

COAL & LIGNITE



# Indian Minerals Yearbook 2012

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**COAL & LIGNITE**

(FINAL RELEASE)

**GOVERNMENT OF INDIA  
MINISTRY OF MINES  
INDIAN BUREAU OF MINES**

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# 10 Coal & Lignite

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Coal plays a pivotal role in sustainable development. It is the most widely used energy source for electricity generation and an essential input to most steel production. As estimated by the World Coal Association, coal currently fuels 41% of the world electricity and this proportion is set to remain static over the next 30 years. About 70% of the world's steel production is based on coal. As per Integrated Energy Policy Committee of Planning Commission, coal will remain India's most important energy source till 2031-32 and possibly beyond. In India, about 75% coal output is consumed in power sector. In addition, other industries like cement, fertilizer, chemical, paper and thousands of medium and small-scale industries are dependent on coal for their process and energy requirements. The production of coal at 532.69 million tonnes in 2010-11 increased by 1.4% to 539.95 million tonnes in 2011-12. The production of lignite at 42.33 million tonnes in 2011-12 increased by 12.19% from 37.73 million tonnes in the previous year. India ranks 3<sup>rd</sup> in world coal production.

## RESOURCES

### Coal

The Indian coal deposits are primarily concentrated in the Gondwana sediments occurring mainly in the eastern and central parts of Peninsular India, although Gondwana coal deposits also occur in Assam and Sikkim in north eastern part of the country. The Tertiary coal-bearing sediments are found

in Assam, Arunachal Pradesh, Nagaland and Meghalaya. As a result of exploration carried out by GSI, CMPDI and other agencies, 293.50 billion tonnes (including that estimated in Sikkim) coal reserves upto 1,200 m depth have been established in the country as on 1.4.2012. Out of these reserves, 118.15 billion tonnes were proved reserves, 142.17 billion tonnes were indicated reserves and the remaining 33.18 billion tonnes were in inferred category. Of the total reserves, prime-coking coal was 5.31 billion tonnes, medium-coking & semi-coking were 28.38 billion tonnes and non-coking coal including high sulphur was 259.81 billion tonnes. Statewise/ coalfield wise and statewise/typewise reserves of coal as on 1.4.2012 are given in Tables-1 & 2, respectively.

### Lignite

Indian lignite deposits occur in the Tertiary sediments in the southern and western parts of peninsular shield particularly in Tamil Nadu, Puducherry, Kerala, Gujarat, Rajasthan and Jammu & Kashmir. The total known geological reserves of lignite as on 1.4.2012 were about 41.96 billion tonnes. Of which 81% reserves are located in Tamil Nadu with about 33.88 billion tonnes. Other states where lignite deposits have been located are Gujarat, Jammu & Kashmir, Kerala, Rajasthan, West Bengal and the Union Territory of Puducherry. Statewise / districtwise reserves of lignite as on 1.4.2012 are given in Table - 3.

COAL & LIGNITE

**Table – 1 : Reserves of Coal as on 1.4.2012  
(By States/Coalfields)**

(In million tonnes)

State/Coalfield	Proved	Indicated	Inferred	Total
<b>All India : Total</b>	<b>118144.81</b>	<b>142168.85</b>	<b>33183.49</b>	<b>293497.15</b>
<b>Gondwana Coalfields*</b>	<b>117551.00</b>	<b>142069.51</b>	<b>32384.00</b>	<b>292004.51</b>
<b>Andhra Pradesh/ Godavari Valley</b>	<b>9566.61</b>	<b>9553.91</b>	<b>3034.34</b>	<b>22154.86</b>
Assam/Singrimari	–	2.79	–	2.79
Bihar/Rajmahal	–	–	160.00	160.00
<b>Chhattisgarh</b>	<b>13987.85</b>	<b>33448.25</b>	<b>3410.05</b>	<b>50846.15</b>
Sohagpur	94.30	10.08	–	104.38
Sonhat	199.49	2463.86	1.89	2665.24
Jhilimili	228.20	38.90	–	267.10
Chirimiri	320.33	10.83	31.00	362.16
Bisrampur	986.06	628.64	–	1614.70
East Bisrampur	–	164.82	–	164.82
Lakhanpur	455.88	3.35	–	459.23
Panchbahini	–	11.00	–	11.00
Hasdeo-Arand	1369.84	3629.64	397.99	5397.47
Sendurgarh	152.89	126.32	–	279.21
Korba	5651.14	5936.50	168.02	11755.66
Mand-Raigarh	4479.29	18031.59	2608.96	25119.84
Tatapani-Ramkola	50.43	2392.72	202.19	2645.34
<b>Jharkhand</b>	<b>40163.22</b>	<b>33609.29</b>	<b>6583.69</b>	<b>80356.20</b>
Raniganj	1538.19	466.56	31.55	2036.30
Jharia	15077.57	4352.49	–	19430.06
East Bokaro	3351.87	3929.57	863.32	8144.76
West Bokaro	3629.03	1349.04	34.42	5012.49
Ramgarh	710.59	495.30	58.05	1263.94
North Karanpura	9499.42	6914.61	1864.96	18278.99
South Karanpura	2748.09	2048.56	1480.22	6276.87
Aurangabad	352.05	2141.65	503.41	2997.11
Hutar	190.79	26.55	32.48	249.82
Daltongunj	83.86	60.10	–	143.96
Deogarh	326.24	73.60	–	399.84
Rajmahal	2655.52	11751.26	1715.28	16122.06
<b>Madhya Pradesh</b>	<b>9308.70</b>	<b>12290.65</b>	<b>2776.91</b>	<b>24376.26</b>
Johilla	185.08	104.09	32.83	322.00
Umaria	177.70	3.59	–	181.29
Pench-Kanhan	1405.24	789.61	692.13	2886.98
Patharkhera	290.80	88.13	68.00	446.93
Gurgunda	–	47.39	–	47.39
Mohpani	7.83	–	–	7.83
Sohagpur	1725.91	4987.62	190.18	6903.71
Singrauli	5516.14	6270.22	1793.77	13580.13

(Contd.)

COAL & LIGNITE

Table - 1 (Concl'd.)

State/Coalfield	Proved	Indicated	Inferred	Total
<b>Maharashtra</b>	<b>5667.48</b>	<b>3104.40</b>	<b>2110.21</b>	<b>10882.09</b>
Wardha Valley	3604.85	1415.57	1424.07	6444.49
Kamthi	1276.14	1204.88	505.44	2986.46
Umrer	308.41	-	160.70	469.11
Nand Bander	468.08	483.95	-	952.03
Bokhara	10.00	-	20.00	30.00
<b>Odisha</b>	<b>25547.66</b>	<b>36465.97</b>	<b>9433.78</b>	<b>71447.41</b>
Ib-River	8475.62	9451.89	5108.16	23035.67
Talcher	17072.04	27014.08	4325.62	48411.74
<b>Sikkim/Rangit Valley</b>	<b>-</b>	<b>58.25</b>	<b>42.98</b>	<b>101.23</b>
<b>Uttar Pradesh/Singrauli</b>	<b>884.04</b>	<b>177.76</b>	<b>-</b>	<b>1061.80</b>
<b>West Bengal</b>	<b>12425.44</b>	<b>13358.24</b>	<b>4832.04</b>	<b>30615.72</b>
Raniganj	12311.17	7713.95	4130.29	24155.41
Barjora	114.27	-	-	114.27
Birbhum	-	5644.29	686.75	6331.04
Darjeeling	-	-	15.00	15.00
<b>Tertiary Coalfields</b>	<b>593.81</b>	<b>99.34</b>	<b>799.49</b>	<b>1492.64</b>
<b>Assam</b>	<b>464.78</b>	<b>42.72</b>	<b>3.02</b>	<b>510.52</b>
Makum	432.09	20.70	-	452.79
Dilli-Jeypore	32.00	22.02	-	54.02
Mikir Hills	0.69	-	3.02	3.71
<b>Arunachal Pradesh</b>	<b>31.23</b>	<b>40.11</b>	<b>18.89</b>	<b>90.23</b>
Namchik-Namphuk	31.23	40.11	12.89	84.23
Miao Bum	-	-	6.00	6.00
<b>Meghalaya</b>	<b>89.04</b>	<b>16.51</b>	<b>470.93</b>	<b>576.48</b>
West Darangiri	65.40	-	59.60	125.00
East Darangiri	-	-	34.19	34.19
Balphakram-Pendenguru	-	-	107.03	107.03
Siju	-	-	125.00	125.00
Langrin	10.46	16.51	106.19	133.16
Mawlong Shelia	2.17	-	3.83	6.00
Khasi Hills	-	-	10.10	10.10
Bapung	11.01	-	22.65	33.66
Jayanti Hills	-	-	2.34	2.34
<b>Nagaland</b>	<b>8.76</b>	<b>-</b>	<b>306.65</b>	<b>315.41</b>
Borjan	5.50	-	4.50	10.00
Jhanzi-Disai	2.00	-	0.08	2.08
Tiensang	1.26	-	2.00	3.26
Tiru Valley	-	-	6.60	6.60
DGM	-	-	293.47	293.47

**Source:** Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata.

\* Including Sikkim.

COAL & LIGNITE

**Table – 2 : Reserves of Coal as on 1.4.2012  
(By States/Types)**

(In million tonnes)

State/Type of coal	Proved	Indicated	Inferred	Total
<b>All India : Total</b>	<b>118144.81</b>	<b>142168.85</b>	<b>33183.49</b>	<b>293497.15</b>
Prime-coking	4614.35	698.71	–	5313.06
Medium-coking	12836.84	11951.47	1880.23	26668.54
Semi-coking	482.16	1003.29	221.68	1707.13
Non-coking	99617.65	128416.04	30282.09	258315.78
High sulphur	593.81	99.34	799.49	1492.64
<b>Andhra Pradesh/Non-coking</b>	<b>9566.61</b>	<b>9553.91</b>	<b>3034.34</b>	<b>22154.86</b>
<b>Arunachal Pradesh/ High sulphur</b>	<b>31.23</b>	<b>40.11</b>	<b>18.89</b>	<b>90.23</b>
<b>Assam</b>	<b>464.78</b>	<b>45.51</b>	<b>3.02</b>	<b>513.31</b>
Non-coking	–	2.79	–	2.79
High sulphur	464.78	42.72	3.02	510.52
<b>Bihar/Non-coking</b>	<b>–</b>	<b>–</b>	<b>160.00</b>	<b>160.00</b>
<b>Chhattisgarh</b>	<b>13987.85</b>	<b>33448.25</b>	<b>3410.05</b>	<b>50846.15</b>
Semi-coking	70.77	99.25	–	170.02
Non-coking	13917.08	33349.00	3410.05	50676.13
<b>Jharkhand</b>	<b>40163.22</b>	<b>33609.29</b>	<b>6583.69</b>	<b>80356.20</b>
Prime-coking	4614.35	698.71	–	5313.06
Medium-coking	12272.35	10372.86	1607.40	24252.61
Semi-coking	223.34	471.55	53.45	748.34
Non-coking	23053.18	22066.17	4922.84	50042.19
<b>Madhya Pradesh</b>	<b>9308.70</b>	<b>12290.65</b>	<b>2776.91</b>	<b>24376.26</b>
Medium-coking	354.49	1560.11	272.83	2187.43
Non-coking	8954.21	10730.54	2504.08	22188.83
<b>Maharashtra/Non-coking</b>	<b>5667.48</b>	<b>3104.40</b>	<b>2110.21</b>	<b>10882.09</b>
<b>Meghalaya/High sulphur</b>	<b>89.04</b>	<b>16.51</b>	<b>470.93</b>	<b>576.48</b>
<b>Nagaland/High sulphur</b>	<b>8.76</b>	<b>–</b>	<b>306.65</b>	<b>315.41</b>
<b>Odisha/Non-coking</b>	<b>25547.66</b>	<b>36465.97</b>	<b>9433.78</b>	<b>71447.41</b>
<b>Sikkim/Non-coking</b>	<b>–</b>	<b>58.25</b>	<b>42.98</b>	<b>101.23</b>
<b>Uttar Pradesh/Non-coking</b>	<b>884.04</b>	<b>177.76</b>	<b>–</b>	<b>1061.80</b>
<b>West Bengal</b>	<b>12425.44</b>	<b>13358.24</b>	<b>4832.04</b>	<b>30615.72</b>
Medium-coking	210.00	18.50	–	228.50
Semi-coking	188.05	432.49	168.23	788.77
Non-coking	12027.39	12907.25	4663.81	29598.45

Source: Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata.

COAL & LIGNITE

**Table – 3 : Reserves of Lignite as on 1.4.2012  
(By States/Districts)**

(In million tonnes)

State/District	Area/Lignite field	Proved	Indicated	Inferred	Total
<b>All India : Total</b>		<b>6180.90</b>	<b>25763.13</b>	<b>10018.76</b>	<b>41962.79</b>
<b>Gujarat</b>		<b>1278.65</b>	<b>283.70</b>	<b>1159.70</b>	<b>2722.05</b>
Kachchh	Panandhro & Panandhro Extn., Barkhan-Dam, Kaiyari Block-A & B, Mata-No-Madh, Umarsar, Lakhpat-Dhedadi, Akrimota, Jhularai-Waghpadar, Hamla-Ratadia, Pranpur.	335.61	56.40	33.09	425.10
Bharuch	Bhuri, Valia, Bhaga, Luna, Pansoli, Nani Pardi, Bhimpur, etc. Rajpardi (CGM) by MECL and Rajpardi (GMDC leasehold) by MECL.	724.76	118.59	491.23	1334.58
Bhavnagar	Kharsalia, Rampur, Hoidad, Bhuteshwar, Surka, etc.	–	–	299.17	299.17
Surat	Tadkeswar, Dungra, East of Kamraj-Vesma, Nani Naroli, Tadkeswar block-Mongrol, Mandvi, Vastan, Ghala, etc.	218.28	108.71	336.21	663.20
<b>Jammu &amp; Kashmir</b>		<b>–</b>	<b>20.25</b>	<b>7.30</b>	<b>27.55</b>
Kupwara	Nichahom, Nichahom-Budhasung	–	20.25	7.30	27.55
<b>Kerala</b>		<b>–</b>	<b>–</b>	<b>9.65</b>	<b>9.65</b>
Kannur	Madayi, Kadamkottumala, Kayyur and Nileswaram	–	–	9.65	9.65
<b>Rajasthan</b>		<b>1167.02</b>	<b>2152.59</b>	<b>1587.40</b>	<b>4907.01</b>
Bikaner	Palana, Barsinghsar, Gurha East & West, Bholasar, Bithnok Main & East Extn., Gadiyala, Girirajsar, Raneri, Mandal Chaman, Hadda, Hadda north & west, Hadla, Badhnu, Hira-ki-Dhani, Chak-Vijaisinghpura, Kuchore (Napasar), Riri, Latamdesar Bada, East of Riri, Bania, Kuchaur-Athuni, Sarupdesar-Palana west, Palana East, Gigasar-Kesardesar, Ambasar-Gigasar, Girirajsar Extn., Bapeau, Bigga-Abhaysinghpura. Diyatra, Pyau, Deshnok-Ramsar-Sinthal, Borana, Bangarsar-Jaimalsar and Kenya-Ki-Basti & South of Bhane-Ka-Gaon.	558.79	230.47	305.45	1094.71
Barmer	Kapurdi, Jalipa, Bothia (Jalipa N Ext.), Giral, Jogeswartala, Sonari, Sachcha-Sauda, Bharka, Bothia-Bhakra-Dunga, Sindhari East & West, Kurla, Chokla North, Mahabar-Shivkar, Mithra, Hodu, Nimbalkot, Nimbalkot North, Nagurda, Nagurda East, Munabao, Kawas Gravity Block, South of Nimbla and Magne-Ki-Dhani.	495.23	1861.56	1086.45	3443.24
Jaisalmer	Ramgarh	–	–	45.26	45.26
Jaisalmer & Barmer	Kuuri	–	–	13.80	13.80

(Contd.)

