# Coal mining industry at the crossroads: Towards a Coal policy for liberalising India[1]

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## Abstract

This paper presents an analysis of the current status of the Indian coal sector, which is poised for major changes with liberalisation and privatisation of the Indian economy, and critically analyses some policy issues. The state-owned Coal India Limited has been ailed by economic problems and has been responsible for causing serious social disruptions and environmental hazards in its areas of operation. The monopoly status that the public sector companies have enjoyed for over 3 decades has acted as a disincentive in improving the social and environmental performance of the industry, the major effort being put on improving the operational processes through the introduction of technology. The substantial liberalisation of the sector would need to prioritise not only a more integrated and investor-friendly regulatory environment but also take a close look at some old laws of colonial vintage, at issues relating to social equity and justice, and incorporate some of the international compliance standards being put forth by the international agencies. The paper also suggests that the government must develop and implement an integrated energy policy, of which coal is a part. Moreover, it must develop efficient coal markets and raise India's profile in the world coal markets, commensurate with India's status as the third-largest coal producer in the world.

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## The Context: At the Crossroads

The importance of coal for the Indian is underscored by the fact that India is relatively poorly endowed with alternative sources of fuel (with the exception of natural gas), and that several of these alternatives sources of energy are currently not viable for large scale implementation. This disproportionate dependence, combined with the international volatility of crude oil prices and supply, has traditionally meant that coal was seen as an essential part of the centralized 'Command and Control' of the economy since late 1960s. Coal accounts for around 55% of India's current commercial energy consumption, and is predicted to remain the king in the energy mix in India, with the Planning Commission of India recently stating that it will remain the most viable fuel for driving sustained economic growth over the next 25 years. Coal has been recognized as the most important fuel source for thermal power generation in India. About 75% of the total coal consumed in the country and some 80% of the domestic production is used for power generation, thereby making the power sector the single biggest consumer of coal in India. In addition, other industries like steel, cement, fertilizers, chemicals, paper and thousands of medium and small-scale industries are also dependent on coal for their process and energy requirements. 80% of India's total mining is in coal and the balance 20% is in various metals and other raw materials such as gold, copper, iron, lead, bauxite, zinc and uranium. Therefore any analysis of coal should include that of mining, and vice-versa. The industry reports a turnover of Rs. 340 billion, which is around 1.2% of GDP. India has hard coal reserves of around 246 billion tonnes, of which approximately 92 billion tonnes are proven reserves. Hard coal deposits are spread over 27 major coalfields, mainly in the eastern and south central parts of the country. The coal industry has a turnover of Rs 340 billion, which is around 1.2% of the GDP (ICRA 2006). The contribution to the government through various duties and taxes is over Rs.35 billion or 0.2% of GDP.

With coal reserves estimated at more than 250 bn tonnes, India should be self-sufficient in coal for the next hundred years. However, technological and capacity constraints restrict the full realization of this potential. The table below illustrates the contribution of coal to the primary energy needs of the country, compared with that of other energy sources.

**Table 1: Production of Primary Sources of Conventional Energy in India**

*Petajoules*

| | **1995** | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** |
|---|---|---|---|---|---|---|---|
| Coal & Lignite | 4,935 | 5,454 | 5,683 | 5,948 | 6,126 | 6,496 | 6,855 |
| Petroleum | 1,350 | 1,338 | 1,358 | 1,341 | 1,383 | 1,397 | 1,423 |
| Natural Gas | 750 | 1,096 | 1,135 | 1,145 | 1,209 | 1,231 | 1,224 |
| Electricity | 3,181 | 3,384 | 3,286 | 3,350 | 3,003 | 3,349 | 3,658 |
| Total | 10,216 | 11,272 | 11,462 | 11,784 | 11,721 | 12,473 | 13,160 |
| **Share of Coal in %** | **48.3** | **48.4** | **49.6** | **50.5** | **52.3** | **52.1** | **52.1** |

*Source: ICRA (2006)*

India has compelling reasons for ensuring energy security. The Planning Commission (2006, p. xxiv) elaborates upon the need for energy security by stating that:

> India's energy security, at its broadest level, is primarily about ensuring the continuous availability of commercial energy at competitive prices to support its economic growth and meet the lifeline energy needs of its households with safe, clean and convenient forms of energy even if that entails directed subsidies. Reducing energy requirements and increasing efficiency are two very important measures to increase energy security. However, it is also necessary to recognise that India's growing dependence on energy imports exposes its energy needs to external price shocks. Hence, domestic energy resources must be expanded. For India it is not a question of choosing among alternate domestic energy resources but exploiting all available domestic energy resources to the maximum as long as they are competitive.

Given that coal accounts for around 55% of India's current commercial energy consumption and about 75% of the total coal consumed in the country is used for power generation, it is inextricably linked to the goal of ensuring India's energy security. At the current levels of consumption, India's proved coal reserves can last for about 80 years. If the inferred reserves can also be proved, then the total coal reserves could last for 140 years, again assuming current levels of extraction and consumption. However, if domestic coal production continues to grow at 5% per year, the total (including proven, indicated and inferred) extractable coal reserves will run out in around 45 years.

## Industry reorganisation

Coal mining was brought under the public sector between 1971- 1973 with the passing of the Coal Mines (Nationalisation) Act, 1973. The Coal Mines Authority Ltd. (CMAL) was set up in 1973 to operate the nationalised non-coking coal mines. In September 1975, the nationalised coal industry was restructured with the establishment of Coal India Limited (CIL), a holding company with its headquarters at Calcutta. CIL has now eight subsidiary companies. Seven of the subsidiaries of CIL are coal producing companies directly engaged in raising and distribution of coal. The eight, Central Mine Planning and Design Institute Limited (CMPDIL), is solely engaged in mine planning and designing in the coal sector and is also rendering mining and engineering consultancy services. At present, with its monopolistic position, CIL accounts for 85% of coal production, followed by SCCL (8.5%), and captive producers (6.5%).

