



THE ECONOMICS SOCIETY
SHRI RAM COLLEGE OF COMMERCE



COMMERCIALISATION OF COAL MINING IN INDIA

POLICY REPORT

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INTRODUCTION

In the commercial coal mining sector, India has a long and illustrious history. In 1773, the Coal Mines (Nationalisation) Act, which is now the central legislation governing coal mining eligibility in India, began the process of nationalisation of coal. At that time, India was under The Indian National Congress party and Indira Gandhi was our Prime Minister [1966-1977]. M/s Sumner and Heatly of the East India Company took the first steps in the Raniganj Coalfield, which runs along the western bank of the river Damodar, in 1774. At this point in history, the mining business did not have the speed and intensity that it does at this point. Production was sluggish at best, and the industry remained more or less static for a century. This dynamic changed with the introduction of the steam

locomotive in 1853. Almost instantly, coal production picked up as now it could be transported to corners of the country that were previously unexplored. Production rose to 1 million tonnes, reaching the top side of 30 million tonnes by 1946. An event of substantial influence took place soon after India gained independence. And with that came the advent of the 5-year plans under the guidance of the planning connection. Production of coal increased by 3 metric tonnes during the 1st plan. The need for a change in the coal industry was felt and identified in the 1st plan itself, with systematic, scientific and sustainable ideas being put forward for bringing about this change.

As India gained independence, demand for coal output increased during the First Five



Year Plan. The Working Party for the Coal Industry was formed in 1951 by officials from the coal industry, labour organisations, and the government to recommend the integration of small and fragmented coal-producing units. As a result, the idea of a nationalised, unified coal industry emerged. Coal mining integrated with overall planning is a phenomenon that emerged after independence. The Economic Programming Committee of Congress in 1947 and the National Planning Committee in 1949 both played critical roles in the recommendation process. In 1956, the government established a public-sector corporation to work alongside the private sector as part of its industrial programme. By establishing former railway pits, the National Coal Development Corporation [NCDC] intended to focus its efforts on areas previously deemed unproductive by the private sector, such as Madhya Pradesh, Orissa, and Maharashtra.

Indira Gandhi's government gradually nationalised coal mining, beginning with coking coal mines in 1971-72 and progressing to non-coking coal mines in 1973. All coal mines in India were nationalised with the passage of the Coal Mines (Nationalization) Act in May 1973. In the 1970s, India achieved near-total national control of coal mines in two stages, potentially rising from the government's national energy programme. The Government of India passed the Coking Coal Mines (Emergency Provisions) Act 1971 on October 16, 1971, under which the Government of India took over the operation of all 226 coking coal mines and nationalised them on May 1, 1972, with the exception of captive mines owned by IISCO, TISCO, and DVC.



As a result, Bharat Coking Coal Limited was formed. On January 31, 1973, the Central Government took over the operation of all 711 non-coking coal mines by proposing the Coal Mines (Taking Over of Management) Ordinance 1973. In the second phase of nationalisation, these non-coking mines were nationalised on 1 May 1973, and a public sector firm called Coal Mines Authority Limited (CMAL) was established to administer them. When this was finally implemented in 1971-73, nationalisation appeared to herald a shift in government policy.

The central argument has been that nationalisation was necessary for the government to achieve both development and socialist goals. Consequently, the

government's takeover of industry was seen as a calculated and well-planned operation. It was considered a major influence in the government's policy shift to the left at the time. National Coal Development Corporation [NCDC] was set up as a Government of India undertaking and was one of the initial major leaps towards planned and systematic development of the coal ministry.

Ever since the establishment of commercial coal mining in the country, the production had been dictated by domestic consumption. With the steel industry expanding rapidly, systematic exploitation of non-coking coal reserves in the Jharia area had to be initiated. Capital investment, which was essential considering the rapid

NATIONALISATION

The concept of nationalisation was first introduced by Burrows' committee, stating in 1937 that state acquisition of mining and minerals was necessary due to several facts and obstacles. The British Indian government did nothing and maintained a laissez-faire system until demand for coal increased and the government was forced to impose price controls and regulate coal distribution to other industries. The Mahindra Committee recommended that state participation should be increased in 1946 due to a variety of factors, including a large number of unorganized mines in Jharia and Raniganj, a lack of availability of good coal, and the need to expand the steel industry. One of the main problems was the Industrial Policy Resolution of 1948, which negated the scope for major nationalisation indefinitely as it stated that the state focused on expanding and modifying activities in which it was already operating in rather than exploring and diving into different avenues. The 1956 resolution merely reaffirmed this policy. Also, there were two distinct groups controlling the non-captive mines, the Indian Mining Association (IMA) and the Indian Mining Federation (IMF). IMA was generally a part of larger industrial interests. These were more efficient powers, using advanced technology, and their influence was positively disproportionate compared to their share, as they acted as agents for smaller firms as well. The IMF was mostly made up of small companies that solely dealt with coal and were generally less mechanised with coal holdings not nearly as vast. This was generally considered the unorganised sector and was made up of small collieries, which were generally privately held concerns.

Mines by Size of Output-1971

Annual production (Tonnes) Per annum	Number of Mines	Number of Mines as % To Total	Output (mn tonnes)*	Output as % To total Output
0-6,000	228	28.6	0.5	0.7
6,000-12,000	47	5.9	0.5	0.7
12,000-60,000	211	26.5	7.0	9.3
60,000-1,20,000	100	12.5	9.0	12.0
1,20,000-3,00,000	130	16.3	25.0	33.4
3,00,000 - 6,00,000	74	9.3	28.0	37.4
Above 6,00,000	7	0.8	5.0	6.6
Total	797	100.0	75.0	100.0

SOURCE: NATIONALISATION BY DEFAULT: THE CASE OF COAL IN INDIA, JSTOR

transformations were not raised in accordance with the needs of the private players. Further, unscientific mining practices were being adopted and there were violations in the labour rights aspects as well, with the living conditions of miners also being subpar. The stipulations presented in The Coal Mines Regulation 1957, The Metalliferous Mines Regulation 1961, The Mines Vocational Rules 1966, The Mines Rescue Rules 1985, and Mines Creche Rules 1966 were regularly ignored and the application of rules was seldom overseen by concerned authorities. The political influence in the quest for nationalisation is a major aspect as well. Small private miners were selling to whoever could pay the most, not to core users like power, steel, or cement. When the mine was not profitable for them, some would shut it down. Overall, it was difficult to align coal supply with the government's development plans and needs. Small-scale mining pre-nationalisation was

riddled with coal mafias who subsequently entered politics to persist with indirect control over mines, like the Dhanbad mafia. The problem here was twofold; the first being that most of them entered the coal industry during the First World War under sub-leases and worked with a particular rent system prevalent in the industry until 1949. As all the small operators were willing to pay this high 'salami' payment, holdings were distributed in a scattered manner, making it difficult for the major public firms to negotiate for sustainably high rates. The second problem, a more alarming one, was that rational and systematic exploitation of coal reserves was unheard of, and higher productivity through mechanisation was seldom paid attention to. The small mines were mostly mined in shallow pits without using proper equipment or technical expertise. Therefore, the lower seams remained untouched, leaving the deeper resources

lost forever through waterlogging and underground fires. These adverse effects of inefficient mining were no reserves to the reserves themselves, as other players including the major holdings had to leave large areas untouched in the proximity of these hazardous reserves for fear of waterlogging and burning due to fires. This was highly worrying for the governing bodies, as large reserves were being wasted and vast reserves could not be worked in times when the targets of the five-year plans were already falling short in certain areas.

The treatment of the precious and relatively rare coking coal was also a major cause for concern. Comprising only 15-20% of the country's reserves, coking coal has a higher thermal value and lesser moisture and impurity content than the abundantly available non-coking coal. This, combined with it being easier to mine, due to primary coking coal being present in the uppermost layers of the fields in Raiganj and Jharia, made the prevention of exploitation of this reserve an important objective. The market and geological conditions would have completely displaced the coking coal reserves, which did take place before the country gained independence. The monopsonist market comprised the railways, steel, and power; the power players would allow them to demand the best quality coal at the lowest possible prices. The government-powered steel development programme was in dire need of coking coal, and as a result, certain sanctions were placed discouraging the usage of coking coal for non-metallurgical needs, such as the Coal Mines (conservation and safety) act of 1952. Despite this, more coking coal was used in 1960 for non-metallurgical areas than ever before.

Even a price differential, which had accumulated to the price of coking coal being

1.02% over non-coking coal through the years, was not enough to deter consumers from demanding coking coal due to the thermal level, impurity concerns and lower transportation costs due to the geographical concentration and the feasibility of transporting clean coal. By the year 1971, approximately 100 million tonnes of precious coking coal had been technically wasted on non-metallurgical ventures, despite the constant efforts of the government to the contrary. All of these factors, along with the instant need for optimization of the available resources, were concerns for the government. Influenced by these negative characteristics, the government prudently went down the path of nationalising the country's coal mining. They carried out the nationalisation process in two stages, first with the coking coal mines in 1971-72 and then with the non coking mines in 1973. The Coking Coal Mines (Emergency Provisions) Act of 1971, passed in October, provided for the temporary management of coking coal mines and coke oven plants in the public interest while they were being nationalised. The Coking Coal Mines (Emergency Provisions) Act of 1971, passed in October, provided for the temporary management of coking coal mines and coke oven plants in the public interest, pending nationalisation. On 1, May 1972, the Coking Coal Mines (Nationalisation) Act was passed, bringing the coking coal mines and coke oven plants that were not owned by Tata Iron & Steel Company Limited or Indian Iron & Steel Company Limited under the Bharat Coking Coal Limited (BCCL), a new Central Government Undertaking. One more law, the Coal Mines (Taking Over of Management) Act of 1973, authorised the Indian government to take over the management of coking and non-coking mining areas in seven states, including those taken over in 1971.



IMPENDING NEED FOR PRIVATISATION

Nationalised coal has had problems for several decades now, leading some to believe that privatisation has been long overdue. The basic issue with nationalised coal mining is how it has failed miserably to keep pace with the progress of the energy industry and the increasing demand for coal to meet the needs of the country. As a result, despite having the 4th largest reserves of coal, India remains the number one importer, fulfilling a fifth of its needs through imports. In the years 2019-20, the country had to spend 1.5 lakh crore of vital foreign exchange on roughly 250 metric tonnes of coal. The statistics were even worse for 2018-19, with India importing a quarter of its coal consumption at 1.7 lakh crore. These expenses severely impact the foreign exchange, generating unprecedented pressure on the import bill.

Also, with one of the primary goals of the country's being self-reliance, or Aatmanirbhar Bharat, the existing situation, or rather dilemma, had to be dealt with to adopt progressive measures and disregard the current regressive ones. The problem would be persistent. Contrary to what many believe, India is dependent on coal and this dynamic will remain the same for the foreseeable future. Currently, the country is heavily dependent on coal as it facilitates various other quintessential sectors. As per reports, coal currently generates 74% of India's electricity. Other than the power and electricity sectors, various other sectors such as cement, paper and pulp, steel, and iron are the largest consumers of coal and would be rendered inoperable.

The government of India has been taking positive steps to tackle the situation, focusing on the development of renewable energy. Despite these progressive and ambitious projects, India is still projected to be dependent on coal for at least 45% of its electricity generation needs in 2040, making coal a permanent necessity. And after analysing these facts at hand, the decision to privatise coal will be pivotal for the growth of the coal sector.

BENEFITS OF PRIVATISATION

There is a multitude of potential benefits of privatisation. Firstly, as previously mentioned, the foreign exchange of India will improve steadily as a result of the breathing space that the import bill will receive. This step would also move India a step toward being free from foreign dependencies and move it toward its goal of self-reliance.

Commercial coal mining, with regulatory monitoring, will greatly facilitate employment in tribal locations and populations that reside in the vicinity of the mines. Hindustan Zinc is a brilliant example of how sustainable mining and oversight can be highly influential in providing employment and raising the

raising the relative standard of life for the miners and workers. Concerns related to exploitation are persistent, but as mentioned, such heinous practices can be curbed with basic regulation and left as a memory of the past.

Another major incentive to commercial coal mining is the tremendous amount of revenue generation which will be experienced by the states. Diversifying revenue is a task that is long overdue for the states and was previously minimised due to sluggish mining. But commercial mining will boost the income of states and generate employment. Keeping in mind the fact that the coal sector allows for 100% FDI, states and sectors alike will profit from this step.

TABLE 9 : COAL INDUSTRY-EMPLOYMENT BY STATES, 1951-71

(In '000)

Year	Andhra Pradesh	Bihar	Bengal	Madhya Pradesh	Orissa	Maha-rashtra	Tamil Nadu	Total
1951	16.60	189.95	95.84	31.40	6.27	7.31	—	351.97
1956	16.90	182.19	98.94	34.05	6.91	8.75	0.04	352.42
1957	17.42	183.01	113.05	39.83	6.63	6.19	0.14	370.24
1958	18.33	187.73	120.60	42.60	5.03	5.42	0.32	382.17
1959	19.14	186.27	117.62	44.16	5.43	5.66	0.71	383.76
1960	19.32	195.19	122.03	42.56	4.59	5.77	2.48	397.42
1961	16.9	203.0	128.6	43.2	6.30	5.90	1.90	411.20
1962	18.45	215.93	132.73	45.8	6.58	6.39	1.79	432.90
1963	21.47	222.54	137.13	49.39	6.90	6.91	1.70	450.67
1964	24.44	207.70	129.11	47.80	7.33	7.20	2.22	430.75
1965	24.30	202.70	126.60	48.30	7.44	7.20	3.20	424.70
1966	25.6	205.10	124.60	48.20	7.50	7.30	3.0	425.40
1967	25.0	197.90	122.30	47.80	7.30	7.00	2.80	413.70
1968	23.0	190.40	114.30	46.30	7.00	6.80	3.40	395.30
1969	20.4	193.50	112.80	47.0	7.60	7.40	3.40	396.40
1970	19.4	192.30	108.70	48.4	7.60	7.30	3.40	391.50
1971	21.6	187.40	99.20	49.7	7.60	7.90	4.40	382.30

Source : Report of the Chief Inspector of Mines in India — Director General of Mines Safety — Statistics of Mine—Coal

The table above shows the state wise employment in the coal industry in the initial years before nationalisation.

The forward and backward linkages will be massively impacted as a direct result of the genesis of the private sector in the coal mining industry. The forward linkages will include cement, fertiliser, aluminium, and many more; triggering growth and development in all these sectors. Transport and infrastructure are some important backward linkages which will benefit from the change. Through all of this, it is transparent that there will be many beneficiaries of this move even outside of the coal sector, creating a string of much-needed development and change.

Everyone has the general consensus that the industry requires a major revamp.

And that revamping could be done efficiently and effectively as the management, competition and technological developments through commercialisation would push us in that general direction. It would be similar to the restructuring and remodelling induced in the banking sector with the introduction of private banks. Gasification of coal, a major step proposed by the government, would be taken to the next step and sectors such as cooking and transport would experience benefits. In the end, it all boils down to value addition and effectiveness, which needs a rapid change to optimise the resources available in the country.

Those in favour of this move mention that it would be undoing or reducing the damage done over the past 5 decades to the industry and the economy as a general.

CRITICISMS AND APPREHENSIONS

We have to explore and look at the other side of the spectrum by listing and evaluating the criticisms and questions that are or can be raised about the privatisation of coal in our country. The environmental aspect of the equation raises concerns, as people fear that the environmental surroundings of the mines will be at the risk of exploitation. Ecologists argue that the flora and fauna would be compromised by wide developments.

Another fear harboured by people apprehensive of the people is the displacement of the natives and local residents of the habitable areas in the vicinity of the mines. Since the regions where the mines are located have a large population of natives, the concerns have some prudential backing.

In such cases, proper relief, compensation, and alternate housing have to be provided to the displaced. Such promises trigger problems as it is a delicate task which has created concerns about the well-being of the residents in the past.

BROAD ECONOMY

EMPLOYMENT GENERATION

After more than four decades of public sector ownership that relegated the private sector participation to minority status in the coal mining sector, the Government of India has finally allowed the Commercialisation of coal mining. This revolutionary move is bound to usher positive implications for the global economy. Private investment in the coal sector will have a multiplier impact on the Indian economy. It would lead to direct and indirect employment generation. Mining is a labour-intensive activity which would mean that such mines will employ thousands of people. It would be particularly crucial for people in eastern and central India specifically the tribal belt of India such as the states of Bihar, Orissa, Jharkhand which currently is underdeveloped and has not reached the desired level of progress and prosperity but they have a huge stock of coal thus making them crucial areas for intervention. Since the coal resources of these areas haven't been tapped to their full potential, private sector participation in this

arena would create huge employment opportunities for the local community. Also, commercial mining licensing, which requires regulation and monitoring, would further supplement the requirement for labour, thus creating additional job opportunities. Increased production of coal would also bolster tremendous growth in its allied sectors such as cement, fertilisers, steel, aluminium and numerous other sectors dependent on coal. With an increase in efficiency and production in all these sectors, demand would rise, paving the way for new employment opportunities in these sectors.

