Market Intelligence
& Analytics

CRISIL
An S&P Global Company

Industry report

Contract mining and transportation

Caliber Mining and Logistics Limited (CMLL)

Formerly Caliber Mercantile Private Limited (CMPL)

Final Report

December 2024

Consulting

Contents

Abbreviations

Abbreviation	Full form
BCCL	Bharat Coking Coal Limited
Billion	10^9 or 1,000,000,000
BT	Billion tonne
BU	Billion units
CAGR	Compound annual growth rate
Capex	Capital expenditure
CCL	Central Coalfields Limited
CCO	Coal Controller's Organisation
CEA	Central Electricity Authority
CIL	Coal India Limited
CMLL	Caliber Mining and Logistics Limited
CMPL	Caliber Mercantile Private Limited
CM (SP) Act	Coal Mines (Special Provisions) Act, 2015
Coking coal	Coal used for metallurgical purpose (steelmaking)
CPP	Captive power plant
CY	Calendar year (01 January to 31 December)
DRI	Direct reduced iron
DSCR	Debt service coverage ratio
EBITDA	Earnings before interest, taxes, depreciation and amortisation
ECL	Eastern Coalfields Limited
EJ	Exajoule (unit of energy)
FSA	Fuel supply agreement
FY	Financial/fiscal year (April 1, XXXX, to March 31, XXXX+1)
GCV	Gross calorific value
GDP	Gross domestic product

Abbreviation	Full form
IMF	International Monetary Fund
km	Kilometre
MCL	Mahanadi Coalfield Limited
Mcum/Mm^3	Million cubic metre
MECL	Mineral Exploration Corporation Limited
MGR	Merry go round, rail circuit
Million	10^6 or 1,000,000
MO/MDO	Mine operator/mine developer-cum-operator
MoM	Ministry of Mines, Government of India
MMDR Act	Mines and Minerals (Development & Regulation) Act, 1957, and its amendments
MoC	Ministry of Coal
MT	Million metric tonne
MTPA	Million tonne per annum
MU	Million units
MW	Megawatt
NC	Non-coking coal
NCDP	New Coal Distribution Policy
NCL	Northern Coalfield Limited
NMET	National Mineral Exploration Trust
NRS	Non-regulated sector
OB	Overburden
OC	Open cast
OCP	Open cast project
Opex	Operational expenditure
PAT	Profit after tax
PPA	Power purchase agreement
PRC	Peak rated capacity

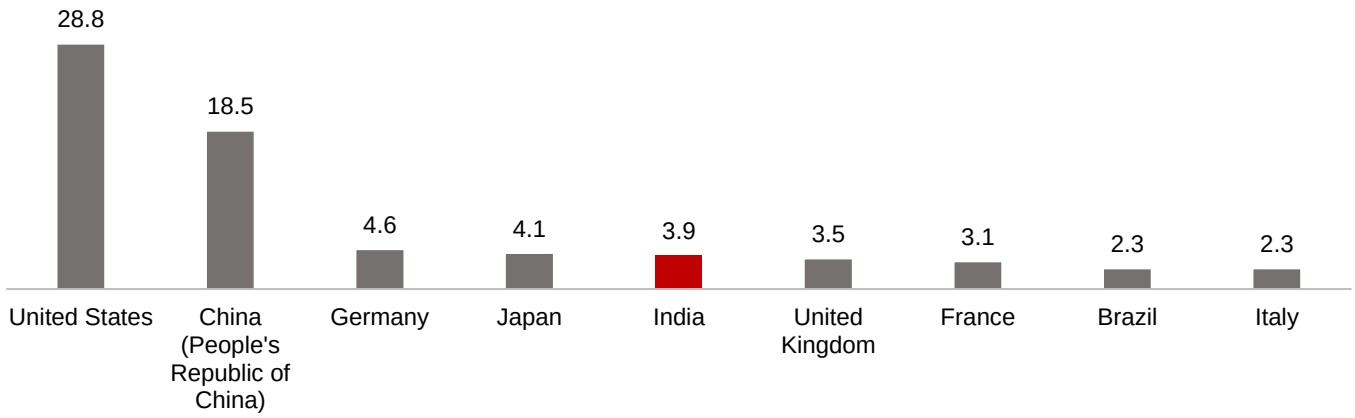
Abbreviation	Full form
PSU	Public sector unit
R&R	Rehabilitation and resettlement
RBI	Reserve Bank of India
SCCL	Singareni Collieries Company Limited
Seams	Coal formation strata
SECL	South Eastern Coalfields Limited
Strip ratio	Ratio between thickness of coal seam and above lying strata
Thermal coal	Coal used primarily in the power generation
Trillion	10^12 or 1,000,000,000,000
UG	Underground mine
WC	Working capital
WCL	Western Coalfields Limited
WPI	Wholesale Price Index

1. Macroeconomic review

1.1 Global economy and comparison with India

India is the world's fifth-largest economy, behind the United States (US), China, Germany and Japan, and the fastest-growing major economy. Its growth rate (7.8% in 2023) is more than double that of the global economy (3.2% in 2023)[1].

