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India's Coal Supply Security:

Pushing Imports at the Expense of Domestic Reforms?

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Coal India Ltd. (CIL) has not been able to supply the committed quantity of coal to the power producers, forcing them to source coal from other countries. Apart from this, many coal blocks which should have been in operation by now are yet to come on-stream. If these blocks come into operation, India's coal imports would reduce substantially. In this light, this Policy Brief raises the question: Are large projections for imported coal from different agencies really justified?

Introduction

Coal mining in India is almost 220 years old. It was started way back in 1774 by Messrs Sumner & Heatly of the East India Company in the Raniganj coal field on the western bank of river Damodar in West Bengal. Coal mining continued after Independence and at the beginning of Independent India's first Five Year Plan in 1951, coal production was 33 million tonnes (Mt) which rose to 73 Mt in 1970 and 313.4 Mt in 2000. It currently stands at 535 Mt.

Until 1970 most of the coal mines were exploited by private parties. In 1970, the Government felt the need for nationalizing the mines as not enough capital investments were coming from private miners. The condition of the labourers in these mines was also a cause for concern. The Government first nationalized all the coking coal mines through the Coking Coal Mines (Emergency Provision) Act, 1971, and followed with the nationalization of all mines in 1973 with the Coal Mines Nationalization Act. Till the Sixth Plan period (1985-86), fuel for electricity generation in the country was shared equally by coal and hydro. In the following years, the share of hydro declined and it currently stands at less than 15 per cent (2010-11) while coal dominates with more than 69 per cent in terms of generation. In terms of energy generated, the difference between the two sources is more than 450 billion units.

After liberalization in the 1990s, the hunger for power increased significantly but the public sector was not able to keep up the pace with the supply of coal. The Coal Nationalisation Act was amended in 1993 for allowing private sector participation in captive coal mining for generation of power, washing of coal and other end uses as notified by the Government. After the re-introduction of the private sector it was felt

that coal supply constraints would ease but unfortunately that has not been the case. Currently 117 coal blocks have been allocated between Public Sector Units, State Public Sector Units and the Private Sector for the power sector with an estimated geological reserve of 24.5 Billion tonnes (Bt) having the potential of producing 100 Mt per year. Production from these mines now stands only at 25 Mt (2009-10) as most of the blocks are not yet in operation due to several factors.

Further, a draft report by the Auditor General of India leaked to the media has created a furor. The report states that there were irregularities in allocating coal blocks from 2005-09 and that the process adopted for allocation was not competitive. The report estimated a loss of 10.7 lakh crore Rupees (US $ 213. 47 billion) to the exchequer. The controversy is still simmering and investigations are going on. This development has certainly disrupted many coal blocks from coming into operation. The coal shortage estimated for the current fiscal (2012-13) year is 60 Mt which includes demand from imported coal based projects as well. According to some companies, the demand for imported coal will increase on account of Coal India's inability to fulfill even their committed coal supply assurance. Many companies are looking to source coal from other countries. But how securing imported coal will ease the problem of shortages, especially in the light of the increase in fuel cost that cannot be passed on to final consumer, is unclear. It is also unclear at this point if the emphasis on imports will add to project feasibility.

This paper aims to examine a few serious questions:
a) Is there an 'absolute scarcity' of coal in the country? b) If not, what are the barriers to domestic coal production? c) Are large projections for imported coal justified?

