



Governance in Coal Mining: Issues and Challenges

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Abstract

The growth of any country is dependent on its ability to provide affordable and sustainable supply of energy. Given the strong linkage between economic growth and energy demand, India is set to witness one of the highest growths in energy demand, largely based on buoyant economy and rising population. Coal is a pre-dominant source of energy in India and constitutes the largest share in India's energy production and consumption. Despite the recent focus on promoting other energy sources (in particular renewables), it is clear that the current coal-centric energy structure will continue for at least next two or three decades owing to technical and cost-related factors. The coal sector in India, in the past few years, has been subject to various controversies and issues, which raise question on the overall governance of the sector. These governance issues, if unaddressed, can hamper the sustainable growth of the sector and in turn the overall growth and development of the economy.

While there are various governance issues associated with different stages of coal life-cycle (i.e. exploration, planning, mining, washing, transportation, distribution, & combustion), the paper aims to look at the key governance challenges associated with coal mining. In particular, the focus is on competition issues, environmental management, and social issues in the sector. The paper discusses the problems resulting from the current institutional set up and the industrial structure, the various factors impeding competition in the sector, and the need for statutory reforms. The paper also discusses socio-environmental management in the mining sector, the regulatory and policy framework in place, and the issues and challenges associated with the current framework. The paper also talks about policies and institutional innovations that have been initiated in the recent years in the mining sector and their likely impact. It also highlights issues that remain to be resolved in order to ensure effective governance in the coal mining sector. The paper is based on field surveys and extensive stakeholder consultations with industry, regulatory agencies, policy makers, local communities, NGOs, researchers and academicians.

1. Overview of coal sector in India

Coal is a pre-dominant source of energy in India and has contributed significantly to the rapid industrialization of the country. The importance of coal in the energy basket of India stems from the belief of its relative abundance vis-à-vis other energy sources and current non-viability of large scale implementation of several of the alternate sources of energy. Coal currently accounts for 55% of India's total energy consumption, and according to most projections, it will remain the most viable fuel for driving sustained economic growth for many years to come (see TERI and PSA 2006; MoC 2005 and Planning Commission 2005). Accordingly, affordable and sustainable supply of coal is inextricably linked to the goal of ensuring energy security for India.

About 75% of total coal consumed in the country is used for power generation. Other end-use industries include cement, iron and steel, fertilizers, chemicals, etc. India is currently the third largest producer of coal, and contributes 8% of the total coal production in the world (IBM 2012). Coal mining in India constitutes a share of 80% in the total mining, with the rest 20% distributed among various raw materials such as gold, copper, iron, lead, bauxite, zinc, etc. The coal industry, in 2007, had a turnover of Rs. 340 billion, which was around 1.2% of the GDP (KL Dutt 2007)

The current gross geological coal resources are estimated at 286 billion tonnes (IBM 2012) and if these estimates are correct, coal supply should be sufficient to meet India's demand for at least the next hundred years. However, these estimates do not take into account technical, economic, and geological constraints associated with coal mining. Not all of this over-estimated coal is technically and economically feasible to mine. According to Batra and Chand (2011), the estimated coal resources include coal that is inaccessible as it lies in protected areas or beneath forests, villages, towns, or water bodies, and even includes coal that has been extracted and burnt during the past 200 years (estimated at about 10 billion). It also includes coal lying at a depth of 1200 m, whereas mining of coal, either currently or in the near future, is not likely to go beyond 300 m. Also, before nationalization, almost all coal came from underground mines which had low recovery rates. Once these mines were closed due to exhaustion, the left over coal was sterilized but is still included in the resource estimation.

Chikkatur et al (2009) have estimated the coal reserves i.e. the resources that can be economically mined given the current technology and prices, at only 44 billion tonnes. According to them, these reserves will last between 30 and 60 years, depending on the rate of domestic coal production. These figures put in doubt the notion of abundant coal reserves, and create concerns and uncertainties with regard to adequacy of coal supplies necessary to meet the growing energy demand of India.

1.1. Industry organization

With the advent of independence in 1947, India embarked upon the five year development plans, and the generation of electricity to nurture industrial growth was the main task before the nation. At that time, India's total power generation capacity was only about 1500 MW (megawatt), mostly consisting of small hydro and high-grade-lumpy-coal-fired thermal power stations. The production of coal was a

little over 30 million tonnes. Due to factors like low cost of production, easy availability of technology, large indigenous reserves, existing railway network and the minimal amount of specialized requirements for transport, coal became a natural starter and the need for larger and efficient production of coal was stressed. The formation of National Coal Development Corporation (NCDC) in 1956 was the first major step towards planned development of Indian coal industry.

Owing to implementation of several legal and institutional changes in the sector, coal production increased from over 30 million tonnes in 1947 to around 60 million tonnes in late 1960s. However, in the late 1960s, coal industry faced a demand shortfall due to low prices of petroleum products. With a view to analyze the causes and to suggest a comprehensive energy policy, Fuel Policy Committee (FPC) was set up in 1970. FPC made a comprehensive analysis of energy sector and concluded that coal should be considered as primary source of energy in the country. Subsequently, coal industry was nationalized in two phases-coking coal mines in 1971 and non-coking coal mines in 1973. Coal Mines (Nationalization) Act enacted in 1973 brought coal resources under the control of public sector.

In 1975, the nationalized coal industry was restructured with the establishment of Coal India Limited (CIL). CIL now has eight subsidiaries. Seven of the subsidiaries of CIL (i.e. Bharat Coking Coal Ltd, Central Coalfields Ltd, Eastern Coalfields Ltd, Mahanadi Coalfield Ltd, Northern Coalfield Ltd, South-Eastern Coalfield Ltd, and Western Coalfields Ltd) are coal producing companies engaged in raising & distribution of coal. The eighth subsidiary i.e. Central Mine Planning and Design Institute Ltd (CMPDIL) is solely engaged in mine planning and designing in the coal sector and rendering mining and engineering consultancy services. Ministry of Coal (MoC), which has the overall responsibility for developing policies and strategies for the coal sector, exercises its functions through CIL & its subsidiaries, and another public sector undertaking called Singareni Collieries Company Limited (SCCL) [which is jointly managed by Andhra Pradesh Government and the Central Government (equity sharing is 51:49)].

Although Coal Mines (Nationalization) Act 1973 restricted the role of private players in mining, subsequent amendments to the Act allowed captive mining by private companies in selected end-use sectors and sub-leasing of isolated pockets to them provided the blocks are not amenable to economic development and do not require rail transport. As a result of various amendments in 1976, 1993, 1996, captive mining by private players is allowed in iron and steel, power generation, coal washing, and cement production. In 2007, gasification of coal was allowed as one of the end uses for captive use.

1.2. Legal & regulatory framework

In general, resources in India are jointly managed by central and state government. The proprietary title vests in the federating states while the center has jurisdiction over mines and minerals development. With regard to coal, Mines and Minerals (Regulation and Development) Act (MMRDA) was enacted in 1957 where in coal is listed as a schedule one mineral. This implies that while ownership of coal resources vests with state, prospecting and mining are controlled by central government

There are large number of laws and regulations that govern various aspects of coal sector. Some of these have been extended to coal mining and some are only incidental to the sector. The general legislative framework for coal is given in Figure-1. MMRDA 1957 and Mines Act 1952, together with rules framed under them, constitute the basic laws governing coal mining.. Forest Conservation Act 1980 and Environment Protection Act 1986 enacted for the protection of forest and environment, are also applicable to coal mining.

The MMRDA and other legislations are guided by the overall National Mineral Policy (NMP) of the Government of India, which was first outlined in 1993 and subsequently revised in 2002 and further in 2008 based on Hoda Committee’s recommendations. In order to give effect to the new National Mineral Policy, 2008, the MMDRA is being amended to ensure that the development of mineral resources is in consonance with the national policy goals.