Figure 1: Gross domestic product (GDP) at current prices for 2023 (US$ trillion)



Source: International Monetary Fund (IMF) – World Economic Outlook (April 2024)

1.2 Global GDP growth[2]

As per the *IMF's World Economic Outlook (April 2024)*, real global GDP grew 3.2% in 2023, 3.5% in 2022 and 6.5% in 2021, after contracting 2.7% in pandemic year 2020. IMF forecasts global real GDP growth at 3.2% in 2024 and 2025 on account of greater-than-expected resilience in the US and several large emerging markets and developing economies, as well as fiscal support in China. **The IMF believes India will remain the fastest-growing major economy over the next five years, with a growth rate of ~6.5% in 2025 and subsequent years.**

Table 1: Country-wise real GDP data (annual percent change)

Real GDP	CY18	CY19	CY20	CY21	CY22	CY23	5Y-CAGR CY18-CY23
World	**3.6%**	**2.8%**	**-2.7%**	**6.5%**	**3.5%**	**3.2%**	**3.3%**
US	3.0%	2.5%	-2.2%	5.8%	1.9%	2.5%	**2.7%**
China	6.8%	6.0%	2.2%	8.4%	3.0%	5.2%	**6.3%**
Euro area	1.8%	1.6%	-6.1%	5.9%	3.4%	0.4%	**1.3%**
Japan	0.6%	-0.4%	-4.1%	2.6%	1.0%	1.9%	**0.3%**

[1] *As per: International Monetary Fund (IMF) – World Economic Outlook (April 2024)*

[2] *Note: All years in this section are calendar years unless otherwise mentioned*

Real GDP	CY18	CY19	CY20	CY21	CY22	CY23	5Y-CAGR CY18-CY23
United Kingdom (UK)	1.4%	1.6%	-10.4%	8.7%	4.3%	0.1%	0.9%
India	6.5%	3.9%	-5.8%	9.7%	7.0%	7.8%	5.7%

Note: CY- Calendar Year

Source: IMF – World Economic Outlook (April 2024)

Table 2: Country-wise real GDP data forecast (annual percent change)

Real GDP	CY24P	CY25P	CY26P	CY27P	CY28P	CY29P	5Y CAGR CY24-CY29 (P)
World	3.2%	3.2%	3.2%	3.1%	3.1%	3.1%	3.1%
US	2.7%	1.9%	2.0%	2.1%	2.1%	2.1%	2.1%
China	4.6%	4.1%	3.8%	3.6%	3.4%	3.3%	3.8%
Euro area	0.8%	1.5%	1.4%	1.3%	1.3%	1.2%	1.2%
Japan	0.9%	1.0%	0.8%	0.6%	0.6%	0.4%	0.7%
UK	0.5%	1.5%	1.7%	1.7%	1.6%	1.4%	1.3%
India	6.8%	6.5%	6.5%	6.5%	6.5%	6.5%	~6.5%

Note: CY- Calendar Year

Source: IMF – World Economic Outlook (April 2024)

1.2.1 Global inflation[3]

Global headline inflation is expected to decline from an average of 6.8% in 2023 to 5.9% in 2024[4], mainly due to an expected decline in inflation in advanced economies by 0.9% in 2024. The fall in global headline inflation in 2024 reflects a broad-based decline in global core inflation (all items except food and energy). This dynamic differs from that in 2023, when global core inflation fell marginally on an annual average basis and headline inflation declined mainly on account of lower fuel and food price inflation. In 2024, core inflation is expected to fall another 1.2% after contracting 0.2% in 2023. As in the case of headline inflation, the fall in core inflation is faster for advanced economies. Diminished inflation reflects the fading of relative price shocks, notably energy prices. In the near term, inflation expectations have fallen in major economies with long-term expectations remaining anchored. There is a regional divergence on the inflation front in the US. The disinflation process remains uneven.

Table 3: Consumer price index (CPI)

CPI	CY18	CY19	CY20	CY21	CY22	CY23	CY24P
World	3.6%	3.5%	3.2%	4.7%	8.7%	6.8%	5.9%
US	2.4%	1.8%	1.2%	4.7%	8.0%	4.1%	2.9%

[3] *All years mentioned are calendar years*
[4] *IMF – World Economic Outlook (April 2024)*

CPI	CY18	CY19	CY20	CY21	CY22	CY23	CY24P
Euro area	1.8%	1.2%	0.3%	2.6%	8.4%	5.4%	2.4%
Japan	1.0%	0.5%	0.0%	-0.2%	2.5%	3.3%	2.2%
UK	2.5%	1.8%	0.9%	2.6%	9.1%	7.3%	2.5%
China	2.1%	2.9%	2.5%	0.9%	2.0%	0.2%	1.0%
India	3.4%	4.8%	6.2%	5.5%	6.7%	5.4%	4.6%

Source: IMF – World Economic Outlook (April 2024)

