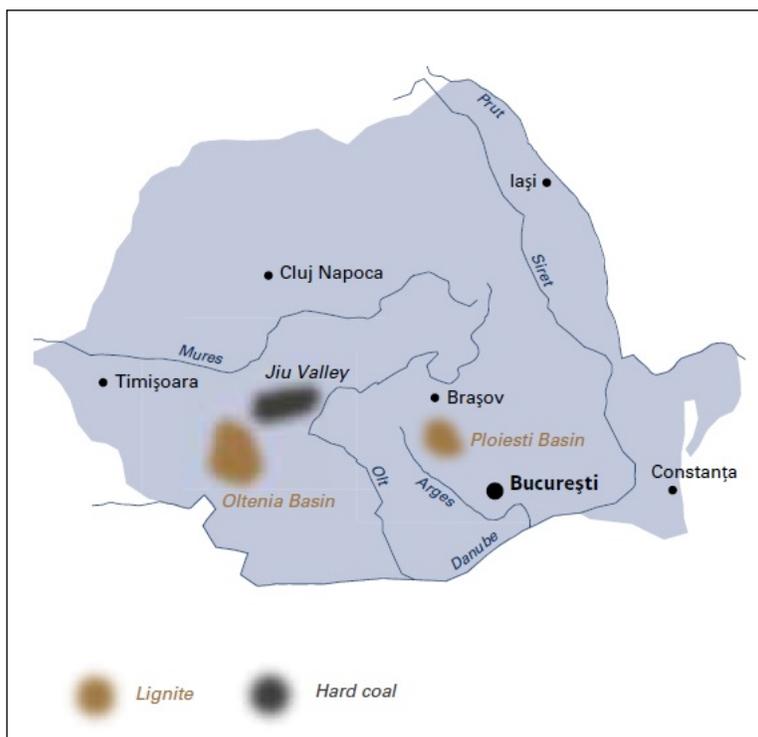
Zone I, mainly located in the Southern Carpathian Mountains, includes all the high-grade coal such as anthracite, pit coal (higher ranking than brown coal – bituminous and sub-bituminous), and brown coal (lignite) from the Petrosani, Anina and Tebea-Brad basins.

Zone II, located within the Pre-Carpathian creep, between the Olt and Valea Buzaului rivers, includes the lignite deposits of Campulung, Sotanga, Filipestii de Padure, and Ceptura. The coal basins of the Eastern Carpathian are also included within this zone: Baraolt-Virghis (lignite) and Comanesti-Bacau (brown coal). More than 90 percent of Romanian coal reserves are located within Zone II, namely in the mining basins of the Oltenia Region.

Zone III is located in the Sub-Carpathian creep of the Getic Plateau, between the river Olt and the Danube, including the lignite deposits of Rovinari, Motru, Jilt, Berbesti-Alunu, and Mehedinti.

Zone IV is located in the Panonian creep in the northwestern part of Transylvania and includes the brown coal and lignite deposits of Sarmasag, Voievozi, Surduc, and Borod.

Figure 29-1. Romania's Coalfields



Source: Euracoal (2014)

29.1.2 STAKEHOLDERS

Table 29-2 lists potential stakeholders in Romania's coal mine methane (CMM) industry.

Table 29-2. Key Stakeholders in Romania's CMM Industry

Stakeholder Category	Stakeholder	Role
Governmental Mining Companies	<ul style="list-style-type: none"> National Company of Lignite OLTENIA, Târgu-Jiu National Hard Coal Company, Petrosani National Coal Company, Ploiesti 	Project hosts
Other Mining Companies/License Holders	<ul style="list-style-type: none"> Asociatia Mina Borod SC Complexul Energetic Craiova S.A. 	Project hosts
Developers	<ul style="list-style-type: none"> See http://www.epa.gov/coalbed/networkcontacts.html 	Project opportunity identification and planning
Engineering, Consultancy, and Related Services	<ul style="list-style-type: none"> See http://www.epa.gov/coalbed/networkcontacts.html 	Technical assistance
Regulatory Agencies and Government Groups	Ministry of Environment and Climate Change Ministry of Economy	Management of mineral resources, issue and enforce government policy

Source: USGS (2013)

29.1.3 STATUS OF COAL AND THE COAL MINING INDUSTRY

Three national companies are active in the Romanian coal industry: National Company of Lignite OLTENIA, Târgu-Jiu; National Hard Coal Company, Petrosani; and National Coal Company, Ploiesti (USGS, 2013; WEC, 2000).

