



Indian Chamber of Commerce

Indian Chamber of Commerce

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Coal mining

Is private participation the answer?



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Foreword

Coal, with a proven reserve of 860 billion tonnes is the most mined mineral in the world. Also, the demand curve for this sector is continuously rising. Major factors leading to a rise in the demand include the growing power sector in countries such as India and China and rising steel production. Additionally, stringent environment regulations, lead to delay in achieving production targets to match the demand from various sectors dependent on coal.

The gap between demand and availability of coal in India is expected to rise every year. As per the 12th Plan, the estimated demand of coal will rise to 980 MT by 2016-17 and 1373 MT by 2021-22 while the supply of domestic coal is expected to be 795 MT by 2016-17 and 1102 MT by 2021-22. Today nearly 60% of the country's total installed power capacity of 2,09,276 MW is generated using coal. India ranks fourth in coal reserves (286 BT) and is the third largest coal-producing country in the world.

Though coal demand has risen by around 9% over the last four years (FY 2006-07 to 2010-11), production which grew by around 5% during the same period has not kept up with it. The domestic industry can supply only 534.53 MT coal as against the demand of 696.03 MT in FY 2011-12. Organisations are acquiring mines abroad in order to augment capacity and meet demand. Besides, there is also an urgent need to adopt measures such as rationalisation of coal linkages, dedicated freight corridors to improve the situation, developing skill-sets of mining professionals, promoting under-ground mining and clean coal technologies for sustainable development. Additional R&D is required to promote coal to liquids (CTL), coal bed methane (CBM) and underground coal gasification (UCG). The land acquisition process needs to be streamlined.

In this context, the **Indian Chamber of Commerce** to further strengthen its support among industry representatives and policymakers presents the **5th India Coal Summit on 3 July 2013 at New Delhi**. **PricewaterhouseCoopers Pvt Ltd is the knowledge partner of this initiative**. This platform will bring together various stakeholders to discuss, share and evolve suitable strategies and development models.



Rajiv Mundhra
President
Indian Chamber of Commerce

The strategic importance of coal



Coal is India's largest commercial source of primary energy. Policymakers and planners expect coal to continue to dominate as the mainstream energy source for the next several years. Further, coal has the largest domestic reserve base, in terms of equivalent energy, and the longest resource life compared with other major fuel choices of oil, natural gas, and uranium.

The power sector is the main buyer of coal and accounts for about 74% of all production in the country. It connects over 166 lakh households while continually increasing coverage under various rural electrification programmes. Other key buyers are the metallurgical (6.9%) and cement (2.5%) sectors, which contribute to infrastructure development.

Given this importance of coal to sustained growth, it is essential to ensure its continued supply to consumers at an affordable cost. This appears to have become increasingly difficult as India is observed to import coal at an annual growth rate of 22% in order to meet its domestic needs.

Position of coal in the primary fuel mix

The growing dependence on overseas sources magnifies the risk to domestic consumers as several external factors such as changes in laws and taxation in exporting countries, global spot price movements, and foreign currency exchange rate variations have an impact. A number of recent events underline this issue. The Indonesian coal benchmark price regulation adversely affected Indian power companies offering stable electricity tariffs by investing in and controlling upstream coal mining activities. The Australian Mineral Resource Rent Tax (MRRT) levied additional taxes intended, inter alia, in order to raise new resources for the government. These actions spurred other resource exporting countries to follow suit. Normal market forces were at play too. The sudden growth in demand from emerging economies meant capital investment to develop new mines, which in turn stressed the supply-chain, increasing operating costs and forcing companies to maintain higher inventories of spares.

All these factors led to a rise in coal prices substantially over the last decade. The growing dependency on imports and rising prices negatively impacts the country's trade balance, the current account deficit (CAD), consequently impacting the value of the home currency, as clearly visible with the falling rupee. The need for supply security, in this context, hardly needs be stressed.

Primary fuel sources

The alternatives to coal (cost analysis) are limited. India relies on imports to meet its fuel demand, to a much higher degree post the volatility in fuel prices. Even in absolute terms of cost per unit of energy (USD per million BTU), coal is more affordable than other fuel sources by a wide margin. With the projected shortages and consequent increase in imports, global prices for internationally traded coal are likely to rise and as imported coal costs, on an average, 15 to 50% over Indian domestic coal prices; the net impact of fuel inflation will be significant and unavoidable.

It is unavoidable if the status quo in terms of policy and industry structure continues. India can, however, take bold steps to improve local energy security by reforming the coal sector. Private participation is an important element of this reform.

Presently, commercial mining is undertaken by state-owned companies while private sector ownership in coal mining is limited to captive use. However, in many ways, the private sector already has a big presence in the development and operation of coal mines; through contract mining, technical services, beneficiation, etc. The government needs to consider taking the next step to broaden private sector participation as a valid industry participant.

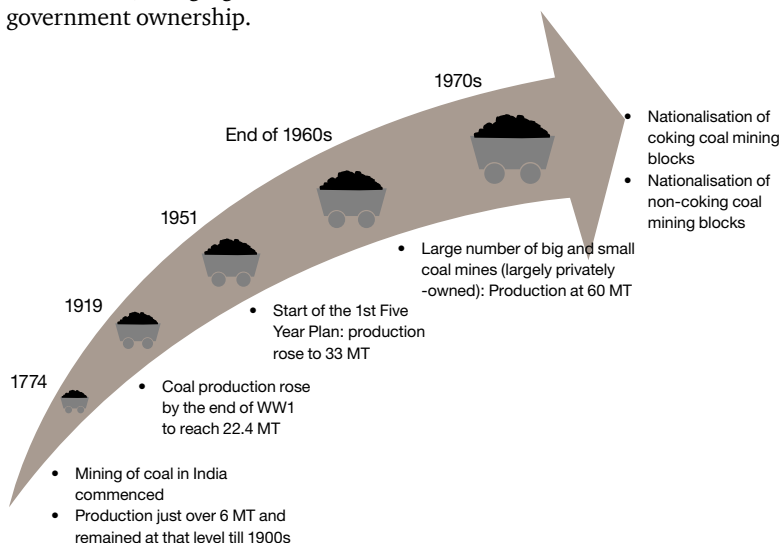
Primary fuel sources

	India's imports as percentage of consumption	Global prices: 2012 (million BTU, USD)	Percentage price increase over last five years	Percentage price increase over last 10 years
Oil	81%	19.63 (Dubai)	60%	359%
LNG	22%	16.75 (Japan CIF)	117%	292%
Thermal coal	8%	3.49 (North-west Europe marker price)	4%	192%

Source: BP Statistical Review of World Energy 2013; Ministry of Petroleum and Natural Gas

Evolution of the coal industry

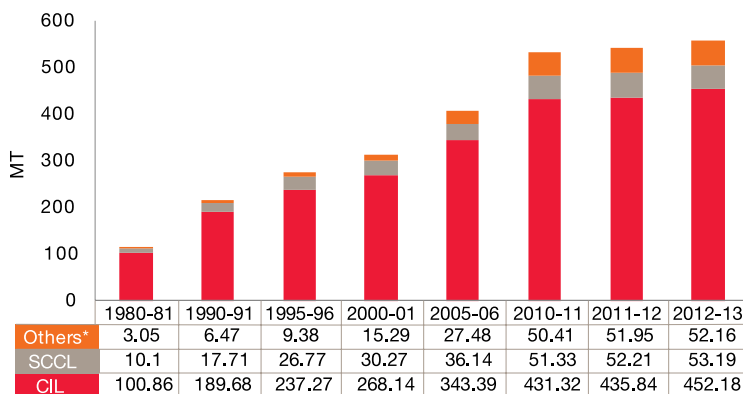
The coal mining industry has a long history, and for most part of it, it has comprised of small and scattered mines, largely with private players. In 1973, the Coal Mines (Nationalisation) Act was enacted and the coal sector, with the exception of a few mines belonging to the Tata Iron and Steel Company (now Tata Steel Ltd), DVC and IISCO, was nationalised, bringing them under government ownership.



