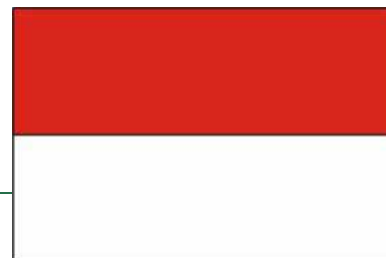


17 INDONESIA



17.1 Summary of Coal Industry

17.1.1 ROLE OF COAL IN INDONESIA

Coal is a critically important export commodity for Indonesia. The country has 5 billion tonnes of recoverable coal reserves, of which 58.6 percent is lignite, 26.6 percent sub-bituminous, 14.4 percent bituminous, and 0.4 percent anthracite (EIA, 2004; EIA, 2008).

Indonesia produced close to 265 million tonnes (Mmt) of coal in 2007 (see Table 17-1). Coal production has increased dramatically over the past several years, increasing by more 250 percent since 2002 (EIA, 2005). Continued growth in coal production is attributable to growing international demand, as well as rising domestic electricity consumption (US Embassy, 2007; US Embassy, 2000). Exports are primarily to Japan and Taiwan, but also to South Korea, the Philippines, and China (USGS, 2007).

Coal provided for 17 percent of Indonesia's energy consumption in 2005 (IEA, 2008). Power plants consume the largest portion of coal in Indonesia, followed by cement plants (US Embassy, 2004).

Table 17-1. Indonesia's Coal Reserves and Production

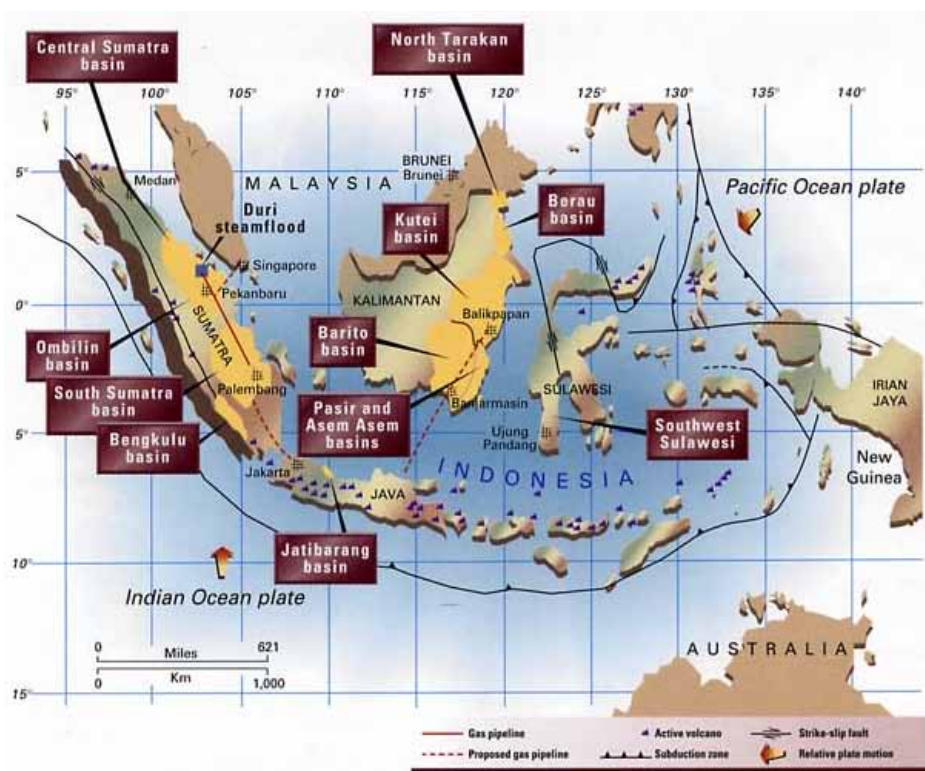
Indicator	Anthracite & Bituminous (million tonnes)	Sub-bituminous & Lignite (million tonnes)	Total (million tonnes)	Global Rank (# and %)
Estimated Proved Coal Reserves (2006)*	1,721	2,607	4,328	15 (0.5%)
Annual Coal Production (2007)**	230.2	34.5	264.7	6(4.4%)

Source: *EIA (2008); **IEA (2007)

Note: Numbers may not add due to rounding

Coal is found in 11 distinct basins on the four major portions of the archipelago that comprise Indonesia (Figure 17-1). Sumatra contains roughly two-thirds of Indonesia's total coal reserves, with the balance located in Kalimantan, West Java, and Sulawesi. However, most production (75 percent) takes place in East Kalimantan, which has higher quality coal deposits (US Embassy, 2000).