Although the Coal Mines (Nationalisation) Act, 1973 was amended in June 1993 to allow captive mining by the private sector for generation of power and for washing of coal obtained from a mine, and for any other end uses notified by Government, the private sector is expected to play a very limited role in the Indian Coal industry in the foreseeable future. In March 1996, the Government also allowed captive mining of coal for production of cement. The restriction of captive mining does not apply to the state-owned coal mineral development undertakings like CIL, SCCL, Neyveli Lignite Corporation (NLC) and Mineral Development Corporations of the State Governments. Commercial coal sales can legally only be done by and through the public sector coal companies (and their subsidiaries); coal produced from captive mines by the private sector cannot be sold on the open market.

Currently only about 45% of the potential coal bearing area in India has been covered by regional surveys, leaving over half the potential area for further exploration. There are significant opportunities to accelerate drilling, exploration, and mining activities in the sector, not only to improve upon the current assessment of coal resources, but also to augment the rate at which new reserves are added to the existing stock. Clearly, the public sector companies, with their current level of technological and financial resources, are ill-

equipped to ensure adequate supplies of coal to guarantee India's energy security. The private sector (including foreign players) is needed to step up and make a contribution towards this goal – they could help verify/improve CMPDI's reserve estimates, and also deploy superior technologies to improve the recovery ratio and bring Indian operations at par with those overseas. The Government of India has, in recent years, taken multiple steps to encourage private sector participation, adopt a more holistic approach towards expanding its coal base, and improve efficiency in the sector as a whole. However, the existing regulatory framework in India is not adequately developed or in tune with international standards that the extractive industries sector have been putting together. It is thus crucial for the Indian coal industry to consider changes in its regulatory environment to make it a par with the international standards to meet the critical requirement for energy security. Although India has made a start in this direction, the Government needs to further initiatives in *three* main areas:

- Encourage producers and consumers of coal to seek acquisitions and joint venture alliances in key mineral-rich countries in Australasia, Africa, Latin America, etc. to diversify the energy supply base and improve long term supply security.
- Promote a more integrated approach to energy planning, recognising the various cross-linkages between different energy segments. The various energy segments must be seen as components of a wider strategy of ensuring energy security, rather than as stand-alone sectors. The current piecemeal approach to regulatory and policy planning must be abandoned.
- At an operational level, investments must be made to develop necessary infrastructure in rail, road, port and power transmission, which in turn will realise efficiencies and scale economies in the energy value chain.

It has been predicted that the next 4-5 years will be years of *pronounced coal shortages* in India (Planning Commission, 2006). According to the mid-term appraisal of the 10$^{th}$ Plan, there will be a projected shortfall of 11 mt in the terminal year (2006-07) of the 10$^{th}$ Plan. This shortfall is expected to increase dramatically by the end of the 11$^{th}$ Plan (2011-12). The magnitude of the shortfall will depend on where the coal would be sourced from (if the

shortfall were to be eliminated). A MOC expert sub-group estimated a shortfall of 330 mt in 2006-07 and 503 mt. in 2011-12 if the entire coal requirements were to be met from indigenous coal, and of 322 mt in 2006-07 and 472 mt in 2011-12 if the shortfall were to be met from import of superior quality coal. The increase in demand is expected to be driven almost entirely by the power sector. Shortages are likely to become acute in the first two years of the 11$^{th}$ Plan as the delayed 10$^{th}$ Plan power projects get commissioned alongside the 11th Plan projects already under construction. These shortages are likely to rise rapidly by the end of the 11th Plan unless Coal India's unprecedented capacity expansion plans materialize during the 11$^{th}$ Plan. Ideally developments of new plants (and captive mines) will continue as per plan and will be completed on time; this is, however, very unlikely given the inevitable delays in getting regulatory/administrative clearances, etc. To cope with this, most of the shortfall will have to be met with increased imports; the government is in fact encouraging companies (especially power plants) to use this avenue.

In addition to delays in mine development, supply constraints will be exacerbated by the limited level of exploration activity currently undertaken in the country. While the amendment to the Coal Mines (Nationalisation) Act is being debated in Parliament, increased exploration using state-of-the-art foreign technologies will not be possible.

## Regulatory Framework

The management of mineral resources in India is the responsibility of both Central Government and State Governments as per the Constitution of India. The Mines and Minerals (Development and Regulation Act, 1957, (MMRD, later MMDR) and the Mines Act, 1952, together with the rules and regulations framed under them, constitute the basic laws governing the mining sector in India. The Mines and Minerals (Regulation & Development) Act, 1957 is one of the two overarching pieces of legislation affecting the coal sector. The other is the Coal Mines (Nationalisation) Act, 1973 which, unlike the MMDRA, is specific to the coal sector. The MMDR Act classifies minerals into major and minor categories. Major minerals such as coal, lignite, mineral oils, iron ore, copper, zinc, atomic minerals, etc. are listed in Schedule A, which is reserved exclusively for the public sector, and minor minerals in Schedule B, in which the private sector was allowed to

participate in mining activities along with the public sector (NMP). According to MMRD Act 1957, prior approval of the Government of India is necessary before the grant or renewal of mineral concession for minerals specified in Schedule 1 of the said Act. Presently, 23 minerals are included in Schedule 1. Of these 11 minerals are atomic minerals, one mineral (coal and lignite) is a fuel mineral and remaining 10 are metallic ores and industrial minerals.

