

# BROOKINGS INDIA



## **Will breaking up Coal India Limited lead to efficiency and competition?**

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# Will breaking up Coal India Limited lead to efficiency and competition?

Rahul Tongia & Anurag Sehgal\*

Inherent and structural differences mean simply breaking up CIL will not unleash meaningful competition, not unless the system is willing to bear a high spread in coal prices. Location matters enormously, and coal ends up being a not very liquid commodity (no pun intended).

## EXECUTIVE SUMMARY

Newspaper reports have spoken about breaking up Coal India Limited (CIL),<sup>1</sup> the world's largest coal miner, to unleash efficiency, raise production, and raise cash for the government (which still owns 70.96% of CIL). Separating CIL subsidiaries is not a new idea, having been floated in 2017 before. Leaving aside political considerations, including worries about unions (i.e., "can this be done?"), the real issues are structural, institutional, and regulatory.

The view to break up CIL is to end its de-facto monopoly (producing almost 85% of domestic production), and unleash efficiency, perhaps through competition. Unfortunately, the differences between subsidiaries aren't just stark, they are structural or legacy, and predominantly outside the hands of management, including based on geo-technical differences. Locational issues are also critical, making coal across diverse mines much less fungible. Any policies that fail to reflect system-level effects and underlying issues might result in minimal change, but could also lead to huge price spreads across subsidiaries, something end-users (like power plants) will have to bear. In the worst case, such changes these may even lead to loss of production.

## COAL AND CIL IN CONTEXT

Coal is vital for India's development, providing about half of India's primary energy.<sup>2</sup> Coal is over three-quarters of electricity generation in the country, especially factoring in captive power generation. In terms of coal supply, CIL is the dominant coal miner in the country, an order of magnitude higher than the second-largest producer. Unofficial estimates for FY'18-19 show that CIL made up 83% of domestic production and 63% of total coal supply (in tonnes), with imports of coal making up for insufficient domestic production (Figure 1).

India imports coal due to several reasons, including higher landed costs of domestic coal at distant locations (exacerbated by high railways transportation costs), better quality of imported coal and lower ash content, selected power plant boilers being designed to a particular quality of imported coal, and a lack of domestic coking coal production (for the steel sector). It is important to look at rising coal imports in India with an awareness that not all coal imports are avoidable.

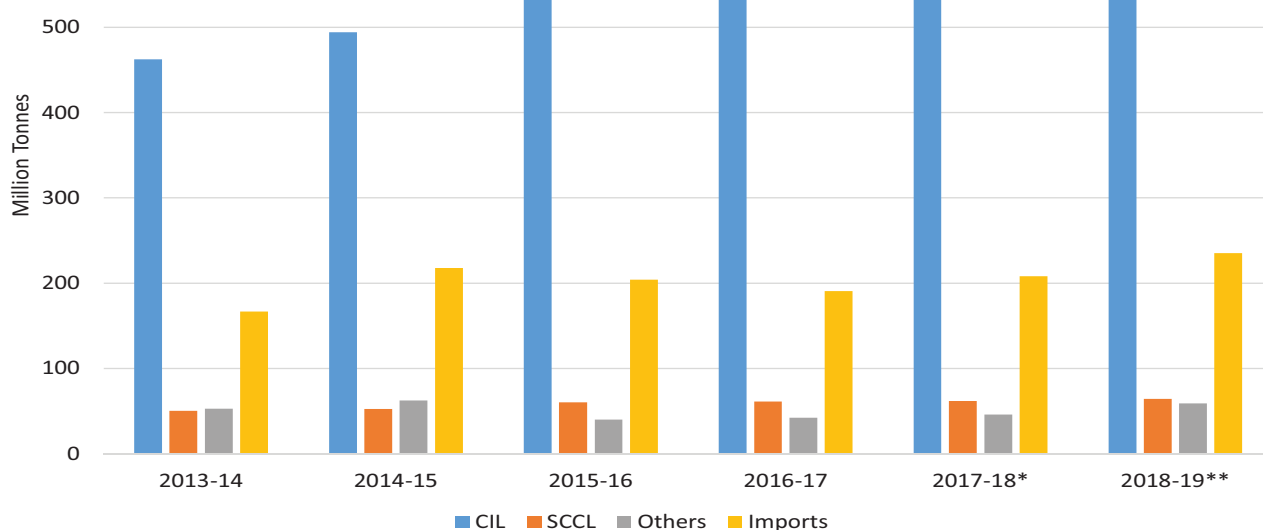
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<sup>1</sup> "Govt may hive off Coal India into separate listed firms to raise funds", Debjit Chakraborty, Rajesh Kumar Singh and Siddhartha Singh, *Business Standard*, July 17, 2019.