The coal industry, after the 1973 Act, was reorganised into two large public sector companies, Coal India Limited (CIL) which owned and managed all previously government-owned mines of the National Coal Development Corporation and the nationalised private mines, and the Singareni Colliery Company Limited (SCCL) which was owned and managed by the government of Andhra Pradesh.

The 1973 Act, amended in 1976, terminated mining leases of private companies in all coal-bearing regions with the exception of allowing captive mining by private companies involved in the production of iron and steel. In 1993, the Act was further amended to allow captive coal mining by the private sector for power generation, washing of coal, and such other end-uses to be notified by the central government from time to time.

India: Coal production over the years



Others*: Others include Tata Steel (earlier) TISCO, IISCO, DVC, private, captive mines
Source: Ministry of Coal, CIL, SCCL

The coal industry grew strongly after nationalisation, and between 1980 and 2010, the state-owned coal companies led to a four-fold increase in production. In recent years, however, production growth slowed down forcing discussion on structural changes to boost production and productivity. As this coincided with a demand upswing, deficits have hurt harder than otherwise. This spurred the government to take steps towards deregulation for enhancing production.

More recently, the MMDR Act, 1957 was amended to permit auctioning coal blocks through competitive bidding. Fourteen blocks for power and three for mining have been put up for auction recently under the

government dispensation route and allocation of these under competitive bidding is soon to be completed. Further, the government has proposed to offer seven open cast mines of about 25 million tonnes capacity to mine developer-cum-operators (MDOs) by this year-end in order to increase coal production for various end-uses.

The government also proposed to amend the Coal Mines (Nationalisation) Act, 1973 to allow Indian companies, either public or private sector to undertake coal mining without the restriction of captive use. However, the Coal Mines (Nationalisation) Amendment Bill, 2000 did not progress, and instead a slow and gradual process of private sector involvement over the years was witnessed.

Global trends in the mining industry

The policy, organisation, and industry structure of the mining sector has seen dramatic changes in recent years as it sought to take advantage of a globalising world economy by investing, growing in scale and reaching new buyers and partners. Governments enacted a wide range of measures, for improving sustainability and safety, attracting investments and improving trade balances.

The natural resources of a country are considered national assets and the benefits generated from it need to positively benefit citizens. For this to happen, however, the resources must be successfully explored, mines need to be developed, and the output has to be competitively produced. It requires expertise of modern exploration technologies, high capacity equipment, mining methods and planning skills that can develop an efficient plan and successful execution.

Private participation and foreign investment are thus central for the efficient development of the industry, creating a climate of positive wealth for the nation.

A number of countries have taken steps to reform and open their mining industry to private and overseas investments. The actions are not as much to privatise the existing industry, but to significantly promote the green-field activity by attracting new talent and investments. As a result, we see new private companies grow along with state-owned companies. In fact, in many jurisdictions we see joint venture arrangements between public and private sector companies where the combined forces of state support and upside in mine development, (either in the form of equity share or production share) are beneficial to both players.

In case of resource exporting countries, taxation in the form of royalty and income tax is another important aspect of monetising resources. This can backfire too, as extracting higher rents will cause buyers and investor to withdraw, and countries with export-oriented mining industries tend to have policies that attract new investments and extract higher rents.

Coal exporting countries and production

Country	Coal production (MT)	Thermal coal exports (MT)	Thermal coal exports as percentage of production	Total coal exports (MT)	Total coal exports as a percentage of production
Indonesia	386	315	82%	338	88%
Australia	431	159	37%	303	70%
Russia	355	108	31%	120	34%
USA	922	42	5%	107	12%
Columbia	89	80	90%	81	91%
South Africa	260	75	29%	78	30%
Canada	67	5	8%	33	49%

Source: AME, BP Statistical Review of World Energy - 2013



South Africa

South Africa has the world's fifth largest mining sector, with total reserves valued at 2.5 trillion USD. Mining is a key industry accounting for 5% of its GDP, and key minerals mined are gold, platinum, diamond, uranium, chromium, manganese, iron ore, copper and coal.

A key challenge for the country was to improve the social and economic equality within. In the mining sector, the Minerals and Petroleum Resources Development Act of 2002 inter alia, aimed to facilitate this. Foreign ownership of mineral assets is subject to the requirement of at least 26% equity

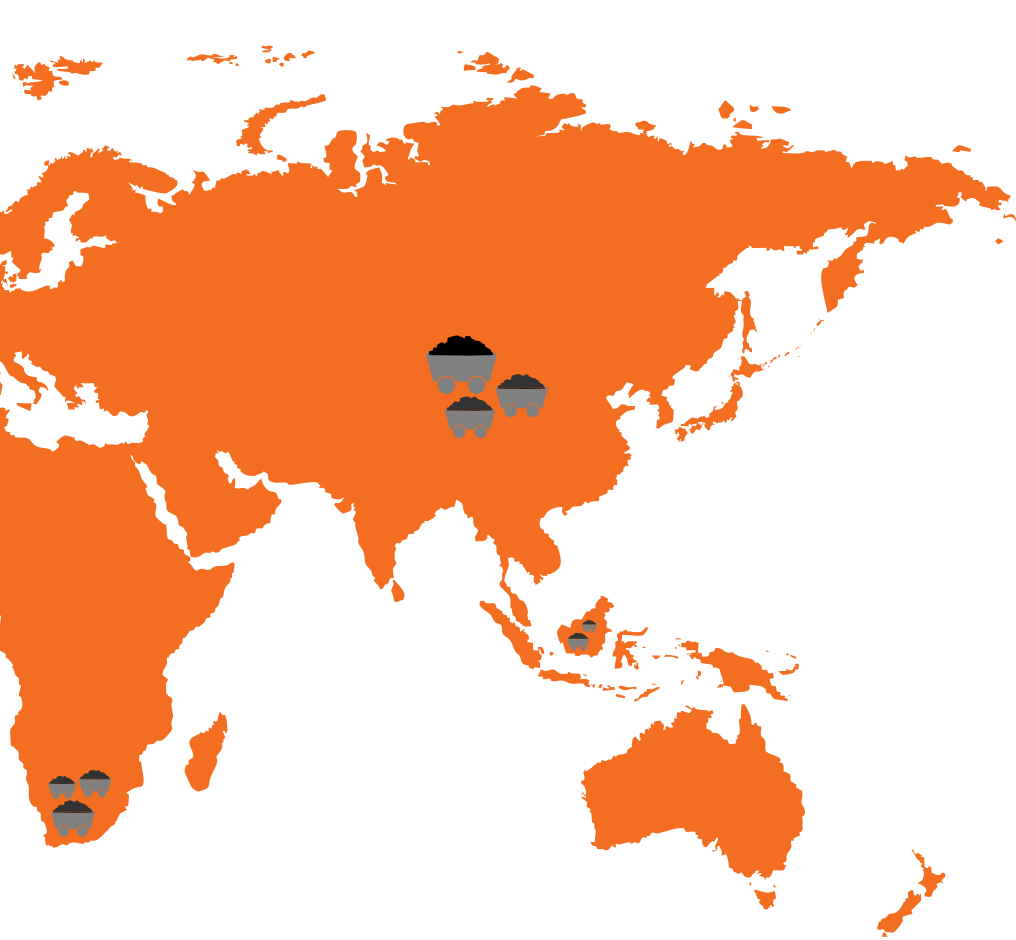
being transferred to the specified local population. An offset is available against the value of beneficiation up to a limit of 11%.

