

The Coal Challenge in India

ASISH KUMAR SAHU¹, VIKASH KUMAR SAXENA²

Department of Mining Engineering, Adarsha College of Engineering, Angul

¹aksahu.nic@gmail.com

²vikashsaxena@hotmail.com

Abstract -- Coal contributes over half of India's primary commercial energy and is likely to remain India's most important source of energy for the coming decade or two. However, extraction and usage of coal leads to severe environmental problems within India and also contributes to climate change inducing green-house gas emissions. But the challenges of coal in India go beyond this, as the sector is plagued with governance challenges, inefficiency and allegations of corruption.

This report takes a holistic view of the Indian coal sector. It summarizes the challenges produced by coal as well as the challenges that affect the sector. Furthermore, the report provides a glimpse into the perspectives of an energy future for the country with a reduced role for coal.

I. CHALLENGES

Although India has the fifth largest reserves of coal in the world, it is not able to meet

its domestic demand. Since FY 04, the country's coal import has grown at a CAGR of

15% (till 2010-11). During the same period the thermal coal import grew at a CAGR of

~25%. According to projections, India's coal import requirement will be more than 200 MT by the end of the 12th Five Year Plan. Some of the challenges in increasing the production capacity are as follows:

- According to the data proved by CIL, 179 forestry proposals are awaiting clearances and if all approvals are secured on time, it can more than double its output to 1,132 MT, given that mines start production from 2016-17.
- Majority of the coal projects have been halted and delayed due to issues in acquiring land and strict rules and regulations (R&R).
- Even subsidiaries of CIL, such as MCL in Angul, face issues pertaining to R&R.
- Bottlenecks in domestic coal transportation and lack of proper road connectivity further increase the challenge
- Delay in mining activities at captive coal blocks and concerns relating to the increasing ash content of run-of-mine (ROM) coal further hinder production.

II. COAL AS STRATEGIC ENERGY RESOURCE FOR INDIA :

For India, coal is a crucial resource today. It currently supplies more than half the country's primary commercial energy. According to the Integrated Energy Policy prepared by the Planning Commission of India, even under a least coal usage scenario, coal will supply more than 40% of the primary commercial energy even in 2031-32. Secondly, policymakers regard coal as being very important to India's energy security. It is the most abundantly domestically available fossil fuel, while about 80% of oil has to be imported. Thirdly, policymakers tend to view coal as a key element in increasing energy access in India, as over a quarter of the country does not have access to electricity and coal will remain the cheapest source of electricity for some time.

The projected coal production in India from 2011/12 to 2051/52

Agency	Resource	2011/12	2021/22	2031/32	2041/42	2051/52
CIL	Existing	435	513	467	330	235
	From Additional Resources in Known Areas (ARKA)		1	60	126	126
	From accretions			1	25	26
	Sub-total	435	514	528	481	387
SCCL and Godavari Valley	Existing	51	56	61	58	55
Captive mines	Existing	38	238	475	475	375
	From ARKA			20	60	74
	From accretions			1	25	26
	Sub-total	38	238	496	560	475
Old captives (TISCO, etc.)	Existing	15	20	25	17	9
Grand Total		539	828	1110	1116	926

At the same time, the downsides of coal production and use in India are obvious, manifold, and serious: Production, transportation and consumption of coal has resulted in severe negative environmental impacts such as air and water pollution. There are negative social impacts as well such as displacement and lost livelihoods.