COAL & LIGNITE

Table - 3 (Concl.)

State/District	Area/Lignite field	Proved	Indicated	Inferred	Total
Nagaur & Pali	Kasnau-Igiar, Matasukh, Mokala, Nimbri-Chadawatan, Kaprion-ka-Dhani, Merta Road & Meeranagar, Indawar, Kuchera, Lunsara and Phalki.	113.00	60.57	60.35	233.92
Jalore	Sewara	–	–	76.08	76.08
<b>Tamil Nadu</b>		<b>3735.23</b>	<b>22900.05</b>	<b>7242.85</b>	<b>33878.13</b>
Cuddalore	NLC Leasehold areas, South of Vellar (Srimushnam), Veeranam (Lalpettai), Eastern part of NLC leasehold area, Kullanchavadi, Kudikadu, Bhuvanagiri-Kullanchavadi, Eastern part of Neyveli, Bahur*, West of Bahur*.	2831.00	2530.74	1199.78	6561.52
Ariyalur	Meensuruti, Jayamkondamcholapuram, Michaelpatti of Nayveli Lignite Field	904.23	302.50	481.07	1687.80
Thanjavur & Thiruvavur	Mannargudi-central, Mannargudi-NE Mannargudi-NE Extn., Mannargudi SE, Melnattam-Araharam of Mannargudi Lignite Field	–	17248.06	3123.46	20371.52
Thanjavur	Mannargudi-NW & SW, Maharajapuram Orattanadu-Pattukottai, Vadaseri (Orattanadu-Pattukottai), Madukkur-Anaikkadu Veppanagulam-Kasangadu of Mannargudi Lignite Field	–	2290.71	72.66	2363.37
Thanjavur & Nagapattinam	Alangudi, Pandanallur, Tirumangaichcheri, and Thirumangalam of Mannargudi Lignite Field	–	359.21	534.19	893.40
Thiruvavur & Nagapattinam	Nachiyarkudi of Mannargudi Lignite Field	–	–	574.05	574.05
Ramnad	Rajasing Mangalam of Mannargudi Lignite Field	–	–	964.97	964.97
Ramnad & Sivaganga	Settanur of Mannargudi Lignite Field	–	–	20.24	20.24
Ramanathapuram	Misal, Bogalur and Tiyanur of Ramanathapuram Lignite field	–	168.83	272.43	441.26
<b>Puducherry</b>	Bahur & West of Bahur of Neyveli Lignite Field	–	<b>405.61</b>	<b>11.00</b>	<b>416.61</b>
<b>West Bengal</b>	Rakshitpur, Mahalla	–	<b>0.93</b>	<b>0.86</b>	<b>1.79</b>

*Source: Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata.*

*\* Both blocks cover parts of Tamil Nadu and Puducherry.*

## EXPLORATION & DEVELOPMENT

The agencies engaged in exploration for coal during 2011-12 were mainly GSI, CMPDI, MECL and State Directorates of Geology & Mining. For lignite, exploration was carried out by GSI, MECL, NCL, DMG, Rajasthan and GMDC Ltd.

GSI carried out exploration for coal in Gondwana basins of Andhra Pradesh, Assam, Chhattisgarh, Madhya Pradesh, Maharashtra, Odisha and West Bengal to identify additional resources of power-grade coal and superior-grade coking coal. As a result of exploration carried out, additional resources of 5,610.83 million tonnes coal were assessed in 2011-12 (as on 1.4.2012). GSI extensively continued its exploration for lignite in Rajasthan and Tamil Nadu, keeping in view the high demand for accelerated growth of power and industrial sectors. As a result of exploration carried out, additional resources of 13.665 million tonnes lignite were assessed in 2011-12 (as on 1.4.2012). Details of additional resource estimation and exploration activities for coal & lignite by GSI are given in Tables - 4 and 5, respectively.

DGM, Maharashtra estimated 15.28 million tonnes coal resources in 2011-12 in Chandrapur, Nagpur and Yavatmal districts. DGM, Jammu & Kashmir carried out exploration for coal during 2011-12 in Rajouri district. DGM, Chhattisgarh estimated 65.15 million tonnes coal resources during 2011-12 in Raigarh, Surguja and Korba districts. DGM Assam carried out exploration for coal in Dhubri and Dibrugarh districts and estimated 0.32 million tonnes resources during 2011-12. Govt. of Meghalaya carried out exploration in South Garo hills during 2011-12. Directorate of Geology, Odisha carried out exploration for coal during 2011-12 in Angul and Jharsuguda districts. DMG, Rajasthan carried out exploration for lignite during 2011-12 in Bikaner and estimated 0.57 million tonnes of geological reserves. GMDC conducted exploration and estimated 139.56 million tonnes lignite geological resources in 2011-12. Neyveli Lignite Corporation Ltd (NLC) also carried out exploration for lignite in Barmer, Bikaner, Jaisalmer & Nagaur districts in Rajasthan and Ramnad district in Tamil Nadu and estimated 12.738 million tonnes resources of inferred category in 2011-12. Details on exploration carried out by the various State Directorates and State Undertakings are given in Table-6.

CMPDI in its exploration programme for 2011-12 laid emphasis on proving power-grade and superior-grade non-coking coal in CIL and non-CIL blocks. CMPDI deployed its departmental resources for exploration of CIL/Non-CIL/Promotional blocks, whereas State Governments of Madhya Pradesh and Odisha deployed resources in CIL blocks only. Besides, four other contractual agencies have also deployed resources for detailed drilling/exploration in CIL/Non-CIL blocks. Apart from it, CMPDI continued the technical supervision of promotional exploration work undertaken by MECL in coal sector (CIL & SCCL areas) and monitored work of GSI for promotional exploration in coal sector (CIL area) on behalf of MoC.

A total of 4,98,425 m of exploratory drilling was achieved by CMPDI and its contractual agencies during 2011-12 which includes 2,73,019 m in departmental drilling (that comprised 55,126 m in non-CIL/captive mining blocks, 2,13,689 m in CIL blocks, and 4,204 m for consultancy work) and 2,25,406 m conducted through outsourcing to concerned Departments of State Governments & MECL (MOU), as well as through tender notifications (for CIL and non-CIL blocks). During 2011-12, CMPDI and its contractual agencies conducted exploration in 90 blocks/mines spread over 21 coalfields situated in 6 states. These coal fields are Raniganj (9 blocks/mines), Jharia (5), West Bokaro (2), Ramgarh (1), South Karanpura (3), Patharkheda (1), Pench Kanhan (2), Kamptee (4), Nand-Bander (3), Wardha (12), Sohagpur (8), Johilla (1), Mand Raigarh (14), Korba (3), Hasdo-Arand (1), Bisrampur (1), Sonhat (1), Tatapani-Ramkola (2), Singrauli (3), Talcher (10), and Ib valley (4). Out of 90 blocks/mines, 24 were Non-CIL/Captive blocks, one consultancy block and 65 CIL blocks/mines. Departmental drills of CMPDI took up drilling activity in 58 blocks/mines, whereas Contractual agencies drilled in 32 blocks/mines.

SCCL in its detailed exploration undertaken during 2011-12, drilled 100,325 m and established proved reserves of coal that were estimated at 390.24 million tonnes as against 51.66 million tonnes reported in the previous year. Thus, the total proved reserves rose to 9,877.68 million tonnes as on 31.3.2012 in Godavari Valley Coalfield, Andhra Pradesh.



COAL & LIGNITE

**Table – 4 : Additional Resources Estimated by GSI for Coal and Lignite,  
2011-12 (as on 1.4.2012)**

(In million tonnes)

State/Coalfield/Block	Additional resources
<b>COAL</b>	
<b>Andhra Pradesh</b>	<b>98.86</b>
A. Godavari Valley Coalfield Narayanapuram-Pattyagudem	98.86
<b>Chhattisgarh</b>	<b>1768.33</b>
A. Mand-Raigarh Coalfield	
(i) Chainpur	654.26
(ii) Nayadih	362.40
(iii) Saraipali	331.10
B. Tatapani-Ramkula Coalfield	
(i) Reonti (West)	202.45
C. Hasdo Arand Coalfield	
(i) Parogia (West)	218.12
<b>Madhya Pradesh</b>	<b>652.98</b>
A. Pench Valley Coalfield	
(i) Bagbaridiya	375.35
B. Singrauli Coalfield	
(i) Hatta-Dudhmaniya	277.63
<b>Odisha</b>	<b>2538.18</b>
A. Talcher Coalfield	
(i) Kudanali North East	991.05
(ii) Harichandanapur	493.03
B. Ib-River Coalfield	
(i) Pilplimal-Khairkuni	1054.10
<b>West Bengal</b>	<b>552.48</b>
A. Raniganj Coalfield	
(i) Binodpur-Bhabanigunj	214.20
B. Birbhum coalfield	
(i) Makhdumnagar	338.28
	<b>Total 5610.83</b>
<b>LIGNITE</b>	
<b>Rajasthan</b>	<b>13.665</b>
A. Palna Basin Lignite field	
(i) Hadda North & West	13.665
	<b>Total 13.665</b>

COAL & LIGNITE

**Table – 5 : Details of Exploration Activities conducted by GSI for Coal & Lignite, 2011-12**

State/Coalfield/ Lignite Field	Area/Block	Exploration details
<b>COAL</b>		
<b>Andhra Pradesh</b>		
Godavari Valley Coalfield	Bugga-Khammamtogu	In borehole GBK-2, a total 12 nos of thin coal/carbonaceous shale seams/bands were intersected with Lower Kamthi Formation between 43.79 m and 187.35 m depths having individual thickness varying from 0.55 m to 1.60 m with cumulative thickness of 9.48 m. The coal/carbonaceous shale zone recorded within Barakar Formation between 280.30 m and 481.37 m depths containing 4 split sections varying in individual thickness from 0.51 m to 1.25 m with cumulative thickness of 3.36 m. The work is in progress.
	Vutasamudram-Venkatapuram area	The uppermost coal/carbonaceous shale zone, viz., C zone of Lower Kamthi Formation containing 3 to 8 split sections varying in individual thickness from 0.60 m to 1.80 m and cumulative thickness from 3.14 m to 8.98 m was intersected in boreholes GVVK-1 and GVVK-3. The middle coal/carbonaceous shale zone, viz., B zone of Lower Kamthi Formation containing 12 split sections having individual thickness varying from 0.50 m to 1.45 m was intersected between 379.25 m and 435.75 m depth in borehole GVVK-3. The work is in progress.
<b>Assam</b>		
Singrimari Coalfield	Sukchar-Singrimari block, Dhubri district at the border of Assam & Meghalaya	A carbonaceous shale horizons with coal stringers occur within gritty sandstone of the Karharbari Formation. A total meterage of 254.30 m was drilled in three boreholes. The first two boreholes were abandoned due to technical difficulties. The work is in progress.
<b>Chhattisgarh</b>		
Mand-Raigarh Coalfield	Nawagaon block	Twelve regional (seam I to XII in ascending order) and eleven local Barakar coal seams I zones have been intersected between the depths of 11.96 m and 406.15 m. The important seams are seam I, IV, VI, VII and VIII with cumulative thickness of coal ranging from less than a meter to 20.44 m. Seam IV is the thickest seam and was intersected between the depths of 44.66 m and 283.48 m.
	Teram block	In Barakar Formation, ten regional coal seams (Seam III to XII in ascending order) and few local coal seams with cumulative thickness ranging from less than a meter to 12.55 m were intersected between the depths of 132.90 m and 729.10 m. Of these, the important seams are seam V, VI, XI and XII. The thickest seam, VI has thickness ranging from 6.55 m to 12.55 m. The work is in progress.
	Samarsingha block	In Barakar Formation, thirteen regional coal seams/zones (seam I to XII in ascending order) with cumulative thickness ranging from less than a metre to 8.52 m were intersected between the depths of 56.20 m and 604.50 m. Amongst these, the important seams are seam I, VI, VII and XII. The work is in progress.
Hasdo-Arand Coalfield	Korja block	Four regional Barakar coal seams/zones (Seam III to VI in ascending order) and four local (seam L1 to L4 in ascending order) have been intersected between depths of 65.83 m and 342.35 m. Coal seam/zone III, IV and V are considered to be significant because of their cumulative coal thickness which ranges from 2.57 m to 6.45 m. The work is in progress.
Tatapani-Ramkola Coalfield	Reonti (West) block	Six regional Barakar coal seams (I to VI) and few local coal seams varying in cumulative thickness from less than a metre to 66.66 m were intersected between 702.10 m and 880.00 m depths. Seams III to VI are important for their thickness and regional persistency. The seams IV and V are represented by several nos of split sections with the maximum cumulative thickness being 12.73 m (4.48 m clean coal) and 66.66 m (22.67 m clean coal), respectively. The work was completed.

(Contd.)

COAL & LIGNITE

Table - 5 (Contd.)