Indonesia

Indonesia is one of the world's largest exporters of thermal coal, besides producing copper, gold, tin and nickel. Its mining industry accounts for 5% of GDP, and is also a large consumer given the sizeable population. In recent years, it enacted a number of measures on licensing, ownership, domestic market obligation, transfer pricing, etc.

Indonesia enacted a new mining law in 2009. A key step was to overhaul its licensing system, replacing the CoW, CCoW system for foreign investors and the KP permit system with three categories of mining licences. Further, the licences are issued for two phases of the mining lifecycle, an exploration IUP and on commercial discovery and entering into production or operation, a production IUP.

The Law on Mineral and Coal Mining No 4 of 2009 requires foreign shareholders to divest in a phased manner to local entities such as the central government,



provincial government or regional or municipal government, a state-owned company or a national private business entity. The phasing starts from 20% ownership to be divested after six years of production, to 51% divestment after 10 years of production.

The legislation also provides a framework for domestic market obligation (DMO) to meet growing local demand, especially for coal. It gives the central government authority to control production and export of mining products, and regional governments must comply with such export controls.

Tax incentives broadly comprise a 30% investment credit, accelerated depreciation, reduced withholding taxes on dividends; and an increased loss carry-forward period from five years to a maximum of 10 years.

Mongolia

The mining sector is important to Mongolia's economy, accounting for 30% of its GDP. The major minerals produced are coal, copper, gold, rare earths, molybdenum, iron ore and uranium.

The legal framework for the mining sector is in evolution. It permits 100% FDI but imposes controls in minerals of strategic importance i.e, those which have potential to produce over 5% of annual GDP. For such minerals, it takes ownership position of 50% (where it has conducted exploration) or 34% (where reserves determination was not through state support. The actual proportion is as per agreement and determined the conditions and level of investment.

The country is a signatory to the Seoul Convention on Investment



Insurance (1985, joined 1999) and is a member of the Multilateral Investment Guarantee Agency (MIGA) since 1999. It has bilateral agreements with several countries for investment protection avoidance of double taxation, including India.

A foreign investor can apply for a stability agreement, providing stable tax conditions for a given term. An investment of up to 50 million USD (in the first five years of the project) provides stability for a 10-year term, and a 300 million USD investment provide stability for a 30-year term. To support new development, exploration costs are allowed to be capitalised and amortised on a

straight line basis over the first five years of production, and the cost of licence acquisition amortised over the life of the licence.

Russia

Russia is the world's sixth largest coal producer with an output of 355 million tonnes. Post its transition from the Soviet era, it undertook a restructuring and privatisation programme, and now over 75% of coal production comes from private producers.

Foreign investment is generally allowed, but investors acquiring control of over 25% in strategic minerals (uranium, diamonds,

nickel, cobalt, etc) must obtain prior approval. In coal mining, the extent of foreign participation remains low, with FDI representing just 2% of total investments (2010).

Brazil

Brazil is one of the world's mining giants and its mineral output represents 4% of its GDP. Its major mineral exports are iron ore, niobium, copper and gold. The industry is composed of largely domestic private companies, though many have foreign shareholders. The law requires mining companies involved in exploration to take authorisation or concession from the federal government.



Brazil does not offer any special tax benefits or tax holidays to mining companies. But they may use general tax incentives available for investors in poorer states such as in the northeast region (SUDENE) or the Amazon area (SUDAM). Companies incorporated there in priority activities can secure lower income taxes of up to 75%.

Canada

Canada is a leading producer of a wide range of minerals such as metallurgical coal, potash, gold, iron, steel, lead, nickel, aluminum, copper, uranium and zinc.

The country continues to attract green-field investment through a variety of measures. An investment tax credit (ITC) of 10% is offered for the exploration and mine development for select minerals. Companies can also avail ITC for other activities (such as for qualified research, exploration of new minerals), for investment in special regions and provinces, and for mode of investment (individuals investing in flow-through shares).

Australia

Australia is a leading global producer of several key minerals, and of mining technologies and services. The mining sector is

among its oldest industries and accounts for 10% of its GDP. The major minerals are iron ore, metallurgical and thermal coal, aluminium, copper, gold, nickel and uranium.

Given its federal nature, mining activities are largely regulated by the six states which have their own laws.

The national government introduced the MRRT, applicable to coal and iron ore projects, besides the familiar pay-outs such as of royalties and income tax. The MRRT is a form of economic rent on profits from mining activity i.e., before they undergo any significant value-addition.

Taxation and royalties

The mining industry bears a significant tax burden in the form of royalties and cess, income taxes, super-profit levies, and production sharing or free-equity provisions in mining concessions. Governments use these avenues for monetising natural resources for public benefit, and create a scope for policy direction through tax exemptions. In a federal structure, the royalty regime is a key tool in control and benefit-sharing between the federal and state governments.

Most mining jurisdictions have now moved royalties from a flat royalty to ad-valorem i.e., based on the sale value. In some countries, royalties are based on actual profit, such as in South Africa which uses the company's earnings before interest and tax as a base, with provision of increased tax rates for higher profitability.