Power Generation in India

Chart 1

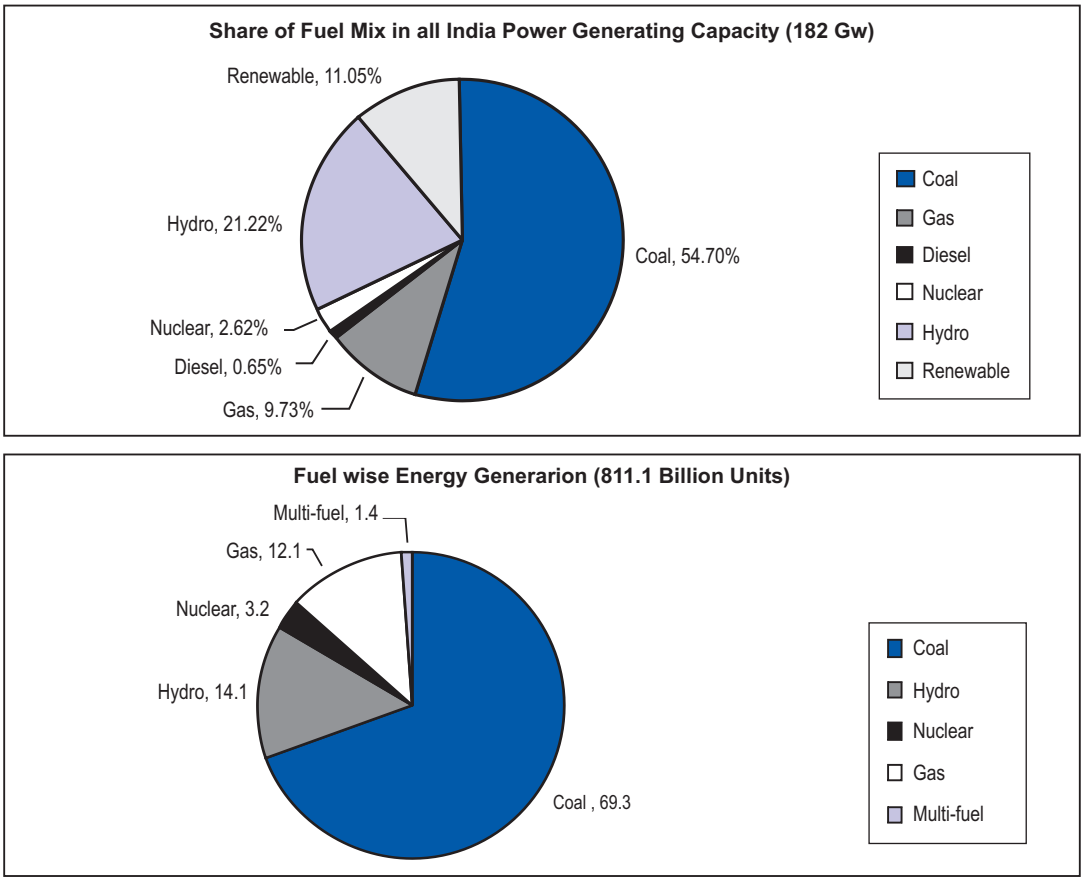


Chart 1 illustrates that coal is the most important source of electricity generation in India. Although other sources such as hydro and natural gas have power generating capacity, their contribution to actual generation is small compared to coal. Renewable sources which have 11.05% share in terms of installed capacity contribute less than 1% to the actual generation (too small to be shown in the chart). Coal has an installed capacity of 54.7% but has a share of 70% in generation. Coal's predominance is expected to continue for the next 30-35 years unless there is some technological breakthrough in alternative fuels. India has reasons for choosing coal as the predominant fuel for power generation. The country has abundant coal reserves and power production through coal is cheaper compared to other sources. Indian Coal Reserves stood at 276.810 Bt (Proved-109.798 Bt, Indicated-130.654 Bt & Inferred-36.358 Bt). About 78-80% of the coal production is used for power generation; coal generated 561.7 BU of electricity out of a total of 771. 6 BU in 2010-11.

Coal Reserves/Production–Region-wise Summary

- Most of the reserves are found in the Eastern region and mostly vested with states like Jharkhand, Orissa & West Bengal. This region has got 173.12 Bt (62.7%) reserves in its inventory and has 293 mines owned by Eastern Coalfield Ltd, Bharat Coking Coal Ltd, Central Coalfield Ltd, Mahanadi Coalfield Ltd and some private players. This region produced around 232.554 Mt in 2010-11.

- In the Western region coal reserves are found in Chhattisgarh, Madhya Pradesh and Maharashtra. The region has got 78.97 Bt (28.6%) of coal reserves with 186 mines owned by Western Coalfield Ltd, South Eastern Coalfield Ltd & others and produced 223.631 Mt in 2010-11.