State/Coalfield/ Lignite Field	Area/Block	Exploration details
	Vijaynagar-Giddhi block	Thirteen regional Barakar coal seams (I to XIII in ascending order) and ten local coal seams varying in cumulative thickness from 10.50 m to 14.80 m were intersected between 22.55 m and 605.60 m depths. Seams II, III, IV, V, VI, VII, VIII, XII and XIII are important for their thickness and regional persistency. The seams III (6.15 m to 14.80 m), IV (3.40 m to 7.65 m) and V (0.60m to 8.40 m) contain several split sections.
<b>Madhya Pradesh</b>		
Singrauli Coalfield	Sarai (East) area	Seven regional coal seams (I to VII in ascending order) of Barakar Formation ranging in thickness from 0.69 m to 3.78 m were intersected between 229.20 m and 597.36 m of shallow depths. Out of these, Seam II, IV, VI and VII are relatively thicker (1.39 m to 3.78 m). Apart from these, two regional Raniganj coal seams (R-II and R-III) ranging in thickness from 0.78 m to 0.92 m were intersected between 18.27 m and 62.03 m at very shallow depths. The work is in progress.
	Hatta-Dudhamaniya	Four regional Barakar coal seams (I to IV in ascending order) ranging in thickness from 1.36 m to 3.07 m were intersected between 542.19 m and 676.77m depths. Seams II (2.80 m) and IV (3.07 m) are important for their thickness and regional persistency.
Sohagpur Coalfield	Devanitola block	Four regional Barakar coal seams (I to IV) and two local coal seams (L1 and L2) varying in cumulative thickness from less than a metre to 8.20 m were intersected between 156.85 m to 287.13 m depths. Seam III is the thickest ( maximum cumulative thickness 8.20 m) composite in nature and charecteristically shows two split sections.
	Amiliha block	Four regional Barakar coal seams (I to IV) varying in thickness from less than a metre to 3.60 m were intersected between 206.95 m and 370.15 m depths. Coal seams III and I are important for their thickness and regional persistency. During the period, regional continuity of coal seams was established 1.50 km along both strike and down-dip direction.
	Pachri block	Four regional Barakar coal seams (I to IV in ascending order) and one local coal seam ranging in thickness from less than a metre to 3.35 m were intersected between 139.85 m and 309.00 m depths. Seam III is the thickest coal seam (1.05 m to 3.35 m) with two split sections and used as a key horizon for correlation of coal seams. The work is in progress.
	Maiki (North) block	Four regional coal seam (I to IV in ascending order) and two local Barakar coal seams (L1 and L2) ranging in thickness from less than a metre to 6.23 m were intersected between 389.10 m and 604.15 m depths. Seam III (3.05 m to 6.23 m) is the thickest with two split sections and is a key horizon for correlation of coal seams. Apart from these, six Raniganj coal seams/bands ranging in thickness from 0.50 m to 2.90 m were intersected at very shallow depth between 9.00 m to 62.65 m. The work is in progress.
Johilla Coalfield area	Naurozabad (North)	The drilling continued and indicated lithoassemblages akin to Barren Measures. The work was closed.
Pench Valley Coalfield	Payalidhana sector	Five regional Barakar coal seams (I to V in ascending order) with individual seam thickness ranging from 0.55 m to 5.55 m were intersected between 296.70 m and 421.27 m depth. Seam II (3.40 m to 4.05 m), III (0.95 m to 5.55 m) and IV (1.90 m to 4.35 m) are important for their thickness and regional persistency. The work is in progress.
	Bagbardiya sector	Five regional Barakar coal seams (I to V in ascending order) ranging in thickness from 0.90 m to 3.20 m were intersected between 416.67 m and 440.41m depth. Seam I (3.20 m), II (1.35 m), and IV (1.13 m) are important for their thickness and regional persistency. The work was completed.

(Contd.)

COAL & LIGNITE

Table - 5 (Contd.)

State/Coalfield/ Lignite Field	Area/Block	Exploration details
<b>Maharashtra</b>		
Wardha Valley Coalfield	Dewala-Mangli block	Two boreholes were drilled and one coal seam of 0.60 m in thickness was intersected at 459.40 m depth in Barakar Formation. The work is in progress.
<b>Odisha</b>		
Talcher Coalfield	Simlisahi-Kunjabiharipur	All ten regional coal seam zones of Barakar Formation (II to XI in ascending order) with cumulative thickness ranging from 0.55 m to 37.72 m were intersected between 300.35 m to 601.89 m depths. Continuity of regional coal seams for 6 km along strike and 2.5 km along dip direction has been established. An additional indicated resources of about 1500 million tonnes of coal has been assessed. Exploration was completed.
	Harichandrapur block	Barakar seam zones II & III were intersected in the last borehole (THC-4) in the depth range from 413.65 m to 471.05 m. Continuation of regional Barakar coal seams for 4 km along strike and 2.5 km along dip direction was established. A total resource of 493.03 million tonnes of coal under indicated category within a depth of 600 m has been assessed. Out of which, 214.78 million tonnes occur within 0-300 m depth. Baseline data generated for CBM in borehole THC-4 indicates variation of in situ gas content from 0.06 cc/g to 0.26 cc/g. Investigation was completed.
	Nuagaon North area	Five Barakar and one Karharbari coal seam zones with cumulative thickness varying from 1.22 m to 36.15 m were intersected from 70.06 m and 626.35 m depths. Continuation of coal seams was established for 6 km along strike and 3 km along dip direction. The work is in progress.
	Korara-Danara sector	To establish the up-dip continuity of Karharbari coal seam at shallow to quarriable depth and to assess the coal potentiality of the area. The exploration was completed.
Ib River Coalfield	Khariaparha block	Five regional Barakar coal seam zones (Belpahar, Parkhani, Lajkura, Rampur and Ib in ascending order) recorded between 20.97 m and 614.20 m depths. The Lajkura coal seam zone is the thickest having cumulative coal thickness of 59.36 m was intersected at roof depth of 327.86 m. The maximum intersected cumulative thickness of Belpahar, Parkhani, Rampur and Ib coal seam zones are 26.69 m, 20.45 m, 57.37 m and 0.72 m, respectively with multiple split sections. Continuation of coal seams has been established for about 2 km both along strike and dip direction. Gas desorption study of coal core samples has recorded a value of 0.14 cc/g.
	Grindola block	In the first borehole of two Raniganj coal seam zones (R-1 and R-II) and three regional Barakar coal seam zones (Belpahar, Parkhai and Lajkura from top to bottom) with cumulative coal thickness ranging from 11.41 m to 26.59 m and 26.07 m to 26.07 m respectively for Raniganj and Barakar Formations have been recorded between 31.90 m and 514.20 m depths.

(Contd.)

COAL & LIGNITE

Table - 5 (Concl.)

State/Coalfield/ Lignite Field	Area/Block	Exploration details
<b>West Bengal</b>		
Raniganj Coalfield	Bhabaniganj east area	Three boreholes were drilled. In borehole of RBB-5, a 5.50 m thick coal seam (Salanpur-A seam) has been intersected at 391.30 m depth. Continuity of Barakar coal seams was established. The work was completed.
	South of Hingla River	Eight boreholes, viz., RSH-2 to 9 were drilled. Development of Barakar coal seams, correlatable with Salanpur-A group with cumulative thickness varying from 0.70 m to 6.30 m were intersected between 240.90 m to 480.40 m depths. The work is in progress.
BDB-5 (part) and	Birbhum Coalfield	Dhobbanpur sector Four boreholes, viz., BDB-3(part), BDB-4, BDB-6 (part) were drilled. A maximum of 23 coal section of Barakar Formation with cumulative thickness varying from 0.50 m to 4.75 m were intersected between 429.55 m and 659.05 m depths. Besides, two lignite seams of 1.20 m and 1.50 m thickness with Tertiary sediments have also been intersected at 169.10 m and 173.20 m depth of BDB-4. The maximum cumulative thickness of coal is 29.85 m recorded in borehole BDB-4 in the central part of the area. CBM desorption study of core samples collected from the coal seams has indicated a mere presence of desorbed gas (Q3) value of 0.10-0.15 cc/g. The work is in progress.
	Gazipur area	Three boreholes, viz., BGZ-3 (part), BGZ-4 and BGZ-5 (part) were completed. The borehole BGZ-4 of 13 Barakar coal seams ranging in thickness from 0.60 m to 4.40 m were intersected between 659.65 m to 797.20 m depths and cumulative thickness of 22.81 m of coal. In borehole BGZ-3, six Barakar coal seams have been intersected ranging in thickness from 0.50 m to 1.75 m were intersected between 554.10 m and 656.30 m depths. CBM desorption study of core samples collected from the coal seams indicate a desorbed gas (Q3) value of 0.104 to 0.256 cc/g. The borehole BGZ-5 has recorded 159.30 m of Tertiaries and 201.60 m of Rajmahal Trap. The work is in progress.
<b>LIGNITE</b>		
<b>Tamil Nadu</b>		
Ramnad-sub-basin in Ramanathapuram district	Bogalur east block	Two regionally persistent lignite seams, viz, seam I of maximum thickness of 12 m and seam II with maximum thickness of 3.80 m were intersected between 350.50 m and 443.50 m depths. The seams are of lignite A grade. Investigation established the lignite potentiality over an area of around 50 sq km.
	Uttarakosamangai block	Exploration work has been taken up to delineate lignite bearing areas and to assess the resource potentiality of the area.
<b>Rajasthan</b>		
Nagaur south sub-basin in Nagaur district	Phalki north area	A maximum of four lignite sections varying in thickness from 0.50 m to 2.48 m were intersected between 68.75 m and 262.25 m depths. Maximum cumulative thickness of lignite seam is 5.0 m. The grade belong to lignite B category. The work is in progress.

COAL & LIGNITE

**Table – 6 : Details of Exploration for Coal and Lignite by State Directorates of Geology & Mining and State Undertakings, 2011-12**

Agency/State/ District	Location	Geological mapping		Drilling		Remarks Reserves/Resources estimated
		Area (sq km)	Scale	Boreholes	Meterage	
<b>COAL</b>						
<b>DGM</b>						
<b>Chhattisgarh</b>						
Raigarh	Dhaurabhata Gare sector 1A	55.63	1:50,000	02	498.35	About 14 million tonnes of resources of C to G grade were estimated.
Korba	Saila block	180.8	1:50,000	06	1797.20	Since commencement of work, a total of 51.15 million tonnes of resources were estimated.
Surguja	Gotan-Birjupalli area	300 0.48	1:50,000 1:4,000	25	-	Work under progress.
--do--	Saidu area	440 0.80	1:50,000 1:4,000	20	-	Work under progress.
<b>DGM</b>						
<b>Jammu &amp; Kashmir</b>						
Rajouri	Mogla	1	1:1,000	-	-	Not estimated.
<b>DGM</b>						
<b>Maharashtra</b>						
Chandrapur	Wislon block	-	-	-	-	-
--do--	Nandori	-	-	-	-	-
Chandrapur	Chalbardi	-	-	-	-	-
Nagpur	Makardhokda block-V (Davha-Phukeshwar)	-	-	-	-	About 15.28 million tonnes of resources were estimated.
-do-	Nand- Panjrepar	-	-	-	-	-
Yavatmal	Ashtona Kothurna	187.00	1:25,000	35	10549.30	-
-do-	Adkoli Khadakhoh	-	-	-	-	-
<b>DGM</b>						
<b>Assam</b>						
Dhubri	Tonggaon & Shalibhul hills, Hat Singrimari	1.1	1:2,000	-	-	Collaboration with GSI. The work remained incomplete due to local law & order problem.
Dibrugarh	Abhaypur, Sivasagar	20	1:25,000	-	-	About 0.12 million tonnes of resources were estimated.

(Contd.)

COAL & LIGNITE

Table - 6 (Contd.)

Agency/State/ District	Location	Geological mapping		Drilling		Remarks Reserves/Resources estimated
		Area (sq km)	Scale	Boreholes	Meterage	
Dibrugarh	Sapekhati	50	1:25,000	-	-	About 0.20 million tonnes was estimated.
<b>Govt. of Meghalaya</b>						
South Garo hills	Soling	5	1:50,000	01	103.00	The work is in progress. Resources yet to be calculated.
		2	1:4,000			
<b>Dte. of Geology</b>						
<b>Odisha</b>						
Angul	Ananta-Langaraj- Bhubaneswari block - of Talchir Coalfield	-	-	09	1151.90	-
-do-	Arakhpal block - of Talchir Coalfield	-	-	09	1835.00	Thickness of coal seam varies from 83.57 m to 129.69 m.
Jharsuguda	Madhupur block of - Ib River Coalfield	-	-	10	2505.00	-
<b>LIGNITE</b>						
<b>DMG, Rajasthan</b>						
Bikaner	N/V Kenya- Ki-Basti	200	1:50,000	02	210.00	About 0.57 million tonnes of resources in lignitic shale were estimated.
-do-	Surpura	105	1:50,000	-	-	-
<b>GMDC, Gujarat</b>						
Bharuch	Amod	-	-	22	2200	Drilling for confirmation of lithology.
Kachhch	Lakhpat, Panharajpur	-	-	507	50000	About 50 million tonnes of resources were estimated.
Kachchh	N/V Panandhro (Mata-No-Madh)	-	1:50,000	-	-	No exploration work.
Surat	Tadkeswar	-	-	21	1500	Drilling for confirmation of lithology.
Bhavnagar	Surka (N)	-	-	10	1491.00	About 89.56 million tonnes of lignite resources were estimated.
<b>Neyveli Lignite Corp. Ltd (NLC)</b>						
<b>Rajasthan</b>						
Barmer	Kurla east	-	-	16	5488.90	Potential lignite reserves are expected in this block which is suitable for undertaking UCG study. The work has been completed and GR yet to be submitted by MECL.
-do-	Magne-Ki-Dhani	-	-	3	358.70	About 12.738 million tonnes of inferred category were estimated.

(Contd.)

COAL & LIGNITE

Table - 6 (Concl'd.)

Agency/State/ District	Location	Geological mapping		Drilling		Remarks Reserves/Resources estimated
		Area (sq km)	Scale	Boreholes	Meterage	
Barmer	Baytu	-	-	14	5684.20	The work is in progress.
-do-	Bhurtiya	-	-	2	1182.60	-do-
Bikaner	Kolasar gravity block	-	-	7	1285.60	The work has been completed and GR yet to be submitted by MECL.
Jaisalmer	Ramgarh	-	-	26	4005.00	-do-
	Khuiyala	-	-	30	5800.00	The work is in progress.
Nagaur	Phalodi, Gangaredi & Ucharada	-	-	28	8292.90	-do-
<b>Tamil Nadu</b>						
Ramnad	Sikkal	-	-	27	11640.00	The work is in progress.

## PRODUCTION, STOCKS AND PRICES

### COAL

#### Production

The provisional total production of coal in 2011-12 was around 540 million tonnes which was higher by 1.4% as compared to the previous year. Chhattisgarh continued to be the largest coal producing state with a share of about 21.1% followed closely by Jharkhand and Odisha with contributions of 20.3% and 19.5%, respectively, to the national output. Next in order of share in the total production were Madhya Pradesh (13.2%), Andhra Pradesh (9.7%), Maharashtra (7.3%), West Bengal (4.5%) and Uttar Pradesh 3.0 percent. The remaining 1.4% of coal production was accounted for by Arunachal Pradesh, Assam, Jammu & Kashmir and Meghalaya.