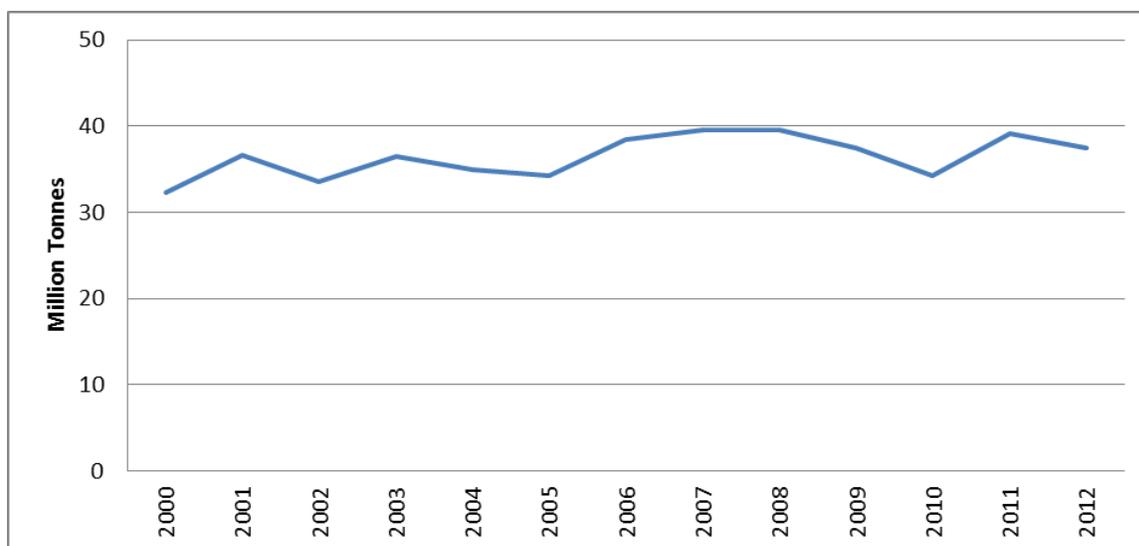
The National Company of Lignite OLTENIA (NCL), Târgu-Jiu has nine main fields (estimated annual capacities): Rovinari (8.0 Mmt/yr), Balteni (6.9 Mmt/yr), Udari (0.3 Mmt/yr), Matasari (7.6 Mmt/yr), Motru (6.6 Mmt/yr), Berbești (2.0 Mmt/yr), Bolbocești (0.6 Mmt/yr), Zegujani (0.6 Mmt/yr), and Husnicioara (2.5 Mmt/yr). NCL has lignite reserves of around 820 Mmt and produces 34 Mmt of lignite annually (USGS, 2013; NCL, 2014).

The National Hard Coal Company (CNH), Petrosani operates seven coal mines: Lonea, Petrila, Livezeni, Vulcan, Paroseni, Uricani, and Lupeni. Three of the mines are considered uncompetitive and are expected to close – Petrila by the end of 2015 and Paroseni and Uricani by the end of 2017 (EUROPA, 2012). CNH has an estimated capacity of approximately 3.5 Mmt per year of bituminous coal (USGS, 2013).

National Coal Company (NCC), Ploiesti operates mainly in seven small opencast pits and one underground mine. The pits are located in the southeast, central, and northwest basins of the country near Campulung, Baraolt City, Sarmasag, Popesti Commune, Comanesti Commune, Filipestii de Padure Commune, Sotanga Commune, and the underground mine is in Borsec City. NCC has an estimated annual capacity of 3 Mmt of lignite (USGS, 2013).

Romania has suffered from declines in production, outdated infrastructure, and labor unrest; however, the Romanian government is hoping for a resurgence of the coal industry and for increased output from existing mines. The first sign of improvement came in 2000, as Romanian coal mine output improved over the previous year's total for the first time in several years. Since then, average production has risen but fluctuated, as shown in Figure 29-2.

Figure 29-2. Romania's Annual Coal Production



Source: EIA (2014)

29.2 Overview of CMM Emissions and Development Potential

The Global Methane Initiative (GMI) International CMM Projects Database currently identifies two CMM recovery projects in Romania: an operating boiler fuel project at Lupeni Mine, an active surface mine in the Jui Valley coal basin, and a proposed combined heat and power (CHP) project at an unnamed abandoned mine in the Caras-Severin region (GMI, 2014). Updates on future CMM projects in Romania can be found at <https://www.globalmethane.org/coal-mines/cmm/index.aspx>

29.2.1 CMM EMISSIONS FROM OPERATING MINES

Methane emissions in Romania totaled 187.0 million cubic meters (m³) in 2000, but are expected to increase to 199.6 million m³ by 2015, and then anticipated to further increase to 201.0 million m³ by 2030 (see Table 29-3).

Table 29-3. Romania's CMM Emissions (million cubic meters)

Emissions	2000	2005	2010	2015 (projected)
Total CH ₄ Emitted	187.0	174.4	191.2	199.6

Source: USEPA (2012)

All mines in the Jiu Valley have ventilations systems (UNECE, 2006), and the total amount of methane emissions from the valley is estimated at 49 million cubic meters per year from ventilation systems and another 4 million per year from other degasification systems (WEC, 2008).

