

# Tripling Coal Production in India: How do we get there?

## Notes from a Panel Discussion

Brookings India

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[with editing in places for clarity and conciseness]

### Participants:

Anil Swarup, Secretary, Ministry of Coal, Govt. of India

Partha Bhattacharyya, from CMD, Coal India Limited

Vivek Sahai, Former Chairman, Railway Board

Vikram Singh Mehta, Chairman, Brookings India (moderator)

*Disclaimer:* While all attempts have been made to carefully capture the deliberations, inadvertent errors may remain in the below Notes.

[Welcome] Vikram Mehta:

The need for coal is very high (witness the 16 billion dollars on coal imports last year), and the target of the government is to triple today's half billion production into 1.5B in five years. Half the growth coming from CIL, which produces most of today's output, and the rest from states and esp. the private sector.

We want a conversation, and this is why it is a small, distinguished audience, and we are privileged to have 3 of the leaders in the coal space with us today, Secretary Coal, Anil Swarup, Former Chairman of the Railway Board, Vivek Sahai, and Former Chairman of Coal India Limited, Partha Bhattacharyya.

Secretary Anil Swarup:

Examining the 204 coal blocks, these have a capacity of 800-900 million tons, and 42 are (were) already mining, and 32 will start within a year. Thus, the target of 500 million from the private sector will not be a major challenge.

The challenges for CIL will be higher, to reach 1,000 million tons, as the historical growth till recently was only 1-3%. For each mine we have identified the issues, and split up the work such that surrounding issues (clearances, logistics, transport, etc.) are handled by the ministry, and CIL can go mine.

There is coal at the pit-head, but rakes [rail transport] is a challenge. Still, we have, for the first time in 5 years, gotten enough coal out such that no power plant is wanting for coal. One of the major reasons for the improvements is I am spending much of my time in the states. Chief Ministers are now receptive to development, and new mine openings and operations have increased dramatically. Joint ventures are being set up with CIL (64%), railways (26%), and state governments (10%), e.g., Orissa and Jharkhand. Part of this desire

to join in came from states which recognize that the coal auction revenues will come to them.

Vivek Sahai:

This issue is very important, and I hope to also shed some light on the issues that need explaining, if not defending, given the vilification of the Railways. Coal can't be there without railways, and railways cannot be there without coal.

The growth of railways isn't as good as desired, but it is still 40-44 million tons of freight growth per year, and most of that is from coal.

There are challenges. The first issues is pithead doesn't mean rail-head. This is probably the Achilles Heel of the system. This distance can sometimes be 20-30 kilometers. The second is adding 44-45 million tonnes more every year – how many more trains are to be loaded every day?

(Some calculations)

One rake loaded daily 365 days means 1.4 million tons of coal (It is about 4000 tonnes/ rake. 67 tonnes/ wagon and about 59 wagons/ rake).

But much of the growth is coming from Talcher and to some extent in Korba, north Karanpura, we had a lot of problem of, we had coal but it did not reach the rail head, so then comes the problem of why does it not reach the rail head.

It has to be transported by road and the coal company of the area gives these contracts, and that is what is actually hurting. Some of these contracts have associated externalities such as being associated with local mafias, locally elected representatives who get involved in this.

One issue is the tenders. Takes time. Second is the sheer number of trucks required. One train load is 4000 tonnes and you have to add 6 trains extra to carry 9 million tonnes extra, you have to carry about 24,000 tonne more [daily] and if you take this by road, it means 2000-2400 trips per day. It becomes an environmental problem for the villages lying along the way.

We should go in for a conveyor belt system whenever we have more than 1 or 2 million tons or a distance above 5-6 km. This will also ease the loading onto trains, avoiding a dumping. With a raised conveyer, one can load a rake within 1 hours, instead today it takes 5-6 hours to load a rake.

Indian goods train average 25-26 kmph, which isn't bad. But in a day, if coal wagons only move 265 km average, that means only some 10 hours movement, and the rest of the time, it is standing. Thus, most of the time is loading/unloading. [edit note– these are averages – will be variance]

Today, loading is 6 hours, unloading 9 hours. It's legacy. Unloading is burdened by bad quality tipplers as well (mostly at the power company side).