Taxation and royalty rates for coal

Country	Coal royalty rate																
Australia	Queensland	<p>Average price per tonne for period (AUD)</p> <table border="1"> <thead> <tr> <th>0-100</th> <th>100-150</th> <th>>150</th> </tr> </thead> <tbody> <tr> <td>for first 100 AUD</td> <td>7%</td> <td>7%</td> </tr> <tr> <td>for next 50 AUD</td> <td></td> <td>12.5%</td> </tr> <tr> <td>for balance</td> <td></td> <td>12.5%</td> </tr> <tr> <td></td> <td></td> <td>15%</td> </tr> </tbody> </table>	0-100	100-150	>150	for first 100 AUD	7%	7%	for next 50 AUD		12.5%	for balance		12.5%			15%
	0-100	100-150	>150														
	for first 100 AUD	7%	7%														
	for next 50 AUD		12.5%														
for balance		12.5%															
		15%															
Western Australia	<ul style="list-style-type: none"> One AUD per ton, to be adjusted each year on 30 June in accordance with the percentage increase in the average ex-mine value of Collie coal for the year ending on that date when compared with the corresponding value of Collie coal for the year ending on 30 June 1981 Exported: 7.5% 																
South Australia	<ul style="list-style-type: none"> 5% of the value of the mineral 																
New South Wales	<ul style="list-style-type: none"> 8.2% of value of open cut coal 7.2% of value of underground coal 6.2% of value of deep underground coal 																
India	<ul style="list-style-type: none"> 14% ad-valorem on price of coal (except West Bengal) 																
Indonesia	<ul style="list-style-type: none"> 13.5% ad-valorem 																
USA	<ul style="list-style-type: none"> Federal coal surface mining: 12.5% of gross value of coal produced underground mining: 8% of gross value of coal produced 																
South Africa	<ul style="list-style-type: none"> 0.5-7% 																
Ghana	<ul style="list-style-type: none"> 5% 																
Columbia	<ul style="list-style-type: none"> 10% (exploitation > 3 MTPA) 5% (exploitation < 3 MTPA) Based on the value of production at the mouth or border of the mine (total sales less transportation and other costs associated with marketing) 																

Source: PwC Taxation and Royalty Guide, government data

The scope for private participation



The growth in the coal sector has so far been led by state-owned companies. The change in industry structure has been driven by a number of factors, such as the need to meet increased demand, bring in new technologies and modern mining methods to improve productivity and sustainability of operations, financing new development, and to bring corporate capabilities to exploration and operations. Competition from new players and the profit incentive will help spur better performance and lower costs.

Private participation currently exists in a number of different forms, such as services from contract mining to MDO, allocation and development of captive coal blocks and joint ventures for exploration.

Captive coal blocks

Captive mining for the private sector was first permitted in 1976 for the steel sector, extended to the power sector and coal washing in 1993, and further extended to the cement sector in 1996. Of the total 218 coal blocks allocated, 106 coal blocks were allotted to private companies across these sectors.

The allocation of coal blocks was based, among others, on the end-use sector requirements, and the developers' technical capabilities and readiness in establishing end-use projects, to ensure that such projects are completed. Despite this, many projects did not progress and several coal blocks have since been de-allocated. The net allocation now stands at 176, with geological reserves of about 40 billion tonnes. Of this, the private sector involvement is 54% (21.5 billion tonnes). The allocation process itself has paused with only two coal blocks allotted in the period 2010 to 2013.

Coal block allocation by sector

Sector	Government companies	Private companies	UMPPs and tariff based bidding	Total number of coal blocks
Power	55	28	12	95
Commercial mining	41	-	-	41
Iron and steel	4	65	-	69
Cement	-	8	-	8
Small and isolated	-	3	-	3
CTL (coal to liquid)	-	2	-	2
Total	100	106	12	218

Source: Ministry of Coal

The guidelines require captive blocks to commence production within 36 months for open-cast mines and 48 months for underground mines from the date of issuing the letter of allocation. Further, an additional 24 months lead time is permitted for unexplored and regionally-explored captive blocks. Further, six months lead time is provided for forest clearance, although practical experience indicates that this has taken over four years on an average.

The delays in development of captive blocks are for many reasons, both, external (e.g. delays in consents and approvals at the local level and at various agencies, land acquisition, time needed for geological studies and mine planning) and internal (e.g. limited past experience of developers, project management capacity, coordination between multiple allottees) and but this initiative is at an early stage and can deliver better results as the impediments are addressed.

It is reported by the Coal Controller's Organisation (CCO) that of the allocated coal blocks, 30 have started production in 2012, and this comprises 14 blocks that were allotted to state-owned companies and 15 to the private sector. Production from the captive coal blocks was 37 million tonnes against the targeted 104 million tonnes for 2011-12.

Production from captive coal blocks

Production from captive coal blocks (Million tonnes)*	2007-08	2008-09	2009-10	2010-11	2011-12
Allotted to the public sector	13	19	21	20.5	20
Allotted to private companies	8	11	14	16.5	17
Total	21	30	35	37	37

Source: Coal Statistics 2011-12, CCO

Target achievement from Captive Coal Blocks: by Sector

Year	Target or achievement	Power		Iron and steel		Govt comm		Private comm and cements	
		No of Coal Blocks	Production (million tonnes)	No.Of coal blocks	Production (million tonnes)	No of Coal Blocks	Production (million tonnes)	No of Coal Blocks	Production (million tonnes)
2007-08	Target	13	13.90	4	8.05	1	0.20	2	0.33
	Achievement	7	12.83	5	8.01	1	0.08	2	0.33
2008-09	Target	20	22.53	14	11.21	3	1.65	3	0.33
	Achievement	14	21.25	8	8.39	1	0.14	2	0.24
2009-10	Target	30	24.90	37	19.04	6	2.85	2	0.30
	Achievement	14	25.74	9	9.17	2	0.30	1	0.25
2010-11	Target 1	33	35.80	41	31.20	8	5.70	2	0.30
	Target 2 (Re)	15	25.50	9	9.64	1	0.20	2	0.30
	Achievement	15	24.36	10	9.27	1	0.30	2	0.30
2011-12	Target 1	42	54.28	41	41.30	8	8.20	2	0.30
	Target 2 (Re)	18	27.30	16	10.35	2	0.30	2	0.30
	Achievement	15	25.82	11	9.83	1	0.22	2	0.30

Source: Provisional Coal Statistics, 2011-12, CCO Kolkata

Exploration

Significant steps have been taken towards coal exploration, with 90% of planned area covered under detailed exploration during the 11th Plan period, establishing 15 billion tonnes of new reserves.

A lot more remains to be achieved. The Working Group report indicates that 4226 sq km area (representing 23% of coal bearing area) is yet to be covered by regional exploration. Further, the drilling target for the 12th Plan is set at 63.6 lakh meters against 27.2 lakh meters achieved over the 11th Plan. This reflects the emphasis placed by the government on exploration, which is necessary to establish the reserves, minimise the development costs, and enable development of mines by multiple agencies including the private sector.

This is, however, dependent on the surge in exploration activity. As it stands, a sizeable gap exists between the current technical

support system and what is needed to achieve the 12th Plan targets. The gap may be bridged by strengthening existing agencies or outsourcing some of the roles to the private sector.

Besides planned exploration, it may be noted that 265 coal blocks (78 blocks belong to Coal India, and the balance 187 are for captive allocation) still need detailed exploration. Of these 265 coal blocks, 37 have been identified for undertaking exploration during the 12th Plan based on the results of the Regional and Detailed Exploration undertaken during the 11th Plan. Early actions on these blocks, as well as outsourcing the detailed exploration for remaining captive coal blocks will help improve the quality of geological information available and permit competitive auctions and private sector participation with lesser risks of failure, and permit better returns to the treasury.