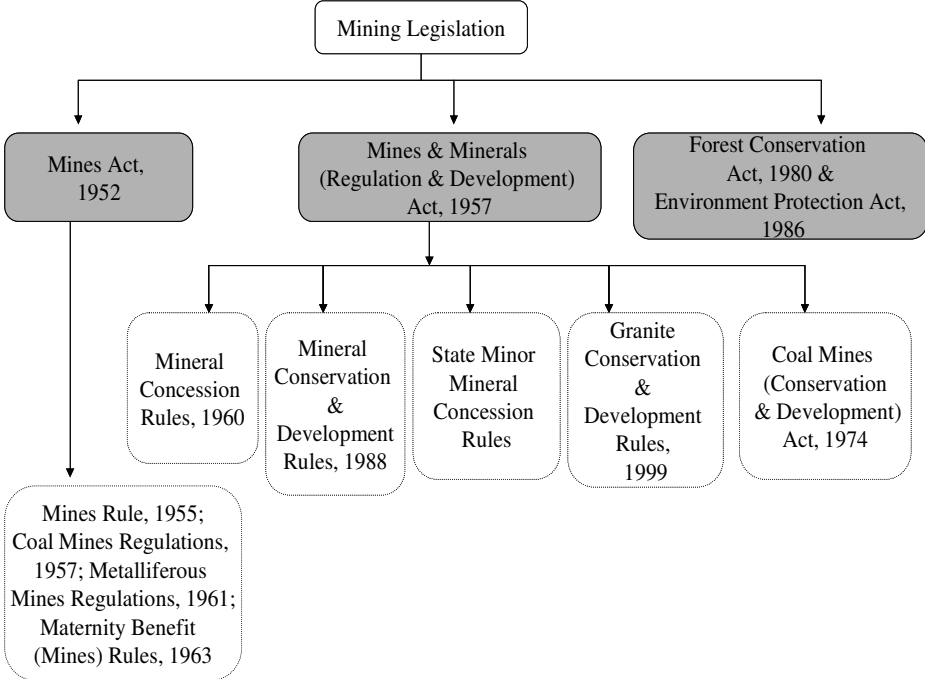


Figure 1: Legislations governing coal mining in India

1.3. Institutional structure

The institutional structure of the coal sector in India comprises of various institutions at the central, state, and local level. In addition to them, trade unions play a significant role in coal sector. Over the years, they have achieved significant representation and a powerful voice in the political process. These institutions, and their functions and responsibilities are given below:

1.3.1. Central level institutions

At the center, the key institutions involved in the management of sector include Ministry of coal, Ministry of Environment and Forest, Ministry of Mines, and Ministry of labour. *Ministry of Coal (MOC)* has the overall responsibility for developing policies and strategies on exploration and development of coal. The bodies under the administrative control of MoC include Coal Controller, various committees, the Coal Mines Provident Fund Organization, and the Commissioner of Payments Office. *Ministry of Environment and Forest (MoEF)* is responsible for formulating legislations to mitigate and control environmental pollution and planning. It is also responsible for promoting and coordinating environmental programs. Agencies such as Regional offices of MoEF and Central Pollution Control Board (CPCB) assist MoEF in executing its assigned responsibilities. Within *Ministry of Labor (MoL)*, Directorate General of Mines Safety (DGMS) is responsible for enforcing all statutory provisions on safety, health, and welfare in the workplace.

There are also a number of ministries with no direct regulatory responsibility for the coal sector but may take decisions that have the potential to impact the competitiveness of coal industry. These include Ministry of Finance (MoF), Ministry of Railways (MoR), Ministry of Power (MoP), Ministry of Industry (MoI) , Ministry of Surface Transportation (MoST), and Ministry of Steel (MoS).

1.3.2. State level institutions

At the state level, the key institutions include Department for mining, Department for forest, Department for environment, and State Pollution Control Boards. The *department for mining* is theoretically responsible for reviewing application for mineral titles, supervising compliance with the requirements and collecting the data submitted. The *department of forests* plays an important role in the grant of forest clearances and compensatory afforestation. *Department of environment* mostly functions as small entities, generally devoid of skills which are required for policy planning and implementation and therefore are restricted to perform routine budgetary functions for *State Pollution Control Boards (SPCBs)*. SPCBs are larger institutions by virtue of their traditional role, and were constituted to implement the Water Act in the states of the Indian union. Their functions include ensuring compliance with provision of relevant Acts; laying down, modifying or annulling effluent and emission standards; planning and execution of programs for prevention, control, or abatement of pollution and advising state governments on the same.

1.3.3. Local level institutions

At local level, Municipalities and Panchayats are expected to play an increasing role in environmental management at district level. Their roles and responsibilities include, among others, soil conservation, land improvement, and management of conjunctive use of resources such as water. In addition, there are various institutes that perform indirect regulatory functions such as district collector/magistrates, department responsible for collecting taxes/royalties, and department responsible for issuing licenses for mining operations. District collectors are at the forefront of the land acquisition process and supervise law and order in the district.

1.3.4. Informal institutions/Trade unions

The constitution, organization, rights and liabilities of trade unions are governed by Trade Unions Act 1926. The central trade unions recognized in the coal industry include Indian National Trade Union Congress (INTUC), All India Trade Union Congress (AITUC), Centre of Indian Trade Unions (CITU), Hind Mazdoor Sabha (HMS), and Bharatiya Mazdoor Sangh (BMS). To these central unions, a large number of local and regional unions are affiliated.

2. Industry structure and the resulting challenges in the coal sector

The coal industry in India has a monopolistic structure with more than 90 per cent of India's production concentrated in the public sector. Amongst the public sector companies, CIL accounts for the largest proportion. Its share in total coal production is more than 80 per cent. Although the private sector is allowed to mine coal through captive mining route, they have so far played a very limited role in the Indian coal industry. Their share in total coal production in 2011-12 is only 9 per cent, and has increased by only 3 per cent from 2005 (see Table-1).

Table-1: Sector wise production of coal in India (In million tonnes): 2005-2011

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
CIL	343	361	379	404	431	431	436
SCCL	36	38	40	44	50	51	52
Other PSU	2	2	2	2	2	3	3
Total Public Sector	381	401	421	450	483	485	491
Total Private Sector	26	30	35	43	48	48	49
All India Total	407	431	456	493	532	533	540
% Public in India Total	94	93	92	91	91	91	91
% CIL in India Total	84	84	83	82	81	81	81
% Private in India Total	6	7	8	9	9	9	9

Source: Provisional Coal Statistics (various years), Coal Controller's Organization, Ministry of Coal, Government of India

Coal production in India has been unable to meet the demand, as can be seen from Figure-2. Production by CIL has consistently fallen short of production targets. In 2011, for instance, CIL production was 436 million tonnes as against the target of 486 million tonnes, implying the shortfall of 50 million tonnes. In addition to deficits in quantity produced, quality of coal has also deteriorated over the years. The quality of coal has declined from 5250 K cal/kg in 1970s to the current level of 3500 K cal/kg (Singh n.d.).

The decline in the quality of coal has been attributed to inefficient mining practices adopted by CIL (Chand 2008). Before nationalization, the practice of selective mining was a norm, and a necessity for the public sector companies to remain in a competitive market dominated by private players. Each mine had a coal handling plant wherein coal was processed with crushing, multi-screening, and hand picking of stone so as to conform to the declared grade. However, after nationalization, large open cast mines were opened to increase coal production in response to the growing demand. Higher sized equipment were deployed in production, which made it more difficult, time consuming, and unremunerative to follow selective mining. With more and more open cast mines giving higher

production, installation of coal handling plant became costlier and this gave rise to in-pit crushing for sizing of coal and neglect of separation processes to remove sand and stone in most of the mines. Owing to this, the quality of coal dispatched from the pithead continued to deteriorate. The deterioration was even more pronounced due to absence of competition from the private sector.