During the year 2011-12, coal mining was confined mainly to the public sector which contributed 90.9% to the national production. In 2011-12, of the total production of coal, 9.6% was coking coal and the rest 90.4% was non-coking coal. As in the earlier years, bulk of the coking coal production i.e. about 85.5% was reported from the public sector. Gradewise analysis of coking coal in 2011-12 revealed that washery grade IV had the maximum share at 67.8%, followed by washery grade III (25.4%), washery grade II (3.5%)

and washery grade I (0.5%). The remaining 2.8% production of coking coal was of steel grade I, steel grade II, semi-coking grade I and SLVI. Out of the total production of coking coal in India, bulk quantity i.e. 98.9% was produced in Jharkhand followed by Madhya Pradesh with 0.6 percent. The remaining 0.5% was contributed by Chhattisgarh and West Bengal.

During 2011-12, excepting a nominal quantity (8.5%), the balance entire production of non-coking coal (91.5%) came from the public sector. Out of the total non-coking coal production, 42% was of F grade, followed by 16% of E grade, 15.8% of D grade, 12.2% of B grade, 5.9% of C grade and 3.1% of A grade. The remaining 5% production was contributed by G grade and ungraded varieties of non-coking coal. Chhattisgarh was the largest producing state of non-coking coal in 2011-12 which alone accounted for 23.3% of the national output. Next in order were Odisha with a contribution of (21.6%), Madhya Pradesh (14.5%), Jharkhand (12%), Andhra Pradesh (10.7%), Maharashtra (8%), West Bengal (5%) and Uttar Pradesh (3.3%). The remaining 1.6% production came from the states of Assam, Arunachal Pradesh, Jammu & Kashmir and Meghalaya.

There were 559 coal mines (as on 31.03.2012) in India which reported production in 2011-12. Out of these, 172 mines were located in Jharkhand,



## COAL & LIGNITE

West Bengal had 100 mines, Madhya Pradesh (71), Chhattisgarh (61), Maharashtra (57), Andhra Pradesh (50) and Odisha (28). The remaining 20 mines were located in the states of Arunachal Pradesh, Assam, Jammu & Kashmir, Meghalaya and Uttar Pradesh. In 2010-11, there were 11 large mines each producing more than 10 lakh tonnes of coal during the year and these mines accounted for 33.2% of the total production. The bulk of the production i.e. 55.2 % was contributed by 142 mines with annual output ranging between 5,00,001 to 10 lakh tonnes. About 11 % of the total coal production was shared by 283 mines whose individual production varied between 50,001 to 5 lakh tonnes. Only 0.4 % of the production was contributed by 123 small mines each producing up to 50,000 tonnes (Tables - 7 to 12).

### Despatches

Despatches of raw coal at 535.3 million tonnes in 2011-12 were higher by around 2.3% as compared to those in the previous year. Chhattisgarh was the leading state in the despatches in 2011-12 and accounted for 21.4% of the total despatches. The states next in order were Jharkhand (20.5%), Odisha (19.6%), Madhya Pradesh (13%), Andhra Pradesh (9.6%), Maharashtra (7.1%), West Bengal (4.3%) and Uttar Pradesh (2.9%). The remaining 1.6% despatches were shared by Assam, Arunachal Pradesh, Jammu & Kashmir and Meghalaya.

Statewise analysis revealed that despatches except from Assam, Jammu & Kashmir and Maharashtra were increased in 2011-12 as compared to the previous year (Table-13).

Of the total despatches of raw coal effected in 2011-12, a sizeable share of 75% was made to the electricity sector. As much as 3% each was made to the steel industry and sponge iron industry, 2.4% to the cement industry, 0.5% to the fertilizer, 0.4% to the paper & pulp industry. The remaining 15.7% was made for other priority sectors including textile & rayons, cokerries and chemical.

During the year 2010-11, the total despatches of raw coal, a sizeable share of 73% was made to the electricity sector. As much as 3.3% was made to the steel industry, 3.2% to the sponge iron

industry, 2.7% to the cement industry, 0.6% to the fertilizer, 0.5% to the paper & pulp industry and 0.2% to the other basic metal. The remaining 16.5 % was made for other priority sectors including chemical and cokerries (Table-14).

### Stocks

The mine-head stocks of coal at the end of the year 2011-12 were 74 million tonnes which was 2.6% more than that at the beginning of the year. Bulk of the coal stocks (about 99.9%) at the end of the year was accounted for the mines located in the states of Jharkhand, Odisha, Chhattisgarh, Maharashtra, Madhya Pradesh, Andhra Pradesh, West Bengal and Uttar Pradesh (Tables-15 A & B).

### Prices

Domestic prices of coal during 2007-08 to 2011-12 are furnished in the General Review on 'Prices'.

**Table – 7 : Number of Coal Mines  
2010-11 & 2011-12  
(By States)**

State	No. of Mines	
	2010-11#	2011-12 \$
<b>India</b>	<b>559</b>	<b>559</b>
Andhra Pradesh	50	50
Arunachal Pradesh	1	1
Assam	7	7
Chhattisgarh	62	61
Jammu & Kashmir	7	7
Jharkhand	174	172
Madhya Pradesh	71	71
Maharashtra	55	57
Meghalaya	1	1
Odisha	28	28
Uttar Pradesh	5	4
West Bengal	98	100

# Relates to number of mines as on 31.3.2011.

\$ Relates to number of mines as on 31.3.2012.

## COAL & LIGNITE

### LIGNITE

#### Production and Despatches

During the year 2011-12, the production of lignite at 42.33 million tonnes increased by 12.19% in comparison to that of the previous year. The production from Tamil Nadu accounted for 58.1%. The share of Gujarat in lignite production was 34.9% and that of Rajasthan was 7 percent (Table-16).

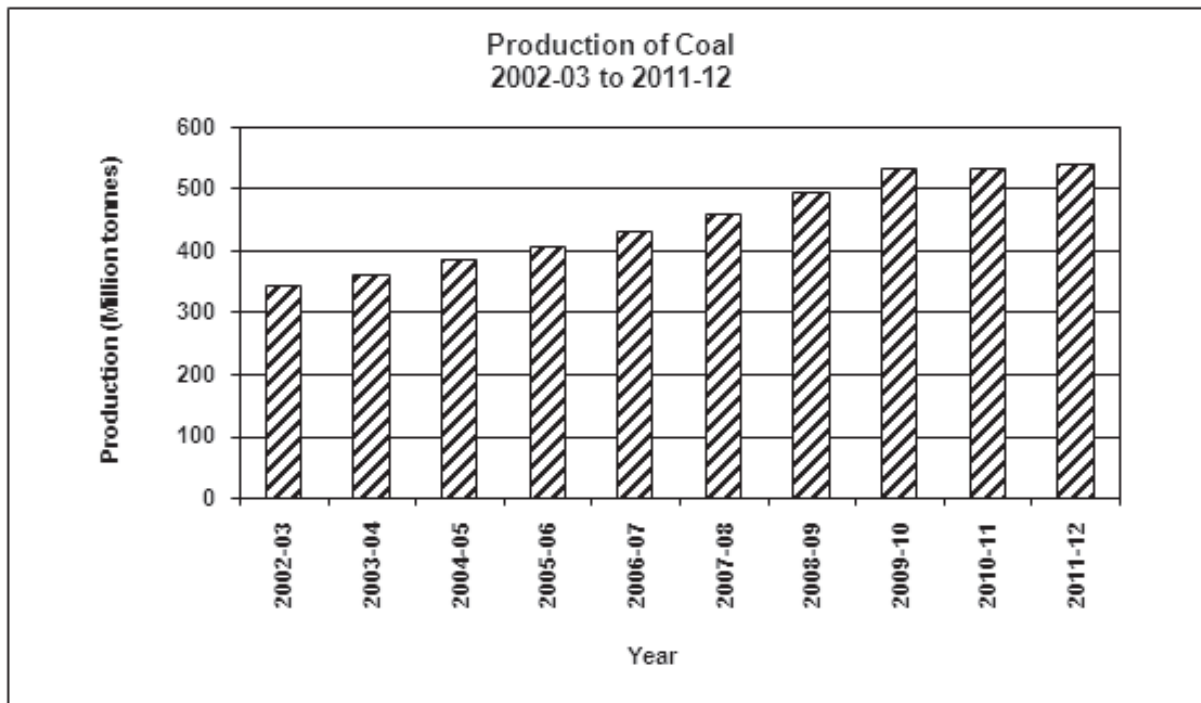
Out of total 14 mines of lignite were operational during 2011-12, seven were located in

Gujarat, four in Rajasthan and three in Tamil Nadu (Table - 17).

The quantum of despatches of lignite was 41.89 million tonnes during the year 2011-12, which was higher by 11.1% as compared to that in the previous year (Table-18).

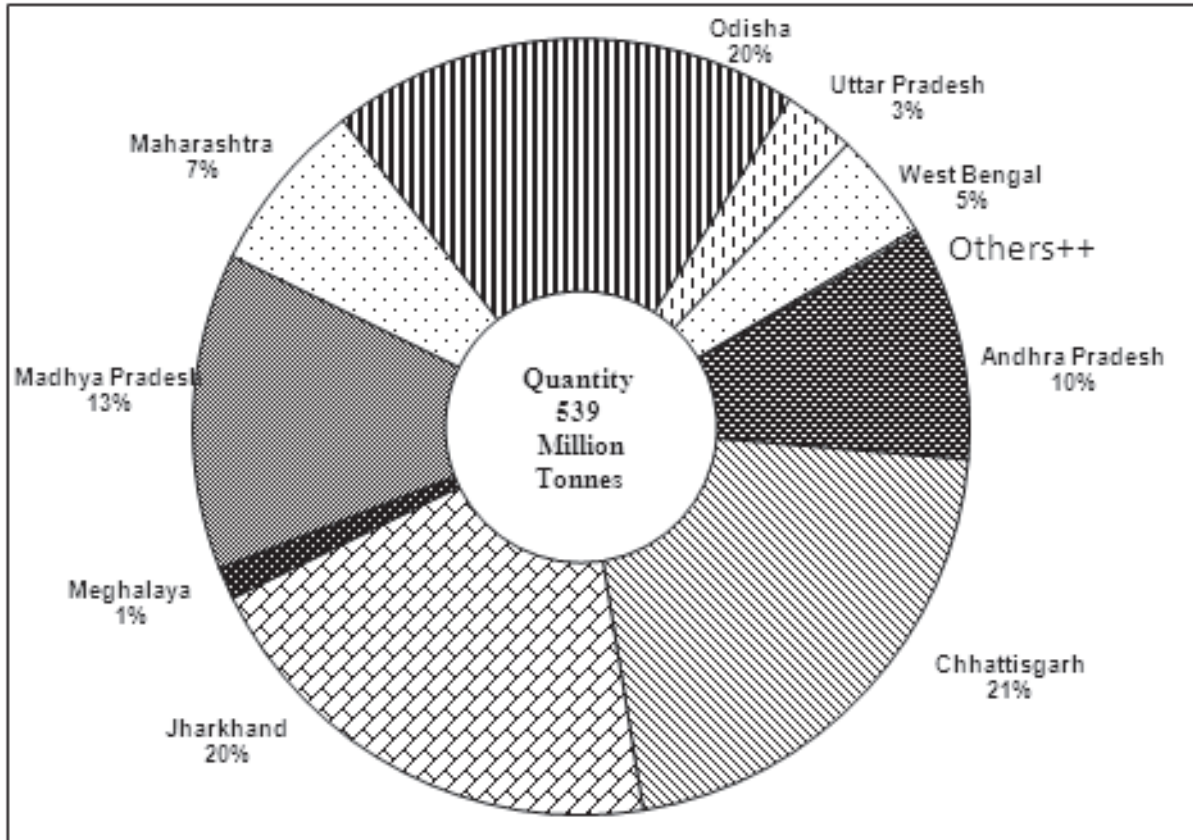
#### Stocks

The mine-head stocks of lignite at the end of 2011-12 were 1051 thousand tonnes which was 72.3% more than that at the beginning of the year (Tables- 19 A & B).

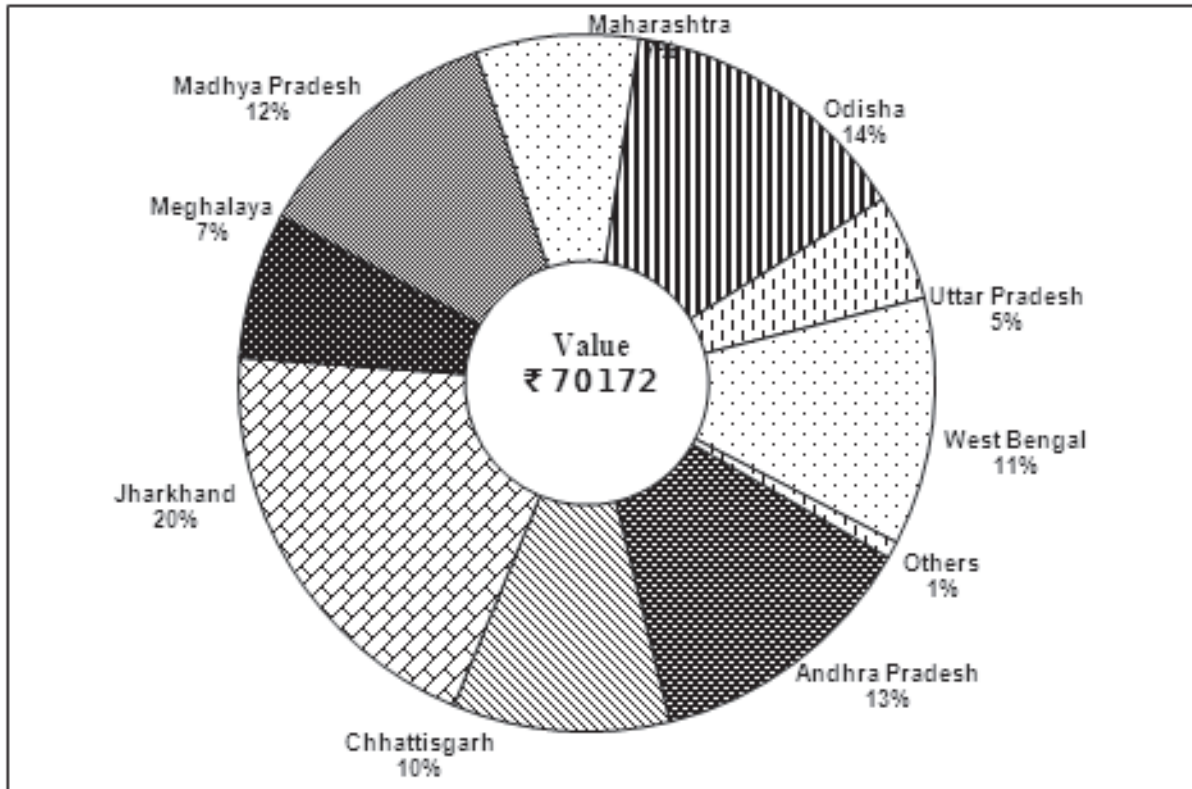


COAL & LIGNITE

Quantity of Production of Coal in Different States in 2011-12



Value of Production of Coal in Different States in 2011-12



COAL & LIGNITE

**Table – 8 : Production of Coal, 2009-10 to 2011-12  
(By Sectors/States)**

(Quantity in '000 tonnes; value in ₹ '000)