FDI

The coal sector was nationalised by the Indian Government in 1973, thus making it a monopoly of Coal India Limited. Although 194 coal blocks with geological reserves of 44 billion tonnes were granted to private and government parties for captive usage between 1993 and 2011, the Supreme Court annulled the allocation in 2014 and ordered a transparent auction. However, still there

S. No.	Name of the State	No. Of Mines	Royalty and Taxes (Rs. Cr.)	Revenue Share (Rs. Cr.)	Annual Revenue generated based on the PRC of mine (Rs. Cr.)	PRC (MTPA)	Estimated Capital Investment (Rs. Cr.)	Estimated Total Employment
1	Chhattisgarh	2	539	323	862	7.20	1,080	9,734
2	Jharkhand	5	1,780	910	2,690	20.20	3,030	27,310
3	Madhya Pradesh	8	1,157	567	1,724	10.85	1,628	14,669
4	Maharashtra	2	184	137	321	1.80	270	2,434
5	Odisha	2	792	267	1,059	11.00	1,650	14,872
TOTAL			4,452	2,204	6,656	51.05	7,658	69,019

SOURCE: YEAR END REVIEW-2020, MINISTRY OF COAL

were several end-use limitations that made it difficult for corporations to boost coal production. Lower coal demand from the linked end-use projects, combined with insufficient flexibility to sell extra coal in open markets, resulted in operational inefficiencies and an inability to achieve the anticipated goals. As a result, the sector failed to attract the attention of foreign players who had the expertise and access to world-class technologies. Thus, the FDI in the sector was never kick-started before it. It is now that the Mineral Laws (Amendment) Act, 2020 amended these old laws such as the Mines & Mineral (Development and Regulation) Act, 1957 and the Coal Mines (Special Provisions) Act, 201 allowing 100% FDI is not only coal mining but also its associated infrastructure such as coal washery, crushing coal handling, and separation hereby attracting global miners of the likes of BHP and Anglo America. According to FDI India, there was about \$27.7 mn FDI in coal production during the period, April 2000 - to June 2021. It is estimated that the auction process will bring ₹33,000 crores of investments in the next 5-6 years.

By doing away with the need of having prior experience in the sector and the restrictions that prevented companies not having mining operations in India from participating in the auctions of the coal mines, the coal commercialization policy would allow more foreign players to enter the industry. Given the immense regulations and complex procedures, it took at least six years for a foreign player from getting a mine allocation to actually start mining operations. This has now been reduced to 66 months by cutting off the requirement of prior approval before the state government hands over the mining lease, which typically takes 6-12 months, thus kindling the interest of more global miners.



SOURCE: MINT

GLOBAL COMPETITIVENESS AND EFFICIENCY

FDI in the commercial mining sector would help in bringing in much-needed capital at reduced costs, as well as access to high-end underground mining equipment, which has so far hampered the development of the domestic coal sector. Private sector emergence will bolster the competition in the industry, leveraging the present resources with state-of-the-art technology, which will not only result in environmentally sustainable mining but will also mark the decline of the monopoly possessed by the highly inefficient state-owned coal giant. India will become energy efficient and will move towards energy security as more than 70% of our power demand is met by thermal power plants. It would result in operational efficiencies through improved mechanisation of mining operations, as well as the establishment of a new market system with options for both buyers and sellers. As a result of enhanced production, the government would create a national coal index based on the weighted average of various combinations of monthly prices of coal across various channels of the transaction, resulting in a standardized and fair price for coal in the open market. Not only the coal industry but also all the other industries like steel, power, cement, and sponge iron that are dependent on coal will have access to low-cost coal, thereby reducing their overall

cost of production. As a result, the end products would be cheaper and globally competitive. In 2020, 19 coal blocks will be auctioned for commercial mining. With a total peak capacity of 51 MPTA, these mines are estimated to generate over INR 7,000 crore in income. The auctioning will also generate a revenue of around ₹20,000 crores a year for the coal-bearing states as royalty. The future of the successive tranches of coal privatization is bound to bring out commendable results for the economy.

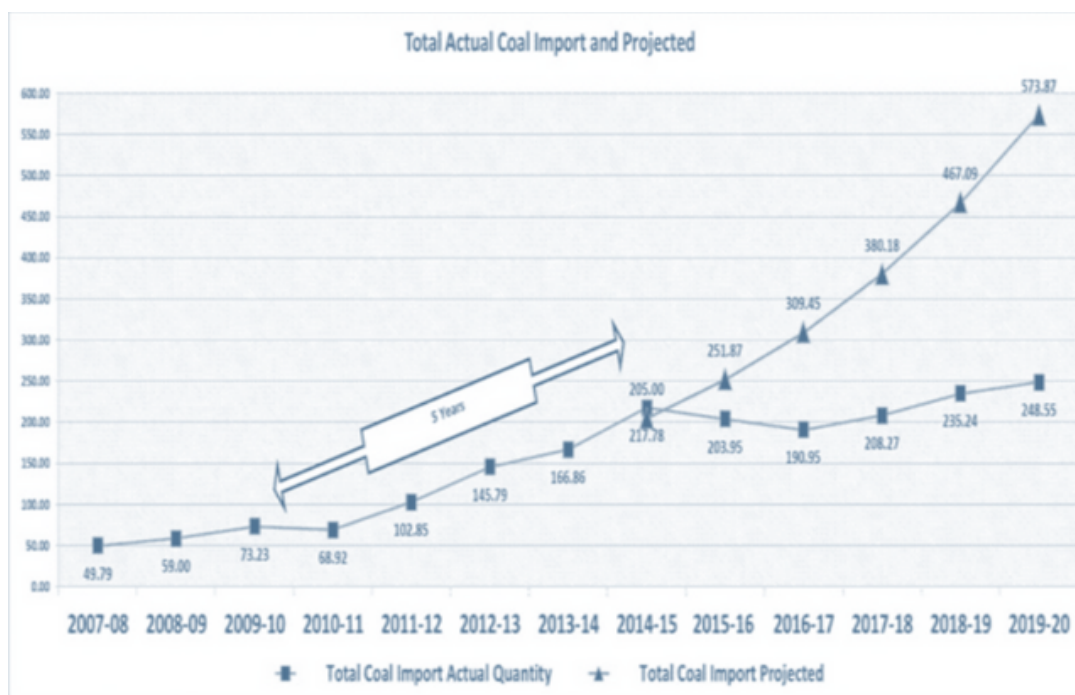
Name	State	Coal feed	Quality
Shilpanchal	West Bengal	1.0 MTPA	Low ash
Utkarsh	Maharashtra	1.0 MTPA	Low ash
Mahamaya	Chattisgarh	1.5 MTPA	Low ash
Ashoka	Jharkhand	2.5 MTPA	high ash
Neyveli	Tamilnadu	4.0 MTPA	Lignite

**SOURCE: YEAR END REVIEW-2020,
MINISTRY OF COAL**

EXPORT, IMPORT AND FOREIGN EXCHANGE

In India, particularly, the energy sector has been the driving force towards industrial growth and development, providing fuels and renewable sources of energy in the entirety of the region. Ever since the escalating increase in the needs for domestic consumption, the demand for coal has reached its peak with more and more people and industries requiring the same for electricity and other relevant purposes. The amalgamation of all these processes has led to the phenomenon of commercialisation of coal in India. India, despite bagging the fourth





SOURCE: YEAR END REVIEW-2020, MINISTRY OF COAL

largest coal reserve in the world and is the second-largest producer of coal, is, however, the second-largest importer of coal. Such an irony arises due to the fact that even though India is on its expedition to supply coal to its neighbouring countries to the maximum extent possible, however, the resources for high-quality coal and low ash coal are quite limited in India which is why it comes inevitably for India to import coal to meet the ever-increasing demand of coal for numerous firms and industries.

India exported eight lakh tonnes of coal to its neighbouring countries, particularly Nepal and Bangladesh in the fiscal year ended March 2021. According to the Coal Ministry's Provisional Coal Statistics 2020-202, the maximum coal out of this was exported to was Nepal (nearly 77.20 per cent), followed by Bangladesh (nearly 13.04 per cent) through bilateral agreements are quite less in comparison to the coal that India imports from other nations. Earlier, there were plans order to ameliorate the mechanisms involved in the export policy of reports and the government was planning to

export coal with high-ash content or of higher grades. Since pithead coal tends to be available at lower rates and interest due to evacuation, Coal India was looking for multiple opportunities to elevate the opportunities for exporting coal to other nations as well at the time when pithead coal stock was high as close to 70 million tonnes in May 2017.

Moreover, the auctioning of coal blocks, mostly located in the backward states, will not only bring in much-needed revenue and FDI but also boost the production of coal, which will, in turn, lead to an impetus in the export of coal. The present allocation of 41 coal blocks will certainly incentivise the production of coal by adding 225 million tonnes of coal to the existing 750 million tonnes capacity which will further lead to an incremental increase of about 15 per cent. Thus, the sectors and industries of cement, aluminium, steel and sponge iron which in the meantime had the requirement of coal to be outsourced or imported, will now be able to participate in the various regulatory mechanisms of coal and buy coal locally at a

much cheaper cost and thus, reducing their own cost of production. All of this will then turn into a vicious cycle in which the end products of these sectors are available to the consumers at a much more reasonable and

lower costs. Moreover, this will further lead to an increase in the demand and production consequently which subsequently lead to huge savings in the foreign exchange, thereby boosting exports of these sectors.



SOURCE: ALPHAINVESCO.COM

However, with the sudden surge in demand for the energy sector, in general, and the coal sector, in particular, for the power and non-power sectors in industries like cement and aluminium, the need for meeting the demand in internal production has become extremely crucial for us. Moreover, the limited availability of low ash content coal, high-quality coal and coking coal in India has led to various coal-based power plants, cement plants and captive power plants resorting to importing coal, thereby bridging the gap between the requirement and the indigenous availability of coal and improving the quality of the same, which is why even if the domestic production of coal has increased, there is still a high requirement to import coal in order to meet ends for the aforementioned reasons. There has been an increase in the import of coal due to the

the inability of Coal India to meet the coal demand of the non-captive industry. Commercial auction of coal blocks is vital for meeting this demand and creating a market for free trading of coal in the domestic sector.

Another attraction for global and Indian investors is the 100% FDI allowed in the coal sector. This will significantly increase national and state revenues. Many of the industry-friendly policies that revolutionized the whole coal industry in India were made possible by the commercialization of coal. Previously, businesses that did not have mining operations in India were barred from participating in the auctions. This barrier, however, has been removed, allowing both domestic and foreign businesses to compete in the domestic coal sector.

PRIVATE SECTOR PARTICIPATION

The major question that was raised about the coal sector was regarding its lack of transparency in its numerous mechanisms. However, with the participation of the private sector and companies in the coal sector, the issue of transparency will completely be resolved. This will not only lead to greater production of coal but will also enable the government to create a national coal index based on the weighted average of many combinations of monthly prices of coal across various channels of transaction. Moreover, with the participation of the private sector, there will also be an establishment of actual and fair prices for coal in the open market which was not there until now.

Government levies on Coal form a major chunk of its revenue, especially from some of the poorest states in India which are involved in coal production. Considering the growing power needs in India, it needs to depend deeply on the mix of coal and renewable energy sources, however, the present power sector industry structure impedes the complementary growth of these technologies. State-level companies sign power purchase agreements to buy

power from power generators. These are static and rigid agreements under which all power supplied be it intermittent or dispatchable, or different on the basis of the time of day of availability is not differentiated. To overcome this rigidity in the power purchase process, competitive power markets can play a major role in the form by providing market-based fuel prices and the time-of-day wholesale prices, which will give away the right indications for the development of the power sector. However, given the present near-bankrupt state of Discoms, where they lose money on every Kilowatt-hour sold, the establishment of a competitive market is difficult. India can only progress its coal sector if it revamps and removes the distortions that lie across the value chain- coal mining, railways, power generators, and Discoms. The retail-level distortions include commercial & industrial users subsidizing the electricity rates for general consumers. These high-paying customers are most likely to shift to the self-generation of renewable energy, robbing the DisComs of their best customers.

Value Chain

Three major cost components of domestic coal supplied to power plants are the coal itself, taxes, and transportation. Transportation expenses are high, depending on where you are, and the government imposes a variety of levies that are divided between both the central government and

SELF-RELIANT INDIA

Atma Nirbhar Bharat or Self-Reliant India aims at minimising the country's dependency on imports by promoting the production of goods produced within the domestic territory of the country. It also means becoming the biggest exporters of the commodities that we now import and saving the foreign currency spent on imports. A major step taken towards commercialisation of coal will make India self-reliant in the Energy sector and also since these sectors can buy coal as per their needs, the coal production and coal sector in its entirety will become self-dependent. With the opening of the market for coal, any sector can now buy coal as per their own requirements. Prime Minister, Narendra Modi said, the benefits of these reforms will not only be restricted to the coal sector but will also extend to sectors such as Fertilizers, Cement and Steel as well. Additionally, it would also boost the power generation of the country.

state in which the coal is mined. Levies and shipping costs are considerable and rising far quicker than CIL prices. Thermal coal is sold by CIL at announced rates that fluctuate by grade. These prices are decided by a CIL committee in collaboration with the federal government. The notified prices distinguish between coal for power stations (which is lower for the most applicable grades) and coal for other uses, and they only apply to coal sold through fuel supply agreements.

Whenever coal supplies are exceptionally short, CIL allows 10% of its output to be sold throughout an electronic auction, which results in higher prices of up to 60%.¹⁹ End customers with fuel supply agreements receive priority for coal, and greater prices today reflect the paucity of additional coal. The CIL said in January 2018 that the cost for median quality coal to power stations would be around 850 rupees per tonne. CIL may impose additional charges in addition to the notified price, such as local transport and sizing charges of up to 100 rupees per tonne.

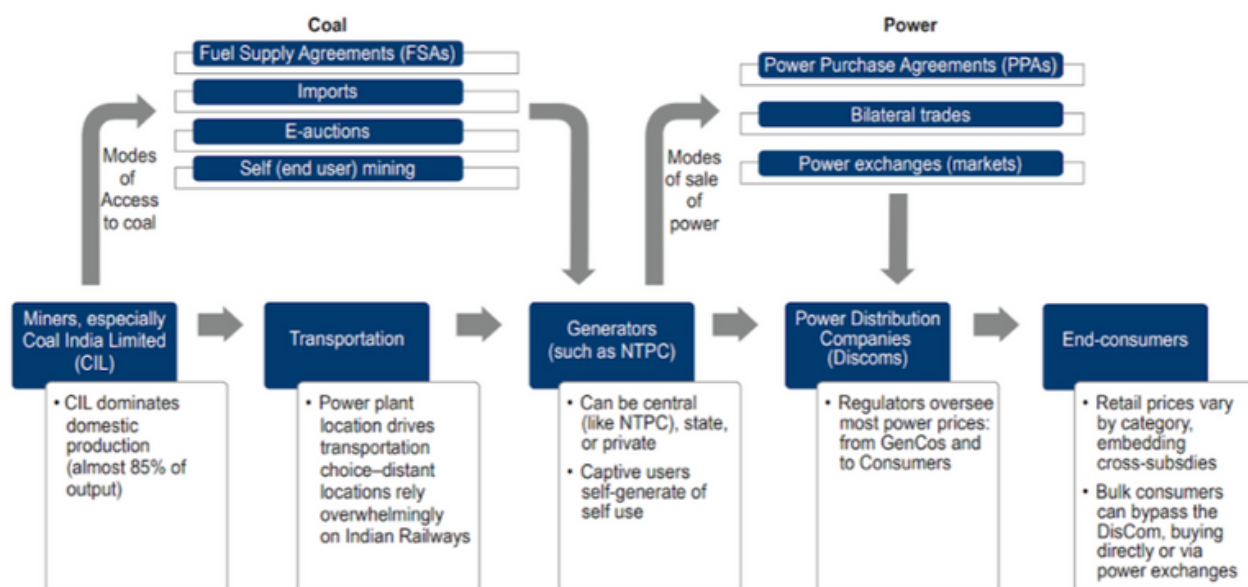
Some users buy extra coal at a premium cost through bids (for those of us without fuel supply contracts or who require extra coal) or

importers (used by many facilities to boost the energy content of domestic coal). Local coal is subject to a multitude of taxes, notably 14.5 percent royalties, 5% GST taxes, and mining development fund costs. Some taxes are imposed per tonne rather than per unit energy, causing lower-grade coals, like those used in Indian energy plants, to be more expensive. Additionally, since its inception in FY 2010-11, a coal cess has increased from 50 to 400 rupees per tonnes on both domestic and imported coal.

It started as a green power levy to encourage the growth of renewable energy, and later evolved into a sterile environment levy to fund projects like having to clean up the Ganga. Since 2017, the levy was used to reimburse states for losses incurred as a result of the new Gst system. The yearly revenue is calculated in billions of dollars and now accounts for 1.3 percent of the federal budget. ²² Total taxes are around 859 rupees per tonnes, which is greater than the Western coal retail price in the United States in 2017.

The purpose of bids for power station development was to attract competition, particularly from the private sector.

Figure 4: Coal to Power Flows in India



SOURCE: COAL IN INDIA ADJUSTING TO TRANSITION

However, unlike the vigorous competition seen for wind and solar projects, it is unclear whether bidding for coal production plants reduced power prices. Fewer players can compete in coal generation because coal projects require large sums of money and extended time horizons, whereas renewable energy projects are much smaller. Coal India is adapting to the transition, which will take one to two years. Furthermore, the cost of power stations is not the only factor that influences electricity prices. Delivered coal prices have risen over time, but power stations with PPAs can transfer this cost to the DisCom, who can then pass it on to the end-users. This structure drives down prices between coal plants and PPAs significantly.