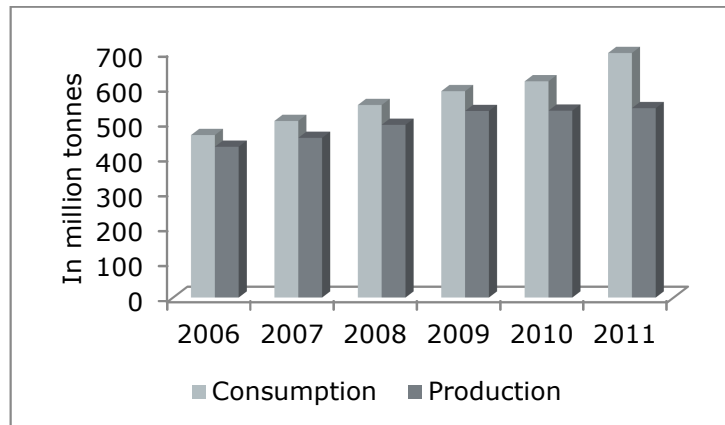


Figure-2: Production versus consumption of coal: 2006-2011

Source: Consumption data is from Report of the Working Group on Coal & Lignite for formulation of Twelfth Five Year Plan (2012-2017), Government of India

Consumption figures of 2011-12 figures are based on the Annual Plan of 2011-12

Production figures are from Provisional Coal Statistics (various years), Coal Controller’s Organization, Ministry of Coal, Government of India

Open cast technology, even today, is the prevalent technology adopted for mining. In 2011, for instance, 90 per cent of production has been through opencast mines (CCO 2012¹). The increased emphasis on opencast mining has been the result of the target to achieve faster production rates. Though the productivity in these mines has increased over the years from 0.58 tons per man shift in 1974-75 to 3.05 tons in 2004-05 (Chikkatur et al 2009) and further to 10.06 in 2011(CCO 2012), it is still very low when compared to international standards. Output per man shift in the United Colliery in Australia, for instance, is estimated at 65 tonnes¹.

Over-emphasis on using open cast mining techniques & exploitation of shallow coal resources has resulted in increased production for the country; however, it has also led to a total neglect of underground mining in India. Underground mines in India are still a mix of manual and semi-mechanized mines. There have hardly been any investments in new underground projects, in capacity building or in mechanizing the existing underground mines since the nationalization in 1973. About 95% of coal from underground mines is produced using the board and pillar (B&P) method, which is characterized by low production, low productivity, and low recovery factor (Chand 2008). The production of coal from underground mines has declined over the years. In 2002, for instance, the

¹ <http://libcom.org/book/export/html/36729>, last accessed on September 17, 2012

share of underground mining in the total coal production in India stood at 19%. It declined to 10% in 2011 (CCO 2012). The stagnation in the evolution of underground mining technology has made it difficult to access coal located at depths beyond 150 meters. With the increasing depletion of coal located at shallow depths and absence of any long term plans to develop underground mining, the demand-supply gap is expected to increase further.

The increasing demand-supply gap and deterioration in the quality of coal has resulted in growing import dependence. Import dependence has increased from 13 million tonnes in 2002 to 30 million tonnes in 2011 for coking coal, and from 10 million tonnes in 2002 to 69 million tonnes in 2011 (CCO 2012). The growing import dependence exposes economy to higher international prices and geo-political risks related to change in policies of exporting nations and application of taxes and other export reducing measures.

The constant inability of CIL in meeting the growing demand of power requirements has ramifications for energy security of the country. As a result, in 2012, the president of India had issued a directive to CIL which mandates the company to sign Fuel Supply Agreements (FSAs) with power producers assuring them of at least 80 per cent of committed coal delivery. Any failure with regard to the stipulated supply will result in payments of heavy penalty by CIL. However, in the absence of any major reforms and with the existing inefficiencies, it is uncertain if the presidential directive will have any impact on ramping up coal production in the country.

Given the growing magnitude of coal shortages, there have been recently increased talks of encouraging active participation of private players to broad base the country's efforts at increasing coal supply. It is felt that commercialization of the sector and entry of new players will result in improvements in efficiency and productivity, increase in investments, delivery of better quality of services and improved access, and lowering of prices for the consumers. However, despite the realization, there has not been much progress in improving private sector participation in the sector. Coal Mines (Nationalization) Amendment Bill 2000, which aimed to introduce private participation in commercial mining without the existing restriction of captive mining, is still awaiting parliamentary approval. Although in the recent times there have been discussions on reintroducing the bill, it is highly uncertain as to how far the bill will go given the political dynamics and the constant opposition from trade unions.

The current route of captive mining has also been unsuccessful in increasing coal production. As of 2009, only 14 of the 200 allocated blocks had started production and the number had remained the same for the past few years (ORF 2009). Statistics of the more recent years also indicate a similar lag. Out of 86 coal blocks with targeted coal production of 73 million tonnes which were scheduled to be produced in the XI plan, only 28 blocks started production as of March 2011. Production from captive mines in 2010 was estimated at only 35 million tonnes as against the target of 73 million tonnes².

2

The government has reiterated the importance of captive mining in meeting energy demand of India in various forums. In fact, Ministry of Coal in its document states that, “*captive coal mining is of utmost importance... The level of attention given and encouragement extended to captive coal mining will decide whether domestic coal will remain the primary source of energy supply*” (MoC 2005). Certain policy measures like allowing Joint Ventures have been introduced to facilitate captive coal mining development. However, still its contribution to production has remained limited.

There are various factors that are responsible for the failure of captive mining and also for impeding the development of competitive structure in the Indian coal sector. These factors are discussed below:

2.1. Delays in receiving approvals and clearances

In the present legislative and regulatory framework, the allottee of a captive coal block has to obtain multitude of clearance and approvals before actual production can begin. Table-2 gives the authorities and agencies at the Central and State level from whom the approvals have to be sought. The process of seeking clearances is a long drawn process involving central and state ministries, and sometimes also lack clarity. This causes significant delays in production from the allotted captive blocks.

Of all the clearances, the MoEF clearance is the most time consuming, since many departments and issues are involved, and also because a vast majority of coal blocks have a strong overlap with forest areas. Although the government has prescribed time frame for various clearance, these limits are rarely adhered to. For instance, the prescribed schedule for giving forest clearances is 15 months, but in reality it takes around 3 to 4 years. The situation with regard to obtaining environmental clearances is no different (ORF 2009). The process of land acquisition is another area which is leading to inordinate delays in the commencement of operations. A number of coal projects are facing delays due to opposition of local communities against mining.

Table-2: Approval and the agencies involved

Approvals/Clearances	Authority/Agency Involved
Mining Lease	
Approval or Purchase of Geological Report	CMPDIL (or Mineral Exploration Corporation Limited, Singareni Collieries Company Limited)
	Directorate General of Civil Aviation and Ministry of Defense (for unexplored blocks if Arial reconnaissance is conceived)
Mine Plan	CMPDIL
	Coal Controller
Mine Safety	Directorate General of Mine Safety

nt_reports/union_performance/2012_2013/commercial/Report_No_7/chap_5.pdf, last accessed on August 30, 2013

Approvals/Clearances	Authority/Agency Involved
Mining Technology & Conservation Measures, and Coal Categorization	Coal Controller
Mining Lease	State Government (Mining Department), Ministry of Coal (GoI)- Reviewed at various levels within the Departments at the State & Central Government level
Environment	
Environment Impact Assessment/Environment Management Plan	State Pollution Control Board
	State Environmental Impact Assessment Authority
	State Water Resource and Water Supply Department
	District Administration (for various aspects of site clearance)
	Coal Controller
	Department of Environment (MoEF)
Forest	
Forest Clearance & Valuing Compensatory Afforestation	Committee to Advise GoI (MoEF)
	Office of Chief Conservation of Forests (Regional Office of MoEF)
	State Forest Department & District Authority
	Department of Forest (MoEF)
	State Revenue Department
Land Acquisition	Ministry of Coal (under provision of CBAADA)
	State Department of Revenue
Infrastructure (Electricity, Water, Railways, Road etc.)	Appropriate Departments of the State Govt. & Ministries of Central Govt.

Source: http://www.idfc.com/pdf/publications/captive_coal_mining_final.pdf

2.2. Lack of level playing field

CBAADA 1957 empowers central government to acquire virgin coal bearing land for a centrally controlled public sector enterprise. Such preferential treatment with regard to land acquisition is not extended to the private sector. The Act also empowers the central government to acquire the land for

which prospecting license has already been issued. Thus, the private sector right holders are vulnerable in the sense that their prospecting license could be nullified should the central government expresses interest in prospecting the area.

Land Acquisition Act (1894), which provides for full acquisition of privately owned/tenancy land for public purpose, is also unclear with regard the definition of public purpose. The Act puts restriction on private companies and allows them to acquire land only for dwelling houses for workmen employed by the company or for the provision of amenities directly connected therewith. However, no such restrictions apply to public sector enterprises (PSEs) in this regard.