State	2009-10		2010-11		2011-12(P)	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>India</b>	<b>532042</b>	<b>513182400</b>	<b>532694</b>	<b>620210400</b>	<b>539950</b>	<b>701719100</b>
Public sector	484040	461918400	485061	525347400	490755	594510600
Private sector	48002	51264000	47633	94863000	49195	107208500
Andhra Pradesh	50429	67373100	51333	81106100	52211	90008100
Arunachal Pradesh	251	894300	299	1106000	221	1464100
Assam	1113	3965200	1101	4072600	602	3988000
Chhattisgarh	109953	50308300	113824	58256200	113958	70740300
Jammu & Kashmir	23	18600	24	22400	20	42500
Jharkhand	105917	114630000	108949	185716200	109566	139887600
Madhya Pradesh	74074	84933100	71104	93673600	71123	83305500
Maharashtra	41005	50887500	39336	53628800	39159	53112600
Meghalaya	5767	20545600	6974	25796800	7206	47739800
Odisha	106409	58751300	102565	73545300	105476	96399000
Uttar Pradesh	13968	15067800	15526	15122300	16178	34369500
West Bengal	23133	45807600	21659	28164100	24230	80662100

*Source: Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata.*

**Table – 9 : Production of Coal, 2009-10 to 2010-11  
(By Frequency Groups)**

Production group (tonnes)	No. of mines #		Production for the group (‘000 tonnes)#		Percentage in total production #		Cumulative percentage	
	2009-10*	2010-11*	2009-10	2010-11	2009-10	2010-11	2009-10	2010-11
<b>All Groups</b>	<b>560</b>	<b>559</b>	<b>526276</b>	<b>525720</b>	<b>100.00</b>	<b>100.00</b>	<b>100</b>	<b>100</b>
0-10000	48	51	54	24	0.01	0.01	0.01	0.01
10001-25000	19	25	356	459	0.07	0.09	0.08	0.10
25001-50000	46	47	1638	1777	0.31	0.34	0.39	0.44
50001-100000	74	71	5496	5209	1.04	0.99	1.43	1.43
100001-300000	157	144	30507	26845	5.80	5.11	7.23	6.54
300001-500000	57	68	22082	26402	4.20	5.02	11.43	11.56
500001-1000000	147	142	284968	290483	54.15	55.24	65.58	66.80
1000001 & above	12	11	181175	174521	34.42	33.20	100.00	100.00

*Source : Coal Controller's Organisation, Kolkata.*

# Excluding Meghalaya.

\*Relates to mines as on 31.03.2011.

COAL & LIGNITE

**Table – 10 : Production of Coal, 2010-11 & 2011-12  
(By Grades and Sectors)**

(In '000 tonnes)

Grade	2010-11			2011-12(P)		
	Total	Pub. Sec.	Pvt. Sec.	Total	Pub. Sec.	Pvt. Sec.
<b>All Grades</b>	<b>532694</b>	<b>485061</b>	<b>47633</b>	<b>539950</b>	<b>490755</b>	<b>49195</b>
<b>Coking</b>	<b>49547</b>	<b>42510</b>	<b>7037</b>	<b>51660</b>	<b>44160</b>	<b>7500</b>
ST-I	263	263	–	83	83	–
ST-II	1558	1558	–	1135	1135	–
W-I	235	235	–	246	246	–
W-II	1757	1752	5	1815	1815	–
W-III	10165	8016	2149	13147	10619	2528
W-IV	35399	30516	4883	35035	30063	4972
SC-I	170	170	–	199	199	–
SLV1	–	–	–	–	–	–
<b>Non-coking</b>	<b>483147</b>	<b>442551</b>	<b>40596</b>	<b>488290</b>	<b>446595</b>	<b>41695</b>
A	12182	5208	6974	14942	7736	7206
B	24023	24017	6	59312	59309	3
C	55581	50293	5288	28918	21262	7656
D	45710	39737	5973	77109	69367	7742
E	121227	117231	3996	78257	72718	5539
F	212693	203228	9465	205194	199919	5275
G	10612	1718	8894	13712	13154	558
Ungraded	1119	1119	–	10846	3130	7716

*Note: Meghalaya Coal has not been graded by Coal Controller. For statistical purpose, grade may be treated as 'A'/'B' non-coking coal.*

**Table – 11 (A) : Production of Coking Coal, 2010-11  
(By States and Grades)**

(In '000 tonnes)

State	All-Grades	ST-I	ST-II	W-I	W-II	W-III	W-IV	SLV1	SC-I
<b>India</b>	<b>49547</b>	<b>263</b>	<b>1558</b>	<b>235</b>	<b>1757</b>	<b>10165</b>	<b>35399</b>	<b>–</b>	<b>170</b>
Chhattisgarh	163	–	–	–	–	–	–	–	163
Jharkhand	48945	234	1558	235	1354	10165	35399	–	–
Madhya Pradesh	403	–	–	–	403	–	–	–	–
West Bengal	36	29	–	–	–	–	–	–	7

COAL & LIGNITE

**Table – 11 (B) : Production of Coking Coal, 2011-12  
(By States and Grades)**

(In '000 tonnes)

State	All-Grades	ST-I	ST-II	W-I	W-II	W-III	W-IV	SLV1	SC-I
<b>India</b>	<b>51660</b>	<b>83</b>	<b>1135</b>	<b>246</b>	<b>1815</b>	<b>13147</b>	<b>35035</b>	–	<b>199</b>
Chhattisgarh	189	–	–	–	–	–	–	–	189
Jharkhand	51108	49	1135	246	1496	13147	35035	–	–
Madhya Pradesh	319	–	–	–	319	–	–	–	–
West Bengal	44	34	–	–	–	–	–	–	10

**Table –12 (A) : Production of Non-coking Coal, 2010-11  
(By States and Grades)**

(In '000 tonnes)

State	All-Grades	A	B	C	D	E	F	G	Ungraded
<b>India</b>	<b>483147</b>	<b>12182</b>	<b>24023</b>	<b>55581</b>	<b>45710</b>	<b>121227</b>	<b>212693</b>	<b>10612</b>	<b>1119</b>
Andhra Pradesh	51333	51	695	8155	11068	16830	11775	1718	1041
Arunachal Pradesh	299	299	–	–	–	–	–	–	–
Assam	1101	1101	–	–	–	–	–	–	–
Chhattisgarh	113661	1244	8149	3870	2797	–	88707	8894	–
Jammu & Kashmir	24	–	–	–	–	–	–	–	24
Jharkhand	60004	289	493	8929	5970	26233	18090	–	–
Madhya Pradesh	70701	1503	2807	27054	8867	30470	–	–	–
Maharashtra	39336	–	340	2107	8676	26836	1377	–	–
Meghalaya	6974	6974	–	–	–	–	–	–	–
Odisha	102565	–	210	222	1790	10528	89815	–	–
Uttar Pradesh	15526	–	–	228	5868	9430	–	–	–
West Bengal	21623	721	11329	5016	674	900	2929	–	54

COAL & LIGNITE

**Table – 12 (B) : Production of Non-coking Coal, 2011-12  
(By States and Grades)**

(In '000 tonnes)

State	All-Grades	A	B	C	D	E	F	G	Ungraded
<b>India</b>	<b>488290</b>	<b>14942</b>	<b>59312</b>	<b>28918</b>	<b>77109</b>	<b>78257</b>	<b>205194</b>	<b>13712</b>	<b>10846</b>
Andhra Pradesh	52211	34	616	–	6678	13191	15629	13154	2909
Arunachal Pradesh	221	–	–	–	–	–	–	–	221
Assam	602	602	–	–	–	–	–	–	–
Chhattisgarh	113769	1195	6725	5259	5019	8297	81493	555	5226
Jammu & Kashmir	20	–	–	–	–	20	–	–	–
Jharkhand	58458	353	332	9203	30621	6177	11705	–	67
Madhya Pradesh	70804	2491	7352	7317	23281	30363	–	–	–
Maharashtra	39159	2396	32494	1851	–	2349	–	3	66
Meghalaya	7206	7206	–	–	–	–	–	–	–
Odisha	105476	–	200	218	1863	8216	92622	–	2357
Uttar Pradesh	16178	–	–	–	7475	8703	–	–	–
West Bengal	24186	665	11593	5070	2172	941	3745	–	–

**Table – 13 : Despatches of Raw Coal, 2010-11 & 2011-12  
(By States)**

(In '000 tonnes)

State	2010-11	2011-12(P)
<b>India</b>	<b>523465</b>	<b>535299</b>
Andhra Pradesh	50046	51389
Arunachal Pradesh	245	322
Assam	1102	800
Chhattisgarh	109562	114610
Jammu & Kashmir	25	23
Jharkhand	106637	109792
Madhya Pradesh	69443	69560
Maharashtra	38240	38108
Meghalaya	6974	7206
Odisha	104359	104819
Uttar Pradesh	15393	15467
West Bengal	21439	23203

COAL & LIGNITE

**Table –14 : Despatches of Raw Coal, 2010-11 & 2011-12  
(By Priorities)**

(In '000 tonnes)

Priority	2010-11	2011-12 (P)
<b>Total</b>	<b>523465</b>	<b>535299</b>
Steel	17199	15833
Sponge Iron	17019	15999
Chemical	509	369
Electricity	382119	401211
Cement	14182	12880
Cokeries	1427	221
Paper & pulp	2432	2026
Fertilizer	2942	2821
Textile & Rayons	275	258
Other Basic metal	1166	240
Others	84195	83441

*Note: Steel includes direct feed & coking washery for metallurgical use and steel (boilers); non-coking washery and bricks included in others.*

**Table – 15 (A) : Mine-head Stocks of Coal, 2010-11  
(By States)**

(In '000 tonnes)

State	At the beginning of the year	At the end of the year
<b>India</b>	<b>64863</b>	<b>72192</b>
Andhra Pradesh	1224	2413
Arunachal Pradesh	49	104
Assam	294	293
Chhattisgarh	7015	9731
Jammu & Kashmir	8	4
Jharkhand	24933	27128
Madhya Pradesh	2498	4391
Maharashtra	2701	3793
Odisha	23409	21611
Uttar Pradesh	664	798
West Bengal	2068	1926

**Table – 15 (B) : Mine-head Stocks of Coal, 2011-12  
(By States)**

(In '000 tonnes)

State	At the beginning of the year	At the end of the year
<b>India</b>	<b>72192</b>	<b>74040</b>
Andhra Pradesh	2413	3038
Arunachal Pradesh	104	4
Assam	293	95
Chhattisgarh	9731	8732
Jammu & Kashmir	4	3
Jharkhand	27128	24684
Madhya Pradesh	4391	6265
Maharashtra	3793	4841
Odisha	21611	22261
Uttar Pradesh	798	1509
West Bengal	1926	2608



COAL & LIGNITE

**Table – 16 : Production of Lignite, 2009-10 to 2011-12  
(By Sector/States)**

(Quantity in '000 tonnes; value in ₹ '000)

	2009-2010		2010-11		2011-12(P)	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>India</b>	<b>34071</b>	<b>37756000</b>	<b>37733</b>	<b>43307200</b>	<b>42332</b>	<b>53376500</b>
Public sector	33755	37405823	36780	42213416	41095	51816764
Private sector	316	350177	953	1093784	1237	1559736
Gujarat	10526	7013700	13064	13480300	14779	15249900
Rajasthan	1207	479400	1525	1071600	2963	1161800
Tamil Nadu	22338	30262900	23144	28755300	24590	36964800

**Table – 17 : Number of Lignite Mines  
2010-11 & 2011-12  
(By States)**

State	No. of Mines	
	2010-11	2011-12
<b>India</b>	<b>14</b>	<b>14</b>
Gujarat	7	7
Rajasthan	4	4
Tamil Nadu	3	3

**Table – 19 (B) : Mine-head Stocks of  
Lignite, 2011-12  
(By States)**

(In '000 tonnes)

State	At the beginning of the year	At the end of the year
<b>India</b>	<b>610</b>	<b>1051</b>
Gujarat	139	462
Rajasthan	–	–
Tamil Nadu	471	589

**Table – 18 : Despatches of Lignite  
2010-11 & 2011-12  
(By States)**

(In '000 tonnes)

State	2010-11	2011-12
<b>India</b>	<b>37685</b>	<b>41883</b>
Gujarat	13079	14448
Rajasthan	1525	2963
Tamil Nadu	23081	24472

**Table – 19 (A) : Mine-head Stocks of  
Lignite, 2010-11  
(By States)**

(In '000 tonnes)

State	At the beginning of the year	At the end of the year
<b>India</b>	<b>565</b>	<b>610</b>
Gujarat	155	139
Rajasthan	–	–
Tamil Nadu	410	471

## MINING & MARKETING

### Coal

Coal mining in the country is being carried out by opencast and underground methods. Opencast mining contributes over 90% of total production whereas rest of the production (about 10%) comes from underground mining. These mines are mostly semi-mechanised or mechanised. The machinery commonly deployed is drill machines, load-haul-dumper (LHD), ventilation fans, pumps for dewatering, haulage for transport, etc. In order to arrest the decline in production from a few underground mines, "mass production technology" by introducing 'continuous miner' is being practised. Modern roof-bolting technology with "flexibolts" up to 5 m length; 'smart bolting' for cost reduction of roof support; introduction of mechanised roof bolting using hydraulic bolts for difficult roof are new technology absorptions in Indian Underground Coal Mining. Mechanised Long wall mining (long wall powered support) has also been introduced in a limited scale which

## COAL & LIGNITE

yields higher output with high percentage recovery (70-80%). In opencast mines, machinery like draglines, dozers, shovels, dumpers and graders are deployed for various operations.

The latest policy pursued by CIL is to encourage technology upgradation through Global Tender. Global tender approach has been used towards introduction of high productivity with the use of Continuous Miners, at SECL and WCL.