- The Southern region stands third with 22.01 Bt (8%) coal reserves mostly found in Andhra Pradesh. It has 67 mines owned by Singareni Collieries Company Ltd and some others. The region produced 51.333 Mt in 2010-11.

- Last and the least is the North & North Eastern region which is not well endowed with coal reserves, estimated at only 2.02 Bt (0.7%) and mainly found in Uttar Pradesh, Meghalaya, Assam and Jammu & Kashmir. The region has 17 mines owned by Northern Coalfield Ltd, North Eastern Coalfield Ltd and others. The region produced 18.74 Mt in 2010-11.

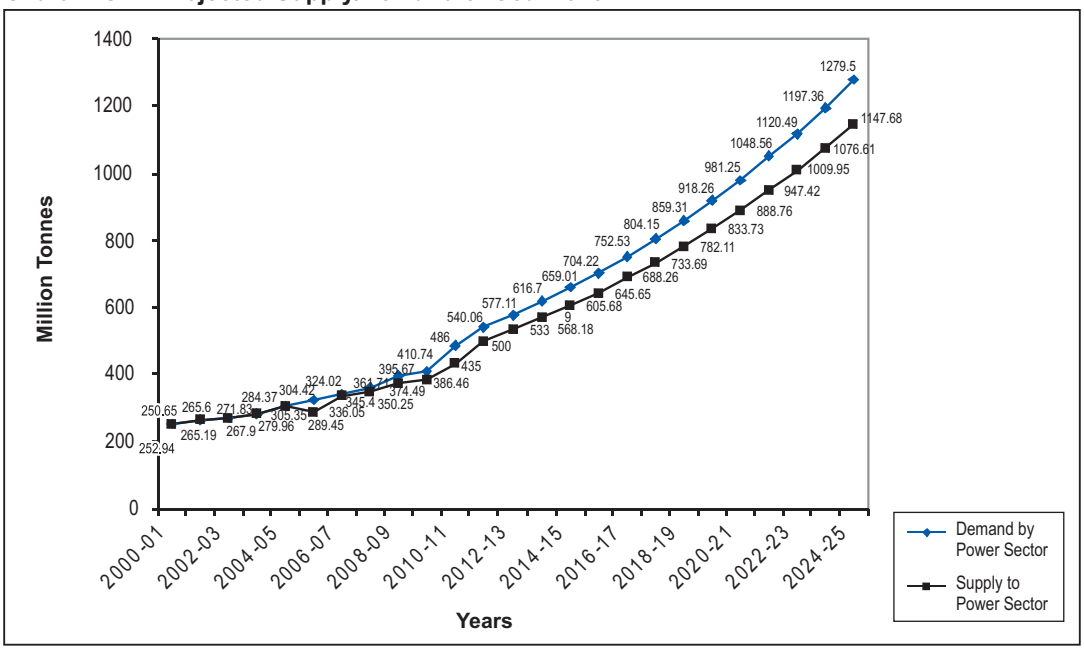
Coal shortage in India

There are many estimates for shortage of coal but there is simply no consistency between there estimates. Even within the Government, different agencies show different estimates and these differences are recorded on their websites and their annual reports. Having said that, it must be noted that estimating coal shortage is not a straight forward task.

Many figures are quoted for the extent of coal shortage in different reports, ranging from 64 Mt and 81 Mt to over 116 Mt in some media reports; but while calculating the shortage based on historical data, the supply to coal based power plants along with the demand from power projects, a different picture emerges. On the basis of demand-supply data, the shortage is estimated at 51 Mt which also includes imported coal based projects. Interestingly, growth in supply lags growth in demand not by a huge margin

but by only 0.3% as demand is growing at 6.9% while supply is growing at 6.6% assuming business as usual (BAU) scenario. While it is true that there is a shortage, it is small enough to be corrected by increasing managerial and administrative productivity.