Coal exploration: Plan and achievement

Targets achieved for coal exploration	Area coverage (Sq km)			Resources established (Bt)			Projected drilling (lakh Meter)			Projected drilling in the 12 th Plan (million meter)	
	Plan	Actual	% achieved	Plan	Actual	% achieved	Plan	Actual	% achieved		
Regional	758	998	132%	9.9	7.1	71%	1.9	1.1	59%	0.11	
Promotional	1717	1586	92%	20	20.1	100%	4	2.9	74%	0.8	
Detailed	CIL	409	717	175%	11.8	8.5	72%	5	11.3	226%	3.05
	SCCL	166	116	70%	1.8	0.5	28%	5.0	2.3	47%	0.49
	Others	1225	788	64%	23.7	5.8	24%	46.3	9.6	21%	1.90
Total		1800	1621	90%	37.3	14.8	40%	56.3	23.2	41%	5.45

Source: Provisional Coal Statistics, 2011-12, CCO Kolkata

Sourcing technology

The government and the relevant national agencies have signed technical collaboration agreements for acquiring new tools and technologies for exploration, mine modernisation and operation in specialised conditions, and improving ore recovery.

The collaborations already initiated are in specialised technologies such

as geo-physical exploration, deep shaft-sinking, coal bed methane, and steep seam mining. Recently, Coal India has invited proposals from international players for advisory services for modernising mines. The emphasis of coal mining companies on upgrading technology is a positive signal and will strengthen the long-term fundamentals.

International technical collaborations

	EU	South Africa	Germany	USA	Russia	Japan	Australia
Geophysical exploration and 3D Seismic survey	Y		Y				
CBM, CMM, AMM, VAM, UCG	Y	Y	Y	Y	Y		
Deep shaft for coal mines		Y	Y				
Mechanisation of UG mines	Y	Y					
Thick seam and steep seam mining	Y		Y				
Mining technology services							Y
Clean coal tech, and coal preparation			Y		Y	Y	
Training related to safety							Y

Source: Coal Statistics 2011-12, CCO



Coal washeries

Given the long distance over which coal is transported in India, and the relatively poor quality, use of coal washeries is desirable and mandatory for use beyond the 500 km mine site.

A number of companies have established washeries – about 11 private companies have set up 15 units with a capacity of 62 million tonnes per annum. Coal India has established 17 washeries under its subsidiaries, with a capacity of 17 million tonnes of coal per annum. The private sector has a dominant position in washery capacity and is an outcome of active policy push.

There is need to establish further coal beneficiation capacity as the present facilities cover barely one-sixth of the annual coal production (532 million tonne). Coal India has expressed interest in establishing 23 washeries with a total capacity of 123 million tonnes per annum.



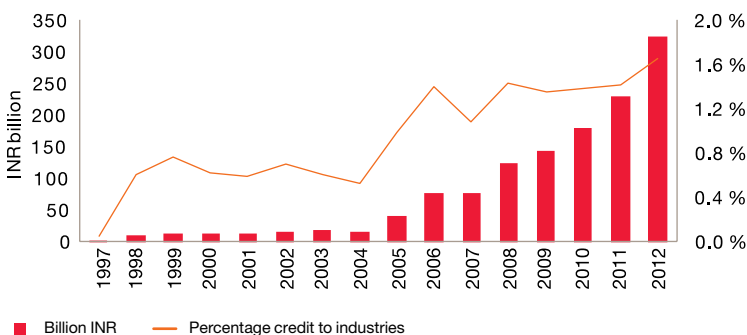
Contract mining

The recourse to contract mining has increased in the recent years, and it has also considerably evolved in scope. Historically, it was seen in outsourcing the overburden removal and logistics activities. In recent years, the model evolved to reflect a more detailed responsibility allocation and risk sharing mechanism that allowed outsourcing to companies the tasks they were better placed to manage and mitigate risks.

This outsourcing was also necessary as many end-user companies engaged in power generation or steel and cement making had no prior experience

in coal mining. This gave rise to the ‘mine developer cum operator (MDO) model’, an extended form of services contract with responsibilities for development activities such as securing consents and developing access, acquiring land, mine plan, and conservation, with specificities varying from case to case. MDO contracts awarded to date are estimated at 160 MTPA managing geological reserves of about 7.8 billion tonnes. It continues to offer a strong opportunity for private participation in mining, with upcoming tenders estimated at 75 MTPA with geological reserves of 2.9 billion tonnes.

Commercial bank lending to mining sector



Source: Reserve Bank of India

Securing financing

Mining is a capital intensive business, requiring a periodic renewal of major heavy earth moving equipments in order to maintain the level of output. The proposed outlay for the 12th Plan for state-owned coal companies is 343 billion INR which is supported by domestic allocation of 78.8 billion INR. This is undersized as (5.8%) compared with the scale of global investments in coal mining.

Globally, as per PwC analysis of the top 40 mining companies, mining companies spent 140 billion USD on capital projects (2012), of which the spend in coal sector was about 14%. The global mining companies took advantage of credit availability to leverage their balance sheets, adding 108 billion USD in debt financing.

In India, commercial bank lending to the mining sector has been modest with 325 billion INR in outstanding loans, which is 1.65% of gross bank credit to all industries.

FDI is allowed up to 100% for setting up power projects and coal mines for captive consumption. FDI in a company for setting up of coal processing plant is also allowed provided the company does not undertake coal mining, and does not sell washed or sized coal from the coal processing plant but sends it back to the respective parties from which sourced.

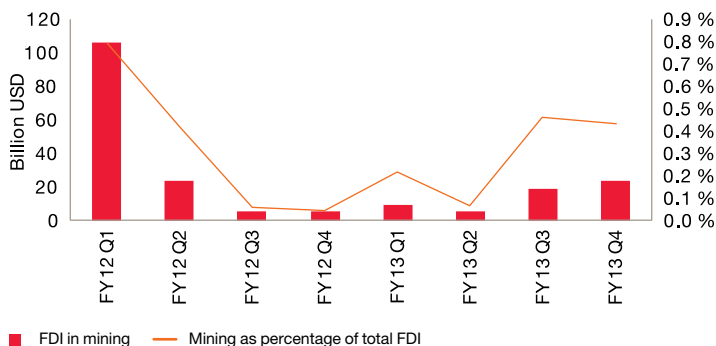
Similarly, companies engaged in exploration or mining of coal and lignite for captive use in steel or cement production are permitted 100% FDI.

India has seen limited FDI in mining sector given the state of the industry and slow pace of reform and private participation. Over the period 2000-2013 the FDI equity inflow into the mining sector has been barely 998 million USD (4636 crore INR), representing just 0.52% of the total FDI inflows into the country.

Common business models

The industry structure in coal mining is dominated by state-owned companies and integrated metals and mining companies that source resources for end-use. The new entrants, namely captive block owners, SMDCs, and merchant plants display a variety of business models.

FDI in mining in India



Source: Department of Industrial Policy and Promotion, Government of India

Self-mining model

This approach may be adopted by companies with large mining portfolios or expectations of building one, and seeking to develop in-house capacity to extract the best value from across the value-chain. Financing: The mine owner undertakes all mining activities in-house, or by use of rate contracts such as for overburden removal, drilling, blasting, development of raise in the mines, and transportation. The mine owner retains all rights and obligations to the block, financing all capital investments, and operations and maintenance.

- **Technology:** The mine owner acquires the capabilities and expertise to develop the mine, including hiring skilled staff or contracting operators, buying or leasing equipment, setting up workshops, etc.
- **Incentives:** The mine owner has full control of the asset and operations and so owns up all risks and rewards from the business.