Important supplementary rules in force under the MMDR Act are the Mineral Concession Rules, 1960, and the Mineral Conservation and Development Rules, 1988. The Mineral Concession Rules, 1960 outline the procedures and conditions for obtaining a Prospecting License or Mining Lease. The Mineral Conservation and Development Rules, 1988 lays down guidelines for ensuring mining on a scientific basis, while at the same time, conserving the environment. *It is noteworthy, however, that the MCR and MCDR do not apply to coal, atomic minerals, and minor minerals (RSPAS).* After the Act was promulgated in 1957, it was amended four times, i.e. in 1972, 1986, 1994, and 1999, and after each amendment corresponding changes were carried out in the two Rules, viz. MCR and MCDR. While the first two amendments increased governmental control, the last two relaxed them. The changes in the regulatory dispensation in 1994 and 1999 envisaged considerable devolution of authority from the Centre to the states.

The Coal Mines (Nationalisation) Act of 1973 reinforces the spirit of the MMDRA, because by nationalizing the mines, it firmly consigned coal to the purview of the public sector. The Coal Mines (Nationalisation) Act 1973 categorically states that 'no person, other than the central government or a government company or a corporation owned, managed or controlled by the central government shall carry on coal mining operation in India, in any form' (Lahiri-Dutt, 2006).

According to the Planning Commission (2006), under the Coal Mines (Nationalisation) Act 1973, and clarifications issued from time to time, the following institutions and agencies are entitled to do coal mining without the restriction of captive consumption. These are:

- Central government or a company owned by the Central or State Government engaged in coal production.
- A government company owned by the state or central government which now takes up coal mining.

Responsibility for overseeing mines and mineral development (and implementation of legislation) rests jointly with the central and state governments. Basically the responsibilities are divided amongst the central and state governments, with the former having exclusive power to make laws with respect to regulation of mines and major minerals development. The state governments are largely responsible for implementing the laws, but are constrained to act within the framework laid down by the central government. The States do, however, have the power to make rules in respect of minor minerals under Section 15 for the Act. They are able to devise specific supplementary legislations to promote investment within the state, and have, over time, started taking initiatives to attract private players (including foreign investors) to the states.

The economic liberalisation first initiated in 1991 were shortly followed (in 1993) by a National Mineral Policy, which governed, among other things, public and private sector participation in the wider mining sector (covering all forms of metals and minerals found in India). The law was amended in 1993 to allow for captive mining in approved end-user industries, namely iron and steel, cement, power generation, and coal washing. Moreover, companies engaged in captive mining must undertake to supply the coal produced *only* to the approved end-user industries, and not sell *any* coal on the open market. This entailed several restrictions and proscriptions, but still marked the start of the process of increasing liberalisation. Several more amendments have been brought in over the years, to facilitate increased production overall, increased private/foreign participation, etc. The policies and results relating to captive mining are discussed later in the report.

## Unresolved social and environmental issues

Like other mining industries, coal mining in India imposes severe social and environmental costs on the regions of its operation. Traditionally, in its drive to acquire coal-bearing land or to develop mines, CIL has typically ignored the need for social impact assessment or

rehabilitation of entire communities displaced by these activities. The Land Acquisition Act used to justify often forced acquisition of land is old and of colonial vintage, and needs serious revision in the present-day context. Such forced eviction has given rise to unrest and conflicts in coal tracts. The engineering and technology-driven large coal mining projects taken up by the state sector have been subject to intense criticism by both academics and non-governmental organisations, but CIL has conventionally tended to ignore these critiques. The resettlement and rehabilitation policy have been clearly inadequate in handling the subsistence needs of displaced poor and indigenous families (Lahiri-Dutt 2003). According to Fernandes (1998), more than 2.5 million people have been displaced by the mines in India since Independence. This number may be a highly conservative estimate. For example, in a recent study in Jharkhand state alone, Ekka and Asif observed that during 1950–91 mining was responsible for 27% of the total displacement in that State (coal mining 18% and non-coal mining 9%) (Ekka and Asif 2000, p. 95). There is also a distinctive gender dimension of these social impacts as observed by Ahmed and Lahiri-Dutt (2006) in a study in Jharkhand. Urbanisation in a haphazard manner is another expression of social change: all the coal mining areas have recorded rapid urban growth in the last 3-4 census decades.

The Coal Bearing Areas Act (CBAA) takes precedence over the non-transferability of 'tribal' land. This is again a part of the 'Command and Control' policy that will be clearly out of place post economic liberalisation. Re-visiting the two main Acts, LAA and CBAA, would enable the creation of a level playing field that can bring companies on a discussion table with local communities. Things such as 'Community Consultation' or 'Community Engagement' would be possible only when this equal bargaining power is created.

There is also a persistent concern that the purely production-oriented strategy of CIL, coupled with its relatively obsolete technology, might be actually undermining the environmental impacts caused by it. This problem is compounded by the relatively poor voice and social awareness of the affected populations. The Indian government needs to address the social issues in coal mining tracts. So far the attention has been on the environmental side of the problem and attempts to address it have involved the reduction of

subsidies on low-quality coal and introduction of financial initiatives (aimed at discouraging use of older, inefficient coal-fired power plants). In addition to these, the government has used fiscal incentives, in the form of customs waivers and soft loans, to encourage the installation of pollution abatement equipment, etc. Despite these efforts, however, the policy remains piecemeal and lacks a comprehensive framework. Implementation, enforcement, and monitoring also remain inconsistent and lack rigour.

In summary, *two* things must be understood in this context: social changes, although inevitable in a mining region, need not be detrimental to the interests of local communities; and that some of the social issues are closely related to environmental degradation in coal tracts.

## Other Crucial Problems

The significant problems facing the coal industry arise from a complex interplay of several sources, and any attempts to address only part of these are bound to result in unintended and unanticipated complications. A coordinated, holistic approach to addressing the issues is the only appropriate way forward. The problems facing the industry arise from: price deregulation; supply constraints and the absence of domestic coal market; an almost monopsony situation (power sector); and the absence of competition in both exploration and mining.