Figure 17-1. Indonesia’s Coal Fields



Source: Stevens et al. (2001)

17.1.2 STAKEHOLDERS

Coal mine operators in Indonesia include state-owned enterprises, private national companies, and foreign mining companies (USGS, 2007).

Table 17-2. Indonesia’s Major Coal Producers

Contract Operators	2007 Production (million tonnes)
PT Kaltim Prima Coal	38.7
PT Adaro Indonesia	36.0
PT Arutmin Indonesia	15.4
PT Kideco Jaya Agung	20.5
PT Berau Coal	11.8
PT Indominco Mandiri	11.5
PT Bukit Asam (State-owned)	8.5

Source: IEA (2008)

Other key stakeholders involved with the coal industry, the coal mine methane (CMM) and coalbed methane (CBM) industries are listed in Table 17-3.

Table 17-3. Key Stakeholders in Indonesia's CMM Industry

Stakeholder Category	Stakeholder	Role
Developer	<ul style="list-style-type: none"> ▪ PT Caltex Pacific ▪ PT Bumi Resources ▪ Rio Tinto ▪ British Petroleum ▪ Eni ▪ CBM Asia Development Corp. ▪ Arrow Energy ▪ McLaren Resources ▪ Churchill Mining ▪ Perusahaan Gas Negara ▪ PT Medco Energi CBM Indonesia ▪ Vico Indonesia ▪ PT Ridlatama Mining Utama ▪ PT Samantaka Mineral Prima ▪ BP Indobararambai Gas Methane ▪ PT Barito Basin Gas ▪ PT Pertamina Hulu Energi Metana Kalimantan ▪ Sangatta West CBM Inc. ▪ KutaiWest CBM Inc. ▪ Newton Energy Capital Ltd. ▪ Indon CBM Ltd. ▪ PT Ogan Interior gas ▪ PT Visi Muti Artha ▪ PT ArthaWidya Persada ▪ PT Triskati Gas Methane ▪ PT Sigma Energy Burni ▪ PT Satu Basin Gas ▪ PT East Ogan Methane ▪ 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
Mining Company	<ul style="list-style-type: none"> ▪ Broken Hill Proprietary ▪ Clough Group ▪ Perusahaan Tambang Batubara Bukit Asam 	<p>Australian mining company with major interest in Indonesian coal mining</p> <p>Australian company</p> <p>State-owned coal company responsible for roughly 25% of coal production in 1999</p>
Government Groups	<ul style="list-style-type: none"> ▪ Ministry of Energy and Mineral Resources ▪ Directorate of Mineral and Coal Enterprises 	Licensing

17.1.3 STATUS OF COAL AND THE COAL MINING INDUSTRY

Since 1981, the central government has been ceding greater autonomy to the regional coal administrators. The government maintains ownership of coal and associated methane gas but contracts mine operations to private companies. The latest revision of the model contract is royalty-based. Fifteen contractors

produced more than 75 percent of Indonesia's total coal production in 1999. Another 15 percent was mined by state-owned coal company Perusahaan Tambang Batubara Bukit Asam, operating in Sumatra (US Embassy, 2000). Indonesia's new production will come mostly from private mines.

Foreign companies are involved in Indonesia's coal industry. The Clough Group of Australia was awarded a \$215 million contract for improvements at Gunung Bayan Pratama's (commercial producer of coal beginning 1999) Kutai mine in E. Kalimantan. Furthermore, Rio Tinto and partner British Petroleum (BP) were divested in July 2003 from their joint venture in Kaltim Prima Coal. The shares were sold to PT Bumi Resources for \$500 million. According to several reports, the divestment was prolonged and acrimonious because the government objected to Rio Tinto's divestment plan and threatened to mobilize public action to block the mine's operations. Ultimately, Rio Tinto and BP sold their combined 100 percent stake for about half of its assessed value (EIA, 2004).

There were three active, underground mines in Indonesia in 2004. In 1999, 99 percent of coal production, roughly 131 Mmt, came from surface mines. Production has expanded in recent years via the expansion of existing surface mines, as well as the addition of new surface mines.

Indonesian coal in general has relatively low gas content because of its low rank and shallow depth. Evaluated gas content in potential CBM areas ranged from 3 to 9 m³ per tonne (Stevens et al., 2001).

17.2 Overview of CMM Emissions and Development Potential

The Global Methane Initiative (formerly Methane to Markets Partnership) International CMM Projects Database currently identifies no CMM recovery projects in Indonesia, in operation or development (M2M Projects, 2010).

17.2.1 CMM EMISSIONS FROM OPERATING MINES

In its first National Communication with the United Nations Framework Convention on Climate Change (UNFCCC) in 1994, Indonesia reported fugitive methane emissions from solid fuel in 1994 to be 131 Mmt. U.S. Environmental Protection Agency provides data for additional years as reflected in Table 17-4 below.