<sup>2</sup> *BP Statistical Review of World Energy 2018*.

Figure 1: Coal in India by supplier



Source: India Coal Directories, Govt. of India, through FY2017; Ministry of Coal data including Monthly Cabinet Notes for provisional\* 2017-18 and preliminary\*\* FY2019 data.<sup>3</sup>

Note the reduction in “other” mining after the 2014 cancellation of allocated captive coal blocks by the Supreme Court, which were subsequently auctioned, but still haven’t caught up with prior production.

For argument’s sake, let us consider if 100 million tonnes (MT) of imports out of the total ~233 MT in FY19 are simply due to unavailability of domestic coal, with the balance imports unavoidable due to the reasons mentioned earlier. This 100 MT of “avoidable” imports, given the energy differential between imported and domestic coal, translates into 150 MT of domestic production. The 150 million tonnes of “avoidable” domestic shortfall is a base figure, which will likely grow in the future as demand rises.

Current production targets of CIL have not accounted for this requirement, and CIL has consistently failed to meet annual targets, even though its output grew as much as 9% in a particular year – in reality, some of the targets have been aspirational. In fact, the 2015 announced target of 900 million tonnes production by CIL by 2020, with 100 MT to come from SCCL, and 500 MT from third parties (captive users), totalling 1.5 billion tonnes, was not only very high from a production growth perspective, but too high from a demand perspective as well. As Tongia and Sehgal (2016) showed,<sup>4</sup> India cannot consume so much coal even if every power plant under construction is built and operates at a high utilisation rate. It is worth mentioning that CIL’s average coal grade (measured across all subsidiaries) is declining measurably, so going forward, the same energy demand will require more tonnes of coal mined.

Despite the enormous growth of and very ambitious plans for Renewable Energy (RE), bottom-up calculations for both electricity demand in 2030 and modelled supply balances for 2030 indicate no “peak coal”.<sup>5</sup> The analysis shows that it would take over 500 GW of RE capacity by 2030 (from approximately 80 GW today) to avoid growth of coal purely on an energy balancing basis. This figure is high enough to necessitate storage technologies. Unfortunately, the reality of today’s inexpensive RE is that it is intermittent or variable RE (VRE), and coal remains vital for electricity, especially for meeting the evening peak demand. However, instead of any imminent “peak coal”, RE and other factors mean India will have a slow-down in growth rates of coal demand through 2030.<sup>6</sup>

<sup>3</sup> <https://coal.nic.in/content/production-and-supplies> for provisional and preliminary data.

<sup>4</sup> R. Tongia and A. Sehgal, “Coal Requirement in 2020: A Bottom-up Analysis,” Brookings India Report, July 2016.

<sup>5</sup> M. Sahil Ali and R. Tongia (2019), “The Future of Indian Electricity: Supply Scenarios of Coal Use by 2030”, Brookings India, <https://www.brookings.edu/research/the-future-of-indian-electricity-supply-scenarios-of-coal-use-by-2030/>

<sup>6</sup> Demand for coal is distinct from growth of power generation (plant) capacity, which India overbuilt in the early 2010s, and now suffers from low capacity utilisation factors (also called Plant Load Factors, or PLFs), impacting their financial viability.