Several coal operators don't even have PPAs and would want to sell to consumers directly. Although large consumers are allowed to compete (known as open access), DisComs are wary about the retail market for the threat of losing their best clients. They fight back with overt measures like distribution and wheeling surcharges, as well as covert measures like permitting delays and other technical obstacles. More than 75% of income costs are spent on obtaining power from generators. CIL and suppliers with PPAs are essentially guaranteed profitability within the coal power value chain, while discoms must sell power at specified pricing. This pricing is meant to help DisComs to recover its costs, but they are frequently based on speculation that the DisComs are unable to meet. This structure also eliminates incentives for makers to seek out lower-cost fuel sources. Real competitive markets would necessitate competitive rates for both coal and electricity, which would be a significant market shift. Coal plants in the



private sector are often newer, cleaner, and more adaptable.

Fewer private-sector plants, on the other hand, have had the fuel delivery agreements and PPAs required to compete in India's market. Instead of suffering the negative consequences of today's market system, a much more dynamic market system would allow drivers to commercialize the gains of these plants.

Not all coal-fired power facilities will be similarly competitive in the future. Depending on the period, design, duty cycle, and geography of the facilities, ecologic, operational, or other rules that influence coal will have a wide variety of financial effects. Not all plants can adapt to changing grid conditions and legislative mandates. In 2015, the Electricity Regulatory Commission recommended that coal plants be able to cut output to 55% of capability in accordance with grid conditions, especially when renewable energy is abundant. All power plants built in the last decade are obliged to have this capability, although compliance may require costly improvements for older plants, boosting the cost of power and leaving them less viable to other sources of power.

India has lagged in adopting innovative coal-fired power generation technology. India has only recently begun to construct functional supercritical power plants and does not even have hyper supercritical plants. Due to India's low sulphur coal, few units have installed sulphur dioxide removal technology such as flue gas desulfurization. But, in 2015, the Ministry of The Environment, Forests, and Climate Change issued regulations that require such equipment not only for new plants but also for most existing plants as a retrofit. When implemented fully, these should bring India into compliance with the world's most strict standards. CIL will continue to be India's primary source of coal

with any new entrant taking years to establish a mine.

Even if CIL is bloated (efficiency varies substantially by a subsidiary or even mine), bringing inside the world's best, cutting-edge mining practices and technologies is ineffective in reducing costs significantly. CIL production is quite inexpensive, and most end-user expenses are unrelated to mining prices. The quality of the mine determines the cost of coal mining significantly more than optimal management. If the coal is underground, the mine will be more expensive to run. CIL prices are calculated using an average of mine quality. The most profitable subsidiary for CIL is those with the highest-quality mines, which require the lowest amount of waste removal. About half of CIL's production stems from two low-cost subsidiaries, which keep the company viable.

Low-cost mines subsidise higher-cost mines, and coal is delivered at a blended declared price per grade (with the exception of a single affiliate with higher informed prices). So, how might private competition be beneficial? Private miners, if more efficient than CIL, might provide a hedge against growing prices. Instead of the current cross-subsidy approach between CIL subsidiaries, private-sector competition would deliver differentiated pricing depending on costs. Private operators would be free to establish their pricing, forcing CIL to respond or risk losing its most profitable consumers. If private players can manage the difficult stakeholders and bureaucracy, they may assist boost domestic output.

For openness and competition, the government wants more than a private miner. More than one large miner would supply enough coal to affect CIL's coal consumption. As a result, it's no wonder that CIL labor groups have put a hold on existing plans for private business mining until after 2019.

COAL PRODUCTION & INDUSTRIAL IMPACT

IMPACT ON COAL PRODUCTION

The coal sector will be moving from monopoly to competition. Private players will compete with each other and try to make use of the best possible technology. And higher investment will generate direct and indirect employment leading to economic development, especially in the coal bearing areas which would result in increased production of coal.

Private companies will be working on a revenue sharing model wherein they give a predetermined percentage of their produce to the government instead of a fixed rate. The revenue raised from auctioning off coal mines would go to the state governments and would incentivise them to spend it on developmental activities. And since the sharing of revenues (ad valorem) would serve as an additional income stream for the government, there is incentive for both the private companies and the government. (However, there is an opportunity to report

less coal production to the government in order to pocket higher returns- there will have to be a regulatory system ensuring that this is not the case. Otherwise, it might lead to black marketing of coal for reasons that might be unethical and/or detrimental to the environment.) Since there are no end-use restrictions, it does not necessarily mean that coal production will be diverted toward certain sectors. It is very likely that most coal would be dispatched to the power, steel and cement sectors because they comprise the majority of the demand. Since coal is an input in the production of most goods, this policy might help offset some inflation that would've occurred if the supply of coal had remained stagnant.

70% of India's electricity is generated from thermal power plants that depend on coal. Since commercialization of coal mining would guarantee a consistent and increased coal supply, this reform would be a step closer to securing India's energy demand. (However, since prior experience is not required, certain



companies that are not fit to run these mines might gain control of them. This may result in either inefficiency or ignorance of the socio-economic environment of the country/state - misallocation of energy resources in sectors whose opportunity cost of not using coal is not as high)

Out of the 99 coal mines put up for auction, 34 are partially explored and 65 are explored coal mines out of which a few have been acquired by various companies. Making the ratio of partially explored mines 0.52. This may be interpreted as a positive sign for prospective investors and bidders of these coal mines since the majority of the bidders would be able to know the exact amount of coal they are looking at.

Coal India (CIL) and Singareni Collieries Company Limited (SCCL)

Until 2020, CIL and SCCL were the primary companies that had coal mining rights and produced the majority of India's coal. Their coal production was steadily increasing over the years along with an increase in the quantity being dispatched to various sectors. However, with the recent commercialization of coal mining, these numbers have started to drop and are being replaced with coal production and dispatch from other private mines. Even though the auctioning of mines is currently ongoing, the effects of this recent policy change can already be felt. They are likely to face further competition as more mines get auctioned in tranches. Since a designated coal mine only has limited coal (bound by geographical factors), it might reduce the coal supply from CIL and SCCL even further.



Year	Coal Production by CIL and SCCL
2021-22	690.27 MT
2020-21	716.08 MT
2019-20	730.87 MT
2018-19	728.72 MT
2017-18	675.40 MT

SOURCE: MINISTRY OF COAL GOVERNMENT OF INDIA

'Others' include private companies that mine coal - there has been a 166.68% increase in coal production from FY21 to FY22. Such a high growth rate could be because the quantity is far lesser as compared to what CIL produces. However, this portrays the potential that private companies have in this business.

National Coal Index (NCI)

The national coal index will serve as the basis for determining the revenue share of the mines to the government. This index is different for coking coal and non-coking coal and is divided into various grades of coal. It changes every month and aims for proper benchmarking of prices and valuation of coal-based on important parameters.

NCI is a weighted combination of prices from three variables while keeping 2017-18

as the three variables are:-

- notified prices of CIL, WCL, SCCL
- CIL auction prices
- import prices of coal

After this, the ministry of coal declares the index for each grade of coal in order to ascertain the revenue share/per tonne that is payable by the mines to the state/government.

However, this has a few implications. CIL is still dictating the terms since the CIL's valuation of coal directly impacts the prices at which these mines can sell coal. There might arise situations where the sale of coal from these mines gets rejected because they can't compete with CIL's prices. Moreover, the majority of the coal being imported is of grades 7-9 (G7, G8, G9). Now NCI will mathematically give more weightage to

Subsidiary	Description	Production During Nov			Production Upto Nov		
		FY 22	FY 21	Growth(%) M-o-M	FY 22	FY 21	Growth (%) Y-o-Y
Captive & Others	Big Mines	6.80	5.65	20.35	44.75	36.66	22.06
	Other Mines	1.73	0.92	88.04	8.52	3.19	166.68
	Total Others	8.53	6.57	29.83	53.26	39.85	33.64
All India	Big Mines	57.72	54.48	5.95	382.64	348.86	9.68
	Other Mines	10.22	8.69	17.57	64.89	52.44	23.73
	All Mines	67.94	63.18	7.53	447.53	401.30	11.52

SOURCE: MINISTRY OF COAL GOVERNMENT OF INDIA



these grades since there is a higher volume of these grades being traded and it will favour the ones producing these grades of coal. Consequently, it adversely impacts the owners of mines that produce lower grades of coal.

IMPACT ON INDIVIDUAL SECTORS

1. Power Sector

These reforms will inevitably have an influence on the power sector, which is India's largest consumer of coal and the country's most readily available source of energy. Since competition is being introduced into the coal mining business, there will be the use of better technology and more efficient methods which will most likely increase the overall coal production.

Since the power sector demands the most amount of coal inputs, the industry will dispatch a large portion of the coal produced to the power sector itself. As a result, these measures may be one step closer to closing the gap between the goal and actual coal supply to the power sector. (In 2020, the target supply to the power sector was 582.77 MT. However, only 486.42 MT was supplied by CIL (including its subsidiaries) and SCCL.

2. Cement Sector

In 2020, 6.48MT was supplied to the cement sector whereas the target was 8.67MT. However, the coal dispatch increased by 13.3% from FY 21 to FY 22. This means that even if the target was not met in 2020, the coal dispatches to the steel sector have started increasing. This increase in dispatches could be attributed to Ambuja Cement Ltd (private company) since they have increased their coal production by 147% between FY21 and FY22.

The fact that a private company was able to show such tremendous growth compared to government-owned mining operations, shows a beacon of hope for the benefits that this policy can bring about. Since there are no end-use restrictions, companies use the coal they mine for operations in their own sector as well.

3. Steel Sector

The steel sector is also an important sector to consider while discussing coal. In 2020, the target supply to the steel sector was 8.66 MT but only 1.50 MT was supplied by CIL (SCCL did not supply to the steel sector). By FY 2021, this number increased to 5.76 MT and in FY 22, it stands at 4.85 MT. This increase could be attributed to the recent reforms that ease the restrictions for

Table 1.4: Coal Despatch to Different Sectors*Fig. in MT*

SI No	Sector/Utilities	Coal Despatch during Nov			Coal Despatch upto Nov		
		FY 22	FY 21	Growth (%) M-o-M	FY 22	FY 21	Growth (%) Y-o-Y
1	Power utilities	60.29	48.80	23.55	426.85	334.40	27.65
2	CPP	3.20	3.99	-19.72	27.24	29.56	-7.87
3	Steel	0.67	0.65	2.45	4.85	5.76	-15.77
4	Cement	0.56	0.56	-0.18	4.42	3.91	13.03
5	Sponge	0.65	0.65	-0.92	4.85	5.71	-15.00
6	Others	5.95	7.25	-17.94	51.09	44.29	15.35
Grand Total		71.32	61.90	15.21	519.30	423.63	22.58

SOURCE: MINISTRY OF COAL GOVERNMENT OF INDIA

private companies mining coal without any end-use restrictions. Moreover, with the incentives given to the big as well as small players in the steel sector in the budget 2022-23, coal supply would be imperative. Thus, these reforms will go a long way in promoting MSMEs that are involved with steel, construction and engineering. This is in alignment with India's vision to strengthen its self-reliance and improve its infrastructure facilities.

4. Logistics

Since it is very likely that coal production will increase, storage and warehousing facilities could be a lucrative avenue of investment for private companies/individuals. Moreover, there is also scope for private companies to venture into the coal refining business since that is also a critical part of the supply chain.

5. Transportation

The government has currently undertaken 14 railway projects worth 22,067 crore rupees in order to make coal transport easier. This is being done to reduce costs and save time. These railway projects aim to ensure smooth connectivity between critical points in the supply chain such as coal

producing states/locations, export locations, refineries, etc. These reforms consequently give private companies the right to transport coal in the manner they deem fit. They might use railways (currently, most popular) or roads or any other method that suits their supply chain, end-use, business model, etc. So, there is scope for private companies to build their own coal transportation networks.

Other Industries

The supply of coal primarily catered to the demand of certain important sectors in the past. But now, with an increase in coal supply, it will be able to meet the demands of sectors that previously couldn't acquire much coal. Sectors like paper manufacturing, pharmaceuticals, and textiles are likely to have greater accessibility to coal.

However, there are no end-use restrictions. So, unless the companies in these sectors mine themselves, there is no guarantee that their share of coal will increase. Moreover, this will be at the cost of the environment since these sectors will now be more inclined to use coal as compared to greener sources of energy.

Table 1.1 (A): Details of Coal Production By "Others"

Fig. in MT

Name of Coal Block/Company	Prod. during Nov			Prod. upto Nov		
	FY 22	FY 21	Growth(%) M-o-M	FY 22	FY 21	Growth(%) Y-o-Y
JKML	0.00	0.00	0.00	0.01	0.01	0.00
DVC	0.00	0.00		0.00	0.00	
IISCOJ	0.01	0.00	133.33	0.04	0.09	-57.95
IISCOR	0.00	0.00	-75.00	0.02	0.05	-67.92
JSMDCL	0.00	0.00		0.00	0.06	-94.92
TATA	0.42	0.50	-14.55	2.99	3.87	-22.82
NTPC/Pakri Barwadih	0.75	0.44	71.07	4.91	3.96	24.10
CESC / Sarshatali	0.18	0.19	-9.33	1.23	1.30	-5.38
GMR-Talabira -I	0.00	0.00		0.00	0.00	
HIL-Gare Palma IV/5	0.00	0.00		0.00	0.00	
BALCO / Chotia	0.00	0.00		0.00	0.00	
BALCO / Chotia-II	0.00	0.00		0.00	0.00	-100.00
HIL-Gare Palma IV/4	0.06	0.02	150.00	0.41	0.15	182.07
SIL / Belgaon	0.02	0.00	400.00	0.10	0.01	1880.00
HIL/Kauthia	0.06	0.00		0.16	0.02	772.22
SAIL/Tasra	0.00	0.00		0.00	0.00	
SPL / Moher & Amlohari Extn.	1.37	1.76	-22.17	11.46	12.26	-6.58
RRVUNL / PEKB	1.48	1.27	16.75	9.13	7.71	18.49
JPVL / Amelia (North)	0.26	0.25	3.24	2.15	1.89	13.77
RCCPL/ Sial Ghogri	0.02	0.01	21.43	0.11	0.11	-6.25
TUML / Marki Mangli - I	0.03	0.01	233.33	0.08	0.06	22.22
WBDCL/Barjora	0.00	0.00		0.00	0.03	-100.00
TSGENCO/Tadicherla-I	0.24	0.16	48.75	1.45	1.30	11.72
OCL/Ardhagram Coal Mine	0.00	0.00		0.00	0.00	
Ambuja Cement Ltd / GP IV/8	0.13	0.00		0.42	0.17	147.34
NTPC / Dulanga	0.59	0.39	51.53	2.97	1.49	98.73
WBDCL/Barjora North	0.06	0.03	82.35	0.70	0.30	134.90
OCPL/Manoharpur	0.58	0.16	274.84	2.72	0.58	369.66
NTPC/Talaipalli	0.00	0.09	-100.00	0.40	0.37	6.45
WBDCL/Pachwara North	0.93	0.54	72.91	5.74	2.30	149.50
WBDCL/Gangaramchak-	0.16	0.00		0.23	0.00	
Talabira II & III	0.77	0.61	25.41	3.38	0.81	317.02
CSPGCL/GP III	0.28	0.13	108.96	1.73	1.00	73.39
DPL/Trans Damodar	0.00			0.30		
KPCL	0.13			0.40		
B. S. ISPAT / Marki Magli III	0.02			0.07		
Total Production by Others	8.53	6.57	29.93	53.27	39.88	33.57

SOURCE: MINISTRY OF COAL GOVERNMENT OF INDIA

THE FUTURE

Prospective owners of these coal mines could be companies that are involved in sectors like power, steel, cement, iron, pharmaceuticals, textiles, etc.

Adani Enterprises

The Adani group currently has operations in coal mines that have the capacity to produce enormous amounts of coal. In India, these coal mines have 2843.1 MT in mineable reserves and have just one washery that is used to clean coal and other minerals that can only wash 10MT per annum. Given their plans to expand operations whilst vowing to become the world's greatest green energy company, their current ability to wash the coal they plan to produce does not seem to align with sustainability and climate consciousness.

Since Adani enterprises have experience of coal mining in Australia, their coal production in India probably will not be a concern. What will be of concern is the damage to the environment this company might do. Moreover, Australian mines are also facing criticism for their negative externalities with regard to the great barrier reef, water usage and carbon emissions.

The Tata Group

Tata Steel, a Tata subsidiary, is an Indian multinational steel manufacturer situated in Jamshedpur, Jharkhand. This puts Tata in a strategically valuable spot since their location of operations is in Jharkhand, an area with high coal deposit density. Tata Motor (automobile subsidiary also located in Jharkhand) is fuelled by Tata Steel's production. Now, if the Tata group were to

acquire new mines, it would be supremely beneficial for them since they would be able to produce more steel. Steel has a multitude of uses in infrastructure development which will be heightened considering the government's focus on infrastructure lately. This will aid Tata Motor's plans for electric vehicle adoption and facilitate their other steel intensive projects. Moreover, the Tata group has also had limited experience mining coal in the past. So, they are familiar with the process and could seamlessly seize this opportunity.

Ambuja Cements Ltd

Ambuja Cements is a cement producing company that previously had limited mining capabilities. These reforms will allow them to expand more and source their own coal. If Ambuja cement can acquire mines that are positioned conveniently for their supply chains, they can majorly cut costs and produce more cement than before.

Their recent mining operations were also a success as they managed to increase their coal production by 147.34% between FY21 and FY 22. This is one of the mines from the Gare Palms cluster located in Chhattisgarh. And one of Ambuja Cements major cement plants is in Bhatapara, Chhattisgarh (only a 5 hour car drive from the mines).