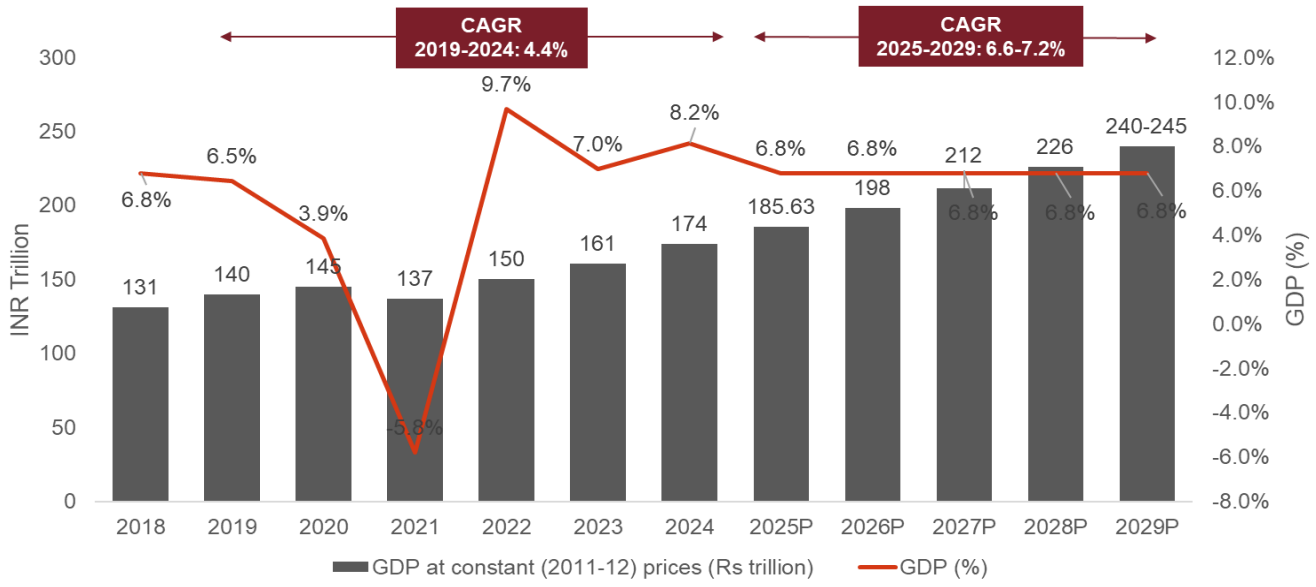
1.3 Indian gross domestic product (GDP) sectoral growth[5]

1.3.1 Review of India's real GDP growth over fiscals 2019-2024 and outlook for 2024-2029

The fastest growing among major economies, India became the fifth largest economy in the world in 2023[6]. As per data published by the National Statistical Office (NSO), the Indian economy logged 4.4% CAGR between fiscals 2019 and 2024[7].

India's GDP exceeded expectations during fiscal 2024. According to the *NSO*, real GDP accelerated to 8.2% on-year in fiscal 2024 from 7.0% in fiscal 2023. In absolute terms, India's GDP clocked reached Rs 174 trillion in fiscal 2024 compared with Rs 161 trillion in fiscal 2023.

Figure 2: India's real GDP trend and outlook (at constant 2011-12 prices)



Source: National Statistical Office (NSO), CRISIL MI&A Consulting

P: Projected; All years are fiscal years

[5] *Data as per Indian authorities for financial year basis*
[6] *According to the International Monetary Fund's ("IMF") World Economic Outlook (April 2024).*
[7] *India follows financial year April 1 to March 31. Hence, the data published by the Indian government/ RBI/NSO is different from that of the IMF, which publishes data as per the calendar year – January 1 to December 31.*

Table 4: Gross value added (GVA) at basic prices (base year: fiscal 2012) constant prices (Rs trillion)

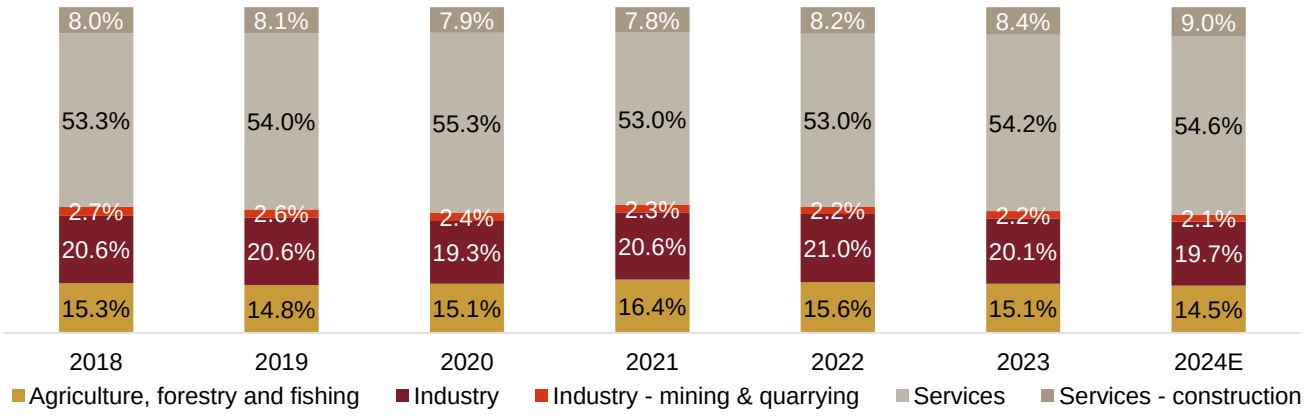
Sectors	2018	2019	2020	2021	2022	2023	2024
Agriculture, forestry and fishing	18.40	18.79	19.94	20.76	21.70	22.72	23.05
Industry	28.12	29.50	28.78	29.03	31.88	31.68	34.63
Mining and quarrying	*3.30*	*3.27*	*3.17*	*2.90*	*3.09*	*3.15*	*3.38*
Manufacturing	*22.09*	*23.29*	*22.60*	*23.25*	*25.61*	*25.05*	*27.52*
Electricity, gas, water supply and other utility services	*2.73*	*2.94*	*3.01*	*2.88*	*3.18*	*3.48*	*3.74*
Services	73.82	79.05	83.64	77.02	85.18	93.65	101.05
Construction	*9.64*	*10.27*	*10.43*	*9.84*	*11.94*	*13.06*	*14.36*
Trade, hotels, transport, communication and broadcasting-related services	*23.68*	*25.39*	*26.90*	*21.59*	*24.80*	*27.78*	*29.56*
Financial, real estate and professional services	*25.37*	*27.14*	*28.98*	*29.59*	*31.23*	*34.05*	*36.92*
Public administration, defence and other services	*15.13*	*16.25*	*17.32*	*16.00*	*17.22*	*18.75*	*20.22*
GVA[8] at basic prices	**120.34**	**127.34**	**132.36**	**126.81**	**138.77**	**148.05**	**158.74**
GDP at Basic Prices	**131.45**	**139.93**	**145.35**	**136.95**	**150.22**	**160.71**	**173.82**