2.3. Structural impediments

CIL enjoys various incumbency benefits accruing to it for over 35 years of exclusive protection. Given that coal mining projects by very nature have high sunk costs, these incumbency benefits put new entrants at a disadvantage in terms of cost of production, price, and profit. The incumbency benefits enjoyed by CIL include possession of the available geological data, monopoly over the infrastructure (CIL has constructed railway lines through budgetary support etc.), domain knowledge in terms of vast experience, established market and clientele, business goodwill, established relations with communities and trade unions, and close proximity with MoC. There are also pre-disposed attitudes and mind set within the existing legal and regulatory framework where in all the agencies like DGMS, MoL, CPCB, etc have a positive bias towards CIL.

2.4. Poor quality of captive blocks offered to private players

The blocks offered to private players for captive mining are of poor quality and are generally not amenable to economic development. CIL is the custodian of all the coal blocks and the allotment of blocks to different parties are made on the recommendations of CIL. CIL reserves majority of good coal blocks for its purpose, as also inferred from the data given in Table-3. Of the total proved reserves of coal, 73% have been allocated to CIL, and only 10% to the private players for captive mining. Moreover, 57% of reserves in captive mines are in the category of indicated reserves where the detailed exploration needs to be done by the respective companies. The blocks are often located in remote and undeveloped areas, which have challenging geographies. Sometimes the blocks are not divided scientifically, which in turn preclude their economic development. Also, the condition of offering only virgin blocks devoid of any infrastructural facilities to private players serves more to block the competition than allow it.

Table-3: Distribution of gross geological coal resources (In billion tonnes)

Blocks	Proved	Indicated	Inferred	Total	% share
CIL	67.71	19.42	4.56	91.96	37
Captive	9.55	15.86	2.7	28.11	11
Non-CIL	3.46	5.17	5.98	14.61	6
Others (TISCO etc)	2.77	0.35	0	3.12	1
Un-blocked	0.78	7.01	21.61	92.49	37
Godavari Valley	8.26	6.08	2.58	16.92	7
NE Region	0.43	0.1	0.37	0.9	
Total	92.96	117.08	37.8	247.84	100

Source: The Expert Committee on Roadmap for Coal Sector Reforms, Ministry of Coal, Government of India

2.5. Presence of opaque & flawed policies

The process of allocation of captive coal blocks has been through a screening committee headed by a Secretary of coal and comprising of representatives from various ministries, state owned corporations, and state governments. This induced subjectivity in the process of allocation and has been a source of controversies in the sector. Although competitive bidding of coal blocks is a part of the Mines and Minerals (Development and Regulation) Bill 2011, the delays in switching from opaque to a more transparent policy for allocation has caused huge amounts of losses. As per the report released by Comptroller and Auditor General (CAG) of India in 2012, huge losses have accrued due to the inefficient allocation of blocks during 2004-09. The loss to the exchequer owing to the flawed policy has been estimated at Rs 1.86 lakh crore. There have been various question raised for the delays in switching to a more efficient policy, despite the possibility of introducing it in 2006 through a simple administrative order rather than waiting for legislative amendments.

There are also other policies that inhibit optimal production of coal in captive blocks. For instance, captive miners are not permitted to sell any excess coal mined from the captive blocks in the market. The surplus if any needs to be sold back to CIL at a notified price, which is considerable lower than the market price. This gives current captive mine owners little incentive to increase production beyond their needs. Also, the government's policy of jointly allocating captive mines has been a source of various problems. Firstly, due to differences in the schedules of end use projects, time bound development of these mines becomes very challenging. Secondly, varied economic interests of the miners make it difficult to optimally develop the mines thereby affecting efficient utilization of resources. Also, technical requirements of end-use projects might also be different, thus adding to the challenges (Aggarwal, S 2009)

Further, exploration is carried out by public sector enterprises without the involvement of private players. On allotment of captive blocks, geological information needs to be purchased by private sector from the government. The geological data is often of poor quality and is available at a very high cost.

2.6. Price distortions & absence of independent regulator

The pricing of coal was fixed by the central government until its deregulation in 2000. With deregulation, the right to fix the price of coal has been conferred on CIL and SCCL. However, the pricing of coal is still far from being efficient and market driven, and is guided by the Ministry of Coal. There have been rampant talks of introducing price reforms in the sector. However, these reforms are secondary unless there is a market with multiple producers, each with limited power to influence prices. The presence of a large monopoly producer has not allowed the sector to reap the benefits of price deregulation.

The impact of monopolistic market structure is exacerbated by the absence of an independent regulatory oversight. The presence of an independent regulator is important to boost investments in the sector, create a level playing field, introduce competitive price regulations, and to govern allocation of blocks, approve mines, etc. While the necessity of establishing an independent regulator has been widely debated over the last few years, it is only very recently in 2012 that the Coal Regulatory Authority Bill has been introduced. The Bill has recently been approved by Cabinet Committee on Economic Affairs (CCEA), and will soon be tabled in Parliament. The bill does not give pricing power to the regulator; however, it empowers them to frame rules and methodologies for determining the price.

TERI in 2006 did a perception survey to seek the opinion of private players and consumers regarding issues that need to be resolved for enabling a competitive environment in the coal sector. The survey was a part of project on 'Competition in India's Energy Sector' and was supported by Foreign Investment Advisory Services (A joint Service of the International Finance Corporation and The World Bank); DFID (Department for International Development) and the Competition Commission of India (CCI) (TERI 2007). The survey findings are presented in Table-4 and Table-5.

Table-4 gives the opinion of respondents on impact of the competition-enabling provisions. The monopolistic structure of coal industry was seen as the biggest deterrent to competition and greater private sector participation. The existence of public monopoly with critical control over prices and other aspects raised concerns on non-level playing field for private operators. Absence of independent coal regulator was seen as a major impediment by 47.8% of respondents. 43.5% of survey respondents also regarded the presence of stiff legislations concerning land acquisition, rehabilitation and environment management as a major competition impediment.

Table-4: Factors impeding competition in the coal sector

	Respondents
Absence of independent sector regulator	Most important (47.8%)
Dominance of a Public Sector Monopoly leading to non-level playing field	Most important (52.2%)
Presence of stiff legislations concerning land acquisition, rehabilitation and environment management	Most important (43.5%)
Acute shortage of coking & non-coking supplies and deterioration of quality of coal	Important (32%)

Source: TERI 2007

With regard to captive mining, 70.8% of the respondents believed that the lack of transparency in allocation of coal blocks is the most important factor contributing to limited private involvement in the sector. Further, about half the respondents opined that ‘high cost and low quality of geological information’ and ‘release of blocks with low prospects’ are major deterrents to private captive mining. Factors such as ‘restrictions on use of surpluses in excess of captive needs’ and ‘lack of developed supporting infrastructure’ were rated as moderate contributors to lack of private involvement in captive mining.

Table-5 gives the survey findings with regard to the extent to which statutory provisions of sector legislations impeded competition in the sector. Biased policies in favor of public sector, flawed policy for coal allocation, restrictions on commercial mining, and control over production were regarded as the major provisions requiring reforms.

Table-5: Need for reforming statutory provisions

Mines and Minerals (Regulation and Development) Act 1957, Mineral Concession Rules	
Preference to PSEs for grant of PL and ML	Major
High cost of geological information	Moderate
Coal Mines Nationalization Act/Restriction of commercial mining	Major
Restriction on competitive bidding	Major
Coal Bearing Areas (Acquisition and Development) Act 1957 and Land Acquisition Act 1894 (Preference to PSEs for land acquisition)	Major
Notification under Contract Labour (Regulation and Abolition Act) 1970 (Restriction on the use of contract labour)	Moderate
Colliery Control Order 2000 (Power of the government to control production)	Major

Source: TERI 2007

While some of the impediments such as restriction on the use of contract labor and absence of competitive bidding have been corrected since the time the survey was conducted in 2006, a lot still needs to be done in addressing other loopholes and uncertainties. Most important would be to introduce a common legislative framework that provides a level playing field between public and private sector.

The government is currently laying a lot of stress on involving private players to undertake mining on behalf of CIL. The focus is on the MDO (mining, development, and operations) model, wherein private sector undertakes mining operations, while the ownership and sale of coal rest with CIL. It is clear that CIL does not have a capacity to meet the current and projected energy demand for India and that the greater involvement of private sector is inevitable. Given this, it becomes important to focus on introducing a series of policy reforms which correct for various impediments that are observed in introducing competition in the sector. Given the changing dynamics, the role of the government needs to be appraised from being the operator to a facilitator creating enabling policies for the private investments to flow in.