Mine developer cum operator (MDO) model

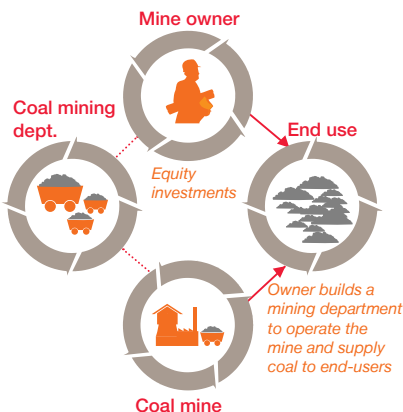
The MDO model, or contract mining, is popular in many countries and even established mining companies often use it. In India, mine owners rely on it to bring mining expertise they lack, or improve productivity, or simply finance the mine development.

- **Financing:** The MDO finances the mine start-up costs thus freeing up the mine owner to build end-use plant. As it relies on a service contract, this financing is risky and comes at a price.
- **Technology:** The contractor brings strong mine planning and operations expertise. It may leverage its own equipment or procure it in bulk, driving down costs.
- **Incentives:** A good MDO model, with proper allocation of risks and rewards, incentivises both parties to play their respective strengths to enhance value and profits.

The mine and end-use plants develop in parallel bringing the project to commence faster.

The MDO or contract mining model is seen in many countries, such as India, Australia, Indonesia, etc, resulting in the development of many specialised companies.. The Australian Mining Equipment and Technology Services (METS) sector is estimated to be worth over 50 billion USD with 160 members exporting goods and services to over 100 countries. It is not uncommon to see even global mining majors outsource their mine development or operations to contract mining companies, as it frees them from having to maintain expensive equipment, inventories, and trained staff in a industry that is cyclical and in a market that is subject to demand swings.

Self-mining model



MDO model



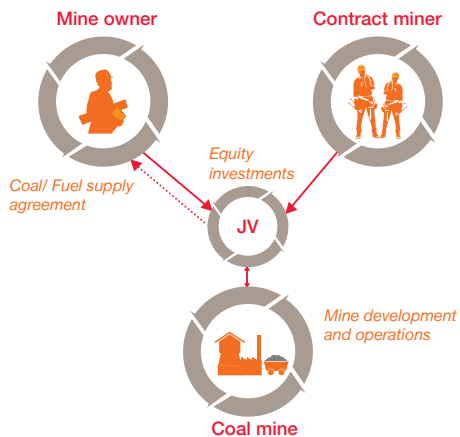
Joint venture (JV) model

An alternate to the MDO model, where development is contracted out, is formation of a joint venture with a specialised mining company. The mine owner forms a JV company with a mining partner to undertake the mine development and operations. While this offers the mine owner potentially better economics, it also burdens it with organisational matters such as creating the company, signing a shareholders' agreement setting out rights, roles and obligations, management and oversight responsibilities, etc. It becomes more complex if the two parties are from different countries.

- **Financing:** The capital investment for coal mine is by the JV company, in turn contributed by the partners as per the shareholders' agreement. In a variant, the end-use plant can also be included in the ambit of the JV company.
- **Technology:** The mining partner brings in the technical expertise, skills, and potentially equipment. The JV company designs and operates the mine, and supplies it to the designated end-use plant on agreed terms that offer it production incentives and subject it to performance guarantees.
- **Incentives:** Both the parties evenly benefit from the performance of the JV company, unless side agreements are drawn up, such as payment for technical services or for managing activities outside the company. The mine owner typically faces the licensing requirements and may have to maintain an oversight responsibility besides that of joint management. In short, the control and incentive structure is likely to be more complex.



JV model





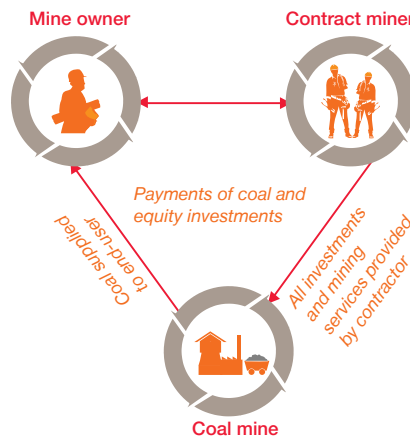
Public private partnership (PPP) model

The government has proposed a PPP model in the recent budget, to enhance coal production. The model is expected to be wider in scope than the prevalent MDÖ models, with the private sector potentially taking on greater development roles, be able to raise project finance, and operate for a longer term. The details are yet to emerge, but we can see an arrangement where the private partner will be the mine owner in all aspects, but for any ownership rights on the asset or the produce. It may adopt a DBFOT (design, build, finance, operate and transfer) model, and the extended roles imposed on it may include tasks such as preparing the environmental management plan (EMP) undertaking progressive mine closure and reclamation of affected land.

The contours of the PPP model are yet to be seen, but the following is a likely option:

- **Financing:** The mine development start-up costs will be borne by the private partner. The public buyer may pay this through contracted per tonne charge. For challenging mines, the payment may be divided into two parts, with the development costs repaid as a lump sum on annual basis subject to plant availability.
- **Technology:** The private partner undertakes planning, development, and operation of the coal mine in a manner that it delivers contracted output in terms of quantity, quality, location, and timing.
- **Incentives:** The PPP contract terms can be designed in several ways so that the private partner is compensated for non-controllable costs, but suffers (or gains) from variation in controllable parameters against the set benchmarks.

PPP model



A number of countries that are deregulating their mining sector, such as Myanmar, Philippines, Ghana, are adopting the PPP model. In mature mining countries too, a wide range of PPP models exist besides the fully privatized operations.

Comparison of various models for private participation

Self mining	JV	MDO	PPP
<ul style="list-style-type: none"> • Full control over mining operation • Tax efficient • Cost savings are to the benefit of the owner 	<ul style="list-style-type: none"> • Leverages the coal mining partner's skills, capabilities, and capital for investment • Has some control over mining operations via its equity stake 	<ul style="list-style-type: none"> • Benefits from the coal contractor technical, financial, and people capabilities releasing it to focus on other areas • Control over mining operations can be tailored to suit its expectation • Flexibility to change mining contractors over time 	<ul style="list-style-type: none"> • Benefits from private partner's capabilities, and can bring capital at a lower cost • Risks of mining operations is borne by the private player, who retains some control on mining operations • Performance based pay drives efficiency and productivity
<ul style="list-style-type: none"> • Must fund all capital, people, and learning costs and implement the project on own • Faces 100% of the risk as the sole owner • Limited flexibility in even of technology or market changes 	<ul style="list-style-type: none"> • Limited flexibility to change coal mining partner over time as the mine develops • Possibility of conflict of interest between the JV partners within the company or outside 	<ul style="list-style-type: none"> • Scope for insufficient control over mining operations • Financing can be relatively costlier 	<ul style="list-style-type: none"> • Private players bring larger investment but may lack equal upside • Government retains major control through both contractual and regulatory means

The road ahead

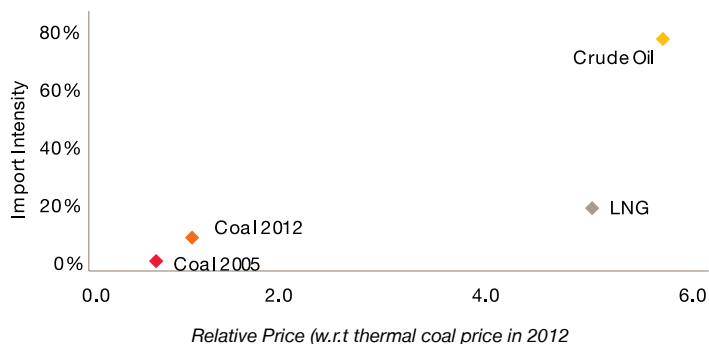


The strategic rationale

As discussed in earlier sections, coal is relatively cheaper in relation to other primary commercial energy sources, but has seen its prices increase significantly over the last decade. At the same time, local shortages have caused greater reliance on imports. The resulting impact can be seen in the graph alongside, showing higher import intensity and higher relative prices of coal.