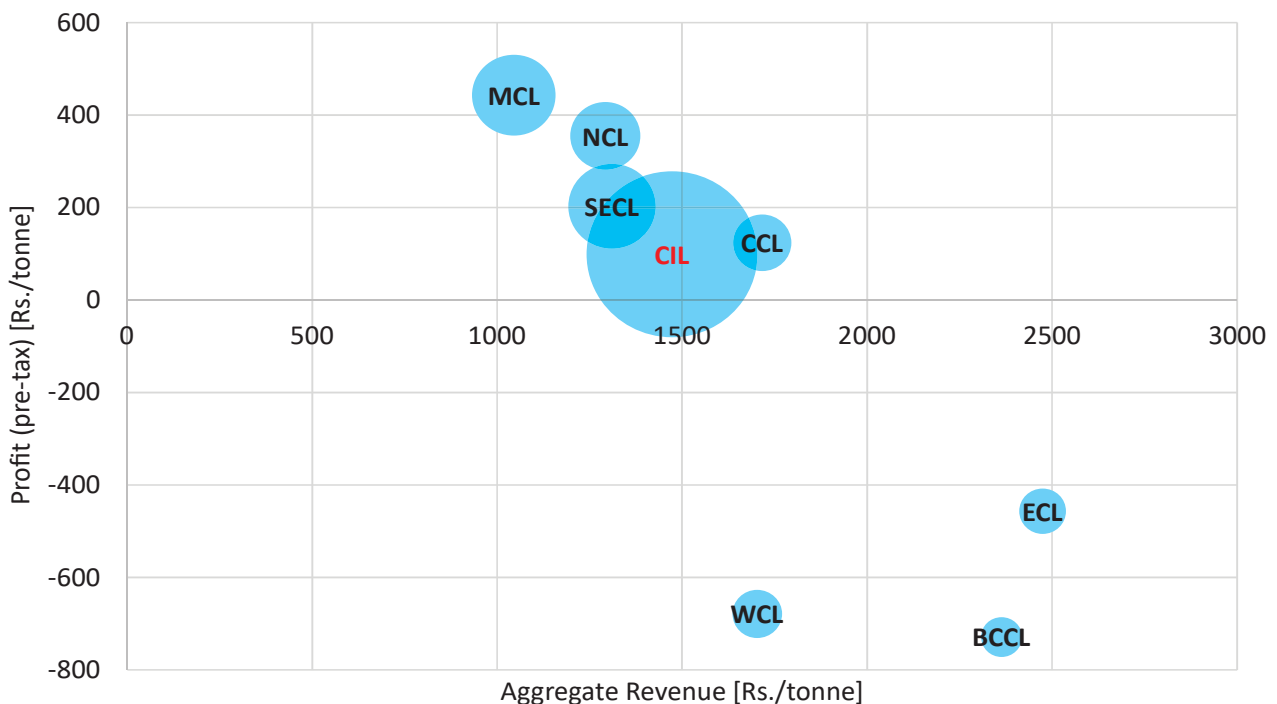
## CIL'S SUBSIDIARIES: VARYING PRODUCTION AND COST STRUCTURES

Coal India Limited grew out of nationalisation of coal in the 1970s, and existing entities merged into one large entity, with CIL as the holding company with multiple wholly-owned operating subsidiaries. New subsidiaries were added, and today CIL has seven producing subsidiaries.<sup>7</sup> But, they are not equal or even comparable by most measures.

There are two sides of coal production – what does it cost, and what is it worth? The latter is more straightforward. CIL sells most of its coal under prices fixed to various grades of coal (called notified prices) which are uniform across all subsidiaries except WCL. These prices are set not through market forces but, effectively, technocrats aiming to keep CIL profitable.<sup>8</sup> Some fraction of CIL output, ostensibly 10% but often closer to 20%, is sold via e-auctions, which are through an open market and garner higher prices than notified prices. A small fraction is also sold under an MoU route.<sup>9</sup> If CIL only sold at notified prices, its margins would take an enormous hit.

The overall end result is close to costs-plus pricing, with a twist. CIL is profitable overall, but margins (profits) vary enormously across subsidiaries. Even revenues vary enormously across subsidiaries by the grade of coal they produce. The newer, larger (and high growth) subsidiaries often produce lower grades of coal, worth less. But because some of them have low-cost structures, they are still disproportionately profitable. Figure 2 shows the spread for FY2017-18.

Figure 2: Financial and Production Spread across CIL Subsidiaries (FY2018)



Source: Data as calculated by Anurag Sehgal, based on Subsidiary Annual Reports.

Size of the bubble represents volume of production; MCL and SECL were half of CIL's production in tonnes (FY18).