Railways should be willing to give a discount on freight if dedicated corridors are there, like proposed.

Partha Bhattacharyya:

Our reserves are 300 billion tons, 30 to 35% less than China's but our production is just 15% of China's. Their structure is mostly government companies, but many small companies. The largest Chinese coal mining company, Shenhua, produces only 10% of the coal. CIL is 80% of India's coal.

Post 1991 liberalization, there were studies done to see if CIL could meet projected power plant demands. Historically, power supply grew slowly, so CIL's growth of 5-6% was sufficient. But, it wasn't likely enough, so the Coal Mines Nationalization Act was amended in 1993 to bring in new players, through an end user model.

Unfortunately, the end-user model didn't work (and hasn't anywhere much). The only large, captive coal mine that I am aware of operates in South Africa, a company called SASOL, it mines about 45 million tonnes of coal, for producing liquid and downstream products. Big mine but the entire coal is used for producing oil and other products. One major reason is lack of core competency by users of coal – and coal mining needs core competency because of the technical and operational issues.

Any major shortage we have today is just over the last 10 years, due to a mismatch in inducting competent players.

Note, the power production growth post liberalization till 2007 was slower than projected, only 3000-3500 MW /year on average, requiring incremental coal of only 15-17 Million Tonnes, which CIL managed. The real problem came in the XI Plan, when power production increased.

It was at this point, when demand was increasing, that India adopted the New Coal Distribution Policy, on 18<sup>th</sup> October, 2007. This said that all the demand would be met by Coal India. 15 years back you said CIL can't do it all, you need more players. Now you want everything via CIL. This was part of the mismatch story.

Coal Secretary expressed confidence in Other Players adding their hundreds of millions of tons of capacity, at least more easily than CIL's growth. I am not so sure, so we have to add more competent and credible players into the mix.

Another problem is the huge imbalance between the occurrence of resource and the mining pattern. More than 80 billion tonnes of coal, say 25%, occurs at depths of 300 meters which can be mined only by underground mining, so the segregation of resources is that 25% is mined by underground mining and 75% is mined by open cast mining. The actual production share is 92% is open cut and 8% is underground, so that is where the mismatch exists. And the open cast able coal is being mined at a rate much faster than the underground coal. Today in China, 90% is underground, the conditions are different, because our geology is not conducive for certain operations but the problem is that we do not have a single company manufacturing underground mining equipment, because Coal India, never encouraged

underground mining. The effort made by Coal India a few years ago to restart underground equipment manufacturing at MAMC Durgapur is yet to fructify.

End-user players, cannot be expected to do underground mining in a big way. Monnet is the only one taking part in underground mining in Bilaspur, and is more productive than some of Coal India mines. The only company that has done anything significant in underground mining is Singareni collieries, other than that we are absolutely at the nascent stage for underground mining.

Another major issue, we have to look at, is environment forest aspects. Coal India on its part has to also promote sustainable mining. The coal industry has to create confidence so that they can be liberal and sustainable.

Restoration and reclamation nobody believed that Coal India doing it properly, and why we addressed it is not because I was a great environment friendly person but I saw a big issue in handling the IPO, that is the issue the international dipstick study was raising, that you guys have a very poor environmental record. And you degrade land and when I came back and looked at in a slightly granular manner, I was really aghast to find, that if you look at the KRA [KEY RESULTS AREA] of a project officer, land restoration was not an item on the list.

It was in 2008 that we introduced that this will be the second most important KRA for a project officer. In order to supervise this, we introduced satellite monitoring of the open cast mines. It's a simple procedure where annual images are taken of the site of an open cast mine, plotted side by side and if the blacked out coal area increases then the restoration is incommensurate, if it is shrinking, more than commensurate. We spent about 14 crores to do this and it was done very well, as a result all the coal mines became compliant and we took the next step. 53 mines applied for ISO 14001 all of them got it.