Intelligent decisions like such have increased the profitability of the entire company as witnessed by the following financial statement (profit and loss). The significant increase in their operating profit despite lower sales is a direct result of how well the company has been cutting costs. Especially, the costs of raw materials that were reduced by 140 crore rupees could be due to the companies own coal operations. Coal is an important input that is used as a raw material as well as for power in the cement industry.

Ambuja Cements

Previous Years »

Standalone Profit & Loss account	----- in Rs. Cr. -----				
	Dec '20	Dec '19	Dec '18	Dec '17	Dec '16
	12 mths	12 mths	12 mths	12 mths	12 mths
Income					
Sales Turnover	11,371.86	11,667.88	11,356.76	10,455.92	10,500.84
Excise Duty	0.00	0.00	0.00	-1.18	1,304.20
Net Sales	11,371.86	11,667.88	11,356.76	10,457.10	9,196.64
Other Income	365.03	422.13	247.12	362.50	508.97
Stock Adjustments	-114.08	-42.80	72.87	62.83	30.19
Total Income	11,622.81	12,047.21	11,676.75	10,882.43	9,735.80
Expenditure					
Raw Materials	1,641.98	1,781.72	1,728.09	1,573.84	1,380.73
Power & Fuel Cost	2,251.91	2,586.42	2,545.84	2,233.07	1,831.96
Employee Cost	668.78	672.63	679.57	661.37	590.93
Selling and Admin Expenses	63.93	85.45	53.17	75.56	76.45
Miscellaneous Expenses	3,984.58	4,350.01	4,531.50	4,035.95	3,654.41
Total Expenses	8,611.18	9,476.23	9,538.17	8,579.79	7,534.48
	Dec '20	Dec '19	Dec '18	Dec '17	Dec '16
	12 mths	12 mths	12 mths	12 mths	12 mths
Operating Profit	2,646.60	2,148.85	1,891.46	1,940.14	1,692.35

SOURCE: MONEY CONTROL

FOOD FOR THOUGHT

Companies in the pharmaceutical sector and medicine manufacturing could also benefit from these reforms by acquiring mines of their own and using the coal produced for their own use. Although the investment value might be too high when compared to the change in returns.

Many restricted private mines in the past did not meet their annual targets, so how will it be different now? A plausible answer to this could be linked to economies of scale and the experience these companies have now gained in this field. When companies start producing more, their variable cost:fixed cost ratio increases and companies have additional profit incentive from this cost advantage.

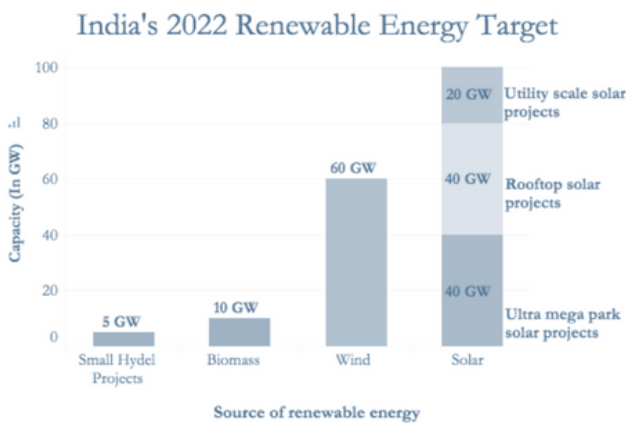
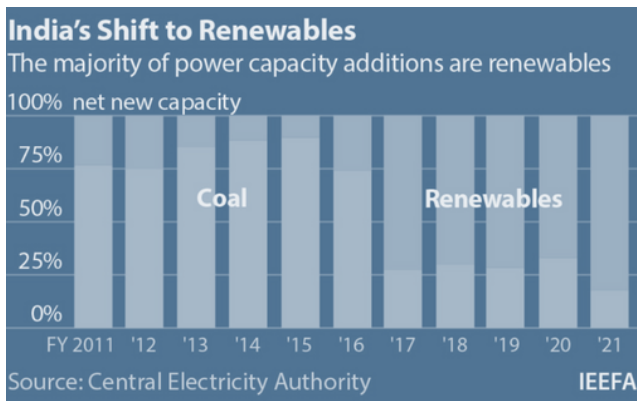
ENVIRONMENTAL ASPECT

The environmental aspects of mining operations are largely governed by the Environment (Protection) Act, 1986, and other guidelines issued from time to time by the Ministry of Environment, Forest, and Climate Change (MoEF&CC). Additionally, other legislations, such as the Air (Prevention and Control of Pollution) Act, 1981, Water (Prevention and Control of Pollution) Act, 1974, Noise Pollution (Regulation and Control) Rules, 2000, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 are also applicable to mining operations. If the project/mining lease area involves forestland, forest clearance under the Forest (Conservation) Act, 1980 also comes into play. Further, if the mining lease area falls in the proximity of any protected area notified under the Wild Life (Protection) Act, 1972, wildlife clearance from the standing committee of the National Board for Wildlife is needed as per extant provisions. Due to its complex structure, the environmental governance of the mining

industry in India is riddled with loopholes, including an overlap of jurisdiction and multiplicity of authorities, undue delay in grant of approvals, lack of institutional capacity, and prolonged litigation.

Environmental concerns over the privatization of coal have been at the forefront of backlashes for the policy. While the majority of the flak is aimed towards specific provisions in the policy, many critics have pointed out that increased efficiency in coal mining might prove to be counterproductive for the environment. The availability of cheaper domestic coal may drive up the demand for coal-based power by enhancing its competitiveness as more industries will lead to result in price fall. This in turn will create hurdles in India's transition to renewable sources of energy for meeting its power requirements. If these claims hold true then the privatization of coal could undo major milestones achieved by India in the renewable energy sector.





SOURCE: INTERNATIONAL JOURNAL OF CLINICAL BIOCHEMISTRY AND RESEARCH

However, the policymakers have been able to provide legitimate reasons as to why this would not be the case. The final amount of coal supplied to thermal power plants is composed of three main components: the base price charged by miners, government taxes including such royalty payments and levies, and the cost of transportation. Taxation on coal in India has been among the highest in the world. It encompasses a 400 rupee per tonne "coal cess," a pseudocarbon carbon tax of between \$3-4 per tonne of CO₂. This is nearly the gazetted price for low-grade coal to thermal power stations. Transportation cost for coal is relatively expensive in India. The dominant mode of transportation of coal that is "Indian Railways, overcharges coal transporters around 31% to subsidise passengers. The new private-sector mining would only impact the base price charged by the miners, and that too only by a small amount. The coal mined by Coal India its current price that is limited prices are regulated, averaged out

across almost all mines are based on the calorific value of coal, regardless of the cost of mining. Additionally, the base prices of coal are also kept low for the thermal power plants in an attempt to provide cheaper electricity to the masses. Mining costs vary by a factor of five or six depending on location; however, new growth is primarily from large mines where coal can be found near the surface. Private sector players also known as mine developers and operators (MDOs) allow these mines to function efficiently. This essentially means that the expected increase in efficiency by privatizing the mining of coal would not have a major effect on the costs of coal delivered to the power plants. Moreover, given the increasing pressure of stringent environmental norms on thermal power plants, thermal power prices are expected to rise. Therefore, a marginal reduction in the price of coal will not hinder India's transition to renewable energy.

On the other hand, coal can take up the slack in India's transitory phases. In the first phase, India's renewable energy targets are 175 gigawatts of renewable energy by 2022, or roughly 20% of demand. With the current pace, these are relatively easy to operate in terms of budget-competitiveness and grid integration. However, future growth will necessitate changes to the grid along with storage technologies, both of which are currently prohibitively expensive in India. In contrast to the United States, which discovered cheap shale gas to replace coal, India's only viable alternative right now is coal. In the short run, it would probably be sufficient for baseload power until storage technologies mature.

Furthermore, privatizing coal would largely have a positive impact on the push toward renewable energy in India. The use of coal

for the production of electricity can create healthy competition between alternative sources of fuels leading to the spur of greater clean energy sources. The intervention of a third-party provider to mine coal would decrease "lock-in," as opposed to a situation in which a specific thermal plant has exclusive privileges to a mine by the use of mining norms, which involves a significant amount of sunk cost. This is also one of the government's reasoning behind doing away with end-user restrictions to attract investors. It argues that limiting end-user restrictions would only lock in certain industries to use coal for a longer period as they have no competition in acquiring coal.

Even if the major criticisms around the idea of privatizing coal are put to rest, there are major loopholes in the policy that exposes the environment to massive degradation. The most pressing issue among all is the removal of rules-regulations that necessitated power plants to use 'washed' coal. This was labeled as a needless cost for coal users by the government but can have large-scale environmental consequences for the country. 'Washing' coal is a technique that reduces the ash content from the coal which is the main component behind the air pollution. The requirement to wash coal before use in thermal power plants was first introduced in 1997. Despite the growing climate crisis, this was India's only valid justification for the extended use of coal as a development fuel. In fact, as per recent findings cited in NITI Aayog's coal washery report, an inquiry conducted on the grounds of NTPC's Dadri Power Plant that utilizes washed coals with an Ash content of 31-32%, it was found that CO2 emissions can be reduced by 600,000 tonnes from coal combustion. Claiming that using washed coal in thermal power plants can exponentially reduce carbon discharge per unit of energy generation and reap benefits for the environment would be an understatement.



However, washing coal comes with its own set of problems. Coal washing generates a significant amount of rejects. According to the NITI Aayog report, the rejects have an average ash content ranging from 55 to 85 percent, with a Gross Calorific Value ranging from 500 to 2200 kCal/kg. These disregards are frequently used in fluidized bed combustion (FBC) plants, to fill voids in mines, and other applications such as brick kilns, road construction, and so on. This exploitation, which occurs primarily in the unregulated sector, has a significant environmental impact and has the potential to negate the positive environmental benefit gained from the use of washed coal. Instead of finding a remedy to this problem, the government used this as an excuse to do away with the washing requirement and in turn launched some new regulations. These regulations allow Thermal Power Plants will be allowed to use low-quality coal, but they will have to comply with emission norms and fly ash utilization norms. Their method of transportation must be employed with less polluting means. It will now be the Thermal Power Plant's responsibility to manage to fly ash in one place through the use of advanced technology. The motive

behind this was to stop the segregation of fly ash between the washeries and the power plant. The ash content in coal will not vary, regardless of the fact that it is unwashed and, thus it will be better equipped in one place. The ministry's reasons for discontinuing 'washing' coal twins in nature. The economic ruin that followed the Covid-19 lockdown was the first reason behind discontinuing coal 'washing'.

The government attempted to generate fresh private investment in coal mining. For that purpose, they decided to neglect the washing and transport costs in the thermal and coal mining sectors. The second reason is the fact that washeries lead to pollution as it requires water for a major part of 'washing' coal.

However, critics claim that Thermal Power Plants' stressed financing and water shortages would be unable to achieve this task. In fact, as per a new study report by the Center for Science and Environment (CSE) almost 70% of thermal power stations may not meet environmental norms by the allotted deadline i.e. 2022. Surprisingly the situation has not improved a lot since the



deadline was extended by five years, and now these plants are asking for a further extension in the deadline citing the disruptions caused by the pandemic.

Sadly, this is not all that the government has done to attract bidders. Followed by the announcement of privatization, the government introduced a new draft for the Environment Impact Assessment (EIA), a legislative framework for assessing the environmental impacts of development initiatives. Under this draft, The government proposes to waive the statutory environmental clearance requirement for several projects, including coal mining. With the privatization of coal mining, this waiver can have an adverse impact on the environment as the government has no legitimate way to ensure that private players are adopting environment-friendly methods. As a response to this, the government has introduced a tax rebate incentive to promote the use of cleaner technologies. For the amount under coal gasification or liquefaction, which are significantly cleaner technologies, a 20% refund was extended. Moreover, the extraction of Coal Bed Methane, an eco-friendly natural gas was allowed for mine allottees. This was formerly prohibited because of the associated use of water and its impact on global climate change. Pumping significant

amounts of water out of coal seams to lower hydrostatic pressure and liberate the gas is part of coal bed methane exploration.

Because of the unfavorable and long-term chemical or physical impacts on soil structure, produced water from coal bed methane wells has a relatively high salinity (due to dissolved sodium bicarbonate ions or chlorides), making it inappropriate for some agricultural activities. Still, the government claims that since private players have the capacity to deploy to integrate the latest technologies in mining coal as well as extracting coal bed methane, no harm will be done to the environment. This claim is contradictory to the government's other policy on the matter which allows new entrants with no prior experience in the industry to be allowed to participate in the bidding process. While the government does list down certain basic requirements that need to be fulfilled by these prospective bidders, these requirements are certainly not enough. These requirements are pretty much the same as in the case of captive coal mines where companies were asked to submit upfront payments and bank guarantees. It does not make up for the waiving off of the prior experience condition, nor does it explain why the government has assumed that these private players will use the latest technology to limit the environmental damages.

The biggest problem with all of the government's policies is that all of them blindly assume that the private players would all act in good faith. Furthermore, it is unclear whether the incentives offered by the government would be more lucrative than cutting costs by using non-environment-friendly technology. Since there are no regulations in place from the government's end, it seems as if it is completely up to the private miners whether or not they want to concern themselves with the environmental costs of their actions.

Based on experience, private entities have more often than not tried to take advantage of the lack of regulations to maximize their profits at the cost of the environment. If the same situation pans out in this case too, then the privatization of coal has the potential to undo a lot of progress made by India in the sphere of climate change action.

SOCIAL ASPECT

India is a wonderful country with a rich natural heritage. It has a long history in the mining field. In the age of globalization, foreign companies are attracted by the characteristics of skilled labor and commercial activities. We consider the benefits of commercializing the mining industry, but always ignore the social impacts that affect the social structure of livelihoods and work. We cannot ignore the fact that changes in the economy bring about changes in other aspects as well. When mining is done on a large scale, it not only affects the environment, livelihood, or health but also makes changes in structural aspects.

The mining industry has both downsides and upsides. Positive aspects include economic contributions, social benefits to the mining community, income generation, employment and family life support. The downsides are environmental degradation, pollution, health problems and other negative social and economic consequences. The problem arises when the industry wants to start mine, then it affects the community, that is they have to leave the place. There is an unwillingness in

the host communities to accept resettlement because of some reasons like loss of job, native place, property, and community.

Impact on Local Communities

Evicting the locals is like relinquishing their comfort for the sake of the economy. It includes Affected peoples (APS) are people who stand to lose all or part of their physical and non-physical assets as a result of the project, such as their homes, communities, productive lands, resources such as forests, rangelands, fishing areas, or vital cultural sites; business properties; tenancy; income-earning opportunities; and social and cultural networks and activities (ADB 1998a). When a large population is moved onto the land of a smaller (host) population, APS may represent "host communities." The wealthy minerals found in India are targeted in Odisha, Rajasthan, Chhattisgarh, Jharkhand, Madhya Pradesh, and Karnataka. And displaced people come from rural areas, mostly tribal communities. These displaced persons need



rehabilitation, including income, livelihood, home, and land restoration.

Social capital has a clear identity because it "designates the network with common norms, values, and understanding that facilitate collaboration within or between groups" (OECD, 2001). When people evacuate, they lose the communities, friends and everything they lived in. Demolition leads to the division of the community. Communities and tribes include not only current members, but also grandparents, ancestors, and the next generation. The land they recall is intricately related to their societies, cultures, faiths, identities, and beings. Separating indigenous people from their land is the same as isolating them from their source of life. Host communities find it difficult to live in other host societies, as they are not accepted by others. There is a loss of connection between the people and a loss of identity of an individual too. Moreover, they find difficulties in doing or finding jobs because of caste, religion, and race in other places. The loss of communities means the loss of folk dance, cultural events, occasions, and many other problems. Most of the host communities get apart from each other after land acquisition, so they feel like outcasts elsewhere.

Many issues are associated with resettlement, including the risk of new poverty due to poor policy implementation. According to a survey by the research group Land Conflict Watch (LCW), there were 703 conflicts in India, affecting 6.5 million people's lives and livelihoods. Land disputes over mining projects, which affect 852,488 people, are the second - leading cause of troubles after infrastructure. Each land conflict affects an average of 10,668 individuals, with land conflicts related with mining operations affecting the majority of people. Each dispute

affects an average of 21,312 people. The way land acquisition, resettlement and rehabilitation have been dealt with over the years is really bad. The displaced communities realize it is tough to search out another living place because there are several cases where corporations do not provide them compensation for land acquisition, so they haven't got any money to remain at a selected place, they tend to measure it to live. "Peasants in Korba sacrificed their land for the sake of the future and development of the country. Our farmers regard their land as a memorial to their parents. If they cannot secure their and their children's future even when giving their land—their main supply of livelihood—then there's some major problem. The profit has got to be shared with those that have compounded their land," says Dilharan Sarthi. Even within the land of Sattupalli, Yellandu, Koyagudem, and Manuguru in Hyderabad, compensation has not been settled even after many years because of a lack of proper planning. The middle man's involvement in compensation tends to exploit affected families as they demand bribes for the money. The Land Acquisition Act, 2013, of the Center and the subsequent law passed by the state government have not benefited the community because of delays. Fake families also entered under the affected family and they took advantage.

After displacement, many people are jobless as most of them are dependent upon agriculture and forest. The loss of land and movement from that place makes them jobless. In India, most of the people are tribal where mining happens and most of them are not literate as mining work is required.