<sup>7</sup> The total number of CIL subsidiaries is 11, but a number of them such as CMPDIL, CVL, and CIAL do not produce coal, and North Eastern Coalfields (NEC) has very little production, with direct CIL control. Hence, CIL itself officially states it has seven domestic coal mining subsidiaries.

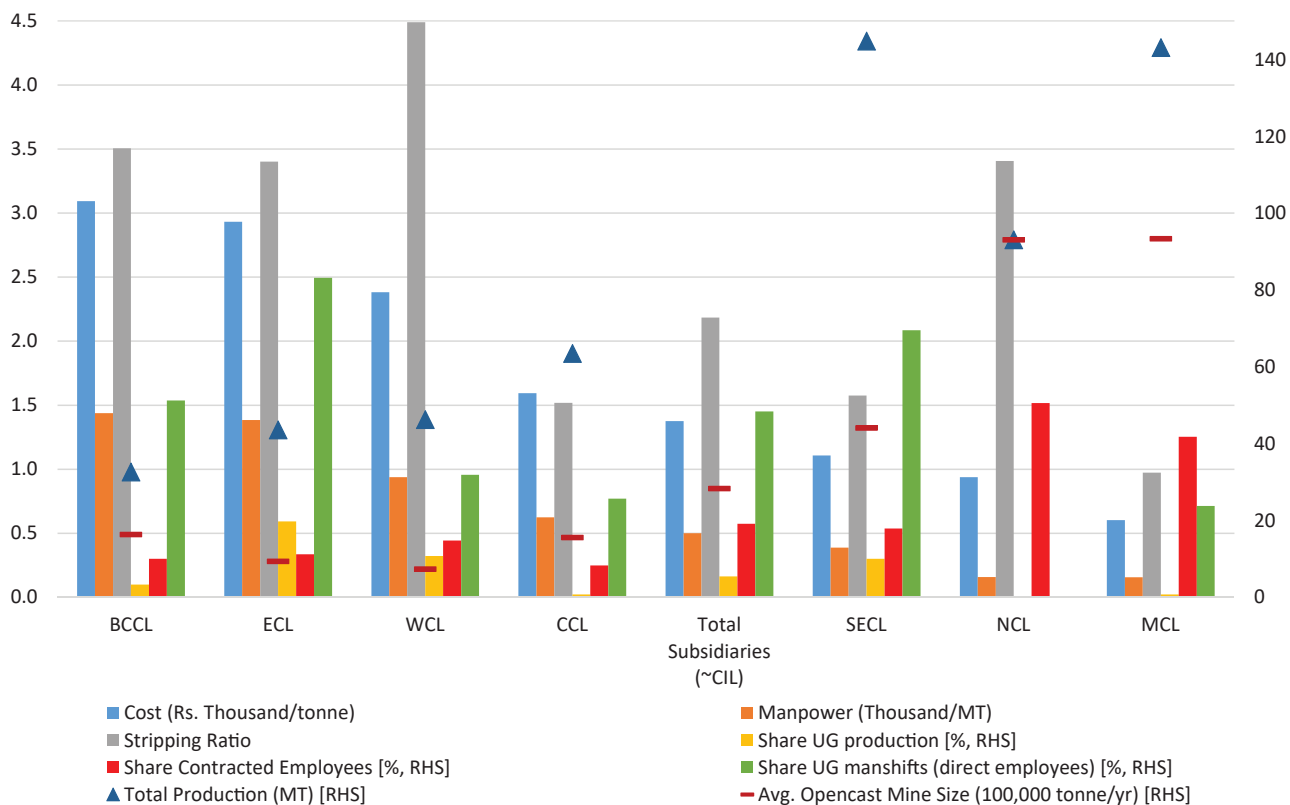
<sup>8</sup> The CIL board officially sets prices, but the Central Government maintains informal control.

<sup>9</sup> Policy favours power plants, with lower notified prices and higher access to notified coal (as opposed to being forced to rely on e-auctions or imports). There is also a difference between public and private sector consumers in terms of access to Fuel Supply Agreements (FSAs), which are for notified price coal.