Full deregulation of coal prices (while maintaining the monopoly) in January 2000 resulted in price rises a few years later. This, combined with supply inflexibility and constraints, resulted in a thriving illegal 'black' market for coal – a symptom of the virtual absence of a proper pricing and trading system. Attempts to create a coal market by selling a small proportion of output through e-auctions yielded mixed results, as the eventual prices were far greater the notified price (the Supreme Court of India ordered suspension of e-auctions in late 2006). Scope of a coal market is anyways limited, given the prevalent system of linkages that ties up most of the supplies through pre-determined contracts. Coal pricing is a problem due to the absence of an appropriate framework for setting prices – prices to consumers is at times 300% over and above the mine-mouth price because the railways

(another monopoly) cross subsidises passengers with freight rates. Some of the vastly complicated issues existing within the coal sector are listed below:

***Inadequate exploration due to technological constraints and potential conflict of interest***

Currently detailed coal exploration in India is solely entrusted to CMPDI, a subsidiary of CIL. Three broad problems can be identified in this arrangement:

- **Capacity**: According to the Ministry of Coal, 'CMPDI's capacity to carry out drilling is limited to 3 lakh metres per annum and at this rate of detailed exploration CMPDI can, at best, add about 2 billion tonnes of reserves annually to the proven category. Towards the end of the Ninth Plan, CMPDI also started to undertake promotional drilling along with GSI and MEC and consequently the detailed drilling capacity has been reduced' (Ministry of Coal, 2005, p. 20).
- **The mode of exploration and quantification of reserves**: Most of India's coal resources - proved, indicated and inferred - are said to be within 300 meter depth. According to the Ministry of Coal (2005, p. 22): 'The geological reserves (of all categories) occurring in a block are estimated within vertical boundaries of the block area up to a depth to which the block has been explored through detailed drilling (in case of Proved reserves) and through Regional/Promotional drilling (in case of Indicated and Inferred reserves). The depth to which drilling occurs is arbitrary (which is considered mineable with existing technologies), rather than to the basement of the coal basin to accurately assess the total coal resources available in the basin'. This has led to concerns that current reserve estimates are the result of insufficient exploration of deposits below 300 meters. The technologies deployed by CMPDI may themselves by relatively outdated and inefficient by international standards, and may fail to yield better reserve estimates, especially at greater depths. Specific measurement and classification procedures used by CMPDI are also open to question. For example, coal seams of less than 1 m thickness are not considered as workable and are excluded from the geological reserves. The extent to which Indian reserves are underestimated by this omission is not clear (Ministry of Coal, 2005). The Ministry of Coal, in its report on

coal sector reforms, detailed the apparently irrational and haphazard way in which CMPDI quantifies coal reserves, and identifies regions for further detailed exploration.

Standard economic theory states that a monopoly will, barring a few exceptions, lead to suboptimal outcomes. An institutional structure reliant exclusively on a single entity for *all* detailed exploration of coal is no exception. Analysis of the data on India's extractable reserves could be improved immensely from an independent assessment. That the CMPDI as a subsidiary of CIL raises questions about its independence and a conflict of interest; private companies are apprehensive that CMPDI is likely to be guided by what is technically feasible and economically advantageous for Coal India, rather than what is best for India's coal industry and energy security.

***Supply constraints and absence of domestic coal market(s)***

Coal supplies are based on 'linkages' as pre-determined by a Linkage committee comprising representatives from several ministries. While this system has proved immensely beneficial in the past in rationing limited coal stocks among users, it has now been proven that it lacks the flexibility to adjust to market realities and contribute appropriately to the energy security and growth needs of the country. The system of Linkage has also impeded the development of a competitive, vibrant coal market in India.

Supply decisions are not really based on long-term plans as such, and do not reflect a goal of maximizing economic returns or promoting efficiency. The two public sector companies of the coal industry merely concentrate on the 'production as per plan', i.e. meeting targets stipulated in the 5-year plans, without due regard for productivity enhancements or technology upgrades. Moreover, since the public sector companies have hitherto not faced competition, their attitude towards consumers is one of apathy; there has been reluctance on the part of the coal producers to prepare the coal as per the specifications required by the consumers – which is a standard practice in the rest of the world (Lahiri-Dutt, 2006). There is an apparent disregard for whether the short-sighted quest for production targets may be eliminating some of the future supplies by sterilizing deposits at greater depths. The coal companies leave the Short Term Coal Linkage Committee to deal with

increased/fluctuating demand from the power industry, on a case by case basis. The coal industry continued to meet its production targets as proposed under the Tenth Plan. The power industry operated on the assumption that, being a high priority sector, its demands would get serviced through short term allocations by the Short Term Linkage Committee by diverting coal away from 'low priority' consumers; it failed to take any long-term steps to plan for increase in coal imports to mitigate the looming shortage crisis. This is one reason for the rise of a black coal economy that I will outline shortly.

Productivity enhancement has been low in the list of priorities and consequently declined over time along with the quality of domestic coal. The development of underground mining technology has been particularly neglected. The table below illustrates that highly skewed and unbalanced nature of productivity enhancement in CIL and SCCL in the last 5 years. The relatively static productivity levels of underground mining create an important supply constraint in the short to medium-term, given the time and resources required to obtain and implement new technologies and train employees.