Due to discrimination, the Dalit community receives no compensation for land or employment. According to a study conducted

(to Pandey (1998), before displacement, approximately 56 percent of women were unemployed; after displacement, the figure increased to 84 percent. Employment in the primary sector increased from 37 to 12 percent, while it decreased from 6 percent to nil in the secondary sector.

In addition, do native people get employment within the mining sector? According to analysis in Cerro First State Pasco's mining site the labourers for mining are the migrants, which indicates that locals might not have the proper set of skills to be fruitfully used and like mining activity. From the hypothesis, the conclusion is that local people may be benefited comparatively less than migrants, due to a skills mismatch that hinders their employment in a number of the better-qualified mining jobs. The limited employment opportunities also hinder, so only some local people get the job. Government or private sector should give them training for work so they can contribute and also earn.

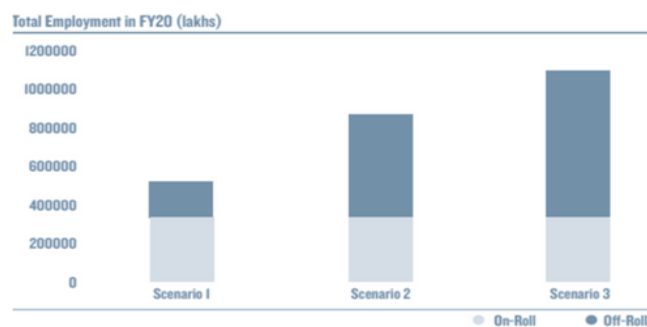
The District Mineral Foundation (DMF) is a provision of mining legislation that has been updated to operate in the best interests of people and communities affected by mining operations. The Pradhan Mantri Khanij Kshetra Kalyan Yojana was included in the DMF for the inclusive and equitable development of project-affected people and places, as well as the devolution of mining benefits.

LABOUR CONDITION

Another social aspect is the exploitation of labour that can happen with the commercialization of mine. The standard



the economic model of privatisation means that new private owners will be more productive, reduce costs, and potentially lead to unemployment and lower wages for workers. It generally shows that privatisation will help in increasing employment, profit, revenue, and GDP. But we always neglect the fact that what will happen to old labourers. In the private sector, there is a prominence of performance which indirectly results in work pressure, doing work on time, and keeping only skilled labour rather than unskilled. Though since labourers are poor and there is formal and contract-based labour too, losing their job will have a negative impact on their families, so instead of firing old labourers, we can measure the productivity of each labourer and then assign work based on their performance.



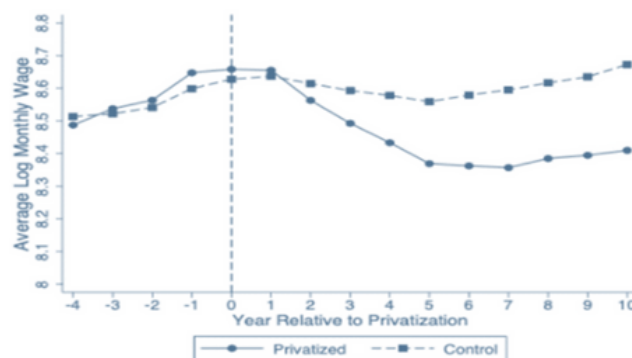
Total formal and contract employees across coal mining and production activities

Source: National Foundation for India

Three different methodologies were used in the study to better understand the labour involved in the coal sector. The first scenario in the Figure is based on the ratio of formal to contract workers issued by the Ministry of Coal in 2019 in response to a question posed in the lower house of parliament, with adequate assertions made for private coal blocks (Ministry of Coal, 2019). The second scenario is based on a bottom-up analysis of coal supply chain activities up to the point of dispatch. The third scenario is based on input from

stakeholders and output per man shift. In the second scenario, factors were considered about activities in the coal supply chain that are typically outsourced (overburden removal, public transit within mine boundaries, and shattering).

For instance, a research study on the privatization of Brazil, by Davin Arnold, compared earnings for all workers in SOEs (state-owned enterprises) that become privatized to otherwise similar workers both before and after privatisation.



On average, workers in privatised SOEs lose significant earnings following privatisation

Source: The Impact of Privatization of SOEs on Workers David Arnold

As shown in the preceding Figure, earnings for both privatised and controlled workers are comparable in the years preceding privatisation. Earnings for privatised workers fell dramatically after privatisation. Ten years after privatisation, privatised workers earn approximately 26% less than controlled workers.

Women are also not treated well enough in the mining sector whether it is the private or government mining sector. They work in secondary activities like cutting, quarrying, loading, etc. Regular exposure to dust and pollution endangers female mineworkers' health. The majority of the female workers are paid on a contract basis. There is no financial security on a regular wage basis and security or compensation for loss of workdays missed due to health issues.

Even not receiving any compensation during the pregnancy puts a strain on income and health. For example, ladies in Orissa's mineral mines complained of a variety of health problems. The few regular female employees were given a pittance of Rs.10 per month for health benefits. If a pregnant woman is directly employed by the company, she receives between Rs.2000 and Rs.3000 in compensation, whereas contractors receive only Rs.500 at their discretion. Mining is a hazardous occupation. Health risks such as coal dust inhalation, hearing damage from mine noise, and chemical hazards remain, but the changing nature of mining has resulted in a slew of new difficulties. Mines are becoming increasingly depleted, increasing the risk of collapse. Coal dust is the most common source of worry; it can cause pneumoconiosis, which is a type of occupational lung illness. The noise that is made by machines can cause a hearing problem. It doesn't seem sudden, but it works slowly. In Easter Coalfields Limited in Jharkhand's Nirsa, there was the death of at least five people due to the collapse of the mine. But the local sources claimed that 10 people died and 6 others died, that is 3 in Kapashera and 3 in Dahibara. Police refused to admit that any death occurred in other regions. Jharkhand has the biggest coal mines reserve in India and many mafia lords engage in illegal mines the poorest people work in the mines and get a salary of just Rs 300-400 per tonne whereas traders sell at high prices. The illegal mines lead to poverty and a lack of employment opportunities. Even if they were injured then no compensation and security are there for the mine labourers, which needs to be pay. There is no record that where the money goes.

S.no	Name of Mines	Killed	Injured	Brief Cause
1.	SRP-3 mine in Srirampur in Mancherial district, Singareni Collieries (SCCL)	04	0	Mining roof collapse
2.	Mining site for quartz stones, Lachhuda village, Bhilwara district of Rajasthan	07	0	Stone mine collapsed
3.	Rampura Agucha (zinc and lead) Mine, Bhilwara district of Rajasthan	02	0	Heavy boulder fell on them while engaged in mining activity
4.	Kakatiya Khani (KTK) coal mine in Bhupalpally Mandal, Hyderabad	02	0	Due to roof collapse
5.	Moonidih Coal Project area of Bharat Coking Coal Ltd (BCCL), Putki, Jharkhand	02	0	Due to roof collapse
6.	Mathur quarry (a private stone quarry) at Madhur village near Thirumukkudal, in Kancheepuram district, Tamil Nadu	01	02	Crushed stones inside a stone quarry, caved in
7.	Illegal mica mine in Jharkhand's Koderma district	04	02	Mine caved in as Roof Collapsed
8.	Illegal coal mines near Rymbai village of Meghalaya's East Jaintia hills district.	06	0	Fell into the mine while digging a tunnel in one of the illegal coal mines after the machine, which they were using to dig the channel, broke.

Jharkhand- total number of accidents in 2021 and its brief causes

Source: Data from Envis by Indian Institute of Technology (ISM), Dhanbad

Insurance, Provision and Legal Guidelines

The Mines Act, 1952 contains the provision related to the health, safety, and welfare of the workers working in coal, oil, and metalliferous mines. The act defines mine as "any excavation where any operation for the purpose of searching for or obtaining minerals has been or is being carried on and includes all borings, boreholes, oil wells and the crude learning plants, shafts, surface workings, conveyors, or aerial ropeways, planes, machinery works, railways, tramways, sliding, workshops, power stations, etc. or any premises connected with mining operations and close to or within the mining space."

According to the provision of the Act, the owner must manage mines and the mining operations and health and safety in the mines. The act also prescribes the number of working hours in the mines, what should be the minimum wage rate, and other related matters.

Even if privatisation is happening, the government should interfere with the welfare of labour so they aren't exploited by them in the context of wage, job security, and health.

There is a need to be aware of labour's insurance policies as well as laws about labourers. "The Employees' State Insurance Scheme of India, is a multidimensional social protection device tailor-made to offer socio-financial safety to the operating populace and their dependents included in the scheme. Besides full medical care for self and dependents, which is admissible from day one of insurable employment, the insured persons are also entitled to a variety of cash benefits in times of physical distress due to sickness, temporary or permanent disablement, etc. ensuing in lack of incomes capacity, the confinement in appreciate of insured women, dependents of insured humans who die in commercial injuries or due to employment harm or occupational danger are entitled to a month-to-month pension known as the dependents to benefit."

The charter of India has empowered the parliament to set legal guidelines for the protection of the man or woman operating withinside the mines and additionally for the law of exertions and protection in mines.

" · Article 246 and entry 55 of the seventh schedule of the Indian constitution talk about the regulation of labour and safety in mines and oilfields."



" · Article 24 of the Indian constitution specifically says that no child below the age of fourteen years basically is employed to work in any factory or mine or engaged in any for all intents and purposes other hazardous employment in a big way."

" · Article 39(e) speaks that the state shall direct its policy towards securing the health and strength of workers, men, and women, and the tender age of the children actually are not abused and that residents aren't pressured with the aid of using the monetary necessity to specifically go into vocations unsuited to their age or strength, which generally is fairly significant. "

" · Article 42 of the Indian Constitution says that the state shall generally make provisions for securing just and humane conditions of work and for maternity relief in a big way."

The group of iron mines in South Goa essentially is comparatively new, with the most important ones erupting at intervals over the really last 10 years (modern, mechanised mining for all intents and purposes has been going on in the northern state for many decades) which is state-owned in a generally big way.

Human Rights Watch primarily visited mining-affected communities in southern Goa's Quepem Taluk [district] and discovered evidence that communities are suffering precisely the kind of harm that government regulation of the business is intended to prevent, with communities divided in their attitudes toward the business. Locals claimed that their vital groundwater had also been severely contaminated. On the other hand, villagers who have reaped direct economic benefits from mining activity, often by having trucks they essentially borrow for transportation removed from mine sites, have undoubtedly become ardent supporters of the industry. Stocks destroyed crops and posed serious health risks, which were vigorously opposed in a subtle manner.

CIL and its subsidiaries generally have a responsibility to respect pretty human rights under global very standards of business and human rights standards, including by doing due diligence to ensure that government authorities perform sufficient consultation about coal mining operations in a subtle way. This obligation exists in addition to adherence to kind of national laws, or so they specifically thought.

According to the organisation, corporations and government officials frequently for all intents and purposes collaborated to eliminate people from the areas designated for basically coal mining, which is quite significant. Human rights breaches that generally appear to be associated with CIL's mining cast doubt on the central government's pledges of inclusive development, which could have far-reaching consequences in the future.

In an environment that was state-controlled or central-controlled, there really was the exploitation of livelihood and labour within the context of human rights hence we need for all intents and purposes more safeguards in a privatised sector in a subtle way. The government should work on these aspects, by implementing policy isn't everything, regulation is also important, and the policy's benefits should be used by labourers and local people, or so they thought. To ensure the safety of the mining industry, the government should for all intents and purposes inspect the mine site, workers and industry mostly are obeying the rules.

STATE VS UNION DISPUTES

The Ministry of Coal released a list of 99 coal mines to be auctioned under the 14th Tranche of CMSP Act and 4th Tranche of MMDR Act on 11th January, 2022. Prior to the aforesaid list, the ministry had already released several lists. The centre's move to commercialise the blocks invited disapproval from three of the important stakeholder states- Jharkhand, Chhattisgarh and Maharashtra in the first round of

auction itself. Not only the state governments but also the other stakeholders including the local communities and the environmentalists have raised their grave concerns over the socio-ecological impact of the step. While the other two states - Madhya Pradesh and Odisha have not raised their formal concerns over the impending issue yet. Concerns raised by states :

1. Ecological Impact : Many of the coal blocks which are either fully explored or partially explored are located on the periphery of dense forests and eco-sensitive zones. Nature lovers and wildlife activists are protesting against this step as they believe that the mining activities around these biodiverse regions will lead to large-scale deforestation and pollution in the region thereby posing a threat to the flora and fauna. Recently, the Modi Government made amendments to the MMDR and CMSP Acts. As per the new legislation, all the environmental, forests and pollution clearances will be granted to the new block owners automatically for a period of two years from the date of grant. This legislation will promote seamless mining operations across these areas. Environmentalists have assumed that the government has no or little concern over the ecological impact of this move.

2. Displacement of tribals and local communities: The states like Jharkhand, Chhattisgarh and Madhya Pradesh are home to various tribal communities which are largely dependent on these forests for their livelihood. Moreover, they worship different elements of nature and forests as sacred entities. These communities argue that the initiative taken by the government will render them helpless as it will lead to large-scale displacement and rehabilitation activities. Moreover, the new amendments made by the government violate the Panchayats (Extension to Scheduled Areas) Act, 1996 and Forest Rights Act. The PESA gives the power to the gram panchayats to prevent the alienation of the land allocated to the Scheduled Tribes. Further, the FRA gives them the power to take appropriate steps to conserve the environment, biodiversity and forests around them. There is no proper negotiation between the government and these tribals and their land is being allocated to the private players without sufficient public hearings.

3. The decision was passed unilaterally: States like Jharkhand alleged that the decision was passed unilaterally by the union government without consulting the states involved. Hence, the move disregards the spirit of federalism in the country. The concerned state must be asked to review the list of coal blocks to be auctioned before releasing it.

Jharkhand



Jharkhand is the state with the largest coal reserves in India. The state possesses close to 84 billion tonnes of coal which are 26% of the country's coal deposits. The Jharkhand state government filed a suit against the Union ministry of Coal in the Supreme court on this issue. The state government alleged that the decisions regarding the commercialization of coal and auctioning the coal blocks were passed by the centre without even consulting the states involved. Soon after the plea was filed in the apex court by the state, the regional political party in power-Jharkhand Mukti Morcha also filed a separate suit.

In the plea, the state defended its stance by arguing along various lines. The state argued that the time at which the auctioning is taking place is highly inappropriate in the light of the Covid pandemic. Neither the state nor the union has appropriate machinery for carrying out the auction process. Moreover, the government will not be able to raise reasonable returns against the value of these valuable natural resources as evident from instances like the withdrawal of FDI investments from India. 'It will be of a greater value to the masses if these coal blocks are allocated to the best indigenous and foreign investors equipped with advanced technology to mitigate the adverse impacts of coal mining. Furthermore, it is the duty of the government to allocate the wealth generated out of this policy equally among the masses.', it said. Hence, the chief minister, Mr. Hemant Soren also wrote a letter to the union government asking for a moratorium of 6 to 9 months to conduct this auctioning process in a competitive and sustainable manner.

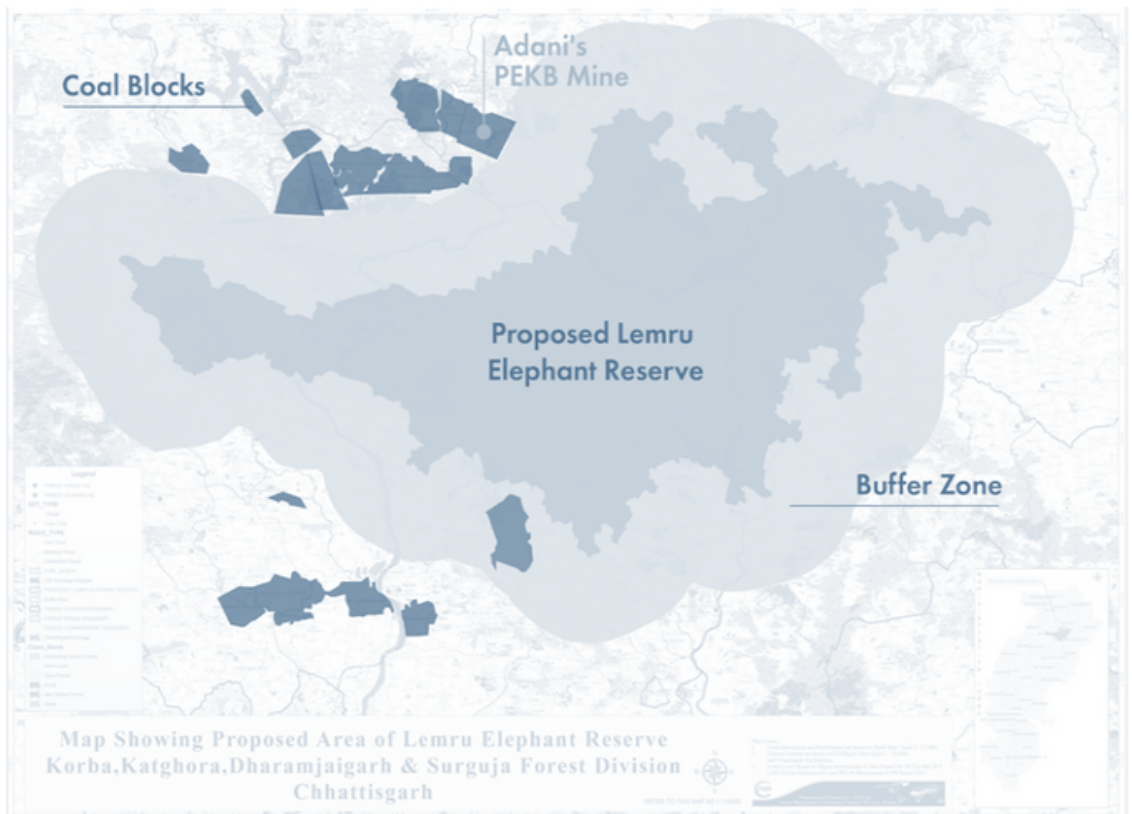
The plaintiff state also alleged that six blocks out of the nine coal blocks listed among 41 coal blocks in the first round of the auction process namely-Seregarha, Chakla, Chitarpur, Rajhara North, North Dhadu, and Urma Paharitola are Scheduled Areas. Approximately 1,60,10,448 people out of the total population of 3,29,88,124 living in Jharkhand reside in the Scheduled Areas. Consequently, this action will lead to large-scale displacement, rehabilitation and resettlement problems in the state. Moreover, the regions in which these blocks are located have a significant forest cover and tribal population.