Chart 2: ORF Projected Supply/Demand of Coal 2025



Source: Data collected through various sources like CAE, Coal Controllers Office, MoC, Institute of Mines
Supply: With an average growth of 6.6% (Figures from 2012-2025 is based upon the average growth calculated from 2000-2012)
Demand: With an average growth of 6.9% (Figures from 2012-2025 is based upon the average growth calculated from 2000-2012)

Some of the reasons for the shortage are that Coal India Limited (CIL) has not been able to supply the committed quantity to the power developers and that many coal blocks which should have been in operation by now are yet to come on-stream. Going by the statistics available as on June 2011, 117 blocks have been awarded for the power sector to the government and private sector with an estimated geological reserve of 24. 55 Bt. 58 blocks were given to the public sector with geological reserves of 15.03 Bt and private sector bagged 59 blocks with 9.52 Bt reserves. But of these, only 14 blocks producing 25.74 Mt are in operation till date. Interestingly, these blocks have performed above expectation as government targeted production of 24.9 Mt from 30 blocks.

Coal blocks allocated for Power till June, 2011

Category	Sector	Nature of Allotment	Blocks Allotment	Geological Reserves (Mt)
Government	Power	Captive Dispensation	29	4, 362.38
	Power	Government Dispensation	29	10, 671.64
A	Total (Govt.)		58	15, 033.82
Private Companies	Power	Captive Dispensation	49	5, 005.892
	Power	UMPP	10	4, 520.91
B	Total (Private)		59	9,526.802
All India	Total (A+B)		117	24, 560.622

Source: Ministry Of Coal (Note: Figures from others sources may differ because GR for many blocks are not available)

Coal Blocks which actually started Production

Year		Power Sector No. of blocks	Production (MT)
2009-10	Target	30	24.9
2009-10	Achieved	14	25.74
2010-11	Target	33	35.80
2011-12	Target	42	54.28

Source: Ministry Of Coal
Note: Figure of Target to 2010-11 & 2011-12 is as per XI Five Year Plan and required periodical updation.

When we observe the past performance of the blocks, it is clear that the target for 2011-12 of 54.28 Mt, can be easily achievable. This will substantially reduce our imported coal dependency. It also raises the question whether large projections for imported coal coming from different agencies are really justified. Importing coal will only be viable for the projects which are based upon imported coal and not for all power projects as many are not designed for imported coal.

Reasons for the shortage of Coal in India

Environmental: The Coal Ministry has predictably cited "environmental restrictions" as the main reason for the downward revision of production targets. Quite often developers have been unable to get environmental clearance. Obtaining forest clearance is even more difficult because it is very time consuming and complex. Normally there is a stipulated time frame for getting regulatory approvals but this is only on paper. Extended delays are the norm. Without these clearances the developer will not be able to get the mining lease grant. Also, the Ministry of Environment & Forests is of the view that mining will destroy the biodiversity of the land, a factor that has restricted some of the blocks from coming into operation. Simultaneously, a developer also has to take a plethora of approvals like mining plan approval, Environment Impact Assessment/Environment Management Plan studies approval which takes a long time.

Example: **ESSAR, Mahan Coal Block, Madhya Pradesh**-The Mahan coal block, allotted to Essar for its 1,200 MW power project in Madhya Pradesh is stuck for the lack of forest department approvals. Essar has asked the power ministry to take up the issue in the meeting of the Central Group of Ministers. Since the block will require time to come on-stream even after clearance, it has sought recommendation for tapering linkage in the meantime. Shoring up its case, Essar has argued that a mammoth Rs 15,000 crore has already gone into the project which employs nearly 10,000 people. The Mahan coal block was granted environmental clearance in December, 2008, but forest clearance has been pending with MoEF since December, 2007. Since the 'Go No-Go' classification has been done away with, Essar has now put up a request for the early clearance of this block.

Social: Mining is an activity where land acquisition is a must, irrespective of the population base and density of the forest land. Acquiring land is as important as getting the mineral rights. But land acquisition is a major hurdle for the new projects because owners are not willing to part with their land. Second, they are very skeptical of the Rehabilitation & Resettlement plans of the Government. It has been witnessed in some cases that the compensation paid to the land owners is very low. Once industrialization takes off in the adjoining areas land prices go up substantially and land owners feel cheated.