There are eight coal producing companies in the public sector. Out of these, Eastern Coalfields Limited (ECL), Bharat Coking Coal Limited (BCCL), Central Coalfields Limited (CCL), Western Coalfields Limited (WCL), South-Eastern Coalfields Limited (SECL), Mahanadi Coalfields Limited (MCL), Northern Coalfields Limited (NCL) and North-Eastern Coalfields Limited (NEC) are subsidiary companies of Coal India Ltd (CIL), a Government of India undertaking. The Singareni Collieries Company Limited (SCCL) is a joint venture of the Government of India and the Government of Andhra Pradesh. CMPDI is a subsidiary of CIL which is engaged in surveying, planning and designing work with a view to optimise coal production.

BCCL is the major producer of prime-coking coal (raw and washed). Medium-coking coal is also produced in Mohuda and Barakar areas. In addition to production of hard coke and soft coke, BCCL operates a number of sand gathering plants, a network of aerial ropeways for transport of sand and nine coal washeries, namely, Dugda-I, Dugda-II, Bhojudih, Patherdih, Mahuda, Sudamdih, Barora, Moonidih and Madhuband.

CCL operates mines in Bokaro, Ramgarh, Giridih and North and South Karanpura Coalfields in Jharkhand and four coal washeries, namely, Kathara, Swang, Rajrappa and Kedla. Its products included medium-coking coal (raw and washed), non-coking coal, soft coke and hard coke.

WCL operates coal mines located in Pench, Kanhan and Patharkheda Coalfields in Madhya

Pradesh and Wardha Valley & Kamthi Coalfields in Maharashtra. This company largely meets the requirements of industries and power stations in the western region of the country.

ECL covers Raniganj Coalfields in West Bengal and Mugma and Rajmahal Coalfields in Bihar. It produced and supplied coal to the local and other industries which required relatively higher grades of coal.

The coalfields of Chhattisgarh, viz, Korba (East & West), Baikunthpur, Chirimiri, Hasdeo, Sohagpur, Jamuna-Kotma and Johilia are under SECL. This subsidiary continued to be the leading producer of CIL.

NEC is responsible for development and production of coal in the North-Eastern States. The present mining activities are confined to Arunachal Pradesh, Assam and Meghalaya. The area has large proven reserves of low ash, high calorific value coal but because of its high sulphur content, it cannot be used directly as metallurgical coal.

SCCL operates coal mines in Andhra Pradesh producing non-coking coal. The coal requirements of consumers in south are mostly met by this company.

MCL had been incorporated as another subsidiary company of CIL. Its area of jurisdiction comprises Talcher and Ib Valley Coalfields of Odisha.

NCL covers the entire Singrauli Coalfields situated in Madhya Pradesh and Uttar Pradesh.

Jharkhand State Mineral Development Corporation Ltd (JSMD), Damodar Valley Corporation (DVC) and Jammu & Kashmir Minerals Ltd (JKML) are the State Government undertakings engaged in coal mining. IISCO steel plant of SAIL is the only public sector steel unit operating captive mines for coal. Bengal Emla Coal Mines Ltd (BECML), Jindal Steel & Power Ltd (JSPL), Hindalco and Tata Steel are the companies, operating captive mines in the private sector.

COAL & LIGNITE

As on 31.3.2012, there were 559 operating mines for coal in the country, out of which 209 were opencast while 323 were underground mines. The remaining 27 were mixed collieries. There were 532 public sector mines and 27 mines in private sector (Table-20). Thrust is now given to further increase production from opencast mines where the gestation period is comparatively shorter. In 2011-12, share of production of raw coal from opencast mines was 487.99 million tonnes (90.4%) against 51.96 million tonnes (9.6%) from underground mines (Table-21). Production of coal by different mining technologies employed is furnished in Table-22. The overall Output per Man Shift (OMS) for CIL in 2011-12 was 4.92 tonnes as against 4.74 tonnes in 2010-11.

**Table – 20 : Number\* of Coal Mines, 2011-12  
(By Sectors/States)**

State	No. of collieries			
	OC	UG	Mixed	Total
<b>All India</b>	<b>209</b>	<b>323</b>	<b>27</b>	<b>559</b>
Public sector	189	316	27	532
Private sector	20	7	–	27
Andhra Pradesh	15	35	–	50
Arunachal Pradesh	1	–	–	1
Assam	3	4	–	7
Chhattisgarh	22	38	1	61
Jammu & Kashmir	–	7	–	7
Jharkhand	73	77	22	172
Madhya Pradesh	21	48	2	71
Maharashtra	34	23	–	57
Meghalaya	–	1	–	1
Odisha	17	11	–	28
Uttar Pradesh	4	–	–	4
West Bengal	19	79	2	100

**Source:** Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata.

\* As on 31.3.2012

**Note:** OC - Opencast UG - Underground.

**Table – 21 : Production of Raw Coal**

(In million tonnes)

Year	Production from open-cast mines (% share)	Production from underground mines (% share)	Total production
2009-10	473.52 (89%)	58.52 (11%)	532.04
2010-11	477.84 (89.7%)	54.85 (10.3%)	532.69
2011-12	487.99 (90.4%)	51.96 (9.6%)	539.95

**Source:** Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata.

**Table – 22 : Production of Coal, 2011-12  
(By Technologies)**

(In million tonnes)

Technology adopted	Production	Percentage of total
<b>All India : Total</b>	<b>539.95</b>	<b>100</b>
<b>Opencast (Total)</b>	<b>487.993</b>	<b>90.38</b>
Mechanised	487.588	99.92
Manual	0.405	0.08
<b>Underground (Total)</b>	<b>51.957</b>	<b>9.62</b>
Conventional B&P	6.082	11.72
Mechanised B&P	40.848	78.62
Conventional LW	-	-
Mechanised LW	0.590	1.14
Other methods	4.437	8.54

**Source:** Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata.

**Note:** B&P - Board-and-pillar; LW - Longwall

As coking coal was deregulated with effect from 1.4.1996, distribution is done by CIL/coal companies. The Government of India has amended provisions of Colliery Control Order 1945 and Colliery Control Order 2000 has been notified, according to which, the price & distribution of all grades of coal with effect from 1.1.2000 have been deregulated.

Coal movements by coastal shipment to southern and western regions through Haldia, Paradip and Vizag ports were continued. Major portion of the despatches was through railways, followed by roads, Merry-Go-Round System, belt conveyor, ropeways and sea route.

## Lignite

Out of the fourteen opencast working mines, three are owned by Neyveli Lignite Corporation (NLC), five by Gujarat Mineral Development Corporation Ltd (GMDCL), three by Rajasthan State Mines & Minerals Limited (RSMML), and one mine each by Gujarat Industries Power Co. Ltd (GIPCL), Gujarat Heavy Chemicals Ltd (GHCL) & V S Lignite Power Pvt. Ltd. (VSLPPL). Sectorwise, twelve mines are under public sector and the remaining two are under private sector i.e. GHCL & VSLPPL. NLC shared maximum production during the period under review. The NLC mines are a part of an integrated complex consisting of three opencast lignite mines (10.5 million tpy + 10.5 million tpy + 3 million tpy), 3 thermal power plants (600 MW+ 420 MW+1470 MW) and a carbonisation and briquetting plant (262,000 tpy) producing carbonised briquettes, commercially called "Leco". The third mine having 3 million tpy capacity feeds an independent power project of 250 MW. Capacity increase of Mine-II from 10.5 million tpy to 15 million tpy with the installation of 2x250 MW units has been approved by the Ministry of Coal. The new Barsingsar Thermal-cum-Mine Project of NLC in Bikaner district in Rajasthan will have 2.1 million tpy lignite capacity to feed the 2x125 MW thermal project. The mine is expected to produce 1.79 million tonnes lignite per annum by 2012-13. The NLC's mines are highly mechanised. Electric-powered equipment like bucket-wheel excavators, fabric & steel cord belt conveyors, tippers and spreaders are used in their opencast mines for excavation, transportation and refilling of overburden. The Neyveli Lignite Mine is the largest opencast mine in the country with eco-friendly technology. Hydraulic shovels & dumpers are used only for auxiliary works. Mobile Transfer Conveyor (MTC) of capacity 4420 cu m/ha, stacker of 4000 t/ha capacity and reclaimers of 2000 t/ha capacity are also deployed.

## Policy–Captive Coal and Lignite Block Allocation

Under the Coal Mines (Nationalisation) Act, 1973, coal mining was originally reserved for the public sector exclusively. The said Act was amended from time to time to allow: (a) captive mining by private companies engaged in production of iron and steel and sub-lease for coal mining to private parties in isolated small pockets not amenable to economic development and not

requiring rail transport (amended in 1976); (b) private sector participation in coal mining as linkage for power generation, for washing of coal obtained from a mine or for other end-uses to be notified by Government from time to time (amended on 9.6.1993), in addition to existing provision for the production of iron and steel; (c) mining of coal for production of cement (amended on 15.3.1996) and (d) mining of coal for production of syn-gas obtained through coal gasification (underground and surface) and coal liquefaction (amended on 12.7.2007).

The Central Government, a Government Company (including a State Government company), a Corporation owned, managed and controlled by the Central Government, can undertake coal mining without the restriction of captive use.

The allocation of coal blocks to private parties is done through the mechanism of an Inter-Ministerial and Inter-Governmental body called Screening Committee.

As regards allocation of small and isolated blocks are concerned, a new policy is being formulated in consultation with the Ministry of Law and Justice and the stakeholders for allocation of such blocks.

With the progressive allocation of coal blocks, the number of coal blocks available for allocation is declining, while the number of applicants per block is increasing, as the demand for coal keeps increasing. This has made selection of an applicant in respect of a block difficult and vulnerable to criticism on the ground of lack of transparency and objectivity.

While efforts are on to continuously add blocks to the captive list, it is also expected that the demand for blocks would remain far ahead of supply. Therefore, there is an urgent need to bring in a process of selection that is not only objective but also demonstrably transparent. Auctioning through competitive bidding is one such acceptable selection process.

With a view to bringing in more transparency, the Mines and Minerals (Development and Regulation) Amendment Act, 2010 for introduction of competitive bidding system for allocation of coal blocks for captive use, has been passed by the both Houses of Parliament and it has been notified in Gazette of India

(Extraordinary) on 9<sup>th</sup> September, 2010. The Amendment Act seeks to provide for grant of reconnaissance permit, prospecting licence or mining lease in respect of an area containing coal and lignite through auction by competitive bidding, on such terms and conditions as may be prescribed. This, would however, not be applicable in the following cases: where such area is considered for allocation to a Government company or corporation for mining or such other specified end use; where such area is considered for allocation to a company or corporation that has been awarded a power project on the basis of competitive bids for tariff (including Ultra Mega Power Projects).

The Government has finalised rules for allocation of blocks through the competitive bidding and same are notified on 2.2.2012. The commencement of the Amendment Act has been notified on 13.2.2012.

At present, captive coal blocks are only allotted to companies in power, iron & steel, Government commercial, private commercial & cement and coal to oil sectors. Till 31.3.2012, a total of 195 coal blocks with 44,802.9 million tonnes geological reserves have been allotted in various states (Table-23). Similarly, 27 captive lignite blocks with 1,996.8 million tonnes geological reserves have been allocated in Gujarat (12) and Rajasthan (15) till 31.3.2012. Of these, 5 blocks are allocated for power generation and 7 blocks for commercial end use in Gujarat. In Rajasthan, the allocation of 10 blocks is for power and 5 for commercial end use.

### Coal Bed Methane (CBM) and Underground Coal Gasification (UCG)

In terms of Govt. of India, CBM Policy 1997, consortium of CIL and ONGC has been allotted 2 blocks—one each in Raniganj and Jharia coalfield for development of Coal Bed Methane. So far, 26 CBM blocks have been allotted to various operations for exploration and exploitation of CBM. Ten more blocks were offered in the 4th round of bidding concluded in October, 2009.

Under the guidelines for conducting underground coal gasification and allocation of blocks issued on 13.7.2009, five lignite blocks and two coal blocks have been identified for allocation.

**Table – 23 : Allotment of Captive Coal Blocks (Till 31.3.2012) (Statewise)**

(In million tonnes)

State	No. of Coal Blocks	Geological Reserves
<b>Total</b>	<b>195</b>	<b>44802.9</b>
Arunachal Pradesh	1	27.0
Andhra Pradesh	1	61.3
Chhattisgarh	41	9090.0
Jharkhand	51	11144.5
Madhya Pradesh	25	3352.4
Maharashtra	24	1043.8
Odisha	33	16267.1
West Bengal	19	3816.7

*Source: Coal Directory of India, 2011-12. Coal Controller's Organisation, Kolkata. (except totals).*

## FOREIGN COLLABORATION

To meet the country's growing demand for coal, Coal India Limited (CIL) is looking for foreign collaboration with the following objectives:

(a) bringing in proven technologies and advanced management skills for running underground (UG) and opencast (OC) mines and in coal preparation for efficient management of the Indian coal industry and development of necessary skills by way of appropriate training, etc.;

(b) exploration and exploitation of coal bed methane and in situ gasification of coal;

(c) locating overseas companies, interested in joint ventures for overseas operations, in the field of coal mining with special thrust on coking coal mining; and

(d) exploring financial assistance for import of equipment and other investment needs for coal industry.

Keeping these objectives in view, Joint Working Group on coal had been set up with a number of countries such as UK, France, Russia, USA, Poland, Germany, Australia and China. The priority areas, inter alia, include acquiring modern technology for mass production in underground

and opencast mining, methodology of underground mining in difficult geological conditions including steep seams, fire and subsidence control, mines safety, coal preparation, use of washery rejects for power generation, exploitation of coal bed methane from working mines and abandoned mines, coal gasification, application of geographical information system (GIS), environmental mitigation and emission trading, overseas ventures for sourcing coking coal, etc. Training of CIL personnel for effective adaptation of the state-of-the-art technologies, available with the developed countries, is also a prime subject of focus.

## COAL WASHERIES

Presently, 19 coal washeries (15 in public sector and 4 in private sector) with 32.80 million tonnes per annum capacity produced about 6.44 million tonnes of coking coal in 2011-12. Production of washed coking coal during 2011-12 was about 3.23 million tonnes in Public Sector and 3.21 million tonnes in Private Sector. In public sector, BCCL operates 9 coking coal washeries (Dugda II, Bhojudih, Patherdih, Sudamdih, Barora, Moonidih, Mahuda, Madhubann and Dugda-I), CCL operates 4 washeries (Kathara, Swang, Rajrappa and Kedla), WCL one (Nandan) and SAIL one (Chasnala) whereas 4 washeries (West Bokaro-II, West Bokaro-III, Jamadoba and Bhelatand) were operated by Tata Steel Ltd, in private sector. Similarly, 34 coal washeries with 109.57 million tonnes per annum capacity produced about 31.41 million tonnes non-coking coal during the year. Of these, 12.36 million tonnes in public and 19.05 million tonnes in private sector. In public sector, 7 non-coking coal washeries (three each in BCCL & CCL and one in NCL) were operational, whereas in private sector, 27 non-coking coal washeries were in operation.