3. Environmental problems, the policies, and the governance issues

3.1. Environmental problems associated with coal mining

Coal mining impacts the environment and ecology to an unacceptable degree, unless carefully planned and controlled. Some of the environmental impacts are felt immediately, while others are perceived over the long term. The magnitude of the environmental impacts, however, vary with the method of mining, scale and concentration of mining activities, geological and geomorphological setting of the area, nature of deposits, land use pattern before the commencement of mining operations, natural resources etc. The major environmental problems at the mining stage are given below:

- **Destruction of forest & biodiversity**

Over 60 per cent of coal resources in India are located in forest areas (MoC 2005). Most coal blocks allocated in the last few years have been in or adjoining forest areas. Given the anticipated increase in demand for coal, the problem of loss of forest cover will accentuate as the need to access forest resources will increase manifold. MoC (2005) estimated that the demand for forest land for mining will increase from about 22,000 ha in 2005 to about 75,000 ha by 2025. Loss of forest cover not only impacts the biodiversity and natural ecosystems, but also compounds the problem of climate change, as there are fewer sinks available for CO₂ and consequently reduced carbon sequestration. Also, forest areas in many coal producing states are sources of non-timber forest products such as mahua, tendu, chironji, bamboo, mushrooms, etc. With the loss of forests for coal mining, communities dependent on these forest resources lose their traditional sources of livelihood

- **Air pollution**

At the stage of mining, activities like drilling, blasting, excavation, construction of haul roads, movement of heavy earth moving machinery (HEMM) etc. results in fugitive emissions of particulate matter and dust. These emissions cause significant human and social impacts by causing air pollution and ecological disturbances. According to MoEF 2009, most coal mining districts including Dhanbad, Korba, Angul, Talcher, Jharsuguda, and Singrauli, are critically polluted. The release of greenhouse gas (GHG) emissions contributes to the problem of climate change. An estimated 650 Gg of methane was released from coal mining in 1994 (MoEF 2004). The problem of air pollution and GHG emissions is compounded by the presence of mine fires, which can be commonly seen in Jharia, Raniganj and other coal mining regions.

- **Land degradation**

Degradation of land is perhaps the most serious impact of coal mining operations. Open cast mining causes a much greater degradation to land than underground mining. With prominent emphasis on large scale mechanized opencast mining in India, large tracts of land are left degraded as a result of activities like excavation, stacking of waste dumps, discharge from workshops, construction of tailing

ponds, etc. Underground mining operations also lead to problem of subsidence of land and result in changes in topography and drainage pattern.

In Jharia, for instance, total of 75.77 square km area of land has been affected due to fire (17.32 sq.km.), subsidence (39.47 sq.km), excavation (12.68 sq.km) and dumps (6.30 sq.km) (Singh, R. et al 2007). Illegal operations and the practice of “rat-hole” mining have also compounded the problem of land subsidence and devastation, particularly in Raniganj, Jharkhand and Meghalaya.

Sahu (2011) has made certain estimations with regard to land degradation resulting from waste generation. As per him, coal mines of CIL removed about 500 million cubic meter (Mcum) of overburden to produce 260 million tonnes of coal in 2003-04 i.e. an avg. stripping ratio of 1.92 cubic meter of overburden against per tonne of coal production. Coal production and the resulting waste generation and land degradation for the year 2005-06 are given in Table-6. Given India’s future plans to produce up to 300 meters depth with the given technology, and assuming the stripping ratio of future coal production to be 1:15, Sahu pointed that for every 1 million tonnes of coal production, 15 million tonnes of waste will be generated. This is huge quantity and given the growing unavailability of land in India, there will be problems in storing this waste.

Lack of proper land reclamation and mine closure further compounds the problem of land degradation. India does not have a detailed inventory of abandoned mines; however, as per CSE estimates, there are at least 240 abandoned coal mines where no reclamation has taken place³

Table-6: Coal production, waste generation & land affected: 2005-06

	Unit	Value
Production	million tonnes	407
Overburden/waste	million tonnes	1493
Estimated land affected	hectares	10175
Land in ha/million tonnes of coal		25

Source: Sahu (2011)

- **Stress on water resources**

Coal mining activities adversely affect the environment especially water. It degrades the quality of water by not only lowering the pH of the surrounding water resources but also by increasing the level

³ <http://www.cseindia.org/userfiles/02Coal%20mining.pdf>, Last accessed on July 10, 2013

of suspended particulate solid, total dissolved solids and some heavy metals. Further, the overburden generated also contaminates the surrounding water bodies and increases the heavy metal concentration especially of Fe, Cu, Mn and Ni which reduces the utility of water for domestic purposes. The Damodar River which flows through 6 coalfields (North and South Karanpur, East & West Bokaro, Ramgarh, Jharia, and Raniganj) has been classified as heavily polluted by CPCB (Priyadarshi 2010). Acid Mine Drainage (AMD) is also the most persistent pollution problems especially in the mines of North Eastern Coalfield (Singh, n.d.).

3.2. Current policy framework for environmental management

Indian constitution is one of the few constitutions worldwide that have specific provisions for environmental protection. This mandate has been strengthened with the recognition of the right to a wholesome environment as being implicit in the fundamental right to life, guaranteed in Article 21 of the Indian constitution. The evolution of environment legislations in India can be said to have begun with the UN conference on “Human Environment” 1972 held in Stockholm. To implement the recommendations, the government of India enacted several Acts on environment. The various pollution control Acts enacted by the government, which are also applicable to the coal sector are given in Box-1.

Environment Protection Act (EPA) 1986 is, however, an umbrella legislation, which has precedence over the pollution control Acts discussed in Box-1. The Act empowers the Central Government to take all measures as deemed necessary for protecting environment, and preventing, controlling, and abating pollution. The Act lays down standards for discharge of effluents, national ambient air quality standards, ambient air quality standards, and the requirements of Environmental Impact Assessment (EIA) based environmental clearance. As per the notification issued in 1994, EIA was made mandatory for all mining projects with mining lease greater than 5 hectares⁴. The EIA notification provides for a two stage clearance, with site clearance given in the first stage and environmental clearance in the second stage. Public hearing is an important aspect of both site and environmental clearance.

The mining plan, which is required to be submitted by the company as a necessary requirement for obtaining mining leases under Mineral Concession Rule 1960, also incorporates details on environmental management. The environmental details which need to be incorporated include, amongst others, details on water sources, an assessment of impact on forest and environment including air and water pollution, details on pollution control devices, etc. Since 2003, restoration schemes and land reclamation have become important components of mine planning. The companies are now required to submit closure plans and give details of corpus funds to MoEF five years in advance of closure. Also, they are mandated to follow various practices for effective land reclamation. This includes the practice of preservation of top soil for the subsequent use in reclamation.

⁴ Mining activity in the area above 50 hectares require prior environmental clearance from the central government on the recommendations of an Expert Appraisal Committee (EAC) and smaller mining projects covering an area of 5 to 50 hectares require prior environmental clearance from the state/union territory EIA Authority

With regard to conservation of forests, Forest Conservation Act (FCA) enacted in 1980 plays an important role. It restricts the powers of state governments in respect of de-reservation of forests and use of forest land for non-forest purposes without prior approval of the Central government. The Act stipulates that, for any area of forest lost due to development, the mining companies have to pay for purchase of an equivalent area of non-forest land as near as possible to the site of diversion, or twice the degraded forest area. The land is then transferred to state forest department and is declared as protected forest. The mining companies also need to contribute funds for compensatory afforestation (CA) on these lands, along with payments equivalent to the estimated net present value (NPV) of diverted forest land. Both CA and NPV are deposited to Compensatory Afforestation Fund Management and Planning Authority (CAMPA) under the state forest department, which is then realized for implementation under forest management plan. Advisory Committee headed by the Inspector General of Forests in the Ministry of Environment and Forest (MoEF) is responsible for overseeing the implementation of statute.

Box-1: Acts for Prevention and Control of Pollution

Water (Prevention and Control of Pollution) Act 1974 (amended in 1988)

The Act provides for the prevention and control of water pollution and for the maintenance or restoration of the wholesomeness of water. CPCBs and SPCBs are constituted as autonomous institutes under this Act for prevention and control of water pollution and related matters. A prior permission from the SPCB is required for setting up any operation, which is likely to discharge effluents. These institutes are empowered to establish and enforce effluent standards in mines and processing plants. In case of non-compliance, the defaulting units can be asked to shut down

Water (Prevention and Control of Pollution) Cess Act 1977

The Act provides for the levy and collection of a cess on water consumed both by persons carrying on certain industries and by local authorities to augment resources for the Pollution Control Boards. Mining is one the industries included within the ambit of the Act and accordingly a cess is charged per kilolitre water used for activities such as industrial cooling, spraying in mining pits, etc. Industries and operations which have installed mechanisms to keep water pollution under control are given a rebate in the cess charged.