Table 17-4. Indonesia's CMM Emissions (million cubic meters)

Emission Category	1990	1995	2000	2005 (estimated)
Total emitted (= Total liberated – recovered & used)	21	28	35	34

Source: USEPA (2006)

17.2.2 CMM EMISSIONS FROM ABANDONED COAL MINES

No information about CMM from abandoned mines in Indonesia is available at this time.

17.2.3 CBM FROM VIRGIN COAL SEAMS

Estimated CBM resources in Indonesia range from 337 trillion cubic feet (Tcf) to 453 Tcf (Stevens et al., 2001; Stevens and Hadiyanto, 2004). Table 17-5 describes the CBM Resources in Indonesia. Some of the most promising areas for exploration are believed to include the Barito and Kutei basins in Kalimantan, the south and central basins in Sumatra, and the Jatibarang basin in Java (Stevens et al., 2001).

The Minister of Energy and Mineral Resources has authorized the Directorate General of Oil and Gas (MIGAS) to develop CBM in Indonesia (US Embassy, 2000). Several companies have developed partnerships and taken initial steps toward CBM development in Sumatra and Kalimantan. These include PT Caltex Pacific, Arrow Energy, McLaren Resources, Churchill Mining, and Perusahaan Gas Negara (US Embassy, 2000; Arrow Energy, 2006; McLaren, 2006; ADVFN, 2007; US Embassy, 2007). Some of the contracts awarded recently include:

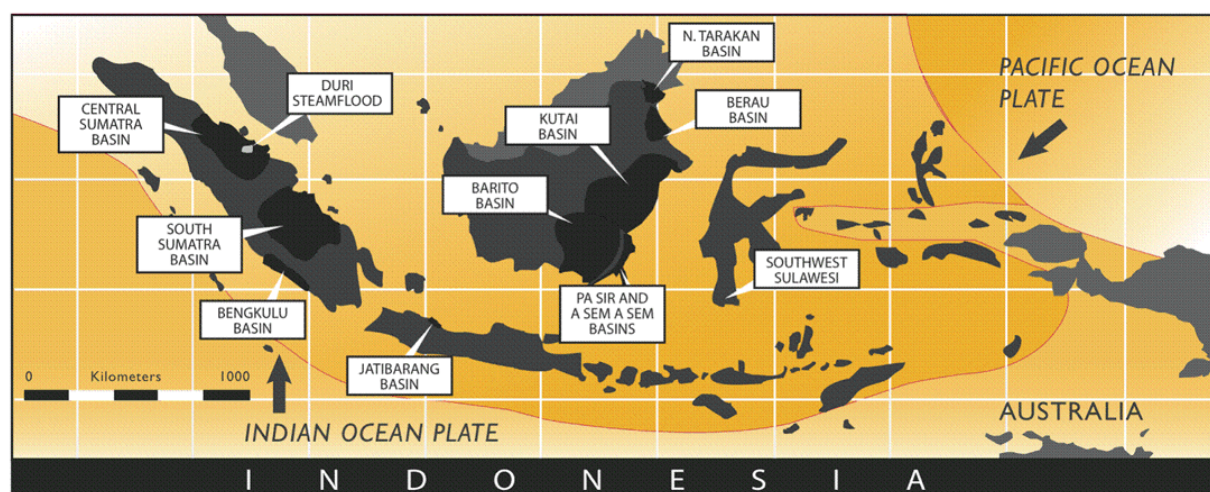
- PT Medco Energi CBM Indonesia and Arrow Energy agreed to jointly explore the conventional oil and gas area in SSE1 Block in South Sumatra in February 2009 (Shift, 2009).
- Vico Indonesia is performing a feasibility study in the Sanga Sanga block in East Kalimantan as of March 2009 (Shift, 2009).
- PT Ridlatama Mining Utama won a contract to extract gas from coal seams in a block in East Kalimantan in June 2008 (Contracts, 2009).
- PT Samantaka Mineral Prima began developing a block in Riau province in June 2008 (Contracts, 2009).
- Four CBM blocks were tendered to companies in November 2008 for exploration: the Barito Banjar-1 block to BP Indobararambai Gas Methan, the Barito Banjar-2 block to PT Barito Basin Gas, the Sangatta block to PT Pertamina Hulu Energi Metana Kalimantan and Sangatta West CBM Inc., and part of the Kutai block to KutaiWest CBM Inc. and Newton Energy Capital Ltd (Shift, 2009).
- Rengat CBM block in Riau, Central Sumatra was contracted to the Canadian company Indon CBM Ltd. in November 2009 (Recent CBM, 2010).
- Barito CBM block in South Kalimantan was contracted to the consortium formed by Trans Asia Resources and Jindal Stainless Steel Indonesia in November 2009 (Recent CBM, 2010).
- Sanga-Sanga CBM block in East Kalimantan was contracted to Vico Indonesia in November 2009, which overlaps the Sanga-Sanga oil and gas block that it is already working (Recent CBM, 2010).