We do not have to make investors happy now, we have to make country happy. That proper environmental measures are being taken and those are simple things. We have till date failed to introduce a water sprinkler system in open cast mines, which actually don't create what we call *kichad* [mud]. Normally the water sprinklers we use give huge spray of water and the whole thing will become mud and then the local people will find it difficult to walk. You see any global mine, it is a mist that is created out of the sprinklers and it settles down without causing any dirt or mud or any sort of thing. Just slightly wet and there is no problem in movement.

We could not introduce an efficient water sprinkler system because of L1, there was a tendering system, sprinklers have to be procured locally and not globally. Let us get some world-class water sprinklers and tear it apart pick up the technology and develop it here. Dust is a major problem - MPs have written to the government time and again about it.

Efficiency gains are there to be had. Equipment utilization numbers for CIL are between 3000-3500 [per annum] hours, compared to global best practices of 6000-6500. The reason is land availability, without which equipment can't function optimally. World Bank had a condition when giving loans in 1990, that they won't give any finance unless there is 10 years of land in possession, and within a year 24 mines were identified, which had 10 years

of land in possession. There are low hanging fruits were actions in the next one or two years, are going to give results and today there is a conducive environment for 15% plus growth in the next two-three years.

## DISCUSSION (Q&A)

Vikram Singh Mehta:

We've heard about low-hanging fruit, about operational efficiencies, integrated coordination, about MOUs, and the environment. What about technology and possible international participation and collaboration? What about geology? Who would set up washeries? What about labor? Pricing? Regulatory environment.

Anil Swarup:

We must understand, that commercial mining is eminently desirable and it is the stated objective in the amended law. But, that didn't mean that today Supreme Court order and next day commercial mining should begin. There is a history, of investments made, and an immediate need for coal. Second, there are implications to commercial mining that without understanding those implications, how do you come up even with a tender document for commercial mining? What about the labor implications of commercial mining?

Hence, we sequenced it, we said we will first have induced stabilization, then we will give commercial mining to state entities and then we will go for commercial mining. [Those] Who only believe that commercial mining that only they can deliver coal in India - let us see how the private sector delivers coal for their own use, so we have to go step by step.

Re. underground mining, PM has asked for it, but the economics are such that surface today is Rs. 700/ton, while underground is 3000/ton.

[Partha Bhattacharyya interjection: those aren't comparable figures]

Those are the numbers as they stand today.

We can give a prescription, which may appear to be extremely ideal, but it is not doable, [then] it is not worth the prescription or the paper on which it is written. Then third point, you know quite a few of us, who are sitting here, probably knew the results or the prescriptions or the diagnosis a few years ago. What really needs to be done I feel Brookings India should be doing, why didn't it happen when everyone knew what was the answer. We don't look into those questions and that is why we trip all the time. We all knew what the answers were. The key is why didn't it happen and why some of it is happening now.

Why is it now happening? Because we are not sitting in silos now. We are now on the same page – with state governments, railways, etc. Working together towards the win-win.

Then as far as I am personally concerned, environmental issues are non-negotiable. We cannot risk environment, just because I want to increase coal production. So that is the bottom line that Coal India has been told very clearly.

We have a good separation between us and CIL. Operational issues are their issues. If they have a problem, they ask me, I don't interfere. I don't ask them to do anything on that. My only message to them is, you have a problem; I will try to solve it. I won't create problems for you and it is working beautifully because I don't talk to chairman Coal India, until I have to talk on some policy issues, he doesn't talk to me until there is something.

Re. labor we have been having good discussions, and they are starting to see the point about commercial mining – they haven't fully bought in to it, but we have made progress. I asked the unions, you are trying for 1 billion [tons]. But we need 1.5 billion? Should we import the rest? Or is it not better to let others produce in India? When ICICI and Axis bank came up, did that mean denationalization of SBI? Both can exist.

I am interested in practical. Re. regulators, people have asked for it, but we have to think is it being asked for just for the sake of having a regulator? Similarly for restructuring Coal India – if there is a reason, let's go do it, but just for the sake of doing it?

We shouldn't import blindly – by that it's about technology and practices. China is different – their longwall technologies are good but may not apply directly in India (technologists may know more about what is needed).