**Table 2: Output/manshift (tonnes): underground and opencast mines: 1999/00–2005/06**

| | **Coal India Limited** | | | **Singareni Collieries Company Limited** | | |
|---|---|---|---|---|---|---|
| | Underground | Open Cast | Overall | Underground | Open Cast | Overall |
| 1999-00 | 0.61 | 5.46 | 2.11 | 0.75 | 4.43 | 1.42 |
| 2000-01 | 0.63 | 5.92 | 2.3 | 0.79 | 7.29 | 1.5 |
| 2001-02 | 0.64 | 6.09 | 2.45 | 0.85 | 6.74 | 1.66 |
| 2002-03 | 0.69 | 6.3 | 2.67 | 0.86 | 7.66 | 1.89 |
| 2003-04 | 0.68 | 6.66 | 2.82 | 0.86 | 7.69 | 1.81 |
| 2004-05 | 0.69 | 7.18 | 3.05 | 0.85 | 8.83 | 1.99 |
| 2005-06 (Apr-Dec) | **0.69** | 7.15 | 3.07 | 0.85 | 8.49 | 1.93 |
| Note: NCL and SECL were set up w.e.f 1.1.1986<br>MCL was carved out of SECL w.e.f. 3.4.1992 | | | | | | |

*Source: TERI (2005)*

India's need for high quality thermal coal is projected to increase to 50-60 million tonnes by the end of the 11th Plan. Imported coal is widely regarded as a viable (and desirable) alternative to domestic coal, not only for its superior quality, but because it will put a competitive pressure on the domestic coal industry to be efficient. No significant imports of thermal coal are, however, evident in the near future despite obvious benefits of long-term contracts, especially at coastal locations. The reason for this is the absence of coastal power plants, inadequate port capacity and the need to trans-ship imported coal on domestic rail/road linkages to consumption points.

The **strategic importance of the power sector** contributes to a major supply constraint for other sectors. A smooth and uninterrupted functioning of the power sector is essential for India's energy security and sustained economic growth. Coal will remain as the fuel of choice for the power sector due to its cost competitiveness and certainty of its supplies. Natural gas, while widely used in generation, cannot effectively compete with coal due to its relatively high prices. Other alternative fuels are either used in minimal proportion or are not economically very competitive. Therefore, each year almost 80% of domestic production is earmarked for the power generation (utilities and captive) at the planning stage itself through the system of linkages. Steel and cement, the other core sectors, require about 14% of domestic coal. While some of the overall demand is met by imports, the system of linkages currently leaves only a little over 10% of total domestic coal output to be spared for trade on the open market.

India is the third largest coal producer in the world but remains a marginal player in international coal markets. India lacks a proper coal trading market that exploits market dynamics and allocates coal efficiently. According to the Ministry of Coal (2005), coal trade and movement are controlled under the Essential Commodities Act and The Colliery Control Order which is a legacy of market situation prevailing during and after World War II and no longer relevant today. There is no legal bar to trading coal under any act governing the Coal sector; any **impediments to trade are purely contractual** and determined by the contracted end-use of coal. In reality, however, each coal consumer in the core sector is required to obtain a coal linkage based on the railway link/capacity

available and is practically tied down to a coal mine or basket of mines. This market reality has also limited the amount of coal available for trading (Ministry of Coal, 2005).

***Pricing and difficulty in having competitive pricing***

Coal prices were totally decontrolled from the 1st of January 2000, thus giving coal companies CIL and SCCL full freedom to set prices. In reality, however, being public sector companies, they are subject to 'guidance' from the MOC. Market prices, coupled with rigid supplies and a highly monopsonistic power sector, create several practical problems that hamper implementation of a fully deregulated pricing regime. The following section summarises some of these problems:

- The absence of agreed pricing principles and an overall **lack of transparency** in setting prices is creating complications. The coal sector is monopolistic, dominated by 2 public sector companies that (theoretically) have freedom to set coal prices. Coal buyers are dominated by the power sector; power prices are regulated, due to which the sector must absorb any large input price fluctuations and usually cannot pass these on to consumers. This interaction of monopoly (with deregulated prices) and almost monopsony (with regulated prices), and their respective conflicting interests, creates an inevitable clash. This was starkly illustrated in June 2004 when, following international volatility, the domestic price of thermal coal increased by 15-20% and that of coking coal by 20-25%. The power sector protested against this 'unilateral revision in coal prices' and called for the appointment of an independent regulator. This reaction was understandable, since the power sector consumes about 80% of domestic thermal coal and fuel costs comprise about 60% of the power tariffs (TERI, 2005). The MoC opposed this, as the demand for coal was highly price inelastic, the increased prices were improving the profitability of the public sector coal companies. For example, CIL reported a before-tax profit of Rs 48.89 billion in 2003-04, compared with Rs 17.54 billion in 2002-03 and a loss of Rs 14.15 billion in 2001-02; a noteworthy fact is that these increased profits are despite only marginal improvements in productivity. The MoC then proposed import parity pricing; this is highly irrational though, since Indian coal is typically of a poorer quality, being high in ash content, lumpy, full of extraneous

inert material and this non-tradeable in international markets. A given quantity of Indian coal, when compared with the same quantity of international coal, will have a significantly lesser Gross Calorific Value (GCV), and hence should not be priced at parity. According to the Ministry of Coal (2005), 100 million tons of indigenous thermal coal roughly equivalent to about 63 million tons of import quality coal.

The above clearly demonstrates that establishing a market mechanism for coal pricing in India is not a simple task of having multiple producers and consumers with minimal entry barriers and prices being determined by the interaction of the two groups. Even though coal prices are now deregulated, the Indian coal sector has not yet learnt to deal with the inevitable volatility in global coal prices. It has yet to answer the question of whether the Indian coal should be priced at international levels when the quality of Indian coal is not at all comparable to that overseas.