Air (Prevention and Control of Pollution) Act 1981 (amended in 1988)

The legislation provides for prevention, control, and abatement of air pollution. It lays down air pollution standards and is administered by CPCB and SPCB. The authorities are empowered to close down a unit or withdraw support services in case of any violation of the law.

Public Liability Insurance Act (PLIA) 1991

Under this act, every owner is required to take out insurance policies, in order to secure himself against any liability to give relief to the persons affected by accidents occurring while handling any hazardous substance. The Central and State Governments, corporations owned or constituted by them and local authorities are exempted from this requirement.

3.3. Governance issues with regard to environmental management

Despite the existence of policy and legislative framework, environmental condition in and around the mining areas has continued to deteriorate over the years. An analysis of the laws and policies and the

evaluation of their effectiveness through various stakeholder consultations⁵ suggest that the problem with coal mining in India is not due to absence of regulations, but due to the poor enforcements. Various governance deficits have been observed in the way the policies are implemented on the ground.

With regard to mine closure and restoration, for instance, the companies have been found to not adhering to practices as mandated by the policies, and there have been no stringent actions taken in this regard. CAG in 2011 conducted a performance audit of CIL and its subsidiaries with a view to assess whether the companies were fulfilling their responsibilities in an effective and efficient manner. As per the findings of the report, no mine closure plans were prepared for mines which were to be closed within 2 to 4 years. A backlog in backfilling and technical reclamation of 12,643 hectare land was found in seven subsidiaries of CIL as on March 31, 2010. Also, the policy of preserving and re-using top soil for reclamation was not followed in practice. Out of 18 open cast mines covered in CAG audit, top soil was found to be preserved in only 5 mines. Also, it was reported that in mines where restoration and reclamation were observed, the methods did not confirm to national standards.

Similar problems of implementation were found with regard to environment clearances which are mandated under EPA. As per CAG (2011), 239 coal projects have been found operating without clearances. The process of EIA comprising mandatory screening, scoping and public consultations is also fraught with certain inherent challenges. These challenges are given in Box-2.

Box-2: Some major challenges in the EIA*

- Collection of data is inaccurate & the methodology adopted is unscientific
- There is a conflict of interest as the project proponents gets the EIA conducted
- Fabrication, reproducing old information, or avoiding crucial facts from the EIA document is common
- Process of public hearings is almost farcical
- In absence of cumulative impact assessments, many lease areas comprising smaller areas (less than 5 hectares) are excluded from the requirement of an EIA, leading to unchecked mining and exploitation
- Most of the assessments are conducted during summer season when the land is drier and meaner. As a result, water courses are generally neglected in EIAs.
- Issue of implementation and inadequate capacity of the appraising as well as monitoring authorities make the EIA process a mere administrative formality

** These issues have been brought forth by stakeholders in a workshop organized by TERI on "Making Minerals Development Work for the People", held on December 2, 2011*

During stakeholder consultations with officials in Jharkhand, it was found that CA has also not been done for many mining projects. The stakeholders informed that coal mining companies generally transfer funds to CAMPA in time; however, the follow up action of implementing the program by the

⁵ Stakeholder consultations were done on the project on "Responsible sovereignty and Energy Resources" supported by Konrad Adenauer Stiftung (KAS) (2010-2012).

state government is not done. In Jharkhand, for instance, no CA has been done in the past 10 years⁶. Non- release of funds from CAMPA due to lack of co-ordination between central and state governments has been the major reason behind the lag. Also, it was reported that in the projects in which CA has been done, no emphasis was given to restoring the original ecological order and biodiversity of the area. It was done more for the sake of meeting the policy requirement.

The problems of co-ordination across various government departments and institutions have resulted in various problems and have been identified as a major concern among stakeholders during consultations. For instance, various problems related to dust, coal spill-outs and other environmental externalities have resulted due to lack of co-ordination between SPCBs, which have responsibility of ensuring that trucks carrying coal are covered with tarpaulin, and state transport departments which are responsible for regulating overloading of coal in trucks or trains. The problem of co-ordination between DGMS and local police with respect to mining accidents also came out during discussions. In addition to co-ordination issues, overlaps among jurisdictions have been observed, which create problems and reduces effectiveness of regulations. Regional office of MoEF and SPCBs, for instance, have similar roles and responsibilities of monitoring and enforcing various laws applicable to air, water, and land.

The regulatory bodies are clearly ineffective in regulating and monitoring the different aspects of coal development. Two of the major factors that were reported for their ineffectiveness are shortages of skilled manpower and inadequate availability of equipment. These factors were highlighted during discussions with various regulatory bodies that include SPCBs, DGMS, State transport department, State forest department etc. In addition, political influence has been reported to be the major factor behind no or inadequate responsiveness of the regulatory bodies to the observed fallacies. In many cases, loopholes in implementations are deliberately ignored given the importance of coal for electricity generation and the grave impact on the economy as a result of any disruptions in the coal supply.

⁶ Based on the interview with Dr. S.N. Tiwari, Additional Principal Chief Conservator of Forests, Ranchi, Jharkhand on April 28, 2011

4. Social issues and governance deficits in coal mining

4.1. Policy framework and issues and challenges

Mining activities, in general, generate huge social costs in the form of displacement, loss of livelihood, and social exclusion. The number of people displaced as a result of mining of all minerals has been estimated at 2.55 million, of whom 55% are members of schedule tribes (Sethi 2006; Bhushan 2007, as cited in Chikkatur and Sagar 2007). This loss is particularly greater in the case of coal mining in India, as most of the regions rich in coal reserves fall in remote forest areas and hilly regions which are inhabited by indigenous communities and/or thickly populated. The problem is compounded due to the dominance of open cast mining which requires larger tracts of land and hence results in larger loss of habitats and livelihoods. As per the MoC (2005), a minimum of 1, 70, 000 families involving over 8, 50, 000 people are likely to be affected by future coal projects.

Coal mining projects not only affect the people whose land and houses have been taken over, but also people living in vicinity. Villages surrounding the projects, even if not displaced, suffer from local environmental impacts, which include water scarcity, air, noise, and water pollution, health impacts etc. Coal mining operations are also subject to safety and health hazards for mine workers, some of which include inhalation of dust; inhalation of toxic fumes and gases; exposure to radiation; noise induced hearing loss; heat stroke; exhaustion etc.

There are policies in place to address externalities with regard to displacement and govern health and safety for mine workers. The policy framework is given in Box-3.

To understand the social impact of coal mining and the effectiveness of the policies, a perception survey⁷ was conducted by TERI in 2011 in coal mining areas of Jharkhand and West Bengal. The methodology and survey results are given in Section 4.1.1 and 4.1.

⁷ The survey was conducted under the project on “Responsible sovereignty and Energy Resources” supported by Konrad Adenauer Stiftung (KAS) (2010-2012)

Box-3: Policy framework for addressing social externalities

Relief and Rehabilitation

Land Acquisition Act (1894), a holdover from colonial times, does not have any provision for rehabilitation. National Policy on Resettlement and Rehabilitation, enacted in 2007, is the key legislation dealing with the issue of Resettlement and Rehabilitation (R&R). Some of the key features of the policy are as follows:

- Provision of benefits to affected families which include land-for-land (to the extent land is available in the resettlement areas); at least one job employment (subject to the availability and suitability); training and capacity building for self-employment; housing benefits, etc.
- Provision of infrastructural facilities & amenities in resettlement area
- Provision of financial support to affected families for construction of cattle sheds, shops, working sheds etc.
- Provision of life time monthly pension to vulnerable persons like disabled, destitute, orphans, widows etc. who are not provided or cannot immediately be provided with alternative livelihood
- Establishment of a strong grievance redressal mechanism
- Mandatory dissemination of information on displacement, rehabilitation and resettlement
- Undertaking detailed Social Impact Assessment (SIA) for projects involving displacement beyond definite thresholds.