Example: **GMR Energy, Chhatisgarh Power Project, 2007**-GMR Energy signed a deal with the Chhattisgarh government in June 2007 to set up a project. But the 55 billion Rupee project hit a roadblock in Chhattisgarh when 150 farmers decided not to hand over their land to GMR Energy for its proposed 1,200 MW thermal power project. GMR Energy officials held that the company was purchasing land directly from about 250 farmers who owned 60% of the total project area while remaining 40% belonged to the government. The farmers opposed the project because they felt that their health problems would increase with the setting up of the power plant and that they would not get adequate compensation for the land.

Transport: Coal is a commodity which needs to be transported from the mining hubs to the demand centres and rail is the most important carrier. 50% of the coal is transported through rail but railway routes are overly saturated especially in the Golden Quadrilateral Region comprising of the four metropolises–Delhi, Mumbai, Chennai and Kolkata. This comprises only 16% of rail network of the country but carries 65% of the freight and 55% of the passenger traffic. In addition, Indian Railways runs passenger and freight on the same track and the difference in speed of two types of trains erodes capacity utilization. Apart from this, coal production coming from states like West Bengal & Orissa is disrupted by Maoists and pilferage & theft is common.

Impact of Imported Coal

Financial viability: Power projects with a capacity of 43,000 MW awarded under competitive bidding are under construction. About 30% of this capacity or 13,000 MW is based on imported coal. Power projects based on imported coal submitted tariff bids based on their agreements with fuel suppliers predominantly in Indonesia. With the new mining law in Indonesia which provides for annual alignment of coal prices with international rates, the price of Indonesian coal increased substantially. Currently, imported coal is three times costlier than indigenous coal and this will have direct impact on the cost of the power production. The recent Indonesian Government mandate that requires the country's coal producers to allocate 24.2% of their annual production for domestic use has added to existing concerns. Australia also has issued a draft mining law to impose a carbon levy on coal and iron ore projects from this year. Power developers, having acquired power projects on tariff-based bids and by the very structure of the competitive bidding agreement, cannot demand hike in tariffs. On the one hand their cost of production will increase and on the other the cost cannot be passed on to the final consumer. This will severely affect project feasibility.

Secondly, the sudden change of pricing in Indonesia, which accounts for 50% of India's coal import, is likely to affect the Indian power developers. It is probable that the bidders may not be able to honour their commitments regarding implementation and generation which will be a great concern for banks/ financial institutions. Lastly, most of the coal rich countries want to encash the demand opportunity in the short term and medium term and are frequently changing their laws and imposing new taxes. This will certainly increase the losses incurred by Indian power developers in the future.

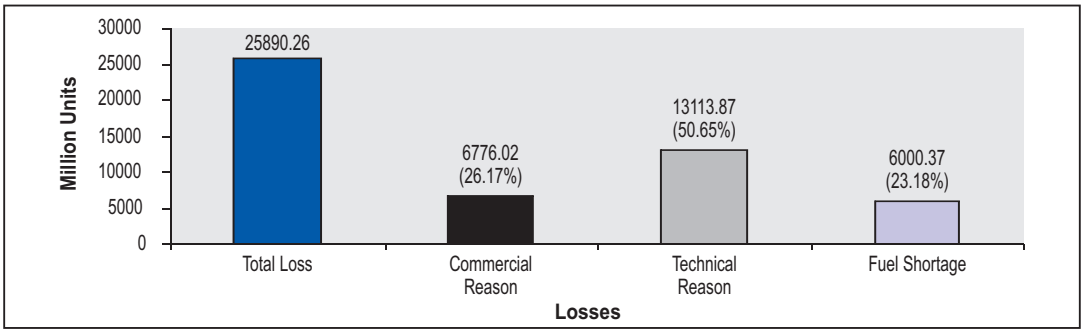
Delay in capacity addition: Apart from imported coal-based projects in which the state also shares the burden, there are many other projects which require imported coal and the responsibility lies solely with the developer. These developers, who face the entire risk of uncertainty in imported coal supply, may realize that projects are not feasible and they may intentionally delay projects until the environment is financially favourable to them.