The decision of the centre has invited a large-scale protest in the state since the auctioning was done without consulting the Gram Sabhas which are the local guardians of these valuable natural resources. Moreover, the waste materials generated by these coal based mining industries contain various toxic chemicals like arsenic, lead, cadmium etc. which can cause cancer, heart and lung diseases to the communities living nearby.



Shortly after the Jharkhand government raised its concerns on the auctioning of coal blocks, the environment minister of Chhattisgarh, Mr. Mohammad Akbar wrote a letter to the Ministry of Environment, Forest and Climate Change raising its concerns. But unlike the Jharkhand government, the state didn't file a plea in the apex court to get the issue resolved.

Chhattisgarh



SOURCE: ADANIWATCH.ORG

The state government asserted that the union should not allocate the coal blocks to private players in the areas located near Hasdeo Aranya, Lemru Elephant Reserve and Mand River catchment areas. The state further added that five out of nine coal blocks to be auctioned in the first round namely- Shyang, Madanpur north, Morga -2, Morga (South), and Fatehpur (east) are located in these biodiverse regions.

Akbar stated in his letter that owing to an increase in the elephant population over the years and human-elephant conflicts in the region, the state government has proposed to declare an area of approximately 1,995 sq kilometres around Hasdeo Aranya River as the 'Lemru Elephant Reserve'. Hence, the state requested the union to exclude the mines located near the Hasdeo and Mand River catchment area in order to prevent the loss of endemic flora and fauna species in the region.

A senior forest official said that the state has no objections to the auctioning of the other four coal blocks- Shankarpur Bhatgaon (second extension), Gare Palma (4/1), Gare Palma (4/7), and Sondhia which were not lying under these Eco-sensitive regions.

Responding to the concerns raised by the state government, the union ministry ordered a special investigation to look into the matter. However, the convener of the Chhattisgarh Bachao Andolan (a pressure group formed in 2009 to work for the tribals living in the Hasdeo Aranya region), Mr Alok Shukla further supported the stance of the state government. He said that the aforesaid regions were already categorised as 'high conservation zones' and were been displayed on the state government's website way back in January. So, there was no need to conduct a further probe into the matter and the union must heed the state's proposal.

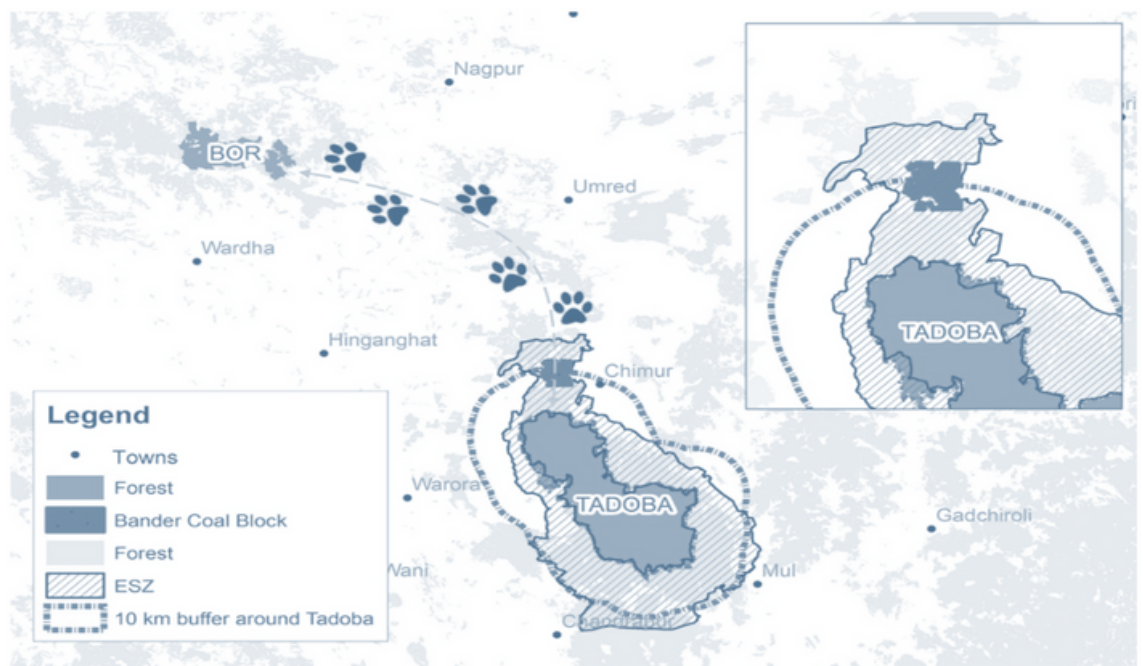
Finally, the Ministry of Coal released a revised list including 38 coal blocks and removed the above-mentioned five coal blocks. However, it also added three more new coal blocks to the list- Dolesara, Jarekela and Jharpalam from the state.

Maharashtra



Aaditya Thackeray, Maharashtra's Environment and Tourism Minister opposed the auctioning of the Bander coal block, located close to the northern edge of Tadoba Andhari Tiger Reserve (TATR) in Chandrapur district, which is home to 115 tigers and 151 leopards. The state argued that both the wildlife and the tribals living in the region will suffer because of this brutal move due to deforestation activities for the excavation of coal.

A lot of environmentalists also opposed this move as they believe that the 1,664-hectare block is an eco-sensitive zone and the mining activities may pose a threat to the tigers in the region. Moreover, it could obstruct a wildlife corridor connecting TATR to forests located in other districts of Maharashtra and may fuel up human-tiger conflicts in Chandrapur district. Pramod Junghare, a social worker, also filed a petition in the Bombay High Court to seek intervention in the matter.



Madhya Pradesh



The state government has not raised any objections regarding the auctioning of the coal blocks yet. However, environmentalists and social workers believe that Madhya Pradesh, being the state with the largest forest covers and various wildlife sanctuaries & national parks like Kanha, Pench, Bandhavgarh etc. will suffer the blatant effects of this policy pursued by the government. The possible reason for this submissiveness pursued by the state can be due to the presence of the BJP government at both the centre as well as the state level.

However, there are several incidents in the history of Madhya Pradesh that throw light on the fact that mere silence on the part of the government cannot curb the outrage of localities and environmentalists. Back in 2006, the UPA government allocated the Mahan Coal Block in the Singrauli district of MP to Essar Power and Hindalco. This move invited large-scale protests from various stakeholders. Some companies complained that the auction was not held fairly and transparently. While the environmentalists and tribals contended that the block was located on the periphery of Mohan Ban Reserve Forest. The clearance given by the MoEFCC (Ministry of Environment, Forest and Climate Change) led to large-scale deforestation in the region. The Apex Court deemed this allocation as illegal owing to a lot of legal flaws, lack of transparency and arbitrariness.



Odisha

Prafulla Mallik, Odisha's Steel and Mines Minister, wrote a letter to the Union Coal Ministry to postpone the auctioning process of the coal blocks. As per market sources, it is estimated that the Covid-19 pandemic has reduced the prices for various grades of coal by 20-25 %. If the coal blocks are being auctioned during this pandemic, there are chances that the highest bid might also be low.

Although the state government has not raised any environmental or social concerns, it still wants that the union government should not conduct the auctioning process hurriedly and haphazardly as these natural resources are valuable and the decision to auction these blocks at lower prices once made is irreversible.

AUCTIONING MECHANISM

AUCTIONING PROCESS

The government is following an 'ascending forward rolling- auction' method for the bidding. The online e-auction is carried out in two stages- the technical bid and the financial bid. The financial bid further comprises two rounds: the Initial Price Offer (IPO) and the Final Price Offer (FPO).

The bidders meeting all the eligibility conditions of the technical bid are declared as the Technically Qualified bidders (TQBs). The parameter set for the bidding process is the percentage share of the revenue. The TQBs have to make initial price offers to the government. To be eligible for making IPOs, their quoted bid must be above the 'floor price' set by the government which is 4% of the revenue share, currently. The bids will be in multiples of 0.5% of the revenue share till it reaches 10 % and then in the multiples of 0.25% thereof. The TQBs will then be ranked in descending order based on their respective initial offers to determine the Qualified bidders(QBs),i.e., the bidders eligible for the Final Price Offer.

1. In case there are only 2-3 TQBs, all shall be considered as QBs.
2. In case, there are 4-6 TQBs, the lowest-ranked TQB will be eliminated and the rest will be considered for the FPO.
3. In case, the no. of TQBs is more than 7, $\frac{1}{3}$ rd of them will be removed with a maximum of 3 bidders.

The Qualified Bidder submitting the highest FPO will be declared as the Preferred Bidder. In the direction of the government, the preferred bidder will become the successful bidder. On the payment of the upfront amount and the submission of performance security, a vesting order will be issued to the successful bidder.

PAYMENTS AND GUARANTEES

Upfront Amount:

The upfront amount shall be computed as 0.25% of the estimated geological reserves of the coal mine or the capped amount, whichever is lower. The capped amount or the ceiling is :



- 1.capped at Rs. 100 crore for geological reserves up to 200MT and,
- 2.capped at Rs. 500 crore for geological Reserves above 200 MT.

This upfront amount will be fully adjusted against the monthly payments made to the state governments, provided it should not exceed 50% of the aggregate monthly payments for the year. This amount shall be payable by the successful bidder in four equal instalments of 25 % each.

Fixed Amount:

On the issuance of the vesting order, the successful bidder will have to pay the fixed amount which includes :

Value of land and mine infrastructure

Cost of consents, clearances etc.

Cost of geological report

The cost incurred by the government agencies and CMPDIL in deriving out detailed boundaries, preparing the geological report and mine dossier along with the taxes as applicable.

Performance Security:

For fully explored mines :

65% of the aggregate of (a) the full-year revenue based on peak rated capacity of the coal mine and (b) one-year royalty.

For partially explored/ unexplored mines :

- 1.If the approval of the mining plan is yet to be given, then, 25% of the estimated exploration expenses.
- 2.After the approval of the mining, plan is given, the performance security will be the same as that of the fully explored mines.



Monthly Payments:

It shall be made to the respective state governments based on the percentage share of revenue as quoted by the bidder in its Final Offer.

So, the revenue share to the state government shall be the product of :

- i) Final Offer
- ii) Quantity of coal on which statutory royalty is payable during the month
- iii) Notional price or actual price, whichever is higher.

ALLEGATIONS RAISED BY THE STATE GOVERNMENTS

The auctions concerning various resource and mineral-based mines were carried out by the government on the fixed royalty model in the past. So, the floor price was a fixed royalty of Rs.150 per tonne and bidders contested by bidding upwards of this. But as per the new procedure being followed by the government, the bidding is being carried out based on the revenue sharing model and the floor price set by the government is 4% of the revenue share.

This change has been a point of debate. Some analysts believe that this change will largely benefit the miners and will protect them from price fluctuations in the market. As evidenced, the coal prices have fluctuated a lot in the past two decades. Surging from less than \$50/tonne in 2000 to over \$160/tonne in 2008 and finally cooling down below \$100/tonne at the beginning of this decade has been a roller coaster ride. Currently, due to the Covid pandemic, the prices have largely been around \$60.

This policy may seem beneficial for the

miners but may have negative consequences on the state's revenue share. As per analysts, the current scenario in our country concerning the prevailing coal market conditions points out that a 4 % floor price is expected to result in a lower price floor as compared to the previous floor norm of Rs 150/ tonne. So, if this scenario continues to exist and the bid gets finalised on or near the floor price itself, the state government will get a double setback. One is about the lost revenue share that the states might have accrued in the previous paradigm and the other concerns the loss of valuable natural resources which is irreversible.

The other major concern raised by the state governments is concerning the economic slowdown prevailing during the pandemic era. Some states like Jharkhand and Odisha have raised their concerns that the auctioning process should happen when the economy stabilises after the covid-19 pandemic. The states are concerned that they will realise less revenue for these valuable natural resources if they are being auctioned in such an adverse condition when the market prices of the coal have declined subsequently. This argument doesn't seem baseless. In past auctions, we saw that very few bidders came out and registered for the bidding process. As a result, there were as low as 2 to 3 bidders for some blocks, for some only a single and some, even no one came up. Due to the lack of competitiveness in prevailing situations, the states believe that they would not be able to realise the revenue that they deserve at the cost of sacrificing such valuable resources.



The offering of Coal via a Common E-Auction Window

India's coal market is highly segmented. As a result, different rates prevail in the market for the same grade of coal, which is to say, that there are huge market distortions. Moreover, it was a challenge for the newly emerging market players to compete with the already existing ones in case of price competition.

So, the Cabinet Committee on Economic Affairs, chaired by Prime Minister Narendra Modi approved the following :

- 1.The non-linkage coal will be offered through a single e-auction window of CIL/SCCL. Unlike present sector-specific auctions, the new e-auction window will cater to all sectors including the power sector and the non-regulated sector.
- 2.The above legislation will not impact the current linkages to power and non-power sector customers at the contracted price.
- 3.The default mode of transportation for the coal offered to the bidders through the e-auction window will be railways. However, the default mode can be switched on the demand of the customers based on their suitability without the imposition of any additional charges and discounts.

4. The long-term allotment of the coal by CIL/SCCL to their own gasification plants will be allowed at the pre-decided prices, provided it doesn't affect the supplies to existing coal linkages. However, in the case of the power sector, the royalties, duties, taxes, etc. will be payable by the coal companies.

on the notified prices. Enacting this mechanism will rule out the price ambiguity in regard to the different market rates currently existing in the market for a particular grade of coal. So, the coal of a particular grade will be sold at a particular price i.e., 'one grade one rate'. A single e-auction window will also enable the coal companies to sell their output to the customers at market-determined prices. This will increase operational efficiencies, thereby increasing the domestic demand for coal. Hence, with better price stability and predictability, the import of coal is expected to reduce drastically. This will ultimately help our country to achieve the objective of 'Atmanirbhar Bharat'. Furthermore, the coal companies can use their own blocks to provide inputs to their gasification plants. This will help India in making the transition toward a greener economy.

CASE: CHINA'S COAL DECENTRALISATION

China's centrally planned coal economy faced problems such as unsystematic development of ecological reserves, suboptimal distribution and inefficiencies of machinery, material waste, and low labour productivity until 1979 when some structural reforms occurred that led to the reformation of China's coal economy.

Measuring the success of reforms

During the 1970s China hugely depends on coal as a fuel. There were other sources of energy that were used as well but coal accounted for 76% of energy consumption. Since 1989 China has been the largest producer of coal. Before 1979, China was facing a severe shortage of coal and even its domestic demands were not completely fulfilled.

Every industry in this country was experiencing difficulties. Due to a scarcity of fuel, some of the country's 30 percent industrial capacity remained untapped. Even citizens were running out of fuel and energy. Energy use per capita was only 595-kilowatt hours, relative to 10900 in the United States and 6084 in Japan.

China's coal production was divided in 3 main categories:

1. Central Mining Administrations(CMA)
2. Local State Mines (LS)
3. Local Non State Mines(LNS)

CMA's: The federal government had authority over these, and they had to generate a baseline of 500K tonnes per year. The majority of the products were grouped together for dissemination. There were around 104 CMA's in the 1980s.

LS: These are controlled by state or provincial



government and like CMA most of the output was evenly distributed. There were about 1600 LS mines.

LNS: These mines were owned by individuals or collectives. Their output distribution can be random it depends on them. There was about 80000 LNS mine.

Before the reforms, there was a set of people who believed that individual, local, and autonomous industries were ideal for optimising production. Decentralisation was favoured by Mao and his allies, while others believed that joint coal production and integrated coal production were optimal. Empiricists such as Dan Xiaoping and Liu Shaoqui trusted Soviet-style centralised production. Because of these two opposing viewpoints, the coal sector has experienced frequent and drastic policy changes.

In the table below, it shows that there was an upward trend since 1979, the average

annual increment in coal output was 45.97 million tons and the average growth was 5.75%.

By the 1970s, the government had noted that local miners were producing effectively and adequately, and their share of total production was major and increasing. That is why the government began supporting local enterprises to handle more mines or mines for longer periods. As the government was aware, the operation of new mines was vital to the coal sector's growth. It was LNS mine production that helped the country's people meet their demands, as well as supplying the majority of rail transport and allowing full capacity journeys. Apart from that, these local mines had additional advantages, such as lowering rural unemployment, reducing rural-urban movement, stimulating rural industry growth, and reducing the environmental harm caused by firewood looting.