The deterioration appears very small, but is misleading (see Graph) . If the actual prices (and not relative) is taken, and economic growth picks up, resulting in higher demand locally and higher prices globally, we will see a stronger deterioration on import intensity and prices. This situation can be avoided if local coal production can be increased without slipping on the cost advantage it has over imported coal.

Import intensity vs Relative price



Source: BP Statistical Review of World Energy 2013; Ministry of Petroleum and Natural Gas

Enhancing coal production

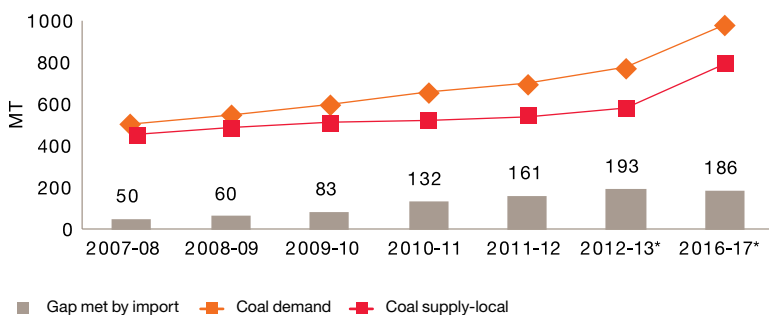
The forecasts of demand and supply of coal over the next five years suggest India experiencing significant and persistent shortages. The reality is more complex with demand softening due to slowdown in economic growth and infrastructure activity, and utilities purchasing less on account of poor financial position. The supply too, is impacted by slow progress on captive coal block development. In any situation, there is a general consensus that India will face higher coal shortages in the coming years and that it will be met by imports.

The challenge is that the forecast deficits are quite sizable vis-à-vis the global sea-borne trade in steam coal (about 25% in 2017) and such large quantity of import will significantly push up spot prices, and thus the delivered cost.

Given the slow pace of development of nuclear plants and with natural gas suffering shortages and high prices, there are few options than to enhance local coal production. The domestic coal sector, as discussed earlier, faces many impediments in increasing output, which need to be resolved. The sector needs further deregulation to attract private players in a more serious manner to bridge the existing deficit.

The outlook, indicating coal will remain the dominant primary energy source perhaps even rising in share, and the supply side limitations suggest that India needs both, a strong national champion and a more robust private sector participation in the mining sector.

Demand supply gap



Source: Annual reports, Ministry of Coal

*Projected figures

Modernisation and productivity improvement

The challenge is not that of increasing production alone, but doing it in an efficient manner to keep costs in control, and ensure that sustainability and safety of the mines is not compromised.

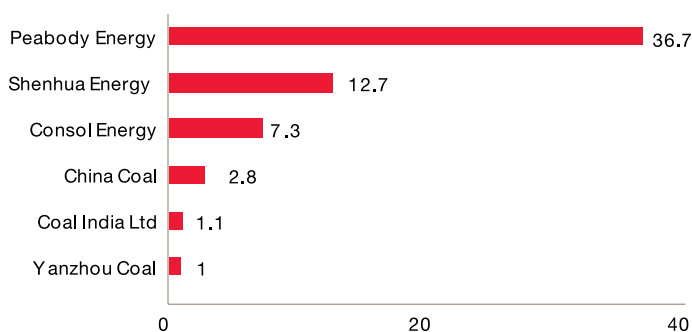
The Indian coal industry in fact has significant scope for modernisation and productivity improvement, which should improve performances on recovery rate and operating costs.

This can be achieved by attracting international and domestic companies to invest in the mining sector, and providing a framework for recovery of such efforts and investments. The investments can be in modern mining methods, higher rated equipment, better conservation and recovery methods, competitive financing, and in information technology and project management.

The accompanying graph shows a comparative analysis of productivity of coal companies, where India fares low despite having a higher proportion of open-cast mines.

To be fair, there has been an improvement in the scale of projects and rating of equipment used, over the years. CIL is pursuing the Magadh project (Central Collieries Ltd) with capacity of 20 MTPA and is considering the Kusmunda project (South Eastern Coalfields Ltd) with capacity of 50 MTPA. Global mining companies can bring further expertise, tools and equipment, and practices which can help augment India's coal production in a cost-effective manner.

Productivity of coal companies (thousand tonne per employee)



Source: CIL, PwC analysis

Further reform and deregulation

The present industry structure is hemmed in by a number of regulations and the legislative framework is very restrictive for proper development of the coal sector. There is a serious need to reform and deregulate the coal sector. The challenges and options can be presented in a consultative paper for broader discussion and securing broader consent.

The licensing process needs to be improved to attract technically and financially strong players in the global coal mining industry. The mine owners should be able to directly monetise the upside of their performance by allowing a certain proportion as free trade (in the manner of e-auction run by CIL today) in the domestic market. The price pressure of this will be minimal as the larger output remains either regulated (as per principles that the regulator may specify) or discovered in a competitive auction. These reforms will need legislative amendments to permit direct ownership and third-party trading within the country.

Incentivising exploration activities

The Geological Survey of India estimates that our total coal reserves and resources are about 293 billion tonnes. Of this, about 40% (or 118 billion tonnes) is under the proved category, leaving 175 billion tonnes as indicated and inferred resource category.

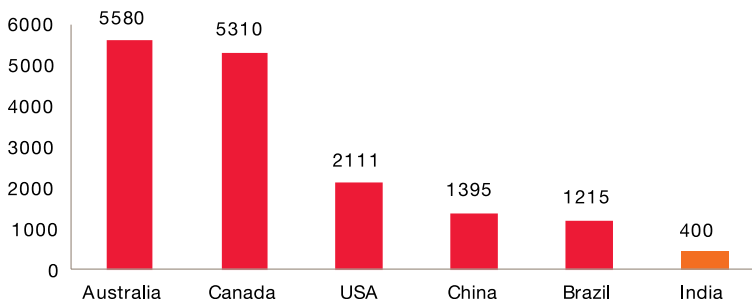
Reconnaissance and exploration is a specialised activity, India's spend on it is the lowest among the major mining economies as seen in graph below. Further, our exploration efforts are largely limited to the depth of 50 to 100 meters as against say 300 meters in Australia.