Source: RBI – Handbook of Statistics on the Economy 2022-23, CRISIL MI&A Consulting; 2024 data is estimates (Provisional by NSO India), All years are fiscal years

1.3.2 GVA share

India's economic growth is expected to be stronger in the longer term as compared with other leading economies, driven by robust domestic demand and its position as an investment destination.

Figure 3: Share in GVA at basic and constant prices



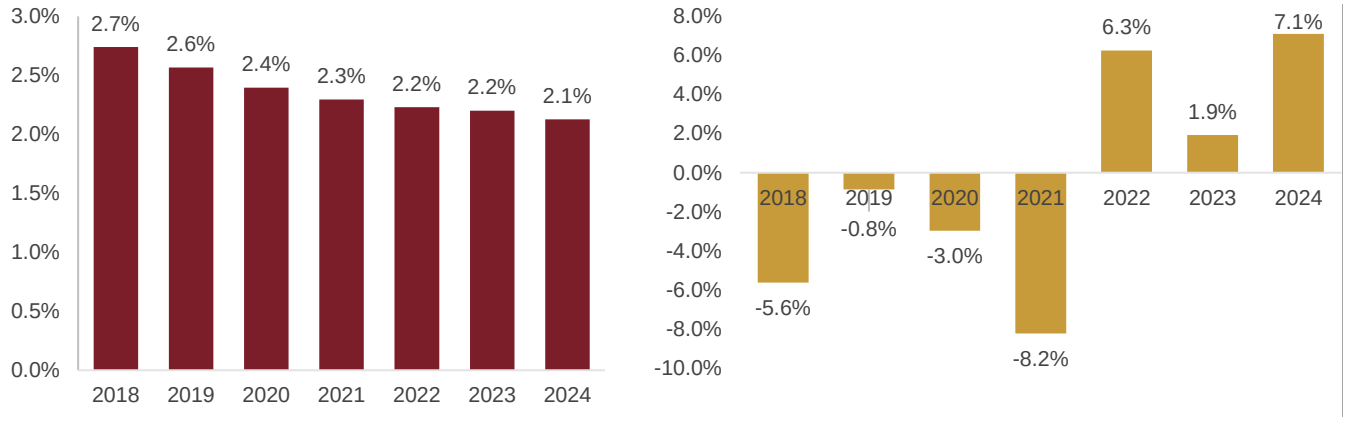
*Source: CRISIL MI&A Consulting, RBI and NSO; All years are fiscal years*Industry includes manufacturing, electricity, gas, water supply and other utilities, ^ Services include those related to trade, hotels, transport, communication, broadcasting, finance, real estate, public administration, defence, and professional and other services*

[8] *GVA- Gross value added [GDP is GVA plus product taxes (like VAT) minus product subsidies]*

1.3.3 Mining and coal industry's contribution to GVA

The mining and quarrying sector accounted for ~2.1% of the GVA (at constant prices) in fiscal 2024. The sector's contribution to the GVA for the fiscal (at constant prices) is estimated at Rs 3.38 trillion; it was Rs 3.29 trillion in fiscal 2018 (2.7% of GVA). The growth in mining GVA was 7.1% in 2024 over that in the previous fiscal.