By and large, ash content in raw coal used by washeries varied between 24 and 33%. The ash content in the washed coal and middlings produced by washeries ranged from 19 to 22% and 35 to 40%, respectively. The rejects in most washeries contained over 50% ash. The capacity and production of washed coking/non-coking coal are shown in Tables - 24 to 27, respectively.

**Table – 24 : Production of Washed Coking Coal, 2010-11 & 2011-12 (Sectorwise/Companywise)**

	(In '000 tonnes)	
	2010-11	2011-12
<b>All India : Total</b>	<b>6955.0</b>	<b>6444.0</b>
<b>Public Sector</b>	<b>3785.0</b>	<b>3230.0</b>
BCCL	1549.0	1421.0
CCL	1453.0	1334.0
WCL	191.0	137.0
SAIL	592.0	338.0
<b>Private Sector</b>	<b>3170.0</b>	<b>3214.0</b>
Tata Steel Ltd	3170.0	3214.0

*Source: Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata.*

**Table – 25 : Capacity of Washed Coking Coal 2011-12 (Sectorwise/Companywise)**

Coalfield/Washery	State	Raw Coal Capacity (In '000 tpy)
<b>Grand Total</b>		<b>32800</b>
<b>Public Sector</b>	<b>Total</b>	<b>27140</b>
<b>BCCL</b>		<b>14550</b>
Dugda-I	Jharkhand	2500
Dugda-II	-do-	2000
Bhojudih	-do-	1700
Patherdih	-do-	1600
Sudamdih	-do-	1600
Barora	-do-	420
Moonidih	-do-	1600
Mahuda	-do-	630
Madhubann	-do-	2500
<b>CCL</b>		<b>9350</b>
Kathara	-do-	3000
Swang	-do-	750
Rajrappa	-do-	3000
Kedla	-do-	2600

(Contd.)

COAL & LIGNITE

Table - 25 (Concl'd.)

Coalfield/Washery	State	Raw Coal Capacity (In '000 tpy)
<b>WCL</b>		<b>1200</b>
Nandan (Pench-Kanhan)	Madhya Pradesh	1200
<b>SAIL</b>		<b>2040</b>
Chasnala	Jharkhand	2040
<b>Private Sector</b>	<b>Total</b>	<b>5660</b>
<b>Tata Steel Ltd</b>		<b>5660</b>
West Bokaro-II	Jharkhand	1800
West Bokaro-III	-do-	2100
Jamadoba	-do-	900
Bhelatand	-do-	860

Source: Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata (except totals).

**Table - 26 : Production of Washed Non-coking Coal : 2010-11 & 2011-12 (Sectorwise/Companywise)**

	(In '000 tonnes)	
	2010-11 (R)	2011-12(P)
<b>All India : Total</b>	<b>34477.7</b>	<b>31406.5</b>
<b>Public Sector</b>	<b>11716.0</b>	<b>12357.0</b>
BCCL	314.0	138.0
CCL	8063.0	8555.0
NCL	3339.0	3664.0
<b>Private Sector</b>	<b>22761.7</b>	<b>19049.5</b>
JSPL	1927.0	-
BLA Ind. Ltd	256.0	277.8
Aryan Coal Beneficiation Pvt. Ltd	15271.0	14934.7
Aryan Energy Pvt. Ltd	50.0	19.9
Bhatia International Ltd	1700.0	-
Global Coal & Mining Pvt. Ltd	2540.0	2743.3
Kartikey Coal Washeries Pvt. Ltd	900.0	344.1
Earth Minerals Co. Ltd	117.7	580.5
Sarda Energy & Mineral Division	-	149.2

Source: Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata.

**Table - 27 : Capacity of Washed Non-coking Coal, 2011-12 (Sectorwise/Companywise)**

Washery/Location	Coalfield	State	Raw Coal Capacity (In '000 tpy)
<b>Grand Total</b>			<b>109570</b>
<b>Public Sector</b>	<b>Total</b>		<b>20200</b>
<b>BCCL</b>			
<b>Jharia Coalfield, Jharkhand</b>			<b>3980</b>
Dugda-I	Jharia	Jharkhand	1000
Lodna	Jharia	Jharkhand	480
Madhuban	Jharia	Jharkhand	2500
<b>CCL</b>			
<b>East Bokaro Coalfield, Jharkhand</b>			<b>11720</b>
Gidi	East Bokaro	Jharkhand	2500
Piparwar	N. Karanpura	Jharkhand	6500
Kargali	S. Karanpura	Jharkhand	2720
<b>NCL</b>			<b>4500</b>
Bina Deshelling	Bina	Uttar Pradesh	4500
<b>Private Sector</b>	<b>Total</b>		<b>89370</b>
<b>Jindal Steel &amp; Power Ltd</b>			<b>6000</b>
Pit Head Washery (JSPL)	Mand Raigarh	Chhattisgarh	6000

(Contd.)

COAL & LIGNITE

Table -27 (Concl.)

Washery/Location	Coalfield	State	Raw Coal Capacity (In '000 tpy)
<b>BLA Industries Pvt. Ltd</b>			<b>330</b>
BLA Washery	Dharmasthal	Madhya Pradesh	330
<b>Aryan Coal Beneficiation Pvt. Ltd</b>			<b>26960</b>
Chakabuwa	Korba	Chhattisgarh	6000
Dipka	Korba	Chhattisgarh	12000
Pander Pauni	Ballarpur	Maharashtra	3000
Gevra	Korba	Chhattisgarh	5000
Binjhri	Korba	Chhattisgarh	960
<b>Aryan Energy Pvt. Ltd</b>			<b>2600</b>
Indaram	Ramagundam	Andhra Pradesh	600
Talcher	Talcher	Odisha	2000
<b>Bhatia International Ltd</b>			<b>6000</b>
Wani	Wardha	Maharashtra	2000
Ghugus	Wardha	Maharashtra	4000
<b>Global Coal &amp; Mining Pvt. Ltd</b>			<b>5000</b>
Ib Valley	Ib Valley	Odisha	1500
Ramagundam	Ramagundam	Andhra Pradesh	1000
Talcher	Talcher	Odisha	2500
<b>Gupta Coal field &amp; Washeries Ltd</b>			<b>13920</b>
Sasti	Wardha	Maharashtra	2400
Ramagundam	Ramagundam	Andhra Pradesh	2400
Ghugus	Wardha	Maharashtra	2400
Gondegaon	Kamptee	Maharashtra	2400
Majri	Wardha	Maharashtra	2400
Wani	Wardha	Maharashtra	1920
<b>Kartikay Coal Washeries Pvt. Ltd</b>			<b>13000</b>
Wani	Wardha	Maharashtra	13000
<b>Spectrum Coal &amp; Power Ltd (ST-CLI)</b>			<b>5200</b>
Korba	Korba	Chhattisgarh	5200
<b>Indo Unique Flames Ltd</b>			<b>5400</b>
Nagpur	Wardha	Maharashtra	600
Punwat	Wardha	Maharashtra	2400
Wani	Wardha	Maharashtra	2400
<b>Earh Minerals Company Ltd</b>			<b>4000</b>
Talcher	Jharsuguda	Odisha	4000
<b>Sarda Energy &amp; Mineral Division</b>			<b>960</b>
Karwahi Coal Washery Divn.	Raigarh	Chhattisgarh	960

Source: Coal Directory of India, 2011-12, Coal Controller's Organisation, Kolkata.



## CLASSIFICATION AND GRADES

Indian coal is classified into two main categories, namely, coking and non-coking. Coking coal is a type of coal from which, on carbonisation, coke suitable for use in metallurgical industries, particularly in iron and steel industries, can be produced. Parameters determining coking property of coal are coking index, volatile matter (VM %), vitrinite %, crucible swell no., fluidity, reflectance, etc. Although for commercial gradation, ash percentage is the sole criterion, for semi-weakly-coking coal, along with ash percentage, moisture percentage too is considered as an added criterion. For non-coking coal, an empirical formula

is used to determine Useful Heat Value (UHV) of coal in kcal/kg.

The classification of coal as per the Ministry of Coal is given in Table - 28. Changing, grading and pricing of thermal coal from the existing Useful Heat Value (UHV) system to the international practice of Gross Calorific Value (GCV) system is under consideration of Ministry of Coal. A Pilot Study on migration from UHV to GCV-based gradation of coal has been completed by CFRI. The draft report is being overviewed by a Committee comprising members from Ministry of Coal, CEA, NTPC, CIL and CFRI.

**Table – 28 : Classification of Coal**

Sl. No	Class	Grade	Grade/Specification
1.	Non-coking coal produced in all states other than Assam, Arunachal Pradesh, Meghalaya and Nagaland	A	Useful Heat Value exceeding 6200 kcal per kg.
		B	Useful Heat Value exceeding 5600 kcal per kg but not exceeding 6200 kcal per kg.
		C	Useful Heat Value exceeding 4940 kcal per kg but not exceeding 5600 kcal per kg.
		D	Useful Heat Value exceeding 4200 kcal per kg but not exceeding 4940 kcal per kg.
		E	Useful Heat Value exceeding 3360 kcal per kg but not exceeding 4200 kcal per kg.
		F	Useful Heat Value exceeding 2400 kcal per kg but not exceeding 3360 kcal per kg.
		G	Useful Heat Value exceeding 1300 kcal per kg but not exceeding 2400 kcal per kg.
2.	Non-coking coal produced in Arunachal Pradesh, Assam, Meghalaya and Nagaland	A	Useful Heat Value between 6200 and 6299 kcal per kg and corresponding ash plus moisture content between 18.85 and 19.57%.
		B	Useful Heat Value between 5600 and 6199 kcal per kg and corresponding ash plus moisture content between 19.58 and 23.91%. Ash content not exceeding 15%.
3.	Coking coal	Steel Grade I	Ash content exceeding 15% but not exceeding 18%.
		Steel Grade II	Ash content exceeding 18% but not exceeding 21% .
		Washery Grade I	Ash content exceeding 21% but not exceeding 24%.
		Washery Grade II	Ash content exceeding 24% but not exceeding 28%.
		Washery Grade III Washery Grade IV	Ash content exceeding 28% but not exceeding 35%.
4.	Semi-coking and weakly-coking coal	Semi-coking Grade I	Ash plus moisture content not exceeding 19%.
		Semi-coking Grade II	Ash plus moisture content exceeding 19% but not exceeding 24%.
5.	Hard coke	By-product Premium	Ash content not exceeding 25%.
		By-product Ordinary	Ash content exceeding 25% but not exceeding 30%.
		Beehive Premium	Ash content not exceeding 27%.
		Beehive Superior	Ash content exceeding 27% but not exceeding 31%.
		Beehive Ordinary	Ash content exceeding 31% but not exceeding 36%.

## COAL & LIGNITE

In order to adopt the best international practices, India decided to switch over from the grading based on Useful Heat Value (UHV) to the grading based on Gross Calorific Value (GCV); and, therefore, on 16.01.2011 the Ministry of Coal notified the switch over. As per the new system, following nomenclature has been introduced for gradation of non-coking coal:

Grades	GCV Range (kcal/kg)
G1	GCV exceeding 7000
G2	GCV exceeding 6701 and 7000
G3	GCV exceeding 6401 and 6700
G4	GCV exceeding 6101 and 6400
G5	GCV exceeding 5801 and 6100
G6	GCV exceeding 5501 and 5800
G7	GCV exceeding 5201 and 5500
G8	GCV exceeding 4901 and 5200
G9	GCV exceeding 4601 and 4900
G10	GCV exceeding 4301 and 4600
G11	GCV exceeding 4001 and 4300
G12	GCV exceeding 3701 and 4000
G13	GCV exceeding 3401 and 3700
G14	GCV exceeding 3101 and 3400
G15	GCV exceeding 2801 and 3100
G16	GCV exceeding 2501 and 2800
G17	GCV exceeding 2201 and 2500

*Source: Coal Directory 2011-12, Coal Controller's Organisation, Kolkata.*

Based on the GCV ranges of proposed gradation and erstwhile (UHV) gradation, a concordance table is generated for better understanding. However, it may be noted that this concordance does not depict exact one-to-one relation between the two systems.

Concordance Table	
Old grading based on UHV	New grading based on GCV
A	G1, G2, G3
B	G4, G5
C	G6
D	G7, G8
E	G9, G10
F	G11, G12
G	G13, G14
Non-coking coal Un-graded	G15, G16, G17

*Source: Coal Directory 2011-12, Coal Controller's Organisation, Kolkata.*

## CONSUMPTION

Thermal power plants, Iron & Steel, sponge iron and Cement continued to be the major consuming industries for coal in India. Sizeable quantities are also consumed by the railways, collieries and as a domestic fuel. Data regarding consumption in these sectors are not available. However, industrywise despatches of coal are given in Table - 29.

**Table – 29 : Despatches\* of Coal  
2009-10 to 2011-12  
(By Industries)**

(In million tonnes)

Industry	2009-10	2010-11	2011-12(P)
<b>Total</b>	<b>513.79</b>	<b>523.46</b>	<b>535.30</b>
Iron & steel <sup>1</sup>	18.57	18.63	16.05
Sponge iron	17.26	17.02	16.00
Fertilizer	2.63	2.94	2.82
Cement	14.36	14.18	12.88
Electricity	378.24	382.20	401.21
Others (Chemical, base metals, paper & pulp, textile & rayon, bricks, etc.	82.73	88.49	86.34

*Source: Coal Directory, 2009-10, 2010-11 and 2011-12.*

\* Data on consumption is not available.

<sup>1</sup> Includes direct feed, cokeries and boilers.

## DEMAND & SUPPLY

### XII<sup>th</sup> Plan Demand Projections

(Million tonnes)

Sl. No.	Sector	2016-17
1	Steel & Coke Oven	67.20
2	Power (Utility)	682.08
3	Power (Captive)	56.36
4	Cement	47.31
5	Sponge Iron	50.33
6	Others	77.22
<b>Total</b>		<b>980.50</b>

### XII<sup>th</sup> Plan Supply Projections

(Million tonnes)

Source	2016-17
CIL	556.40
SCCL	57.00
Others	101.60
<b>Total Indigenous Supply</b>	<b>715.00</b>
Import - Coking	35.50
Non-coking	230.00
<b>Total Imports</b>	<b>265.50</b>

*Source: Report of the Working Group for Coal & Lignite for XII<sup>th</sup> Plan.*

## WORLD REVIEW

World proved coal reserves were estimated at 860.94 billion tonnes at the end of 2012 of which, 404.76 billion tonnes (47%) is classified as anthracite & bituminous coal and 456.18 billion tonnes (53%) as sub-bituminous coal & lignite (Table-30). World production of coal and lignite increased from about 7.24 billion tonnes in 2010 to 7.74 billion tonnes in 2011. China continued to be the largest producer of coal and lignite in 2011 with about 45% share in total world production, followed by USA (12%), India (8%), Indonesia & Australia (5% each), Russia (4%) and South Africa (3%). The remaining 18% of the total world coal production was from other producing countries (Table-31). Global primary energy consumption fell by 1.1% over the preceding year. Asia Pacific and the Middle East have increased coal consumption during the year.