In fact, a number of countries are actively offering incentives for scientific exploration. For example, Chile incentivises exploration by relaxing criteria for unified exploration and mining rights. Canada offers mining companies tax credit for qualified exploration expense they have incurred. These tax credits recover themselves very easily as exploration boosts new growth and production, bringing in royalty and tax payments.

Conclusion

The role of coal mining has to be reassessed, and given a greater prominence, in light of the higher costs and diminishing security of other primary fuels. Coal reserves have a finite life, and so the mine planning, operation, and beneficiation should be in an efficient and sustainable manner. This needs investments in technology and modernisation of the existing strategies and frameworks. There is a strong case to enhance private participation and foreign investment in coal mining to support new exploration activity, improve productivity and recovery of mines, and ensure their sustainable development.

Absolute investment in exploration (INR per Sq km)



Source: Strategy Paper for the Ministry of Mines, November 2011

Asia School of Mine

We are delighted to announce PwC's Asia School of Mines 2013, an event that will provide mining executives and stakeholders a dynamic platform for discussing the latest developments in the industry.



Against the global economic challenges, it is worth recognising the shift in mining industry in Asia; for the first time ever, half of the top 40 miners are from emerging countries including countries from Asia. Growth opportunities abound for those savvy enough to make the most of present market conditions. According to the 2012 estimates, the Asian mining companies have lesser debt, have substantial cash reserves, and contributed significantly to the capital expenditure globally. Initiatives relating to performance improvement in the mining chain and processes are fast emerging as an industry focal point. How well they use this position to meet their growing commodity needs is the next big question.

The dynamic state of the industry presents countless opportunities for mining companies to grow. However a host of challenges for management and execution are also peculiar to the region.

The Asia School of Mines presents an opportunity to learn of the latest developments in the mining industry while connecting with mining executives and PwC specialists from around the globe. We would like to invite you for participating in the PwC's Asia School of Mines 2013 on 5 and 6 December 2013. We hope to have concrete discussions on a few issues outlined below:

- *Enhancing resource security*
- *Mining deals*
- *Contract mining*
- *Financing projects*
- *Reporting and taxation*

So whatever your experience and interests, tailor the programme to suit your goals. We look forward to your active participation.

Event details

Date: 5-6 December 2013

Place: Delhi, India

Enquiries

Piyush Kumar Bharti

Tel: +91 96424 10222

Email: piyush.bharti@in.pwc.com

Pukhraj Sethiya

Tel: +91 99896 00236

Email: pukhraj.sethiya@in.pwc.com

Dilip Kumar Jena

Tel: +91 98660 19865

Email: dilipkumar.jena@in.pwc.com

Notes

About ICC

Founded in 1925, Indian Chamber of Commerce (ICC) is the leading and only National Chamber of Commerce operating from Kolkata, and one of the most pro-active and forward-looking chambers in the country today. Its membership spans some of the most prominent and major industrial groups in India. ICC is the founder member of FICCI, the apex body of business and industry in India. ICC's forte is its ability to anticipate the needs of the future, respond to challenges, and prepare the stakeholders in the economy to benefit from these changes and opportunities. Set up by a group of pioneering industrialists led by G D Birla, the Indian Chamber of Commerce was closely associated with the Indian Freedom Movement, as the first organised voice of indigenous Indian Industry. Several of the distinguished industry leaders in India, such as B M Birla, Sir Ardeshir Dalal, Sir Badridas Goenka, S P Jain, Lala Karam Chand Thapar, Russi Mody, Ashok Jain, Sanjiv Goenka, have led the ICC as its President. Currently, Rajiv Mundhra is leading the Chamber as its President.

ICC is the only Chamber from India to win the first prize in World Chambers Competition in Quebec, Canada.

ICC's North-East Initiative has gained a new momentum and dynamism over the last few years, and the Chamber has been hugely successful in spreading awareness about the great economic potential of the North-East at national and international levels. Trade and investment shows on north-east in countries like Singapore, Thailand and Vietnam have created new vistas of economic co-operation between the North-East of India and South-East Asia. ICC has a special focus upon India's trade and commerce relations with South and South-East Asian nations, in sync with India's 'Look East' Policy, and has played a key role in building synergies between India and her Asian neighbours like Singapore, Indonesia, Bangladesh, and Bhutan through trade and business delegation exchanges, and large investment summits.

ICC also has a strong focus on economic research and policy issues. It regularly undertakes macro-economic surveys, studies, prepares state investment climate reports and sector reports, provides necessary policy inputs and budget recommendations to governments at state and central levels.

The Indian Chamber of Commerce headquartered in Kolkata, over the last few years has truly emerged as a national Chamber of repute, with full-fledged offices in New Delhi, Guwahati, Bhubaneshwar and Patna functioning efficiently, and building meaningful synergies among Industry and Government by addressing strategic issues of national significance.

Contacts

Indian Chamber of Commerce, Head Office

Dr Rajeev Singh
Director General-ICC, 4 India Exchange
Place, Kolkata 700 001
Tel: 033 22303242
Fax: 033 2231 3380, 3377
Email: ceo@indianchamber.net
Website: www.indianchamber.net

Indian Chamber of Commerce, New Delhi Office

D-118, 1st Floor, Aashirwad Complex,
Green Park Main, New Delhi 110016
Tel: 011 4610 1431 38 , 4610 1439
Fax: 011 4610 1440, 1441
Email: energy@indianchamber.net
Website: www.indianchamber.net

Indian Chamber of Commerce, Bhubaneswar Office

32-East Ashok Nagar, Bhubaneswar, Orissa
Tel: 91 674 2532744
Email: rd.orissa@indianchamber.net
Website: www.indianchamber.net

Indian Chamber of Commerce, Guwahati Office

House No. 209, 2nd Floor Opp Overtnite
Express, Near AIDC
R G Barua Road, Guwahati 24
Tel: 0361 2460216, 2464767
Fax: 0361 2461763
Email: iccner@indianchamber.net
Website: www.indianchamber.net

Indian Chamber of Commerce, Bihar Office

11/B, Dumri House, Kavi Raman Path,
East Boring Road, Patna - 800001, Bihar
Tel: 0612 6500357
Fax: 0612 2533636
Email: rd.patna@indianchamber.net
Website: www.indianchamber.net

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Contacts

Kameswara Rao

Executive Director and Leader, Energy,
Utilities and Mining
Tel: +91 40 6624 6688
Email: kameswara.rao@in.pwc.com

Sambitosh Mohapatra

Executive Director
Tel: +91 124 3306515
Email: sambitosh.mohapatra@in.pwc.com

Yogesh Daruka

Director
Tel: +91 33 4404 4191
Email: yogesh.daruka@in.pwc.com

Pukhraj Sethiya

Manager (Mining)
Mobile: +91 9989600236
Email: pukhraj.sethiya@in.pwc.com

Key contributors

Pukhraj Sethiya
Piyush Bharti
Dilip Kumar Jena
Bhavesh Singhavi
Umesh Vadhva
Supreet Srinivas
Pallav Bagla
Abhishek Kakar

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AK 26 - June 2013 Coal mining: Is private participation the answer?.indd
Designed by: PwC Brand and Communications, India