Partha Bhattacharyya:

The point about commercial mining isn't we need it now, but eventually. Re. underground mining, today's numbers aren't comparable since we have limited experience (WCL and BCCL) but these are primitive, without proper mechanization. Labor costs of ours have gone through the roof, and we need improved technologies. You also cannot give underground mining out on contract.

Longwall may not work well here, as we don't have the same runs, but continuous mining technologies are being tried, and these are technologically sophisticated. Conveyer belt technologies are being tried, but these need to be made easier to enable. That is something that happened in the past; it can be done better this time.

Qs from the Audience:

Q: We need to think longer term, and integrated/coordinated planning. Re. technologies like tipplers, some can be good, but the problem is in the specifications. Other countries do open-cast well, without dust problems. It can be done, just we have to specify things better, then the cheapest (L1) can be fine.

We also have to think of the people – 300,000 people in CIL. They have to be brought on board. Communities also matter. Some states wanted a cess on coal – they have since withdrawn it because of improved royalties. We have to advance cooperative federalism.

Anil Swarup:

We are re-thinking HR to bring people along, and working with local communities (whose land is at stake). We are building up proper development plans. Then the communities go along.

Re. proceeds, we have an issue. Historically, the center tried to tell states what to do. We may or may not be smarter than them. We can, at best, give suggestions. In Jharkhand, we have set up a separate fund, instead of putting the money into the general exchequer. This can go for development, including of railways. And for the specific areas to be impacted. This will not be a top-down G.O. or directive. After all, states are aware of what they need to do to keep their populations happy.

Q: Are we doing proper estimates as per new methodologies on a per block, at 3 layers: level of geological knowledge; technical feasibility, and economic viability? CMPDI [Central Mine Planning and Design Institute] was using a proved versus inferred methodology, with some weightage factors. Else we overstate the potential. Re. environment, it's more than adding back biomass, but restoring biodiversity.

Q: We don't have the power sector here, which is critical given they use most of the coal. Importantly, while there was a spurt in coal power for a few years, many plants are stagnating. Can they really use up the extra 500 million? Given CIL costs and freight costs, can it [domestic coal] compete with imported coal?

Also, are global miners willing to come in? My discussions with them are they are apprehensive. Mr. Secretary, just as you are helping CIL, you should help the private sector as well, since they face many similar issues as well.

Re. loading/unloading, we had offered 7-8 years back to put up bottom-unloading wagons, which would cut the time in half, but we were told if we put them in, there is no control of if we get them back.

Q: Re. the power sector, some of the companies have big so aggressively that they say their input to the power sector will be zero, in addition to the money they will pay the states. It would have been rational seeing the bids of 3-3.5 Rs./kWh, given the cushion they can manage but that is with then higher capital costs. But, the government is now saying they are planning to cap fixed costs and hence there will be trouble. Banks may not finance projects then. Could it be a ticking time bomb?

Q: How could we encourage private participation into railways, with incentives like tax breaks, etc. This is an infrastructure play. Second, could we give more incentives to the states to perform in terms of helping increased outputs via better clearances, railway lines, etc. Involve the community but give more output greater support. Third, what about inland waterways? These are vastly underdeveloped and under-harnessed in India. The energy savings from these versus rail are similar to rail over roads. Maybe it's not feasible, but has it been looked at?

Re. regulator and restructuring – a regulator might help to prevent disputes, e.g., why is it NTPC takes CIL to the supreme court? Re. CIL's future, maybe one value for restructuring would be to allow each mining area (holding company) to be separated so they are allowed to perform as best as they can. Some have more legacy, different coal quality/distances, maybe the need for more underground, etc. Could this provide a roadmap for restructuring?

Vivek Sahai:

The Q on BOBRN raised by someone is of interest to the secretary – the railways already has a wagon investment scheme. We have policies for private participation

[Anil Swarup Interjection: Too many policies]

Not too many policies, but specific to each user, e.g., Maruti. The issue is PPP creates an apprehension for bureaucrats. 5 years later, will the CBI come after us, simply with hindsight that why didn't we foresee something down the road. We have tried to do it slowly, like a titration; it can be improved later on.