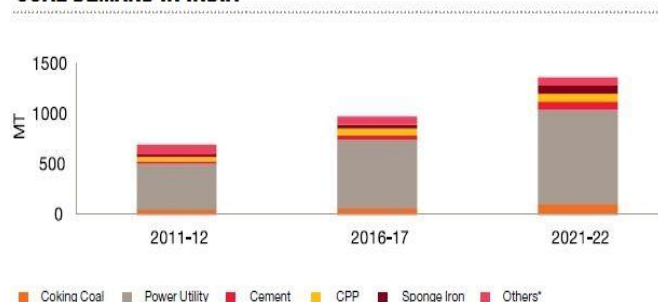
Coal usage in India also has impacts beyond India. In 2011, though India's annual per-capita CO₂ emissions in 2011 at 1.6 tons was considerably lower than the global average of 4.9 tons, India was the world's third largest emitter of CO₂ with 1,970 million tons. Of this, coal usage contributed about 970 million tons, or about 3% of world CO₂ emissions.

III. GOVERNANCE CHALLENGES IN THE INDIAN COAL SECTOR :

Beyond well-known environmental and social issues, India's coal sector faces considerable challenges of its own. These challenges derive coordination, and a monopolistic market structure. The recent 'coal-gate' scandal, in which the country's chief auditor alleged that the allocation of coal mines to end users (such as power plants) for their own use resulted in undue gains of Rs. 1.8 billion to the beneficiaries, is perhaps only the tip of the iceberg and symptomatic of a whole array of governance challenges faced by the sector.

Insufficient transparency is another problem that plagues the sector. An example of this is the way 'linkages' or 'letters of assurance' of coal supply are granted to coal consumers such as power plants, based on which such consumers proceed with their plans. These linkages are granted by a multi-ministerial committee, and, as of 31st July 2011, applications for about 1,500 coal linkages worth about 3,000 million tons per annum (mtpa) were pending compared to the projected production increase of 175 mtpa up to 2016-17. In such a shortage situation, transparent and objective allocation of coal linkages is critical. However, as stated in the 2011 report by the government-appointed Committee on Allocation of Natural Resources, lack of

COAL DEMAND IN INDIA



*Others in 2011-12 include e-auction quantity.

transparency about how linkages are granted leads to serious doubts about their merit.

Lack of planning and inter-agency coordination limit the expansion of coal production in India. Coal-fired power production capacity in India has increased at about 10% annually between 2008 and 2012, but coal production increased by just 4% per annum. The widening gap has led to an increase of coal imports for the power sector by 300% over the period. During this period there was also a significant rise in international coal prices, threatening the country's energy security. The reasons for the limited increase in coal production include difficulties in obtaining clearances, the limited human resource capacity and

technological expertise of India's coal sector, and the lack of some key railway links.

The market structure of the Indian coal sector constitutes another major challenge. Coal mining in India is nationalized by law and the public sector Coal India Ltd. (CIL) supplies more than 80% of India's domestic coal. While nationalization of the coal industry in 1973 helped to improve operating practices, labour safety and coal production, in more recent times it has led to concerns about the potential abuse of its dominant position by CIL by forcing its customers to accept severely one-sided supply agreements.

IV. ENVIRONMENTAL AND SOCIAL COSTS:

Environmental & Social Concerns



Distress is rife in coal mining areas of India. Air quality in coal mining towns such as Ghuggus in Maharashtra is often worse than prescribed norms. Available data shows that in 2011-12 in Ghuggus, which also has other industries allied to coal mining, the RSPM level was always worse than permitted norms, with the level often being more than twice the acceptable limit. Another study by TERI about the air quality in Korba mines in Chattisgarh reinforces this.

Coal mining areas also typically suffer from water pollution and some research papers have claimed that the total amount of dissolved solids in the water – a general indicator of water quality – is very high at such locations. In addition, coal mining activities also tend to lower water tables due to exhaustive pumping of ground water from the mines.

An 2010 audit report of the environmental practices of CIL by the country's lead auditor provides specific examples of poor performance. The report stated that 10 out of 18 mines inspected did not stack overburden safely and had a plantation density that was below the expected norms. 13 out of 18 mines did not restore topsoil properly and 6 had inadequate effluent and sewage treatment. 239 mines were found to be operating without proper environmental

clearance for their expanded operations, while 558 out of 629 mines did not have the requisite environmental management systems certification. There was a backlog of over 12000 hectares in landfilling and technical reclamation across 7 out of CIL's 8 subsidiaries.