Figure 4: Share of mining and quarrying in India's GVA and growth



Source: CRISIL MI&A Consulting, RBI and NSO, Handbook of Statistics on Indian Economy- 2023, All years are fiscal years
Note: The fiscal 2024 numbers are taken from the press note on provisional estimates of Indian GDP by Ministry of Statistics and Programme Implementation dated May 31, 2024

In terms of sectoral growth of the eight core industries, the coal sector grew the maximum at 11.8% in fiscal 2024 as compared with 14.9% in fiscal 2023, as per the Index of Eight Core Industries (ICI; base year 2011-12) as per Ministry of Commerce & Industries[9]. The considerable rise in coal production during the period drove the growth. The production increase underscores the sector's capacity to meet the growing demand of the energy and manufacturing industries. The combined ICI increased 7.6% on-year in fiscal 2024.

Table 5: Summary of the Index of eight core industries (Index)

Sectors	2018	2019	2020	2021	2022	2023	2024
Cement	129.7	147	145.7	130	156.9	170.6	185.7
Coal	**124.9**	**134.1**	**133.6**	**131.1**	**142.3**	**163.5**	**182.7**
Crude oil	93.7	89.8	84.5	80.1	77.9	76.6	77.1
Electricity	149.2	156.9	158.4	157.6	170.1	185.2	198.3
Fertilisers	106.6	107	109.8	111.6	112.4	125.1	129.8
Natural gas	68.4	69	65.1	59.8	71.3	72.4	76.8
Petroleum refinery products	125.2	129.1	129.4	114.9	125.1	131.2	135.9
Steel	140.5	147.7	152.6	139.4	163	178.1	200.4
Combined Index (Base year 2011-2012)	**125.7**	**131.2**	**131.6**	**123.2**	**136.1**	**146.7**	**157.8**

Source: Ministry of Commerce & Industries, all years are fiscal years

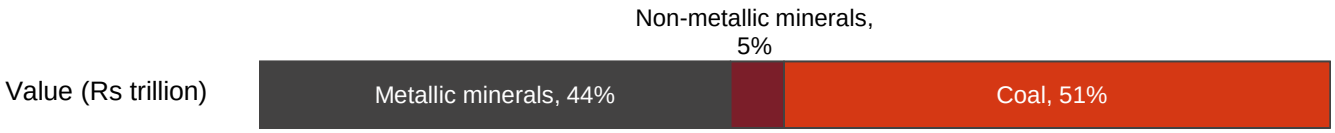
[9] *Department for Promotion of Industry and Internal Trade, Office of Economic Advisor press release dated August 30, 2024*

Table 6: Summary of the growth of Index of eight core industries (%)

Sectors	2018	2019	2020	2021	2022	2023	2024
Cement	6.3%	13.3%	-0.9%	-10.8%	20.7%	8.7%	8.9%
Coal	**2.5%**	**7.4%**	**-0.4%**	**-1.9%**	**8.5%**	**14.9%**	**11.8%**
Crude oil	-0.8%	-4.2%	-5.9%	-5.2%	-2.7%	-1.7%	0.6%
Electricity	5.4%	5.2%	1.0%	-0.5%	7.9%	8.9%	7.1%
Fertilisers	0.0%	0.4%	2.6%	1.6%	0.7%	11.3%	3.7%
Natural gas	2.9%	0.9%	-5.7%	-8.1%	19.2%	1.5%	6.1%
Petroleum refinery products	4.6%	3.1%	0.2%	-11.2%	8.9%	4.9%	3.6%
Steel	5.6%	5.1%	3.3%	-8.7%	16.9%	9.3%	12.5%
Combined Index (Base year 2011-2012)	**4.3%**	**4.4%**	**0.3%**	**-6.4%**	**10.5%**	**7.8%**	**7.6%**

Source: Ministry of Commerce & Industries, All years are fiscal years

Figure 5: Value of minerals in India distribution



Source: Ministry of Mines, Government of India, total value of mineral production is Rs 2.5 trillion for fiscal 2024.

Coal and iron ore are the bedrock of India's mineral wealth, playing a critical role in driving the nation's industrial and economic progress. These minerals not only fuel the country's energy needs but also support the backbone of its manufacturing sector, particularly in steel production.