[Anil Swarup interjection: This is one reason we didn't rush for private commercial mining. ]

This is why I haven't taken up any role after retiring. When people ask what I am doing, I say I am living comfortably and peacefully.

Coming to BOBRN [provided by the user of coal], it is a logistics question. Railways are based on box and wagons. If you have a BOBRN, and it brings you coal, you want it to be for you. But going back, it will be empty. I only charge for freight, so it would be scheduled instead to go somewhere else, to create circuits. I cannot make a good circuit with a BOBRN. Or you have to pay for it being moved empty.

We have been titrating on something from 2012, and the color has changed. I cannot say more just now – working with the Railways Board, but hope that I can share soon.

Partha Bhattacharyya:

Regarding reserves estimation, we don't follow the international methodology (JORC) but rather something called ISP. JORC isn't superior, but has a different way of measuring, with a JORC certified geologist choosing how/where to do the bores. We believe ISP is better for Indian mines. When we did our IPO, we had to do JORC, and yes, it came out lower (some 20-25%). But we shall see which is better suited. Regardless, at some point we have to join the global norms of JORC.

Anil Swarup:

Hopefully this isn't the last word.

Euphoria about coal auction - you know when bureaucracy didn't do the job, they were condemned. Now they are doing their job they are still being condemned not for their job but for what the businesses have done. Now if they have dug their own grave with their eyes wide open, what can I do about it? I didn't ask them to bid that way. I know they were bidding beyond what they were [ ] but imagine a scenario where I had to stop them from bidding. I would've been in Tihar jail, you would have asked me this question in Tihar Jail. Now try and understand how it works, and I keep using that phrase, what maybe eminently desirable may not be probable. You must sit in my position to understand what we can do and what we can't.

I have been shouting from rooftops and quite literally, this reverse auction is for bringing the [power] tariff down. We all understand English language, we all understand commercial

language, and fixed cost is fixed cost. We can't smuggle coal cost into fixed cost. If someone wants to believe that he will suffer.

What can I do about it? It is not that we are clarifying right now, it was there on the wall, and someone does not want to believe that, what can I say about them? So let us understand this, we did our job, to the best of our ability, someone wanted to jump into the well, we tried to stop him, I could do it only verbally but he still jumped into the well. We know how to take care of ourselves. I am sure they will be able to take care of themselves.

There are broader, important issues, like power (and renewables) that are important, but they are not my focus as coal secretary. Those should be handled, but I speak as an individual there. I have asked the Power Minister – who will buy the coal? Who will pay?

Today CIL has a balance of 8,000 crores to be recovered. When I joined, I said in two months you won't have a coal problem. And now we don't (all plants have sufficient coal). But we do have a power problem, and it could grow 2-3 times. I agree, a crisis is brewing.

I have focused on some steps at a time. When the auctions were planned, people were asking will we get bids. Now people are worried the bids are too high. We are working, and shall cross other bridges (like commercial mining) as they come. And they shall come some point.

We are preparing well, documenting well, and believing in transparency. Re. helping smooth out problems and handholding the private sector, we are working on it. We have a portal for private sector investors in coal mines, and it is paperless (like PMG [project monitoring group]), where concerns when raised are automatically routed to the concerned department and Joint Secretary, and we monitor this regularly.

The Supreme Court gave us an opportunity, and we have converted that crisis into an opportunity and now have a roadmap. First we auctioned coal blocks. Then we will do commercial mining for states. We have a plan, and we are working on it.

We are also already doing coastal shipping and examining inland waterways as well.

NTPC and CIL disputes no longer go to courts because we have set up a small group to handle such things (with resp. Joint Secretaries). Let's work things out instead of using courts for handling concerns.

Restructuring CIL hasn't been a priority, as there are other things to do first. We aren't against restructuring, but there should be a good reason to do so. We are working on (and can do more on) rationalizing coal linkages. There is, in fact, a committee to decide linkages. Perhaps linkages can be more transparent, and even auctioned? We could use reverse bidding to keep the prices low.

There are lots of possibilities and opportunities, and I glad Brookings India did this, to set me thinking, which one cannot always do in the office (or in the mines).

**Vikram Mehta: THANK YOU TO ALL**