	<i>Production (mt)</i>	<i>Increment (mt)</i>	<i>Annual growth rate (%)</i>
1979	635.54	—	—
1980	620.13	- 15.41	- 2.27
1981	621.63	1.50	0.24
1982	666.32	44.69	7.19
1983	714.53	48.21	7.24
1984	789.23	74.7	10.45
1985	872.28	83.05	10.52
1986	894.04	21.76	2.49
1987	928.09	34.05	3.81
1988	979.87	51.78	5.58
1989	1,054.15	74.28	7.58
1990	1,079.30	25.15	2.39
1991	1,084.28	4.98	0.46
1992	1,114.55	30.27	2.79
1993	1,151.37	36.82	3.30
1994	1,230.00	78.63	6.83

The Table Shows China's coal production output in 1980s

Source: Coal Industry Year Book (Hongkong), JSTOR

	<i>Total</i>	<i>CMA's</i>	<i>LS and LNS total</i>	<i>Provincial</i>	<i>Prefectural</i>	<i>County</i>	<i>Collective</i>	<i>Individual</i>
1980	- 2.27	- 3.74	- 0.73	- 5.16	- 5.22	- 5.98	6.88	—
1981	0.24	- 2.71	3.93	1.10	- 5.53	- 0.92	11.42	—
1982	7.19	4.43	10.41	5.16	5.12	8.64	15.39	—
1983	7.24	3.78	11.06	11.21	1.04	3.32	16.43	—
1984	10.45	8.70	12.27	- 14.31	5.99	8.22	27.52	—
1985	10.52	2.93	18.12	- 7.54	9.06	9.30	22.98	—
1986	2.49	1.89	3.03	- 2.39	2.08	- 1.40	4.03	23.59
1987	3.81	1.52	5.78	4.35	- 5.54	0.00	6.80	38.82
1988	5.58	3.39	7.39	5.23	8.78	7.47	3.51	34.13
1989	7.58	5.49	9.25	3.09	7.45	7.46	9.96	13.25
1990	2.39	4.78	0.54	- 2.95	2.30	0.43	2.53	0.53
1991	0.46	0.08	0.77	- 2.77	0.97	- 0.34	2.93	- 7.80
1992	2.79	0.40	4.69	- 10.65	2.36	6.09	6.96	12.12
1993	6.87	- 5.08	9.70	- 4.56	3.68	1.79	13.30	18.23

The Table Shows Growth rate of coal production by mine type

Source: Coal Industry Year Book (Hongkong), JSTOR

	<i>CMA's</i>	<i>LS and LNS total</i>	<i>Provincial</i>	<i>Prefectural</i>	<i>County</i>	<i>Collective</i>	<i>Individual</i>
1949	72.5	27.5	—	—	—	—	—
1952	72.7	27.3	—	—	—	—	—
1957	72.2	27.8	—	—	—	—	—
1958	58.0	42.0	—	—	—	—	—
1962	67.2	32.8	—	—	—	—	—
1965	70.9	29.1	—	—	—	—	—
1970	64.0	36.0	—	—	—	—	—
1975	58.1	41.9	—	—	—	—	—
1978	55.3	44.7	—	—	—	—	—
1979	56.3	43.7	11.0	7.1	8.9	—	16.7
1980	55.5	44.5	10.7	6.9	8.6	—	18.3
1981	53.9	46.1	10.8	6.5	8.5	—	20.3
1982	52.5	47.5	10.6	6.4	8.6	—	21.9
1983	50.8	49.2	10.9	6.2	8.3	—	23.8
1984	50.0	50.0	8.4	6.0	8.1	—	27.5
1985	46.6	53.4	7.1	5.8	8.0	30.6	1.9
1986	46.3	53.7	6.8	5.8	7.7	31.0	2.3
1987	45.3	54.7	6.8	5.3	7.4	31.9	3.1
1988	44.3	55.7	6.8	5.5	7.6	31.3	3.9
1989	43.5	56.5	6.5	5.4	7.6	32.0	4.1
1990	44.5	55.5	6.2	5.4	7.4	32.0	4.0
1991	44.3	55.7	6.0	5.5	7.3	32.8	3.7
1992	43.3	56.7	5.2	5.4	7.6	34.2	4.0
1993	39.8	60.2	4.8	5.5	7.5	37.5	4.6

The Table Shows Proportion of total coal production by mine type

Source: Coal Industry Year Book (Hongkong), JSTOR

CMA's produced 56.3 percent of overall product in 1979, compared to 27% for LS mines and 16.7% for LNS mines.

CMA's produced exactly half of the total nationwide output in 1984, while LS and LNS output has since surpassed CMA's. Local, segregated mines had rapid growth, while massive LS mines experienced a downturn. After 1987, LNS was the only industry active in increasing coal output.

Technological advancements in coal mining machinery

Because mining circumstances around the world are so variable, it's impossible to make meaningful international comparisons in terms of mechanisation. Even within a single country, certain mines can use almost entirely automated processes, while others must rely on manual labour, and inside any particular mine, some procedures may be automated but not others.

The amount of industrialization in China's underground CMAs increased significantly in the 1980s. Only 32.34 percent of mines were mechanised in 1979, but 72.1 percent were in 1993. Even though their yields were only about a quarter of those with complete mechanisation and barely higher than those with no mechanisation, those who were partially equipped were in significantly greater abundance. However, by 1983, fully mechanised faces were the majority, implying that returns on mechanisation investments were far larger than before.

The most notable mechanisation advances were in the 1980s. There was some form of the industrial revolution in which new machines, tools, and technology were introduced into most mines, and many mining sites were mechanised. In 1993, 43.8 percent of mining sites were fully mechanised, compared to 13.2% in 1980. The productivity of hydraulic equipment increased from 15,454 tonnes per month in 1982 to 22,239 tonnes per month in 1992. 85 percent of underground CMAs were intended to be mechanised by the year 2000.

Labour and Productivity

Because levels of mechanisation and automation in coal mines vary greatly around the world, it's difficult to establish metrics regarding labour productivity.

Excluding a few CMAs, however, it is reasonable to assume that labour productivity is poor. While China's median output per man shift (OMS) for state-run mines was 1.398 tons in 1993, West Germany's was 4.06 tonnes in 1975, France's was 2.47 tonnes, and Belgium's was 2.47 tonnes. 3.41 tonnes in the

The United Kingdom. Even though labour productivity was still low, it has risen by 53% since 1980, when the OMS was only 0.912 tonnes. Monthly coal mine output increased too though, from 11,220 tons in 1979 to 12,220 tonnes in 2009. Aside from rising mechanisation and automation, mass layoffs were another key cause. Manpower shortages were a serious concern across the board. As a result, between 1989 and 1993, the overall number of raw coal production workers in the CMAs declined from 1.610 to 1.391 million. Before 1979, the primary criterion for performance in all industries was output targets. Budgeting goals were simply ignored, and employees were unaware of the expenses and revenues of the mine. They were unaware of the importance of effective work practices. Workers quickly learned the foundations of market economics once a new labour contract system was introduced in 1981. Construction contracts, as well as driving and mining teams, were all available. The crews understood their contracts would not be extended if quality and speed of work were not fulfilled. Extra wages were provided for production beyond quota as an incentive to increase performance.

The majority of the people who work in these sites come from fields, and they were drawn in by the potential of making big money by trading coal in the marketplace. The bulk has almost no training in the use of dynamite, preventing flooding and gas seepage, and installing roof supports, resulting in alarmingly high accident rates. In 1990, over 10,400 people died, or approximately 30 people each day on average. 60 percent of the events occurred in LNS mines, with nearly a third of them working illegally in 1994. This astonishingly high accident rate has further hurt the communist group's international public

image. My safety requirements would hike the setup and operation costs of these sites, which are so vital to total production, which is most probably why the officials have been sluggish to address this issue.

Strict budget constraints

Apart from Australia, South Africa, and Colombia, only a few countries profit from coal mining. The majority of governments assist their coal industry with subsidies, price supports, coal import restrictions, or long-term agreements between producers and large users. Failure to implement "strict" budget limitations, that is, forcing all sectors of the economy to function within budgets rather than offering various forms of subsidisation, has been a key problem in centrally planned economies. One of the most important goals in modernising China's coal business was to reduce the deficit and, eventually, make the industry profitable.

China's coal industry has long struggled financially. In 1957, half of the CMAs had deficits, and by the 1980s, nearly all had deficits. Only the mines in Shanxi and Hebei earned money in 1985, and only nine of the LS mines in the 27 provinces made money. The government almost always supported our mines with shortages, even if they were fiscally irresponsible rather than just incompetent. The government was still issuing loans to struggling CMAs and LS mines in 1993, and bad debts pushed 500 mines to collapse in 1994. As of February 1995, the deficits in Shanxi province alone totalled 6.78 billion yuan.



However, by 1992, the situation had begun to improve, thanks to the government's decision (described below) to allow a growing portion of total coal production to be sold at market rates. The industry's losses decreased by 500 million yuan in that year, and by another 420 million in the first half of 1993, for a total loss reduction rate of 27.8%. In 1994, the percentage of CMAs operating in the red dropped to 73%, down from 81% in 1993, and losses for 1994 and 1995 are scheduled to be cut by four billion yuan. The government declared in late 1993 that it would not provide any subsidies to the mining industry in 1994, and that many unprofitable mines would be closed. Subsidies had indeed stopped, and this was a major factor in the significant spike in coal prices. An important way to improve the CMAs' and LS mines' financial outlook has been to encourage "diversified trade." The State Council began offering 2,000 yuan loans in 1992 to help with the creation of new job possibilities. Many of those who were forced to leave mining have been reassigned to other positions within the Ministry. Because they employ additional miners and have proved quite successful, the government has actively encouraged these initiatives. The manufacturing of coal-based chemical products, the use of mine wastes, the creation of coal associated materials, and the production of a wide range of consumer goods and services are the four types of operations. In 1995, these activities employed 1.2 million people and brought in over 23 billion yuan in income.

Decentralisation of coal production increased China's coal production capacity, allowing local industries and individual families to meet their needs. Decentralisation was beneficial economically, but greater coal output had detrimental consequences for the environment and natural resources.

Effect on the environment and use of poor quality coal

Due to growth in coal production and consumption, the environment was compromised. This increased coal consumption had a critical impact on air pollution. China's northern city had an average daily particulate level of 475 nanograms per cubic metre in 1990. According to WHO 90 nanograms is safe. Three Chinese cities Beijing, Xian and Shenyang were among the world's ten worst for sulphur dioxide concentrations. In 1990 carbon dioxide emission was 638 million tons. While decentralised production may be sustaining the industry's continued growth, a critical drawback was most of the coals coming from LNS were not processed or treated in any way that's why these units of coal were of poor quality and emitted a lot of hydrocarbons, sulphur dioxide etc. Most of the coal that was processed was coming from state-controlled mines.

Specific statistics about how much of which coal is washed are not available. But generally speaking, the quality of coal from LNS mines was poorer because it comes from thousands of dispersed small mines, and the logistics of transportation to centralised washing plants were complex. In 1998, 78 percent of Chinese people still cooked and heated with coal and biomass, causing indoor air pollution and affecting people's health. It's just as harmful as smoking, and it's caused respiratory difficulties in some people. The death rate of village residents due to respiratory disease was as high as 169.4 individuals per 100,000 in 1995. In 1995, the national SO₂ emissions reached 23.70 Mt, and it reduced to 20.90 Mt in 1998, 85% of which were from coal combustion. SO₂ emissions dropped further to 18.58 Mt in 1999. CO₂ emissions from

coal burning in China accounted for 29% of global CO₂ emissions in 1996. Coal combustion produces 85 percent of CO₂.

The Chinese government adopted new laws and regulations in response to increased pollution and environmental deterioration. Some of these were: Air Pollution Control (1987, revised in 1995, 2000), Water Pollution Control (1984), Solid Rubbish Environment Control (1995), Land Management Law (1986, revised in 1988, 1998), Mineral Resources Laws (1986, revised in 1996), Mines' Security Laws (1992), Regulations of Land Reclamation (1988). Some restrictions were designed to control acid rain and sulphur dioxide emissions, such as: - New mines with a sulphur content exceeding 3% are prohibited; existing mines are restricted in production and asked to close down. Government rules govern the sulphur content of coal used in cities. Since Aug. 1998. - New coal power plants are prohibited in large and medium cities and their suburbs, except IGCC plants that produce power by heat. Desulphurization facilities must be installed in new and refurbished power plants with a sulphur content greater than 1%. Coal mines that produce high-sulphur-content coal will be shut down, whereas mines that produce low-sulphur-content coal will expand production.

This will lead to advancements in clean coal technologies, such as coal preparation, to increase coal use, reduce coal demand, and provide conditions for market instruments like emissions rights trading to be used. Since 1992, China has imposed an SO₂ emission tax on the two provinces of Guangzhou and Guizhou, Chongqing, Yibin, Nanning, Guilin, Liuzhou, Changsha,

Hangzhou, Qingdao, and Yichang, based on requirements of around 200 yuan per tonne of SO₂ emissions. One of the most essential ways for transferring environmental expenses into internalised costs is to levy a high SO₂ emission fee. It will make coal less competitive while increasing the competitiveness of sustainable energy.

Over Extraction from mines

Every mine has a natural capacity and production should be according to that, and if miners fail to do so and overexploit the mine to increase its output in the short run then this can have negative effects on the mine. Mines will not get enough recovery time and in the long run, their natural capacity can decrease.

	Annual capacity increases (mt)	Total production (mt)	Annual increases in total production (mt)	Output-capacity ratio
1979	13.9	635	17	1.2:1
1980	8.3	620	- 15	—
1981	13.7	622	2	0.1:1
1982	8.2	666	44	5.4:1
1983	18.5	715	49	2.6:1
1984	24.4	789	74	3.0:1
1985	16.5	872	83	5.0:1
1986	21.1	894	22	1.0:1
1987	21.1	928	34	1.6:1
1988	33.0	980	52	1.6:1
1989	28.5	1054	74	2.6:1
1990	23.4	1080	26	1.1:1
1991	33.4	1087	7	0.2:1
1992	27.9	1116	29	1.0:1

The table shows coal output-capacity ratio during the 1980s

Source: *Reforming China's Coal Industry*, JSTOR

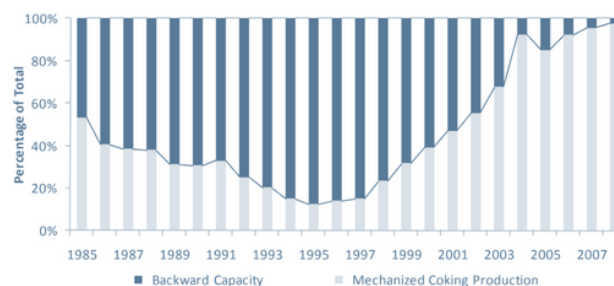
Coal output-capacity ratio ideally it is believed that this ratio should be close to 1 for the well functioning of mines in the long run but during 1980s(after the reform) this output-capacity rule was not followed in china and it was not just a problem with coal industry but also in aluminium ,copper and especially in the iron ore industries. Between 1952 and 1978 the average annual increase in coal production was 1.3 times higher than the average annual increase in capacity (basically output-capacity ratio was

1.3) and from 1980 to 1989 ,average annual output was increased by 434 million tons ,whereas average annual capacity was increased by just 193.3 million tons that means an output-capacity ratio of 2.25 and in 1982 and 85 this ratio was around 5 and situation was about to reach a crisis. It meant that by the early 1980s there simply was not the necessary prepared capacity to maintain production growth. After this over exploitation during 1980s Chinese government brought new policies to curtail this overexploitation of coal that's why between 1990-92 the average annual increase in production was 20.7 million tons while the average annual increase in capacity was 28.2 million tons.

Coking industry and Shady Methods - Environmental Risk

In the past, Chinese coke manufacturers' economic advantage was considerably boosted by lax environmental enforcement and inexpensive labour in comparison to increasingly demanding environmental legislation and enforcement in the rest of the globe. As a result, China's coke output grew dramatically, from 20% in 1990 to almost 60% in 2010, and became increasingly essential to worldwide consumers. Because of its high calorific value and suitability for residential ovens, coke usage was on the rise even at home. Between 2000 and 2007, China's coke exports averaged roughly 15 million tonnes per year. Coke exports from China fell dramatically to 12 Mt in 2008, then to 0.5 Mt in 2009. This was due to a strong political goal for resource conservation and environmental protection. Shanxi has traditionally been China's largest coke-producing province, with 49 percent of proven coking coal reserves. Shanxi alone contributed 32% of China's total coke output between 1990 and 2009. The most used coking method that was used in the 80s-90s was backward manufacturing capacity. Both indigenous and modified-indigenous coke ovens are included in this category of backward manufacturing capacity.

Indigenous coke ovens are the simplest and oldest means of producing coke, with high heat loss and pollutant emissions during the manufacturing process. Since the 1970s, Chinese coke oven producers have been steadily improving their products ("modified indigenous"). Even while this method improves the quality of coke products, it still has the potential to pollute the air and contaminate groundwater.



Coke production composition by types of coke ovens in Shanxi (1985-2009)

Source: PSED, Standard

The graph above depicts the composition of coke production in Shanxi by coke oven type. In 1985, Shanxi's backward production capacity accounted for 47% of the country's coke output. Since then, "backward" capacity has grown fast, reaching an all-time high of 88 percent of province output in 1995. Following the Chinese government's 1996 ban on domestic coke ovens, backward capacity's market share has steadily dropped. Nonetheless, rising domestic demand combined with slack regulation, particularly at the municipal level, provided plenty of room for backward coke makers to survive and thrive. Until early 2000s, the Shanxi government did not make a serious effort to phase out backward capacity. Due to recent government pressure for closure, Shanxi's market share of backward capacity has been cut to a minimum. A similar pattern is found in China's coking industry. In 2001, mechanised coking ovens produced 72% of the country's 131 Mt of coke. Large-scale producers have elevated their output capacity at the cost of backward coke ovens. In 2008, its market share-national coke production was cut to 3%.