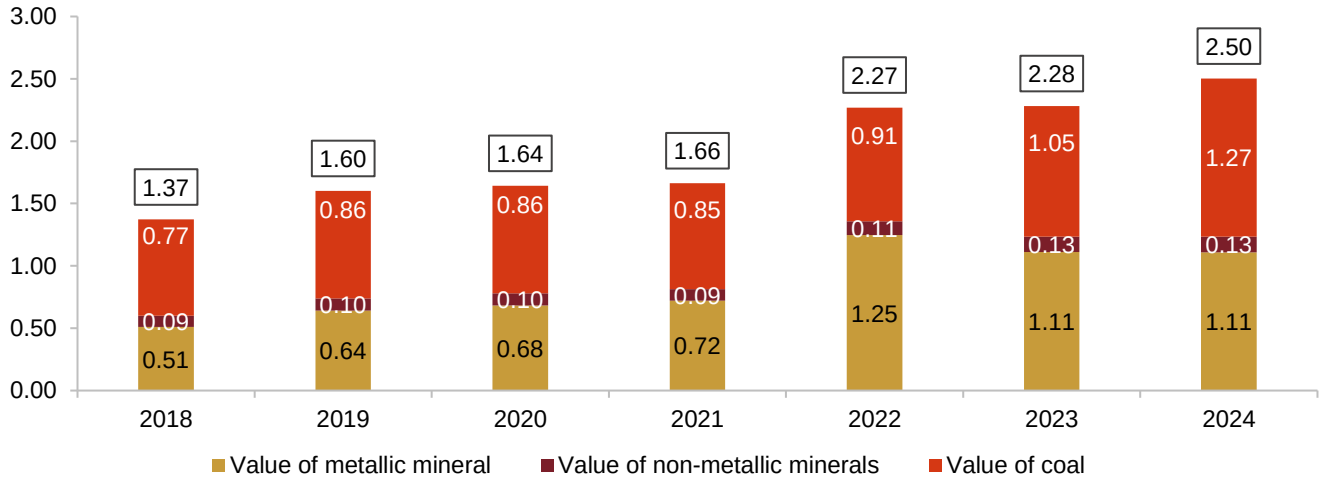
The value of minerals mined in India is approximately evenly split between the coal and non-coal minerals. Coal is undeniably the most crucial mineral for India, accounting for ~51%[10] of the total value of minerals mined in the country. Given India's large population (largest country by population in the world with ~1.44 billion people in 2024 according to IMF estimates) and rapidly growing economy (6.5% real GDP growth rate expected from CY2024 to CY2029, according to the IMF[11]), the demand for energy is ever-increasing, making thermal coal indispensable for ensuring energy security. The importance of coal is further underscored by its widespread use in various industries[12], from cement to chemicals, contributing significantly to India's industrial output. Also coking coal plays a critical role in the steel industry, which is a key sector for infrastructure development.

Besides coal, metallic minerals contribute to the country's mineral wealth significantly, at ~44% of the value of minerals mined. Iron ore, contributing ~36% to the total value of minerals mined in India, is another essential mineral that underpins India's economic framework. Approximately 81% of the value generated by metallic minerals in India

[10] *Ministry of Mines, Government of India, total Value of Mineral production*
[11] *As per International Monetary Fund (IMF)- World Economic Outlook (April 2024)*
[12] *Mentioned the share of coal demand in various sectors in detail in the coal demand & supply dynamics chapter*

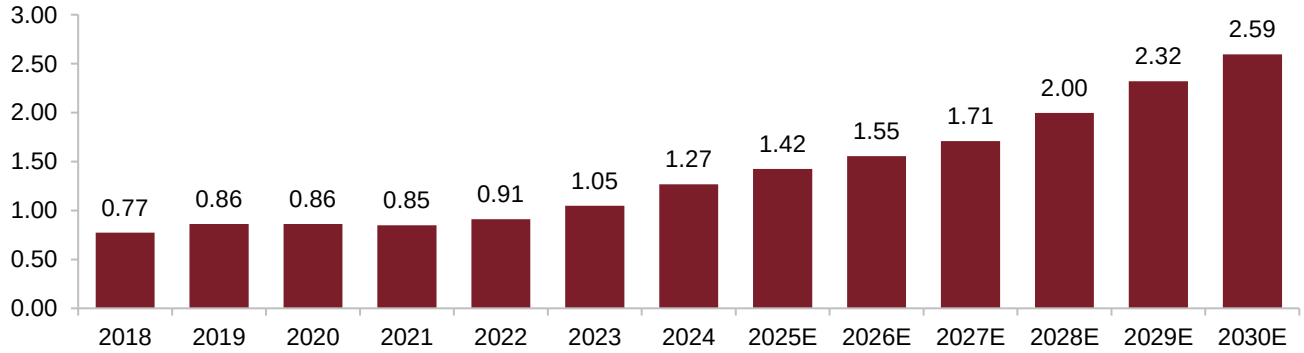
comes from iron ore, reflecting its importance. Iron ore is the primary raw material for steel production; steel, in turn, is fundamental to building infrastructure, from bridges and roads to factories and residential buildings. With India being the second largest producers of steel globally, the demand for high-quality iron ore is ever-growing. Given that the mining industry contributes ~2.1% to India's GVA, coal and iron ore contribute about 86% of this number. Coal, with its 51% share in the value of minerals mined, accounts for a significant portion of this GDP contribution, primarily through its role in power generation (~72% of coal demand is from the power sector, including captive power plants[13]). Iron ore's 36% share, driven by its critical role in steel production, also makes a substantial contribution to the GDP (~2% via the steel industry[14]).

Figure 6: Value of minerals (coal and major minerals) in India (Rs trillion)



Source: Ministry of Mines and CRISIL MI&A Consulting analysis, total value Rs ~2.5 trillion in fiscal 2024; All years are fiscal years

Figure 7: Value of coal produced in India and expected future value (Rs trillion)



Source: Ministry of Mines, CRISIL MI&A Consulting analysis assuming growth rate of 7.0% in coal supply growth; All years are fiscal years