## Will breaking up Coal India Limited lead to efficiency and competition?

The spread between subsidiaries in cost structure isn't purely based on good versus poor management. High costs are overwhelmingly legacy issues in some subsidiaries, which include a high share of underground mining, use of direct employees over contract labour (the latter being cheaper), and poor geo-technicals (stripping ratio, which determines costs, as well as grade of coal underground, which determines revenues). Figure 3 shows FY18 data highlighting these differences, which also shows that cheaper mines are (newer) larger mines.

Figure 3: Factors determining the cost structure spread across CIL subsidiaries



Source: Annual Reports per subsidiary plus calculations based on data from CIL on manpower and audit reports for mines.

These are costs, and not revenues (which could have a component of profits or losses). Revenues per tonne are shown in Figure 2.

CIL's subsidiaries are clearly very different. In some years different entities are loss-making, even if CIL is profitable overall, while in other years all subsidiaries have been profitable. While rules forbid explicit cross-subsidies through cash transfers, there are a wide range of subtle cross-linkages, ranging from inter-subsidiary staff movement (management level), differences in dividend payouts, share buybacks by profitable subsidiaries, and even balance sheets' implicit blending for the terms used for equipment and other expenses.

Only a small fraction of the spread in costs can be reduced by policy choices. Underground mining is inherently expensive, but it produces very little coal (albeit of slightly higher quality) at low productivity. However, underground mines are politically hard to shut down, and they require disproportional effort for safe mine closure at their end of life. This spread in cost structures means, assuming a modest profit margin, the required per tonne sale price as FY18 would have a 4x spread across subsidiaries! Even when we normalise for grades of coal, on a therms (energy) basis, the spread is measured in multiples.

One other important factor in pricing is a recognition that CIL has been a de-facto monopoly, but it hasn't charged monopoly prices. While Fuel Supply Agreements are very one-sided (to the extent the Competition Commission of India has fined CIL), and many consumers have complaints on quality and timely supply

(especially complaining about grade slippage), many of these issues are distinct from the purposely cheap coal available to selected consumers, especially the power sector (which is cross-subsidised by non-power users, under notified prices).

Going forward, a very important question is if any new entity (whether a competitive new entrant or a subsidiary of CIL that is spun off) competes with CIL's average price, or only against CIL's most expensive units of production? Spinning off a subsidiary is unlikely to increase output (CIL invariably misses production targets, so it's not lack of demand holding output back) – it is new entrants that would add to supply.

The fact that CIL averages its costs keeps coal's costs equitable across the country. Instead of average-cost pricing, if we had a market-clearing-price uniform price, this would result in higher prices for consumers, given the last (most expensive) tonne of CIL coal is quite expensive to produce. Competition amongst subsidiaries for lowering prices is difficult to envision under a shortfall.

## COAL IS AN ECOSYSTEM

Miner prices are only a subset of delivered coal prices. Levies/taxes and transportation are both substantial, the latter especially for distant mines. Levies are per ton, which creates further distortions by grade of coal on an energy basis, but transportation is especially not uniform for end-users. The Indian Railways transports the majority of Indian coal, and coal is the single largest freight carried by the Railways. Passengers aren't charged true costs, and are cross-subsidised by freight, where coal has the largest share. At least 31% of coal freight costs are an overpayment for passengers, and this becomes substantial, especially when coal is transported over long distances. The cross-subsidy borne by coal is so high that distant power plants pay about Rs. 0.60/kWh for passengers on railways.<sup>10</sup>

When we combine this with the fact that coal grades vary across mines and subsidiaries, this makes coal much less fungible than people imagine. Power plants are often designed to a narrow range of coal quality, and thus couldn't easily take alternative supplies, even if these were cheaper. This is one reason that several coastal power plants rely on imports – it's not just net cost-effectiveness but technological lock-ins.

Location is more than about subsidiary or mine locations – end-users also vary by location. Thanks to the railway transportation spread on landed price of coal, the Plant Load Factor (PLF, also called capacity utilisation factor) of pithead power plants is much higher than of distant coal power plants. But states, by definition, usually have plants in their state, and thus higher fuel charges. On top of this, Renewable Energy (RE) potential is disproportionately concentrated in Southern and Western India, far from coal mines.

All of these issues mean that focusing on just miner prices will not help predict future market shares or equilibrium.