In addition, CIL has its own R&R policy which was adopted in 1994. The policy is to offer job to at least one member of each displaced family from whom land of a minimum size (generally taken as two acres of irrigated land and three acres of un-irrigated land) has been acquired

Health and Safety

The key legislation governing health and safety aspects is Mines Act 1952. The Mines Act is supplemented by numerous rules and regulations of which the most important are Coal Mines Regulation 1957 and Mines Rule 1955. The implementation of Mines Act and subordinate legislation enacted are under the domain of Director General of Mines Safety (DGMS), who operates under the Ministry of Labour.

4.1.1. Methodology used for field survey

The survey was based on a quantitative research method involving one to one interview. A semi structured questionnaire was developed for data collection across four target groups: mining workers, displaced communities, villagers close to mines, and distant villagers (residing 7-10 kilometers away from coal mines and not near to any other mines/industrial area). In total 400 people were interviewed, which comprised of 100 mine workers (50 from Jharkhand and 50 from West Bengal), 100 displaced families (50 from Jharkhand and 50 from West Bengal), 100 villagers residing close to mines (50 from Jharkhand and 50 from West Bengal), and 100 villagers residing at a distance from coal mines (50 from Jharkhand and 50 from West Bengal).

The sampling was done in two stages. In the first step, villages were selected and in the second step the respondents were selected.

Step 1: Selection of villages

In the first step, a list of villages was prepared with the help and inputs from Government officials /local representatives and influential people of the area. Two separate lists were prepared for Jharkhand and West Bengal. These lists were used as the sampling frame. From each state, two villages were selected by using systematic random sampling. Only in the case of displaced

communities, more number of villages was selected. Further, equal number of respondents was selected from each village.

Step 2: Selection of respondents

With regard to non-mining workers, each selected village was divided into two segments with approximately equal number of households. The center point of each segment was considered as the starting point. From this point, following left hand rule, required number of interviews were carried out. The interviews were conducted with either the head of the family or any competent member living in the selected households. For mining workers, an attempt was made to ensure randomization and coverage of different socio demographic strata

4.1.2. Survey findings

Displaced community

Of the total household representatives interviewed, majority of them reported that prior consent for displacement was taken by the mining authorities, and that there was no threat or force used against them. For instance, out of 79 households displaced between 1995 and 2005, 84% reported that the displacement happened only after seeking prior consent. Only 13% of these households complained of the use of threat or force for displacement.

With regard to the amount of compensation, most of the households reported to have received compensation as per the market price. However, a serious lag has been found between the year of displacement and the year of receiving compensation. Mean years of offering compensation to the displaced household after the displacement is 13 years. This is a biggest source of dissatisfaction among communities as the market value of land at the date when compensation is promised is much lower than its value at the date when compensation is received (land prices shoot up manifold as soon as mining projects start). This generates a feeling of distrust in the minds of land losers and creates resentment against mining.

With regard to rehabilitation, 92 out of 100 households were provided with alternate house/land. While almost all the households had access to basic amenities like electricity and schools, unavailability of water and medical infrastructure was a concern with a proportion of them. 28% of households witnessed problems due to non-availability of water and 42% with the non-availability of hospitals.

While majority of households expressed satisfaction with regard to relocation, a problem was found with regard to long run income restoration. A comprehensive relief and rehabilitation program should include measures that result in improvement of the former standard of living and earning capacity of the displaced community after a reasonable transition period. However, with regard to coal mining, only around 1/4th of the total households interviewed witnessed increase in income. 30% witnessed no impact on the income levels, while 46% suffered decline in income.

Majority of displaced households complained of problems due to deterioration of environment as a result of mining. 73% of the households suggested that the air pollution has increased after the start of mining in the area. 68% of the households also complained of deterioration in the quality of water.

Mine workers

Of the 100 workers interviewed, only 17 were found to be employed from the displaced community, while the rest were employed from outside. On questioning about working conditions inside mines, only 27% rated them to be bad, while the rest rated the condition to be either good or satisfactory. Almost all the workers reported accident rate per annum to be low. Majority of workers (i.e. 85%) informed that the accidents are in the nature of minor injuries, while the rest reported accidents to involve major injuries. With regard to basic medical facilities, 78% had access to them, while the rest had no information about the facilities.

Majority of workers (i.e. 73%) informed that health and safety checks are conducted for them; however, frequency of these checks is low. During stakeholder consultations, it was found that inadequate availability of manpower with DGMS is a major factor constraining the regularity of these checkups. The checkups are therefore mostly conducted only once a year. On questioning about diseases, 40% reported to have been suffering from occupational diseases, which majorly consist of breathing problems.

Villagers

With regard to impact on local communities, it was found that almost all villagers (i.e. both residing near the mines as well as located at some distance to mines) benefitted from mining as it led to creation of infrastructure like roads, schools, hospitals, and electricity. However, there has been a negative impact due to changes in environment and forest cover due to mining. The impact has been more severe for the villagers residing near the mines. 95% of nearby villagers were suffering due to negative impact on environment, while 78% of distant villagers informed of no perceived impact on environment. Similarly, with regard to forest cover, 79% of nearby villagers have been affected due to loss of forest cover, while 76% of distant villagers witnessed no problems in this regard.

Villages residing near the mines are also facing problems due to water shortage and dust emissions. 46% of the nearby villages are suffering from lack of access to water and 54% due to dust emissions. During stakeholder consultations, it was found that transportation of coal is a key source of pollution. Although, there have been arrangements in place to sprinkle water to settle dust, shortages of sprinkling equipment leaves extensive dust to be a major challenge to be countered in the area.

4.2. Governance issues with regard to social management

The survey results bring our attention to the three main governance challenges that need to be addressed. First is the inadequate capacity of regulatory bodies which results in ineffective monitoring and regulation. Second is the lag in compensation and absence of holistic measure to restore income levels of displaced communities. In principle, income restoration can be achieved through either providing jobs in the mines or providing replacement land, or by providing self-

employment. Although these provisions are a part of National Policy on R&R 1997(see Box-3), but these are subject to disclaimers related to availability of land and jobs. In practice, all the measures have become difficult in the current scenario. Giving land against land is no more possible owing to its limited availability. CIL has had a long tradition of providing one job for every 2 acre of land acquired from the family; however, this has now become difficult given the increased mechanization in the coal industry. Also, providing necessary skills for entrepreneurship in the short time is always not feasible. Given this, the only solution to compensate the communities adequately and equitably is to provide them a stake in mining projects and treat them as partners.

Third is the ineffectiveness in addressing environmental challenges which are causing various problems to the communities. This brings us back to the governance deficits with regard to environmental management, as discussed in Section 3.3. To make matters worse, there have not been any effective mechanisms in place to address the grievances of people affected by coal mining though bodies like SPCBs claim to have installed systems to receive and address public complaints.

During stakeholder consultations, it was found that the role of NGOs in addressing grievances and spreading awareness about the possible legal options is also limited in many villages. NGOs are not spread across the country and many a times they have limited capacity to effectively deal with issues. There are also many instances and reports where NGOs have been fake and have been found joining hands with authorities and acting as middlemen. Even if grievances are raised with regulators and courts which are a part of the quasi-judicial and judicial structure, problems like lack of expertise and limited manpower result in large delays and hamper judicial procedures.

Moreover, mining operations also negatively affect the people deriving their livelihoods from common property resources (CPR) such as forests, common pond, common grazing land etc. While there are provisions in law to compensate land holders, the village people, tribals, and other groups who survive on the basis of CPR are often deprived of compensation. The major challenges that restrict provision of relief and rehabilitation to these groups are absence of legal documents to prove ownership right on the land and absence of an established methodology to enumerate, value, and provide compensation against these resources. The lack of social inclusion of these groups in the policies has created space for menace like coal theft, pilferage, and illegal mining. Stealing of coal by poor villagers and tribals is a widespread phenomenon in coal rich regions of the country, particularly Jharia and Raniganj. These operations, in addition to causing environmental concerns as given in Section 3.1, also involve various safety hazards. While at the central level, there have been frequent discussions on possible measures to curb illegal mining, the people and authorities at local level see these operations as economic activities and no objections are raised against these menaces.

A lot of social problems associated with coal mining can be addressed by undertaking a comprehensive Social Impact Assessments (SIA) before the mining project starts. Though SIA is a part of national policy on R&R, but its implementation is fraught with challenges related to adoption of unscientific methodology, production of biased reports, missing information, data gaps, etc.