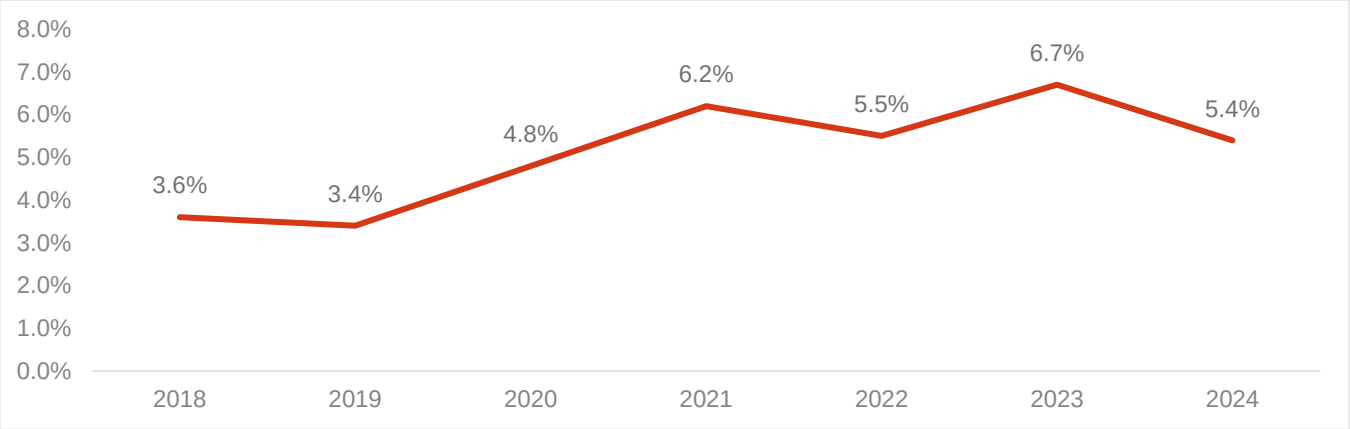
[13] *CRISIL MI&A Consulting analysis*
[14] *National Steel Policy 2017, Ministry of Steel, Government of India*

1.4 Performance of key macroeconomic indicators

1.4.1 Consumer price index

India's average consumer price index (CPI) inflation rate remained ~4.7% between fiscals 2018 and 2022. However, it increased to 6.7% in fiscal 2023, primarily led by surging food prices before moderating to an average 5.5% in fiscal 2024. Although core and fuel inflation numbers have remained low, it is the food inflation that has been keeping CPI inflation above Reserve Bank of India's medium-level target rate of 4.0%. For instance, as per the data for March, food inflation remained at 8.5%, primarily led by strong acceleration in foodgrains and meat and fish inflation and the slower pace of deflation in the edible oils category. Going forward, CPI inflation is expected to moderate further to 4.5% on average in fiscal 2025 on the back of an expected dip in food inflation led by a favourable monsoon and high base effect[15].

Figure 8: CPI inflation trend



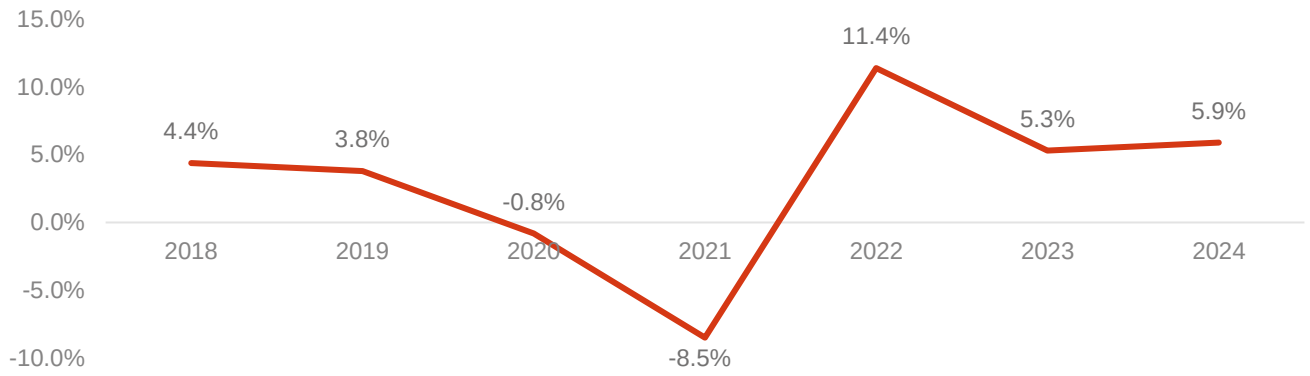
Source: NSO, Ministry of Industry and Commerce, CRISIL MI&A Consulting; All years are fiscal years

1.4.2 Index of Industrial Production

The Index of Industrial Production (IIP) averaged 2.6% between fiscal 2018 and fiscal 2023 before surging to 5.9% in fiscal 2024. The uptick was primarily led by a strong pick-up in sectors pertaining to the manufacturing of electrical equipment and basic metals. Further, there was an uptick in the consumer durables sector, which also supported the growth.