## BREAKING UP CIL – JUST ONE OPTION FOR CHANGING TODAY'S STATUS QUO

Breaking up CIL could certainly unleash some value for the owners, but it would create differential impact on end-users. A few important questions that need clarity include:

1. If the break-up is treated as a zero-sum game, this may signal true prices and microeconomic efficiency, but how will electricity prices manage the wide shifts in coal prices? Electricity is singled out because it's a regulated commodity, unlike products from other users of coal.

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<sup>10</sup> P. Kamboj and R. Tongia, "Indian Railways and Coal: An Unsustainable Interdependency", Brookings India, July 2018, <https://www.brookings.edu/research/indian-railways-and-coal/>

2. Assuming some subsidiaries have to price coal higher to be viable, what incentive is there for cheaper producers to lower prices commensurately, i.e., why would price spreads remain a zero-sum game? Wouldn't coal producers with low costs rather price at least at the average price that they know consumers are paying today? What stops them from pricing equal to the highest prices visible in the market?
3. Assuming prices do float across subsidiaries, will expensive ones price themselves out of competitiveness, not just against imports but renewable power? This emphasises that the real buyer isn't coal power plants but electricity distribution companies (Discoms). In the extreme case, shutting down non-competitive coal mines means a loss of domestic production.

An alternative to breaking up CIL is shaking up the non-PSU mining space (here, we bundle the number two miner, SCCL, along with CIL, as it is a similar public sector unit). Today, such mining is limited to end-users who undertake captive mining, entirely for their own needs. For multiple reasons, that go beyond the cancellation of previously allotted coal blocks in favour of Supreme Court mandated auctions, captive mining has not succeeded. Output is very low, far lower than projections/plans. Estimates indicate the captive output as of 2018 was about 40% of the pre-cancellation production.<sup>11</sup>

Opening up commercial mining is likely to help increase quality output, and a shortcut for this may be to enable existing captive miners—who rely on contractors, the mine developer and operator, or MDO, to actually mine—to produce more than what they currently do (or aim to do) and be able to sell commercially. There are two advantages to this. First, this is likely to be efficient, especially if the mining resource has optimal extraction at larger scales – note how Figure 3 shows all the cheaper mines are also larger. Second, this is likely to be the fastest. Greenfield development of coal mines will likely take many years.

Breaking up CIL isn't the only way to shake things up. We haven't properly tried commercial or even part-commercial mining (blending with captive mining). The government has just announced a second attempt at allowing captive miners to sell part of their output commercially,<sup>12</sup> a step in the right direction. However, it doesn't go far enough in offering miners flexibility, especially in terms of volumes and setting coal sale prices, which the government appears to want to cap.

One aim for commercial mining plans has been to draw in global best practices, but we don't know what the appetite will be for global entrants, many of whom are either moving away from coal mining (Rio Tinto), or have had poor experiences in attempts to mine coal in India, notably Theiss. If conventional wisdom is that the private sector is more efficient than the public sector, it's worth highlighting that CIL has already taken advantage of extensive private sector efficiency through MDOs, especially in newer subsidiaries. This means the scope for efficiency gains is modest, and unevenly distributed across CIL.

Regardless of the mode of adding new mining, the real need is adding supply to avoid last-resort, expensive imports. The good news is new entrants are unlikely to hurt CIL's profits, especially in the short-run if they displace imports. It's only down the road that new supply would cut into premium e-auctions.<sup>13</sup> The larger issue isn't will it lower CIL revenues, but the distribution of the winners and losers. Today, it is specific types of users who pay the import or e-auction premium, especially private users, and non-power users. Competition may help such users, but to keep CIL whole in the long run, this may require slightly raising power sector notified prices of coal.<sup>14</sup>

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<sup>11</sup> This calculation removes Reliance's mines for Sasan power plant, as well as any other captive blocks that were not allocated under the Supreme Court mandate for coal mine auctions. Figure 1 aggregates all captive together, and hence doesn't show as great a decline due to the cancellations.

<sup>12</sup> "Centre readies 27 block for commercial mining", Debjoy Sengupta, *Economic Times*, August 5, 2019. [http://economictimes.indiatimes.com/articleshow/70532415.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](http://economictimes.indiatimes.com/articleshow/70532415.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)

<sup>13</sup> These statements assume global prices remain similar to today, and higher than netback calculations even against e-auctioned coal.