- The way in which coal is graded for quality and priced in India is also problematic. The Indian coal industry follows a peculiar system of coal pricing based on grades of coal. These grades are identified by a very broad band called 'Useful Heat Value' (UHV) – a concept that unique to India. This is a highly subjective and arbitrary measure, without any scientific basis, and encourages coal companies to supply coal at the bottom of the grade bands and pass of the coal as belonging to the next higher band. Therefore, not only is this measure an inconsistent indicator of quality, it also promotes outright dishonest behaviour by coal companies. The rest of the world, in contrast, uses the GCV to specify coal quality. This is a scientific and specific measure of coal quality, with prices being fully variable with the quality. The practice of using UHV creates another problem in the form of incentives for inefficient behaviour. Unlike in the rest of the world, most coal in India is sold without any 'preparation' or 'dressing'. As already mentioned, Indian coal has a high ash content (about 40%), but this could easily be brought down to about 35% by simple deshaling, improved mining procedures and sizing of coal. Full washing of coal could increase the quality further, thereby saving transport costs and resulting in more efficient power plant design and operation. Indian coal is sold without proper preparation/washing because the practice of using UHV

makes it profitable to do so – the ability to pass of lower grade coal for a higher grade and get higher returns without any accountability whatsoever. This also affects international demand for Indian thermal coal because it is not tradable across borders without significant preparation and beneficiation.

- Another source of irrationality results from the **binding nature of the linkages** that drive coal supplies. Coal pricing has remained non-transparent and distribution is restricted through an inflexible/complex system of linkages based on a constrained rail infrastructure. The average mine-mouth price of domestic thermal coals sold to the power plants is just under $5/million kilocalories, inclusive of royalty and tax. However, freight and handling then adds $7-$11 for distances between 1000 to 2000 kilometers from the mines, thus making the delivered price of domestic coal $12-$16 per million kilocalories. Imported coal, even at its all time high prices, could be delivered at a cif price of about $13 per million kilocalories (including a 5% custom duty) at a coastal location (Ministry of Coal, 2005). Thus imported coal is cost competitive at coastal locations on the West coast and Southern shores of Tamil Nadu, especially if it requires minimal or no land transportation to reach the final consumption point. The markup of 200-300% on domestic coal by the railways is far more than can be economically justified, making the delivered price to consumers far greater than what is charged by the coal companies. The Indian Railways cross-subsidises passenger traffic with coal freight; this exercise of monopoly power by the Railways effectively neutralises pricing decisions of coal companies. This pricing anomaly exists despite the fact that domestic thermal coal delivered to power stations is generally of a poorer quality (average calorific value of 3500 kilocalories/kilogram) with high ash content of about 40%. Imported coal, on the other hand, has a higher calorific values (around 6200-6500 kilocalories/kilogram) and low ash content of about 10-12% (Ministry of Coal, 2005).

***The 'black' coal economy***

A less discussed but widely prevalent issue throughout the coal mining areas is illegal mining and black market of coal. I have noted elsewhere that this situation arises from

several reasons: the fact that while coal prices are in theory fully decontrolled, whereas the coal supply and trade are not. This, in conjunction with poor environmental record and neglect of social impacts, lead to a decay in farming or forest-based livelihoods, and encourage illegal mining of coal. I will come to the issue of social performance in the next section, but pricing is also to blame for the existence of a black coal economy in India. Given that there is always excess demand (shortage) for coal at the any given price, especially from the non-power sector, coal companies find it profitable to set higher prices and get windfall returns. This is turn creates opportunities and incentives for the local musclemen to enter the coal market. Their collusion with the police, and local and mine officials creates a vicious cycle of corruption and deteriorating governance in the mines (Ministry of Coal, 2005).

It is also common knowledge that there is a thriving black market for coal, supplied by pilferage and illegal mining of abandoned mines (or small mines that fall through the transport trucks or regulatory cracks). I have named this phenomenon as **coal cycles (**Lahiri-Dutt 2006). Coal sold illegally through these coal cycles is estimated to be around 2.5 million tonnes annually, or about 1% of India's annual coal production. This form of illegal mining started some years after nationalization, and is usually confined to a local area; coal sold through this is used for household or small-scale purposes.

The government is making serious attempts to establish a coal markets as a means for dealing with the black marketing problem. The Planning Commission, in its report on the Integrated Energy Policy (2006), recommended independent regulation of coal prices and e-auctions to facilitate the establishment of a competitive coal market. It was further recommended that for it to be meaningful, the e-auctions should sell at least 10% of domestic production in the first year (2005-06), with the quantity of coal sold through e-auction reaching 20% of domestic production by the end of 2007-08. The recommendations also included inducing power companies to set up coastal power plants, which could use imported coal, thereby reducing the dependence on domestic coal and free up greater quantities for sale through the e-auction route. Following these recommendations, CIL (through its subsidiary BCCL) tested the e-auction system, selling 20 mt in the first year to

non-core sectors, with further plans to sell 36 million tonnes in the fiscal 2007-08 (The Telegraph, Nov, 2006). The auction would entail floor prices of 20% *above* the notified prices, but in practice resulted in significantly higher realisations for CIL and its subsidiaries.

While the initiative was a well-meaning one, it has in reality been fraught with problems. This is because with no other alternative sources of coal, the non-core sectors are totally dependent on the monopolistic CIL for their supplies. The e-auction system attracts companies/people with deep pockets and a lot of muscle power to lift huge quantities, which is then rationed to smaller consumers at far higher prices. This played havoc with the small-scale consumers who had no direct access to coal from the coal companies. According to the Hindu Business Line (January 2007), 'e-auction initiated by Bharat Coking Coal Ltd (BCCL) was completely cartelised and backed by a section of company officials and that the entire auction process was controlled by a handful of people (sic)'. While the idea of e-auctions had the Ministry's approval, it had no idea how the system was being abused and manipulated at the ground level. It was to address and stop these abuses that the Supreme Court of India ordered a temporary halt to e-auctions from 1 December 2006, while an appropriate strategy was developed. In the interim, however, CIL has replaced e-auctions with an e-bidding system that entails consumers and traders electronically bidding for coal, with prices being fixed at 30% more than the notified price. This is strictly meant to be a temporary measure, while other alternative strategies are debated.