Taken together, such socio-environmental practices lead to social distress and alienation of the local population. In turn, this leads to resistance to mining activities, and with local citizens become less willing to give up their land and mobilize themselves against such activities. This leads to complaints from coal companies about the difficulty of acquiring land for mining and hence the difficulty of increasing production to meet demand, in turn affecting the country's overall energy scenario and economic growth.

V. PERSPECTIVES FOR THE COAL SECTOR :

Given the diverse and difficult nature of the challenges faced by the Indian coal sector, there cannot be a single 'silver bullet' solution to them and a comprehensive approach is necessary to address them. Reforming the sector requires action on many fronts, and such reforms are unlikely to be easy given the entrenched nature of the problems and the associated vested interests. However, India has no choice but to initiate these steps as it would have to significantly depend on coal for the short and medium term..

A second important measure would be an increased level of public participation and inputs in decision making. The coal sector is about to formulate many key policies and laws, such as the policies to auction coal mines and set up an independent coal regulator. All such policies must be published in draft form and finalized only after comments are invited from citizens and the feedback is incorporated. Similarly, local citizens must be more involved in coal mining related activities before the mining starts as well as during the mine's life. Before the mine starts, there should be meaningful public hearing processes regarding environmental and social impacts, and associated compensation mechanisms. During the mine's operation, local citizens can help to oversee the operations and ensure its compliance to existing norms.

Innovative approaches such as long-term lease of land, offering equity or offering annuities should be tried in rehabilitation processes. Similarly, time-bound plans must be developed to enhance the capacity of the relevant institutions in order to improve the planning, operations and oversight of the sector.

VI. PERSPECTIVES BEYOND THE COAL SECTOR

India has neither the responsibility nor the capability to undertake significant responsibility in the battle against climate change, particularly given the large energy poverty in the country. At the same time, India cannot follow a business-as-usual approach to development due to the socio-environmental impacts of fossil fuel (including coal) use,

natural resource constraints and the vulnerability of India's poor to climate change.

India has initiated some steps in recognition of this. India has made a public commitment that the per-capita GHG emissions of India will never exceed that of the OECD nations. India has also launched a National Action Plan on Climate Change (NAPCC), which includes eight missions including one on energy efficiency and one on solar energy. The recently released 12th five year plan has also announced plans to set up a National Wind Mission. NAPCC has set a target of 15% of all electricity generated in 2020 to come from renewable sources – a target that, judging by media reports, seems comparable to China and more ambitious than Australia and USA. This is reflected in the 31% per annum growth in renewable energy capacity compared to 6% per annum growth in thermal electricity capacity over the last decade.

An interim report of the Planning Commission's expert group on low carbon strategies for inclusive growth states that the potential avoided electricity capacity addition until 2020 through energy efficiency measures is greater than the combined potentials of capacity addition through nuclear, hydro and gas together.

In short, India is taking many steps to gradually reduce its dependence on coal, though there are perhaps a few more that it could potentially take, particularly if supported by international finance – for example improving the efficiency of its power plants and improving its railway infrastructure. However, as coal will remain an important part of the energy mix for the short and medium term, it is critical to address the challenges of the coal sector.

REFERENCES

1. http://en.m.wikipedia.org/wiki/Mining_in_India
2. Coal Report Of Indian Chamber of Commerce
3. Final Coal Report by World Institute of Sustainable Energy.
4. Coal India Limited's Employees and there official reports.
5. William, M. (1908), "Presidential Address on Coal Mining in India", Trans. Min. & Geol. Inst. Of India, Vol. III, Part I, pp. 12-28
6. The Report of the working group for coal and Lignite for twenty five year plan.
7. <http://www.prayaspune.org/peg/publications/item/191-black-and-dirty-the-real-challenges-facing-india's-coal-sector.html>