<sup>14</sup> Given grade-based price differentials that go beyond thermal value differences, one could make an argument that grade slippage was nothing but a hidden price increase. If true grades were recognised and sold as such, then CIL and, more so, SCCL earnings would decline, necessitating price rises.



For any commercial mining to work, the terms of coal mine allocation become key. If a new entrant gets a poor mine (high stripping ratio), no amount of efficiency will lead to cheap coal. If the auction mechanism has a structure of floor price that squeezes the efficiency gains into exchequer revenue, then the resultant coal will inherently not be cheap. CIL subsidiaries have thus far avoided such issues – CIL pays a nominal allocation charge to mine. If we worry about intra-CIL distortions as a driver for breaking up CIL, thanks to price averaging these aren't visible to end-users. The distortions between CIL, PSU captive miners (who also avoid auctions) and private captive miners today (who must pay via auctions) are far higher.

Most experts believe that the real challenge for more output isn't management capabilities but land acquisition and permits/clearances. Here, CIL has an advantage over many private sector players, not just because it is viewed as being the government, but also because it has a long history of CSR and investing in local development, beyond the statutory levies and charges. However, one large aspect of this is coordination, including with the central government, a task undertaken by CIL, the parent (holding) company. This is just one of many intangibles that may offset any mining efficiency gain potentials by breaking up CIL.

There are other subtle issues regarding CIL acting as one. In a pinch, CIL can offer coal from another subsidiary to a recipient, and it routinely uses multiple mines within a subsidiary for deliveries. In fact, consumers have to pay a premium to get coal from a dedicated mine. If we break up a single subsidiary into smaller units, or lease them on a franchise basis like in electricity, we lose such flexibility. This doesn't mean others can't compete, just that there is likely a minimum scale for cost-effective mining. In addition, commercial mining needs flexibility in terms of outputs, while current captive mining allocations require relatively rigid "mining plans", which may not be optimal based on varying coal demand. Policies should not park all the risk on a single entity, either a miner or a consumer (fuel costs are a pass through in most power purchase agreements, or PPAs, which dominate electricity sales).

## RECOMMENDATIONS AND DISCUSSION

Clarity on policy objectives is key to any change. Other than unleashing cash for the government, will breaking up CIL raise production? As shown before, that is unlikely. Will it spur efficiency? Perhaps, but efficiency may have more to do with management freedom and flexibility than competition. There remains a significant possibility that any average price reductions will come from closing down non-remunerative mining rather than competition-induced efficiency.

If we consider two major types of changes from the status quo, i.e., enabling commercial miners and splitting up CIL, the former creates less disruption to the pricing equilibrium, and is likely much easier, especially if the incumbent (labour) is worried about viable mines and jobs. But market forces depend on pricing flexibility, which would benefit from a spread across CIL prices. A number of countries such as the United States and China have regional prices for coal, with price spreads greater than based on coal quality (energy content) differences.

Pricing changes away from blended pricing may be an interim step that could allow either or both options to be undertaken with less overnight disruption or workforce resistance. It would be interesting to ask incumbents which would they prefer: splitting up CIL or enabling commercial mining? Our discussions with current and retired CIL executives suggest commercial mining is something CIL as an institution does not fear, but would even welcome as it would allow it to undertake commercial decisions more easily.

Change is coming, even if its shape and form is uncertain. Government policy should not shy away from making hard decisions on reforming CIL and giving it more operational and pricing flexibility, but the same should be enabled for all (existing and new) miners. Commercial mining is important for lowering prices, not just from efficiency per se, but also simply by adding to supply and thus avoiding imports. Policy should

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also start planning for a coal regulator, whose true value comes from not just creating a level playing field for new entrants, but also having jurisdiction over CIL.

Coal supplies are important, but in the short run, much of the effort on coal will be on the consumption side, including cleaning up existing power plants. However, in the long run, India has to face greater uncertainty in coal production, especially when measured by timeframes of mines, power plants, or railway links. This uncertainty isn't made easier by uncertainty in demand, especially with the push towards renewable energy.

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