5. Recent policy and institutional reforms, the impact and the missing gaps

In the past few years, various reforms have been initiated in the minerals sector, which have bearing on governance in coal mining. These reforms have been the result of various national and international pressures. National pressures include the need for greater exploration information; transparent allocation of resource revenue; and compensation for socio-environment externalities created by mining. Internationally, there was a need for India to make credible commitments to the world with regard to bringing transparency in approvals, removing regulatory hurdles, and creating incentives for increased investments in the sector.

NMP 2008 and MMDR Bill 2011 have sought to address many of the industry and community concerns by including pro-people clauses that relate to benefit sharing, minimizing footprint, improved participation in decision making, and effective grievance redressal mechanisms. The policy and the bill reflects the need to have a sustainable development framework in mining which re-emphasizes the significance of addressing social and environmental externalities as central to minerals development. Some of the salient features of the MMDR bill are given in Box-4.

Provision of competitive bidding of concessions, as included in the bill, is likely to bring in transparency and correct for the most important factor impeding private sector participation (as discussed in Section 2). Coal producing companies will now be also required to contribute 26% of profits to District Mineral Foundation (DMF), which will then be used for benefits of project affected people and development of local areas. This is a progressive move as it recognizes the communities to be as much owners of the resources as is the state. This, in addition to compensation and rehabilitation measures as given in national R&R policy, may result in holistically improving standard of living of displaced as well as other communities residing near the mining regions. However, much depends on how the funds are disbursed from DMF. Previous experiences with regard to utilization of funds collected for a designated purpose have not been very encouraging. For instance, the money collected through CAMPA has been found to be either not utilized or utilized inefficiently. In this context, it is important to have transparent and participatory mechanisms to ensure that funds collected through DMF are managed and utilized effectively for community development.

Establishment of tribunals for adjudicating mining related disputes, as proposed in the bill, is likely to reduce delays in giving justice, provided these tribunals are equipped with appropriate expertise required to assess mining related cases. Sustainable Development Framework (SDF) for mining could also result in introduction of best practices with regard to socio-environmental management provided efforts are made to create awareness about the framework among different stakeholders.

As discussed in Section 2.6, establishment of a coal regulator for improving regulatory oversight is a progressive and a much awaited reform for introducing competition, improving transparency, creating a level playing field etc. However, an important factor that will determine its success in creating more faith in governance and acceptance of mining is its independence from the government as well as the

industry. In context of improving the way EIAs are conducted, the role of the National Environment Appraisal and Monitoring Authority (NEAMA) is seen as a positive way forward. It will result in a more independent and scientific assessments and will mark a major improvement over the current assessment system. However, efforts also need to be channelized to strengthen capacity to do cumulative impacts and risk assessments.

The Land Acquisition and Relief and Rehabilitation Bill introduced in 2011 attempts to address the problems with Land Acquisition Act 1894, which have been the center of debates and controversies for many years. This include, among others, unclear definitions and clauses and absence of requirements for compensation, participation and R&R in the Act. The Bill has introduced a number of positive changes which include mandatory provisions with regard to taking consent of at least 80% of the affected people, conducting Social Impact Assessments (SIA) through independent body, and broadening the definition of affected people to include sharecroppers, agricultural labourers, tenants etc. whose livelihoods are affected.

While these various policy initiatives are positive steps to address governance deficits in the coal mining sector, much depends on the effectiveness of their implementation. As seen in previous sections, much of the governance challenges are not due to the absence of policies, but due to the flawed implementation. Therefore, these policies need to be combined with reforms which improve their implementation & effectiveness on the ground. Some of the reforms that need to be initiated include:

- Strengthening capacity of existing regulatory agencies and local institutions;
- Ensuring timely and regular co-ordination among centre, state and district level agencies;
- Enhancing transparency and knowledge on various issues;
- Promoting greater responsiveness and accountability across all levels of government; and
- Laying clear rules and guidelines on the power, functions, and responsibilities of different institutions.

Box-4: Some salient features of the MMDR Bill 2011

Competitive bidding- The Bill lay emphasis on allocation of concessions through competitive bidding.

Transparency and accountability – Certain disclosure requirements may be detailed in subordinate legislation or executive orders. For example, the Central Government *may* prescribe a framework for disclosure of information related to mineral resources and their exploration and exploitation, and recycling [Sec 46 (7)]; reports on reconnaissance or prospecting operations have to be published. [Section 4 (10)]

Reducing waste and high technology – The new Bill lays great emphasis on scientific methods for prospecting, extraction and beneficia

Regulators – National and State Mining Regulatory Authorities are proposed to be established under the Bill. (Chapter V)

Tribunals- The Bill has proposed establishment of Nationals and State Minerals tribunals for adjudicating mining related disputes.

Benefit sharing – Every lessee shall pay 26 per cent of profits in case of coal and an amount equivalent to royalty in case of all other minerals to a District mineral foundation in addition to any other compensation paid under any other rehabilitation law or policy. [Sec 46(2)]

Compensation and support for host population – Every licence holder shall pay an annual compensation to every person or family holding occupation or usufruct or traditional rights of the surface of the land over which the licence has been granted. [Sec 43(1)]

Corporate Social Responsibility-Every mining plan shall contain a corporate social responsibility document, comprising details on socioeconomic activities in and around the mine area for the benefit of the host population in the panchayats adjoining the lease area. [Section 26 (3)]

Supports the needs of the host population-Final closure plans shall include measures to reduce hazards, improve productivity and ensure that it supports the needs of the host population. [Section 32 (8)]

Participation – Gram Sabhas/ District Councils/ Panchayats have to be *consulted* before issuing of a notification for mineral concessions. [Sec 13(10)] IBM or the State directorates shall give their approval to a plan only after *consulting* concerned Panchayats [Sec 32(5)]

SDF - The Bill proposes to give a legal basis to sustainable development framework for mining. Every mining plan *may* take into account SDF and every progressive and final mine closure plan shall take into account the SDF, as finalised by the government of India [Sections 26(1), 36(1) & 46]

Additional steps - Application for a high technology reconnaissance cum exploration licence and prospecting licence must contain steps proposed for minimizing the adverse effect on the environment, such as prevention and control of air and water pollution, progressive reclamation and rehabilitation of the land, a scheme for the plantation of trees, restoration of local flora and fauna. [Sec 21 (1) (v)]

Forest clearance – The State government will obtain all the necessary forest clearances required to enable commencement of operation before notifying any area for inviting bids. [Section 13(5)]

Source: TERI Policy Brief (2012)

6. Concluding remarks

The coal industry was nationalized between 1971 and 1973. The rationale given for nationalization was that the private operators were unable to modernize and increase production to meet national demand and meet norms related to working conditions, payment of wages, health, safety etc. The problems were reported despite the presence of the then existing legal and regulatory authorities like Chief Inspector of Mines, Coal Board, and Coal Mines Welfare Organization. However, after around 40 years of nationalization, the country is still confronted with the problems of widening demand-supply gap, deteriorating quality, and inefficiencies in production. The socio-environmental conditions around mining continue to deteriorate and the reasons stem from ineffective enforcements, inadequate capacity of regulatory bodies, flaws in institutional structure, information deficits, etc. The only exception is with regard to working conditions in mines and welfare of workers, which have improved considerably post nationalization.

Given the above, an important question that comes forward is whether nationalization of the industry was the right thing to do at that time or whether the focus should have been on strengthening the then existing legal and regulatory framework. Whatever the answer may be, it is now clear that the public sector does not have a capacity to meet the growing energy demand. There is an increased focus on involving private sector; however, the mode of involving them is in the form of contracts where ownership and control still rests with the public sector. In the absence of robust policy measures to introduce competition and improve transparency, there comes a doubt if the government is willing to let go off their monopoly over the sector. The reasons given against greater private sector involvement are that it will adversely affect the poor and lead to corruption. However, in the presence of robust policies and regulations, even the private sector operating with sole motive of maximizing profits can contribute towards greater welfare of employees, communities, and the nation at large.

Thus, given the current situation, it becomes imperative to restructure the sector by removing the current policy biases that work against introducing competition in the sector and strengthening regulatory and enforcement mechanisms so that coal needs of the country are met without hampering environment and social sustainability.

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