***Problems with the captive mining policy***

The analysis of coal demand and supply trends discussed earlier make it clear that India will certainly face a shortage of coal in the next 5-7 years. The bill to amend the Coal Mines (Nationalisation) Act is not expected to be passed anytime soon, which will bring about private participation in coal mining. According to the Ministry of Coal (2005, p. 40), the growing gap between the emerging demand and constrained supply will result in a shortage of 'nearly 100 million tons of thermal coal of indigenous quality (equivalent to about 63 million tons of import quality) by the year 2011-12. This gap might increase

further beyond 2011-12 unless India succeeds in restructuring the coal sector by 2011-12 in a manner that ensures that domestic supply increases to meet growth in domestic demand beyond 2011-12'. The government is fully cognizant of the fact that current public sector dominance (through CIL) of exploration and mining activities, with its antiquated technology and inability to undertake appropriate levels of investment leaves the sector ill-prepared to address the future needs and challenges. It is constrained in that it cannot allow private participation beyond captive mining without amending the existing Coal Mines (Nationalisation) Act. A government bill, Coal Mines (Nationalisation) Amendment Bill, 2000, to amend the Act is already tabled in the parliament, but is not expected to be passed for a few more years. Given this context of regulatory and political constraints, the government recognises that any attempts to augment coal supplies and increase the number of players in coal mining would, at least in the short-to-medium term, have to happen within the framework of existing legislation; captive mining is (probably) the only option that satisfies these constraints.

Captive mining was first allowed in 1993, and in Dec 2000, Central and State Public Sector Units (PSUs) and State Government Undertakings were allowed to mine coal at par with the Central Coal Companies. 14 years on, the results have been disappointing at best. According to the Ministry of Coal (2005), efforts to promote captive mining began in earnest only from 2003 onwards, even though the policy itself was promulgated 10 years before that. When captive mining was first allowed, 148 blocks were identified for allotment under government or captive dispensation; of these, 89 are already allotted or earmarked for allocation. These 89 blocks contain total geological coal reserves of 13.5 billion tons (8 billion in the proven category), and could theoretically yield a total production of about 100 mt of coal annually. However, as the subsequent analysis shows, this level of output is unlikely by 2011-12 (Ministry of Coal, 2005).

Use of captive mining in increasing domestic coal output has been slow. The most striking feature is that of the 68 letters of allotment that have been issued thus far, only 19 were issued in the first 10 years of this policy (1993-2003). Of these, only 8 mines have gone into production so far, whereas none of the blocks allotted after 2003 have gone into

production as yet. This is an important point because even in the best case scenario, an open cast mine needs 3 years (4 years for underground mines) to go into production. This scenario assumes that it takes only six months to obtain mining leases and all necessary clearances (including environmental clearance). It is well-known by the Ministry of Coal, that such processes take anywhere between 2 to 5 years to complete, and that achieving rated mine capacities could take another 2 to 4 years from the commencement of production. Therefore, the *actual* gestation period and slow regulatory process make the realization of government's stated objective (of significantly increasing production through captive mining) virtually impossible. This appears to reflect a serious neglect or lack of understanding of ground realities in the goal setting process. This may be one reason why although some foreign investors have been attracted, the major players in international mining have largely stayed away from the Indian coal sector. Since 2003 that the government has become strict in monitoring progress of captive mine development, and reserves the right to cancel an allotment if progress is found to be unsatisfactory or unusually slow. Potential investors blame the failure of captive mining to take off on a multitude of factors, primary among which is the regulatory quagmire (and opaque procedures) that continue to exist.

**Table 3: Captive Mining in India**

| | |
|---|---|
| Total # of blocks identified initially * | 148 |
| Already allocated or decided for allocation | 89 |
| Letters of Allocation issued | 68 |
| Blocks allocated before 2003 | 19 |
| Production commenced ** | 8 |

** Total blocks, including those in which detailed drilling has not yet taken place*
*** No blocks allotted after 2003 have yet gone into production*

Source: Ministry of Coal (2005)

***Acquisition of foreign assets by Indian companies***

In addition to the government inviting foreign investments, Indian companies (from both public and private sectors) are proactively seeking coal assets abroad to augment their supplies and captive mining activities. The following is a list of some of the companies that already made overseas acquisitions, or are trying to do so.

- CIL, through its subsidiary for overseas ventures, Coal Videsh limited (CVL), has begun opportunities in countries like South Africa, Indonesia, Mozambique, Zimbabwe and Russia for acquisition and/or development of mines, either through complete ownership or joint ventures. CVL is also actively exploring opportunities in Australia and Canada. A high level team for CVL was slated to visit Australia in February 2007 at the invitation of Invest Australia, a trade promotion body; a similar visit to Canada is planned for March 2007.
- The Steel Authority of India Limited (SAIL), India's largest steel producer, is planning to acquire overseas coal mines, and has already begun the process of testing foreign coal samples to ascertain their usefulness/acceptability. According to the Chairman of SAIL, currently about 65% of SAIL's coal requirements are met through imports and the remaining 35% through domestic sources. SAIL is primarily interested in high quality coal that can be blended with Indian coal.
- India's largest independent metallurgical coke producer, Gujarat NRE Coke Ltd, became the first Indian company to acquire coking coal mines in Australia in late-2004; the agreements were to acquire the coal mining leases in the whole of old Avondale Colliery and part of Huntley Colliery in the Southern Coalfields of New South Wales (The Hindu Business Line, July 2005).
- Tata Steel, India's second largest steel producer, is actively seeking coal assets in Australia, New Zealand, Mozambique, and Indonesia in a bid to triple is steel production.
- In December 2006, Tata Power confirmed that it was looking at coal mine acquisitions and coal supplies from Australia, Indonesia and South Africa. This follows the granting of a contract to Tata Power to build a 4,000 MW coal-fired power plant at Mundra. Both Tata Power and Tata Steel are part of the Tata Group, which is India's second largest conglomerate.