**Table – 30 : World Proved Coal Reserves  
at the end of 2012  
(By Principal Countries)**

(In million tonnes)

Country	Anthracite and bituminous coal	Sub-bituminous coal and lignite	Total
<b>World : Total</b>	<b>404762</b>	<b>456176</b>	<b>860938</b>
Australia	37100	39300	76400
Brazil	–	4559	4559
Canada	3474	3108	6582
China	62200	52300	114500
Colombia	6366	380	6746
Germany	99	40600	40699
India*	56100	4500	60600
Indonesia	1520	4009	5529
Kazakhstan	21500	12100	33600
Poland	4338	1371	5709
Russian Federation	49088	107922	157010
South Africa	30156	–	30156
Ukraine	15351	18522	33873
USA	108501	128794	237295
Other countries	8969	38711	47680

*Source: BP Statistical Review of World Energy, June 2013.*

\* India's reserves of coal as on 1.4.2012 are estimated at 293.50 billion tonnes to a depth of 1,200 m and those of lignite at 41.96 billion tonnes.

COAL & LIGNITE

**Table – 31 : World Production of Coal and Lignite  
(By Principal Countries)**

(In million tonnes)			
Country	2009	2010	2011
<b>World : Total</b>	<b>6876</b>	<b>7235</b>	<b>7739</b>
<b>Australia</b>			
Hard coal	350	357	347
Brown coal	68	69	67
<b>Bosnia &amp; Herzegovina</b>			
Brown coal & lignite	11	11	13
<b>Bulgaria</b>			
Brown Coal & lignite	27	29	37
<b>Canada</b>	52	58	57
Lignite	11	10	10
<b>China</b>			
Hard coal	2973	3235	3520
<b>Colombia</b>			
Hard coal	73	74	86
<b>Czech. Rep.</b>			
Bituminous coal	11	11	11
Brown Coal	45	44	47
<b>Germany</b>			
Hard coal	15	14	13
Brown coal	170	169	177
<b>Greece</b>			
Lignite	62	54	58
<b>India *</b>			
Hard coal	532	533	547
Lignite	34	38	81
<b>Indonesia</b>			
Hard coal	256	275	350 °
<b>Kazakhstan</b>			
Hard coal	87	90	93
Lignite	5	7	8
<b>Korea Democratic Rep.</b>			
Coal all form	36	41	41
<b>Mongolia</b>			
Brown coal & lignite	14	25	32
<b>Mexico</b>			
Bituminous coal	19	16	21
<b>Poland</b>			
Hard coal	78	77	76
Lignite	57	57	63
<b>Romania</b>			
B. Coal & lignite	29	29	34
<b>Russia</b>			
Hard coal	298	317	334
<b>Serbia</b>			
Lignite	38	38	41
<b>South Africa</b>			
Hard coal	251	257	253
<b>Thailand</b>			
Lignite	16	18	21

(Contd.)

Table-31 (Concl'd.)

Country	2009	2010	2011
<b>Turkey</b>			
Hard coal	4	6	6
Lignite	82	87	90
<b>Ukraine</b>			
Hard coal	55	55	63
<b>United Kingdom</b>			
Bituminous coal	18	18	18
<b>USA</b>			
Hard coal	909	913	919 <sup>e</sup>
Lignite	66	71	73 <sup>e</sup>
<b>Vietnam</b>			
Anthracite	44	45	46
<b>Other Countries</b>	80	87	86

*Source: World Mineral Production, 2007-2011*

*Hard coal – Including anthracite, bituminous & sub-bituminous coal.*

*\* India's production of coal and lignite during 2011-12 was 539.95 million tonnes and 42.33 million tonnes, respectively.*

As estimated by the 'World Coal Association', coal currently fuels 41% of the world electricity and this proportion is set to remain static over the next 30 years. About 70% of the world's steel production is based on coal. The World Coal Institute in its report "Coal Meeting the Climate Challenge: Technology to reduce Greenhouse Gas Emission" released in 2007, outlined two primary ways of reducing CO<sub>2</sub> emission from coal use. The first is by carbon capture and storage (CCS) which can reduce 80-90% CO<sub>2</sub> emission into atmosphere and second is storing CO<sub>2</sub> in geological formations. CCS is now acknowledged as the only technology that can significantly reduce emissions from fossil fuel power stations and other industrial plants. International Energy Agency has emphasised need to install CCS on coal-fired plants by 2030. With the widespread deployment of CCS, fossil fuels will become an important part of solution rather than part of the problem.

### Australia

Australia is the world's fourth largest producer and world's leading exporter of coal. Queensland and New South Wales were Australia's leading coal producing States and accounted for more than 95% of the country's total output. New South Wales and Queensland are its major coal exporting States; however, to sustain export growth, the country's infrastructure would require significant expansion and upgrading so that minerals for export could be transported from inland to port terminals. A carbon tax and mineral resource rent tax would not affect Australian mineral investment

significantly. Australia is expected to remain a major mineral and fuel exporting country. The infrastructure bottlenecks held back Australia's mineral exports, especially coal, while a number of new infrastructure projects were underway. One additional 90 million tonnes per year of new coal terminal port capacity has been scheduled to come for 2014. At Newcastle, New South Wales, Port Waratah Coal Services expanded its Kooragang Terminal capacity by 13 million tonnes per year to 102 million tonnes per year and planned a further increase to 113 million tonnes per year. The Newcastle Coal Infrastructure Group planned to add a 30 million tonnes per year terminal in 2010. The total combined terminal capacity in the states of New South Wales and Queensland would be 448 million tonnes per year. Rio Tinto decided to close down its Blair Athol coal mine near Clemont, Queensland, at year ending 2012 after almost 30 years of operation. The decision to close the mine was owing to the drop in coal prices and the increase in production cost.

### China

Coal consumption had increased to meet the high demand for industrial and power generation. Coal was the primary source of energy and two-thirds of the country's electricity was produced by coal-fired power plants. About 50% of the country's total coal output was consumed by the power sector. China's coal production continued to increase in 2011 because of an increase in demand for coal in industrial sector. However, owing to high coal and coking coal prices in the domestic market and weak international coal prices, coastal coking coal producers imported a large volume of coal. The Government continued to close small coal mines to reduce fatalities. In the long-term, several large companies are expected to produce coal along with small mines. In 2015, the country would have coal output capacity of 4.1 Gigatonnes (Gt), and coal production and consumption would be controlled at 3.9 Gt. The Government intended to add 740 million tonnes per year of new output capacity by 2015, of which the western part of the country would build 530 million tonnes per year; the central part in 185 million tonnes per year and eastern part in 25 million tonnes per year. In 2015, the distribution of coal output would be the western part in 2.09 Gt; central part in 1.35 Gt and eastern part in 460 million tonnes.

### Indonesia

Indonesia was the world's second ranked exporter and leading producer of coal. Central

Kalimantan Province held reserves of 1,400 million tonnes of high-quality metallurgical coal. The Province produced 1.5 million tonnes per year of high-grade coal from 15 coal mining companies.

BHP Billiton planned to develop the 774-million tonnes of Maruwai deposit in East and Central Kalimantan Provinces to produce 6 million tonnes per year of combined thermal and coking coal by 2014 and to expand output to between 15 and 20 million tonnes per year. PT Marunda Graha Mineral planned to increase production at its MGM coking coal mine by 25% to 2 million tonnes per year. Minerals Energy Commodities Holdings (MEC) of the United Arab Emirates expected a coal railway to start operating at the end of 2012 when its coal mine in East Kalimantan Province begins producing at a rate of 1 million tonnes per year of coal; the company planned to begin exporting 14 million tonnes of coal to Chinese and Indian power producers beginning in 2013.

## FOREIGN TRADE

### Exports

In 2011-12, exports of coal decreased about 53% to 2.03 million tonnes from 4.27 million tonnes in the previous year. Exports of coke also decreased 16% to 0.61 million tonnes in 2011-12 from 0.73 million tonnes in 2010-11. Coal was mainly exported to Bangladesh (60%), Nepal (33%) and Bhutan (6%). Coke was exported predominantly to Brazil (60%), Iran (13%), Nepal (7%), Malaysia (6%), Bhutan (5%) and Pakistan (4%). Export of lignite was one thousand tonne during 2011-12 and mainly to UAE. The export of coal gas was 59 tonnes in 2011-12 and mainly to Nepal (Tables - 32 to 35).

### Imports

Imports of coal increased by 49% to about 103 million tonnes in 2011-12 from 69 million tonnes in the previous year. Imports of coke also increased by 59% to 2.36 million tonnes in 2011-12 from 1.49 million tonnes in the previous year. Coal was mainly imported from Indonesia (54%), Australia (27%) and South Africa (12%), whereas coke was imported mainly from China (30%), Japan (18%), Ukraine & Russia (13% each), Australia (8%) and Colombia (5%). Imports of lignite were negligible while imports of briquettes of coke/semi-coke increased to 10769 tonnes in 2011-12 from 100 tonnes in the previous year and mainly from South Africa (Tables - 36 to 39).

COAL & LIGNITE

**Table – 32 : Exports of Coal (Excl. Lignite)  
(By Countries)**

Country	2010-11		2011-12	
	Qty (‘000 t)	Value (₹‘000)	Qty (‘000 t)	Value (₹‘000)
<b>All Countries</b>	<b>4272</b>	<b>11519939</b>	<b>2025</b>	<b>5869603</b>
Bangladesh	1159	2462446	1216	3091507
Nepal	625	1201743	676	2349089
Bhutan	8	19970	113	328788
Saudi Arabia	++	986	1	6309
UAE	++	1915	1	5571
USA	++	3	1	4426
Lebanon	-	-	++	1513
China	2301	7024314	++	1370
Malaysia	++	506	++	942
Unspecified	1	2762	17	77186
Other countries	178	805294	++	2902

**Table – 35 : Exports of Coke  
(By Countries)**

Country	2010-11		2011-12	
	Qty (t)	Value (₹‘000)	Qty (t)	Value (₹‘000)
<b>All Countries</b>	<b>728365</b>	<b>11645428</b>	<b>611517</b>	<b>11487428</b>
Brazil	403975	7731209	368500	7737809
Iran	42	743	79999	1678194
Pakistan	22118	412169	24791	615586
Malaysia	2	24	34000	570294
Bhutan	132336	480002	30571	304075
Nepal	9239	25595	40898	123708
Bahrain	9697	184709	5598	117997
UAE	1002	22569	16435	88223
Cameroon	-	-	2780	80477
Korea Rep.	6504	132170	2923	73343
Other countries	143450	2656238	5022	97722

**Table – 33 : Exports of Coal : Lignite  
(By Countries)**

Country	2010-11		2011-12	
	Qty (‘000 t)	Value (₹‘000)	Qty (‘000 t)	Value (₹‘000)
<b>All Countries</b>	<b>++</b>	<b>9179</b>	<b>1</b>	<b>14583</b>
Indonesia	++	738	++	7682
UAE	++	2108	1	3780
Egypt	++	3412	++	1931
Nigeria	-	-	++	689
Malaysia	-	-	++	500
Japan	-	-	++	1
Other countries	++	2921	-	-

**Table – 36 : Imports of Coal (Excl. Lignite)  
(By Countries)**

Country	2010-11		2011-12	
	Qty (‘000 t)	Value (₹‘000)	Qty (‘000 t)	Value (₹‘000)
<b>All Countries</b>	<b>68918</b>	<b>415494801</b>	<b>102841</b>	<b>788268785</b>
Australia	17273	181449036	27792	366256380
Indonesia	35944	134788133	55260	258417122
South Africa	11214	57272632	12207	77000793
USA	1770	19829296	2973	39745018
New Zealand	795	7703847	960	12985853
Russia	424	4216902	1194	9885259
China	242	1752587	482	4939369
Ukraine	44	402013	367	3578583
Canada	++	1672	230	3157153
Unspecified	333	1783374	232	1650080
Other countries	879	6295309	1144	10653175

**Table – 34 : Exports of Coal Gas water, etc.  
(Except Gaseous Hydrocarbons)  
(By Countries)**

Country	2010-11		2011-12	
	Qty (t)	Value (₹‘000)	Qty (t)	Value (₹‘000)
<b>All Countries</b>	<b>++</b>	<b>22</b>	<b>59</b>	<b>365</b>
Nepal	-	-	56	255
Bangladesh	-	-	++	79
Canada	-	-	3	30
Iran	-	-	++	1
Other countries	++	22	-	-

**Table – 37 : Imports of Coal : Lignite  
(By Countries)**

Country	2010-11		2011-12	
	Qty (‘000 t)	Value (₹‘000)	Qty (‘000 t)	Value (₹‘000)
<b>All Countries</b>	<b>++</b>	<b>310</b>	<b>++</b>	<b>474</b>
USA	-	-	++	474
Other countries	++	310	-	-

## COAL &amp; LIGNITE

**Table – 38 : Imports of Coke  
(By Countries)**

Country	2010-11		2011-12	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>1490210</b>	<b>31203551</b>	<b>2364688</b>	<b>47584537</b>
China	700574	16211830	717340	16895354
Japan	85975	1330033	423114	8557407
Ukraine	10000	197531	299613	6506312
Russia	89619	1748398	300083	4645496
Australia	222309	3910751	208199	3564203
Colombia	36527	826659	127001	2756825
Poland	43730	1061862	85043	1972992
UK	29071	643591	35222	658698
Saudi Arabia	-	-	79355	554663
Singapore	-	-	21758	472004
Other countries	272405	5272896	67960	1000583

**Table – 39 : Imports of Briquettes of coke,  
semi-coke of Coal  
(By Countries)**

Country	2010-11		2011-12	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
<b>All Countries</b>	<b>100</b>	<b>685</b>	<b>10769</b>	<b>106569</b>
South Africa	-	-	10765	106368
Japan	-	-	2	179
USA	-	-	1	14
China	-	-	1	8
Other countries	100	685	-	-

**FUTURE OUTLOOK**

The XII<sup>th</sup> Plan Working Group for Coal & Lignite has assessed a coal demand of 980.50 million tonnes by terminal year i.e. 2016-17. The indigenous coal supply projection in the terminal year is projected to be 715 million tonnes. The demand-supply gap emerging from these projections would be 265.50 million tonnes, which will be met by imports of 35.50 million tonnes of coking coal and 230 million tonnes of non-coking coal.