Cost increase to consumers: The consumers will be at the receiving end as expensive cost of producing/procuring power will have to be distributed in the supply chain and ultimately it is going to be the consumer who absorbs the additional cost. In metropolitan cities such as Delhi, power distributing companies are procuring power at a higher cost and passing on the increased costs to the consumers on monthly or quarterly basis for covering the fuel price hike.

Thermal Power Station Facts

Though the blame is assigned to coal shortage for the dismal growth of the power sector in India, the ground reality presents a different picture. This is quite evident from the performance data of thermal power stations that have missed their generation targets by more than 100 Million Units. Though fuel shortage is one of the reasons, the major loss is due to commercial and technical problems (See Chart 3). Of the total loss of 25.89 BU, 50.65% of the loss was due to the technical faults, 26.17% due to commercial reasons and 23.18% due to fuel shortage. One point that is important to note here is that these thermal power plants include gas-based plants as well and it is a fact that gas is currently a very scarce commodity compared to coal.

Chart 3: Statement of shortfall in generation (more than 100 MU) vis-à-vis targets of existing thermal stations during 2010-11



Source: CEA (Commercial: Low demand from beneficiary state; Technical: Forced Outages, Delay in the stabilization of new units, Turbine bearing & Stator earth fault)

The Way Forward

Environmental

- There is an urgent need to bring about some synergy in the working of Ministry of Environment & Forests, Ministry of Coal and Ministry of Power so that clearance for the projects can be expedited.

- In total only three clearances are required: Environmental clearance, Forest clearance and mining lease grant. However, depending on whether the allotted block is explored or unexplored, whether it comes under forest or non-forest area etc., more clearances are required from multiple authorities which delays projects. A single window approach is required where a separate office is created at the state level having representative from the respective ministries which after thorough enquiry can give the clearance. This will help in bringing more transparency and speeding up the process.

- Bio-diversity of the forest can be maintained in the long run as mining is a long term phenomenon in which trees are not cut at one go. They are cut in different stages and as per the coal industry statistics, 3-3.5 trees are planted for every tree cut. This preserves bio-diversity and generates more forest cover.

Social

·India has a National Rehabilitation & Resettlement Policy 2007, which provides for the states to have their own R&R policies. This needs to be reviewed. It is recommended that the states must align their R& R policy with National R& R policy so as to bring more uniformity.

In many of the cases, a large part of the land belongs to the state governments. The state government should take measures to transfer the land to the project owner quickly. As regard to the private land, the following measures should be adopted:

- The compensation for the land should be based upon the market price rather than the average price and it must be kept in mind that owners must give their land voluntarily.
- Reclaimed land should be given back to the land owners after the mining work is completed.
- Companies should create employment & training facilities for making the land losers employable. It is not possible to provide employment to all as today's mining is becoming less labour intensive. In cases where employment is not given, land losers should be given a share in the project.
- A lump sum amount must be given to the land owners after the mining work is over so as to make the land fit for use as the owner deems fit.
- It should be clearly stated that companies should acquire that part of the land which is technically minable and not more than that.

If implemented, these measures will minimize the sense of distrust among the people and they would more willing part with their land.

Transport

- There is a need for the dedicated freight corridors to be developed so that system reliability can be increased and cost per unit of transportation can be reduced. The Ministry of Railways has decided to construct a new Dedicated Freight Corridor (DFC) covering two routes-the Eastern Corridor from Ludhiana to Dankuni and the Western Corridor from Jawahar Lal Nehru Port, Navi Mumbai to Tughlakabad, Delhi/Dadri along with interlinking of two corridors at Khurja. The Eastern Corridor has been sanctioned to cater to North India power plants whereas the Western corridor will help in the movement of imported coal from the Western sea ports. Hopefully, these two corridors will come up in 2016-17 if things go according to plan. Pilferage and shortfall in loading can be prevented by proper vigilance.

These simple measures can substantially reduce our import dependence for coal which will save vital foreign exchange reserves and at the same time increase confidence among private firms/foreign companies to invest in the Indian coal sector.

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