***Foreign investment opportunities in drilling, exploration, and mining***

According to the Investment Commission of India website (2006), the Indian coal sector has an overall investment potential of US$ 30-40 billion over the next 10 years to 'double its annual coal production apart from modernizing existing mines and developing related infrastructure. Current visibility on investments in this sector is less than $2.5 billion'. Specific opportunities exist for exploring and developing new coal mines; manufacturing and selling state-of-the-art mining equipment and technology; and creating related infrastructure for off-take of mined coal.

This amount includes the possibility of foreign investment as well. India currently has a critical need for foreign financial resources and technical/managerial expertise in turning the coal sector from a marginal player on the international coal market to a major one (commensurate with its significant coal reserves). The need now is for the government to implement the necessary regulatory adjustments to induce the foreign capital to flow into the coal sector, and for the large foreign mining companies to follow-up on the innumerable opportunities. However, before that happens, the Government of India must take a close look at some ground realities in coal mining regions, often arising from poor social and environmental care by CIL.

## Conclusion: Towards a Policy

The world mineral scenario is very different from that a few decades ago. Given that mining is a risk-oriented activity with long gestation periods and uncertain returns on capital, it is extremely sensitive to the regulatory framework operating in a country. According to a survey conducted by the World Bank in 2001 (cited in Planning Commission, 2006), 'Mining Sector Reforms and Investment—A Global Survey', India was found to have one of the lowest scores on various parameters of interest to investors compared to other resource countries such as Australia, Brazil, Chile, China, and Indonesia'. These countries have greatly liberalised their mining laws and made them extremely investor friendly. So far, India's efforts have been concentrated in simplifying procedures for captive mining and introducing transparency in the process of allocating blocks and granting various clearances, but much is left to be desired. A quick entry into

open coal mining also requires that the Indian State adopts due measures to protect its citizens. The current laws used to acquire land (such as CBAA and LAA), particularly overruling tribal ownership of land, neglect the interests of its people and goes against the grain of democracy that is envisaged in liberalization philosophy. The State and the mining companies must recognise the facts that much land in rural and remote areas are deedless (*gair majurwa*) but have been customarily used by individuals and communities either as commons or for individual gain, and hence needs to be compensated for. The Indian coal mining industry also needs to engage with debates going on in the wider mining community that accepts the primacy of rights of communities over mineral resource revenues and enables them to gain from mineral extraction.

To conclude, therefore, I would return to the main theme of the conference: that of finding a coal policy in liberalising India that is cognisant of global changes. Here, the main recommendation would be to consider the social and environmental impacts of coal mining as the most crucial public issue. None of the other efforts will be fruitful unless these two areas are not adequately addressed by suitable experts and in multi-stakeholder forums. This was noted by High Level Committee, appointed by the Planning Commission of the Government of India established in September, 2005. The context in which this Committee was established was unique: the mid-term review of the Tenth Five Year Plan observed that although the Government of India had aimed at encouraging the flow of private investment in its 1993 Mineral Policy, procedural delays and the absence of infrastructure had caused a rather slow growth in the sector, encouraging a review of the entire gamut of issues related to the development of the mineral sector. This committee, amongst other things, reviewed the National Mineral Policy and the Mines, Minerals (Development and Regulation) Act, 1957, and suggest changes. Whilst the Committee's tasks did not clearly include looking at the social impacts of mining, it devoted a significant section discussing 'Local Communities and Mining Activities'. It lamented the poor social care in mining regions, and observed (2006: 69):

> Land is often used without the consent of the indigenous people. Mining companies should act as if consent to gain access to land is required even when the law of the land does not require this. In making decisions, the cultural circumstances of the local people and loss of access to common resources should be kept in mind. Where resettlement takes place, companies need to ensure that living standards are not diminished, that community and social ties are preserved, and that they

> provide fair compensation for loss of assets and economic opportunity. Responsibility for ensuring the long-term well being of resettled communities needs to be defined and monitored.

India is now passing through a volatile time when the nationalized coal mining industry will undoubtedly, eventually, undergo divestment, and the monopoly of CIL will break. How will we then deal with the social impacts that coal mining industry causes? In a democratic country, as evident from the High Level Committee's Report, there is a need to accept the rights of local communities to continue their livelihoods around mineral resources and participate in reaping benefits from the economic benefits that mining can bring. For this, more robust and socially informed mineral resource laws need to be developed based on an agreed set of broad principles. The foremost of these principles would be respect for the rights and interests of all those involved. The current laws are focused only on *mitigating the negative impacts* of mining that too primarily on the environment. Instead, we need to frame policies and laws that can deliver sustainable developmental benefits for local, regional and even global communities. This can be achieved only if the laws emphasise the need for a more participatory and inclusive approach at the process level that mining companies can adopt. A revisit of the laws surrounding mineral resource extraction in India would thus involve a fuller understanding of the role of the community in local economies, to provide access to resources to local people, and to integrate community interests in mine management plans. Access to the land and its natural resources and food security are at the centre of illegal coal mining. If the coal resources of India are truly vested in national interest, they must help us to build and live in a society where opportunities and benefits are equal for everyone. The other urgent needs include the protection of common pool resources that help poor communities survive in rural economies in colliery tracts and to find ways to vest the power to co-manage the minerals with the local communities. It is also important that a wide debate takes place, between social scientists, planners, international agencies and civil society, on the issue of justice in coal mining areas. It is understandable that the public sector would resist any attempts to implement regulatory and/or technological changes that affect it monopoly power. The resistance is unlikely to be explicit, but most likely will be mounted through administrative delays and

bureaucratic bottlenecks, long identified as the primary bottlenecks of the coal mining sector in India.

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