As previously mentioned, Romania has one operating CMM utilization project at an active mine in the Jiu Valley Coal Basin. At the Lupeni mine, two on-site boilers are fueled by methane from the coal mine, generating a total of 35 MW of electric capacity and avoiding 478,800 metric tons of carbon equivalent per year (GMI, 2014). The project is summarized below in Table 29-4. Romania is seeking partners to develop other projects.

Table 29-4. Romania's CMM Utilization Projects

Site	Project Operator	Mine Type	First Year of Project Operation	Use of Methane	Output
Lupeni Mine	CNH Petrosani	Active	2008	Boiler Fuel	2 x 15 Gcal/hour

Source: GMI (2014)

29.2.2 CMM EMISSIONS FROM ABANDONED COAL MINES

The potential for CMM emission recovery from abandoned coal mines is unknown.

29.2.3 CBM FROM VIRGIN COAL SEAMS

Proposed efforts to explore and/or evaluate coal bed methane (CBM) production were abandoned in 2008; to date, the potential remain unknown.

29.3 Opportunities and Challenges to Greater CMM Recovery and Use

Romania ratified the Kyoto Protocol as an Annex 1 country and is eligible to host Joint Implementation projects that reduce greenhouse gas (GHG) emissions. Table 29-5 summarizes Romania's climate change commitment.

Table 29-5. Romania's Climate Change Mitigation Commitment

Agreement	Signature	Ratification
UNFCCC	June 5, 1992	June 8, 1994
Kyoto Protocol	January 5, 1999	March 19, 2001

Source: UNFCCC (2014)

Romania's *National Strategy on Climate Change (NSCC) 2005-5007* outlined the country's policies in meeting the international obligations of the Kyoto Protocol and its own national priorities (RMO, 2008a), while the National Action Plan on Climate Change outlined the implementation methodology for the NSCC (RMO, 2008b).

In recent years, Romania's climate change position is reflected in the overall position of the European Union of committing unilaterally to reduce, by 2020, the emissions of GHGs by 20 percent from the level recorded in 1990 (MFA, 2014). In this context, Romania's main objectives, alongside the EU Member States, are the adoption of a comprehensive global climate change agreement, subject to international law and applicable to all states after 2020, as well as increasing commitments to reduce GHG emissions in the near future, with the ultimate long-term aim to limit the average global temperature increase below 2° C (MFA, 2014).

29.3.1 MARKET AND INFRASTRUCTURE FACTORS

The natural gas transmission system is run by the state-owned company TRANSGAZ. Romania had previously increased imports of Russian gas due to depletion of domestic sources (Transgaz, 2002); however, more recently Romania is increasingly looking elsewhere to diversify its sources of gas to avoid supply interruptions or price pressures (Upstream, 2010). Both of these situations indicate favorability toward developing domestic alternative gas sources like CMM/CBM.

The Romanian government ended subsidies for lignite and metals mining in 2007, closed some unprofitable mines, and privatized profitable mines. Key remaining challenges include the continued closure of unprofitable mines, modernization of remaining mines, and reduction in employment/manpower (Euracoal, 2014). Another major obstacle against further CMM development, in the case of the Jiu Valley at least, has been the lack of investment (WEC, 2008). Additionally, the EU's position on state aid (subsidies) mandates three hard coal extraction units from the Jiu Valley—Petritla, Uricani and Paroseni—must be closed by 2018, which will result in job losses totaling 3,500 employees (Euracoal, 2014).

29.3.2 REGULATORY INFORMATION

Romania instituted a national energy plan for 2007 through 2020 that includes the privatization of the energy sector. The law requires that all mining activities be based on licenses for either administration or specific concessions. All enterprises with ongoing mining exploitation and exploration activities must apply for licenses in areas where they are active, and as part of the restructuring process are required to relinquish all inactive areas to be reorganized and offered up to competitive Romanian and foreign investment. The former National Agency for Mineral Resources (NAMR), now Ministry of Environment and Climate Change, has been appointed as the controlling authority for coal extraction in Romania. This Ministry has the power, on behalf of the State, to manage the mineral resources of the country and to enforce the provisions of the exploration and utilization of mineral resources. The Ministry of Economy (formerly the Ministry of Industry and Trade) issues and enforces government policy in the mining field and administers and monitors public property in the field of mineral resources (WEC, 2000).

Romania entered the European Union (EU) in 2007 and has to meet energy production and other requirements of EU law. Romania's energy policy framework regulates the production of gas, coal, lignite, oil, and nuclear energy, as well as power plant modernization (Euracoal, 2014). Romania also passed a Renewable Energy Law (no. 220/2008) in 2008, in part to meet the EU regulatory requirements, promote investment, and meet the goals of the national energy plan (EBRD, 2009).

29.4 Profiles of Individual Mines

Some basic capacity numbers can be found in the 2011 Minerals Yearbook for Romania (USGS, 2013) and in a 2006 report on Jiu Valley Mine Potential (Lupu, 2006). Updates on future CMM projects in Romania can be found at <https://www.globalmethane.org/coal-mines/cmm/index.aspx>.

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