CBM contracts were signed for the following coal basins from May to August 2009 (Recent CBM, 2010):

- South Sumatra basin by PT Ogan Interior Gas;
- Kutei basin by PT Visi Muti Artha and PT ArthaWidya Persada;
- Barito basin by PT Triskati Gas Methane and PT Sigma Energy Burni;
- Asem Asem basin by PT Satu Basin Gas; and
- South Sumatra basin by PT East Ogan Methane and Arrow Energy (Tanjung Enirn)

Further, CBM Asia Development Corp. has interest in production sharing contracts (PSCs) for the South Sumatra and Kutai Basins and is investigating commercial feasibility of CBM in the Kutai-West PSC (CBM Asia, 2010).

Figure 17-2. Indonesia's CBM Basins



Source: CBM Asia (2010)

Table 17-5. Indonesia's CBM Resources

Region/Basin	*Prospective Area (square kilometers)	CBM Resources (trillion cubic meters)	CBM Resources (trillion cubic feet)
Kalimantan			
▪ Barito	15,000	2.88	101.6
▪ Berau	2,000	0.24	8.4
▪ Kutei	10,000	2.53	89.4
▪ N. Tarakan	6,500	0.50	17.5
▪ Pasir Asam-Asam	1,000	0.085	3.0
▪ Ombilin	1,500	0.014	0.5
Sumatra			
▪ Central	15,000	1.49	52.5
▪ South	20,000	5.18	183.0
▪ Bengkulu	3,000	0.10	3.6
Java			
▪ Jatibarang	500	0.023	0.8
Sulawesi			
▪ Sengkang	1,000	0.057	2.0
Total	74,000	9.47	336

Source: *Stevens et al. (2001); Jakarta Post (2010)

17.3 Opportunities and Challenges to Greater CMM Recovery and Use

Indonesia is a signatory to both the UNFCCC and the Kyoto Protocol. As a Non-Annex I Party to the Kyoto Protocol, Indonesia has no national emissions targets and is eligible to host a mitigation project under the Clean Development Mechanism (see Table 17-6).

Table 17-6. Indonesia's Climate Change Mitigation Commitment

Agreement	Signature	Ratification
UNFCCC	June 5, 1992	August 23, 1994
Kyoto Protocol	July 13, 1998	December 3, 2004

Source: UNFCCC (2004); UNFCCC (2005)

17.3.1 MARKET AND INFRASTRUCTURE FACTORS

Oil and gas infrastructure exists in several coal basins with significant potential. It is lacking, however, in the key Barito Basin. Indonesia's service industry appears to have the capability to support CBM developments consisting of roughly hundreds of thousands of low-cost wells (Stevens et al., 2001). The existing extensive pipeline infrastructure in the many major target basins could be used to move produced gas to domestic or export markets. A key market opportunity could be to conduct CBM development adjacent to high value Jakarta, Central Sumatra, or other gas demand centers. Alternatively, CMM or CBM recovered could be utilized by the steamflooding oil recovery or power generator industries or be exported to Singapore or Malaysia. One challenge to CBM/CMM development is the heavy government subsidization of competing domestic petroleum products (Stevens et al., 2001). CBM and CMM must also be able to compete with Indonesia's "stranded" conventional gas reserves, although a factor favoring CBM/CMM production may be the fact that conventional gas reserves have high levels of carbon dioxide (CO₂). Production from CBM "sweet spots" could be cheaper to develop than deep and structurally more complex conventional gas reservoirs with high CO₂ concentrations (Stevens et al., 2001).

17.3.2 REGULATORY INFORMATION

Coal and gas resources are owned by the State. Private companies wishing to extract resources are required to develop a production-sharing contract with Indonesia, which historically has been considered to have one of the toughest contract terms in the world (countrydata.com, 1992). Production splits for oil and natural gas directed 60–80 percent of profits to the government and the remainder to the contractor. In 2003, production splits were adjusted to 65/35 for oil and 55/45 for gas (USGS, 2003). In 2007, the government announced that it would offer a 45 percent production split for CBM developments in order to encourage investors.

CBM is to be treated on the same terms as oil and gas and will be controlled by MIGAS (Reuters, 2007). Regulation No. 36 of 2008 on Business Undertaking of Coal Bed Methane is the current primary regulation for CBM development. Under the new regulation, oil and gas contractors have precedence over coal mining contractors in overlapping areas, though there are some exceptions for contracts made prior to the passage of the regulation. The CBM block agreements made since its passage have been made with a 55/45 split in favor of the government with cost recovery ceilings and other governmental participation options (Recent CBM, 2010).

17.4 Profiles of Individual Mines

No mine profiles are available at this time for Indonesia.

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