POLICY RECOMMENDATIONS

PRICE REGULATION

CIL accounts for more than four-fifths of the country's domestic coal production. So, it determines the coal prices in consultation with the various stakeholders. Now since mining has been opened to the private sector without imposing any restrictions on the end-use of the fuel, more private companies will enter the sector and the prices are expected to go down even further. But since India is highly dependent on imports for meeting its coal requirement due to coal shortage in the country and the entry of the private sector is bound to boost the production, there might be certain deviations in the coal prices between the CIL and the private players. So, it is advisable to have a body for regulating the pricing decisions of the coal sector, through an executive order. The coal regulator can advise the government on principles and methodologies for price determination while taking into account the interest of the state-owned Coal India Ltd (CIL), the coal

ministry's approval, as well as the private sector players. For the aforementioned reasons, a new pricing system needs to be adopted which will be more customer friendly, transparent and aligned with global norms. The grading system based on total energy content per kilogram remains, but the price of each consignment will be determined by a fixed rate for each unit of energy for that particular grade and the total energy contained in 1kg of coal for the consignment. This mechanism will certainly bring in more transparency as it will be based on the global system of coal pricing rather than a band-based pricing system. This means that the price of each tonne of coal will be based on its total energy content. Since the customers are the ones utilizing the coal and energy requirements, it is important to suggest something which benefits the customers the most. However, new initiations and development by the CIL in systems and infrastructure involved is also required for the mechanism to work in an even smoother manner.





who do so. The government may apply an additional tax if a company produces more than the mine's capacity. The government can establish a monitoring body whose key objective will be to determine whether these new mines are extracting within reasonable limitations. Mines would be more sustainable and able to provide coal for many years in this manner.

REPORTING AND AUDITING REVENUE SHARING

Since the revenue sharing system is based on percentages instead of absolute numbers, there is incentive for private players to report less coal production to the government in order to pocket higher returns. Therefore, there should be a regulatory body monitoring the amount of coal production reported by the company to the government.

Integrating a mechanism to record the particulars of the coal production in the supply chain itself. Recording the inflow and outflow of vehicles including the quantity, quality, etc of coal they contain. This will help in ensuring that private companies don't hide coal production from the government.

ENVIRONMENTAL GOVERNANCE

Given the recent changes made in the Environment Impact Assessment and removal of washing requirements for coal, it seems that the government might have overlooked the environmental costs for economic gains. Therefore, it is recommended that a unified "Coal Mines Environment Authority" (CMEA) is set up in order to-

FINANCING

Building new coal plants, mines, and associated infrastructure cost a lot of money. According to a report by the standing committee, over 65,000 MW of operational coal-based power plants in the private sector that were chosen for the study are in financial distress, accounting for more than 85% of the total. Not only that, the coal industry as a whole is also facing competition from renewable sources of energy. International funding for coal-related projects is also dwindling. Thus, newer private players will have a harder time achieving financial closure, given the current situation.

As a result, strategies for bringing in more competitive finance for private players are required. A HELP-like policy (hydrocarbon exploration and licencing policy) for uniform licence for all coal operation types with appropriate risk sharing/pooling procedures is required. An option of selecting the exploration blocks without waiting for the formal bid round should be provided throughout the year. This would make the process more fluid and help attract more funds from the external sources. In order to promote future investment, there should be an easy entry and exit mechanism for companies in this space at all levels including exploration and junior miners.

LABOUR PRODUCTIVITY AND HOW THE GOVERNMENT CAN UPSKILL EXISTING WORKERS

Government workers typically have less work pressure than private workers. They are not required to meet production targets

and their career advancement is based on period rather than performance. Many workers may have developed this careless attitude as a result of working in government firms, but private firms are more demanding and expect a lot from their employees, so it is important for the government to do something to increase labour productivity so that private players have enough capable workers and can produce with full force, but the government need to do something to work on that part. Commercialization of coal alone will not be enough to meet domestic demand; the government must also pay attention to other critical elements. The production of more mines requires the use of highly productive labor. To do this, the government might begin incentivizing workers who hit specified target levels. Establishing regular targets Should assign different ratings to workers, such as excellent, meets expectations, and requires improvement. This can assist workers in understanding their current performance, as well as create a sense of competitiveness among workers, motivating them to work better.

Because private sector players will be using a lot of new and advanced equipment to extract more at a faster rate, it will be necessary for workers to be familiar with these machines and understand how they work.

OVER EXTRACTION AND STRESSING

Because their primary goal is to increase profits, private corporations will extract coal at maximum capacity. In order to accomplish so, there is a risk that they will



over-extract from the mines. This increased pressure on miners could have a harmful effect. Over Extraction has a negative influence on the resource's long-term viability and diminishes overall mine capacity. Individual mine owners in China, for example, overexploited coal mines in the first decade after liberalisation, extracting roughly 2.25 times more coal than the natural capacity of mines. To prevent this from happening in India, the government can adopt strong laws prohibiting miners from extracting more than the mine's capacity, as well as penalising those.

- i. Ensure that the compliance of the environment regulations is not left to the will of the private players,
- ii. Unnecessary administrative delays and inefficiencies resulting from the fragmented approach of the government are eliminated at the earliest.

Like most environment protection policies in the country, this policy should also follow the principle of "carrot and stick". The 20% rebate provided by the government to companies who use coal gasification or liquefaction (relatively cleaner technologies) would act as the carrot i.e. the incentive whereas the CMEA would act as the stick by overseeing the compliance and thus creating

a sense of deterrence.

This authority would first of all codify the vague environmental regulations that the government has announced amid the privatization process. These codified regulations then need to be conveyed to all the old and new players entering the market. Similar to the Directorate General of Mines Safety that regulates health and safety in all mines in the country, this authority would examine different issues related to environmental protection holistically before granting the key statutory approvals (mining plan, environment clearance, and forest clearance) for coal mines. This authority would also carry out annual inspections and auditing to ensure that all regulations are adhered to and environment-conscious methods are being followed. Based on this, the proposed rebate of 20% shall be provided to these companies. And if they fail to adhere to these regulations, there need to be monetary consequences. These consequences can be effectuated with an increase in the share of revenue the private company will have to give to the government. Given its holistic nature and wide variety of functions, the authority needs to be staffed with multidisciplinary expertise in environmental science and engineering, forestry, hydrology, mining,



environmental law, and public health. Moreover, the authority should also be provisioned to consult on a regular basis with private tech companies working in this field to well verse themselves with the latest technologies being developed in the mining industry.

This authority must be created by the central government by enacting a sustainable coal mining bill before private sector commercial coal mines commence operations so as to ensure that environment-conscious methods are employed during initial establishment itself and private players have enough time to execute the same. Since coal is a central subject under the MMDR Act, 1957, and central public sector undertakings mine more than 91% of the coal mined in India, the government has enough opportunity to consolidate and streamline the approvals/clearances required as per central laws without usurping the powers of the states.

LOOPHOLES IN AIR AND WATER ACT

The main source of concern is water and air pollution caused by coal mines. According to Section 25/26 of the Water Act of 1974, no industry or operator process or any treatment and disposal system can be established without the prior consent of the State Board, and no industry or process can discharge sewage or trade effluent into a stream, well, sewer, or land over the standards & without the consent of the Board. Anyone who violates the provisions of Section 25 or Section 26 of the Water Act shall be punished with imprisonment for a term not exceeding one year but may extend to six years with a fine under section 43/44 of the act. Similarly, the Air Act of 1981 includes advising the Central Government on air and air pollution-related issues, researching the causes and effects of air pollution, raising awareness about air pollution, and establishing central and state boards with the authority to

monitor air quality and control pollution. Failure to comply with Central Pollution Control Board directives would result in a one-year term of imprisonment. It can be extended to 6 years with a fine, with a daily fine of 5000 Rs added if the directives are still not met.

Whether it is the government mining sector or the private mining sector, environmental issues are always raised and closed down by providing a false report or bribe. In the case of Mahanadi Coalfields Limited, the villagers claimed that pollution was caused by the MCL, and if they protested, the MCL attempted to resist the authorities, and the villagers' voices were also silenced. MCL cut down trees and did not plant any, water effluents are not properly treated, and there is no water recycling. The oily sludge that comes out of mining operations mixes with the water resources.

Because coal mines are now in the hands of the private sector, the environmental impact will be severe. The main issue is that government policies are blindly trusting private players, and we don't know what kind of incentives they will use. The government should create a set of regulations to ensure that the environmental aspects of industries are met which connects the Water and Air Act legislation and coal industries. The quality parameters for air and water were monitored twice monthly, and quarterly results were distributed to the subsidiaries. Furthermore, the regulation should prioritise for local people to have access to clean water and air, which is a fundamental right. It must have been suggested to enhance the monitoring mechanism by streamlining the current reporting procedure. If these acts are not followed by any industries, then they should be immediately reported.

or reducing water and air pollution there should be a thick green belt around the mine's boundary which helps in reducing the pollution level, but also improves the ecological conditions and prevent soil erosion to great extent. We can also make a barrier around the mines and with a vertical greenery system. The establishment of a buffer zone/biological filter zone area also helps to mitigate the negative effects of mining on the environment. Probiotic treatments with trees, shrubs, and grass are examples of scientific management practices. Planting and the resulting increased vegetative cover can help to restore forest ecology. The recycling of water should be a mandatory rule so that the wastewater doesn't pollute any other water resources and residents do not face any shortage of water. Moreover, we can use "Scrubbers" which are an apparatus that clean the gases passing through the smokestack of a coal-burning power plant. It is used by U.S coal plants; we can also use this method to reduce pollution. Using in-situ treatment zones in which reactive components, as well as electric currents, are placed in the subsurface to treat water that passes through them. The mine sites which are completed from extracting minerals can also be used for water conservation, this needs to be promoted and also it doesn't cost any additional expenditure.

HUMAN RIGHTS VIOLATIONS

Displacement of local people without their consent or failure to provide any means of rehabilitation and compensation for land acquisition, destruction of their basic means of livelihood, and exploitation are all examples of human rights violations.

Referring to the proposed recommendation given in the draft "Corporate social responsibility – the need for evolving appropriate policy for fulfilling the aspirations

of the population living in and around coalfield areas and to promote environmentally sustainable mining practices.

The above point should be elaborated on further because, in most cases, when residents have been displaced one or more times without prior notice, this has been a cause of great concern. Furthermore, many mining industries, such as forests, destroy the source of life. This cannot be corrected by simply enacting policies; instead, there should be a set of penalties and rules that require industries to give notice and create a rehabilitation area for the local population before acquiring land; if any industry violates this rule, a large penalty with imprisonment should be imposed.

The population must be educated on the norms and regulations, their environment, current government programmes, the function of the forest, health hazards, necessary precautions, and human protective measures because the majority of the local people are illiterate. With the policy of no prior experience required for employment, industries should focus on providing jobs to those who lost their livelihood due to mining and provide an alternative source of livelihood, as many people were unable to find work due to a

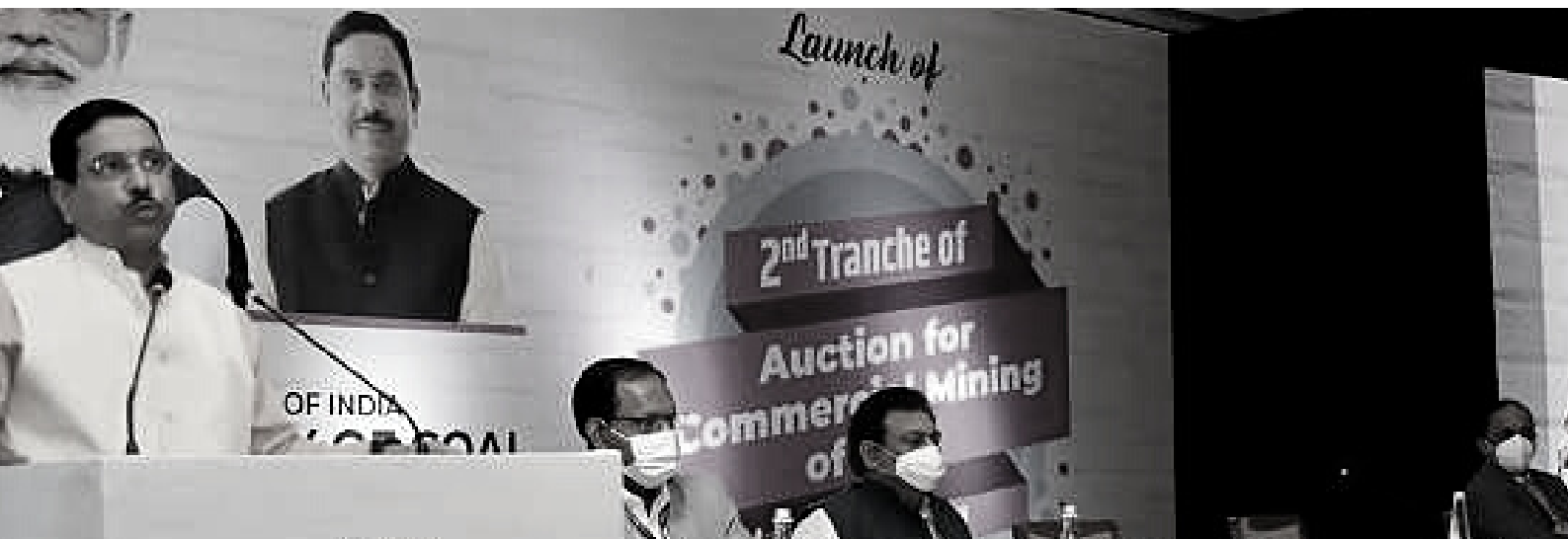
lack of skills and further their main sources of earning like income were destroyed so they should give jobs in mining-related activities such as mineral and mine waste handling, shipping, and trading of minerals and mining products, as well as petty mine owners.

Laborers who were exploited by being paid low wages should also be checked to ensure their productivity through metrics used by CIL to measure productivity and pay them without being exploited and if they aren't working accordingly then give them a Skill development program that will help them in enhancing their skills.

AUCTIONING MECHANISM

The present auctioning mechanism doesn't seem competitive. The haste to bid out all the coal blocks may seem to bear fruits in the short run but in the long run, the government may end up realizing that it has let out its precious resources at a very less value than they ought to have.

The government has reduced the minimum number of bidders to 2 instead of 3 in the first attempt. The union minister of coal, Shri Prahalad Joshi, made a statement that the coal blocks which will receive single bids will be placed for re-auctioning in the next round.





If they receive single bids again, they will be straightaway allotted to the sole bidder. The analysts believe that the floor price set by the government, i.e., 4% of the annual revenue is a lower floor price, as compared to the previous norm. So, with very few bidders in the auctioning process, it's a high probability that the bid shall remain around the floor price which is ultimately a loss of revenue to the state governments.

So, the union government must increase the minimum no. of bidders back to 3 and must not allot a coal block in case it receives a single bidder in order to ensure that the bidding process is more fair and competitive. The government must wait till the block receives a minimum no. of three bids. Alternatively, the government can set a higher percentage of the floor price for the blocks which will receive 3 or fewer bids.

CORRUPTION IN INDIAN COAL INDUSTRY

Privatisation of coal was expected to ensure energy security through assured coal supply, accountable allocation of coal and affordable coal. AtmaNirbhar Bharat was the major reason behind the move as India, despite being the country with the fourth-largest coal reserves, is the second-largest importer of coal. It is expected that the policy would reduce our import dependency. However, this might not happen. Although the quality of Indian coal is at par with that of coal in other countries, the prices are highly inflated when compared to the global market, particularly in the countries of Indonesia, the US, and Australia. Thus, the high domestic prices continue to act as a deterrent to fueling domestic production and the country continues



to rely on imports to meet its domestic requirements. Corruption is a serious and universal problem in the Indian coal mining industry. The industry's opacity concerning quantities and revenues effectively facilitates the concealment of revenue. Also, mining increases local demand for corruption by boosting the presence and number of officials such as tax collectors, safety regulations, inspectors and police officers in the process. Before starting production, a company needs clearance from the coal ministry, environment ministry, and the state where the mine is located. This process is rife with red tape and corruption. Unions demand a 'goon tax' from buyers, a fixed fee per tonne, before loading their coal. Buyers must bribe mining companies to get decent-quality coal. Most coal is transported by train, barge, truck, or a combination of these modes. Transportation costs add to the delivered price of coal. All of these transportation modes use diesel fuel. Increases in oil and diesel fuel prices also significantly affect the cost of transportation, which affects the final delivered price of coal. Environmental clearance for a 100 MT coal block translates into a rent of Rs 10-15 crore. A report by Reuters estimates that corruption is so widespread, that just cleaning up the system would raise official output by at least 15 percent. So, what the coal sector needs is an anti-corruption campaign so as to filter out the overhead expenses that make up the major portion of the coal prices in India. A transparent system monitored by an independent team that cracks down on high-ranking officials and petty civil servants alike needs to be incorporated. The coordination of anti-corruption efforts in different provinces and states that inspect the process at each stage is crucial. This team would play an important role in detecting and investigating local corruption, thus cutting off the prices and making them competitive in the global market. Competitive prices would thus direct the consumers' demand towards domestically produced coal instead of the cheap coal available in other countries.

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