[15] *Press Information Bureue issued by Ministry of Finance dated 22 July 2024.*

Figure 9: IIP growth trend

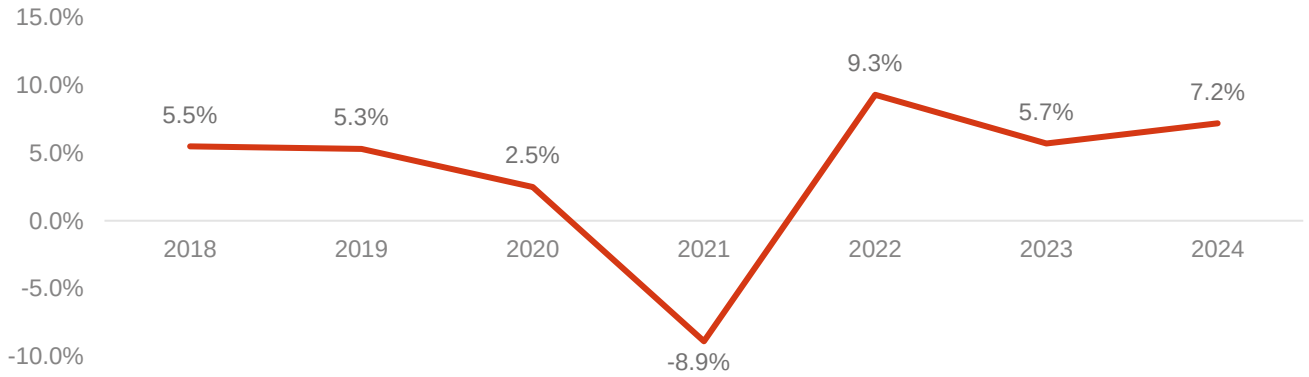


Source: NSO, Ministry of Industry and Commerce, CRISIL MI&A Consulting; All years are fiscal years

1.4.3 Gross national income

The growth rate in the per capita gross national income (GNI) fell from fiscal 2018 till fiscal 2021. However, after the pandemic era, per capita GNI increased 9.3% in fiscal 2022. In fiscal 2024, the growth rate increased again, to 7.2% from 5.7% in fiscal 2023.

Figure 10: Per capita GNI trend



Source: NSO, Ministry of Industry and Commerce, CRISIL MI&A Consulting; All years are fiscal years

1.4.4 Outlook on GDP

India's GDP growth is expected to moderate to 6.8% fiscal 2025 after a better than-expected 8.2%[16] expansion in fiscal 2024 as per NSO India (compared to IMF projections of India's real GDP growth expected to moderate to 6.8% and 6.5% in CY2024 and CY2025 respectively from 7.8% in CY2023).

[16] *National Statistics Office (NSO) of India*

1.4.5 Growth drivers for increase in GDP in India

The Indian government's total capital expenditure is estimated at Rs 9.5 trillion[17] in fiscal 2024. Investment prospects are optimistic, given the government's capex push (capital expenditure has tripled in past five years, from Rs 3.1 trillion in fiscal 2019 to Rs 9.5 trillion in fiscal 2024).

1.4.6 Manufacturing

Indian real GDP growth has been mainly due to significant 9.9% growth in the manufacturing sector in fiscal 2024 over -2.2% in fiscal 2023 and 7.1% growth in the for mining and quarrying sector in fiscal 2024 over 1.9% in fiscal 2023. The manufacturing sector has grown at an average annual rate 5.2% over the past 10 years, despite numerous disruptions. The main growth drivers in the sector have been chemicals, wood goods and furniture, transportation equipment, medicines, machinery and equipment.

1.4.7 Infrastructure

In recent years, the funding of large-scale infrastructure projects has been aided by buoyant public sector investment. Between fiscal 2014 and fiscal 2024, the average daily speed of national highway construction grew nearly three times, from 11.7 km to approximately 34 km. In the past five years, capital spending on railroads has surged 77%, primarily due to large investments in new-line construction, gauge conversion and doubling. The operationalisation of new terminal buildings at 21 airports in fiscal 2024 has increased the capacity to handle 62 million more passengers annually overall.

India rose from 54 in 2014 to 38 in 2023 in the World Bank *Logistics Performance Index*. Between 2014 and 2023, India's clean energy sector received Rs 8.5 trillion[18] in new investments.

The *National Monetisation Pipeline* included assets with a monetisation potential of Rs 6 trillion during the four-year period.

1.4.8 Services

The services sector's share of the total GVA has increased to 54% (fiscal 2023), the level observed before the epidemic. 65% of businesses are operating in the services industry. As of March 31, 2024, there were 1,691,495 active firms in India. In 2022, India's services exports made up 4.4% of all commercial services exported worldwide. About 73% of India's services exports were made up of business and computer services, which increased 9.6% on-year in fiscal 2024. India's percentage of the world's exports of digitally delivered services climbed from 4.4% in 2019 to 6.0% in 2023. In 2023, the tourism industry saw over 9.2 million foreign visitor visits, indicating a 43.5% on-year rise. With a 33% on-year gain and 0.41 million units sold in the top eight cities, residential real estate sales in India reached their highest level since 2013.[19]

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[17] *India Budget, Government of India*
[18] *Ministry of Finance, notified through Press Information Bureau dated 22nd July 2024*
[19] *As mentioned in the economic survey report*

India plays a significant role in the global economy, driven by its diverse industrial base, growing consumer market, and strategic geopolitical position. As one of the fastest-growing major economies expecting a strong real growth of 6-7% in this decade, India's contribution to global GDP continues to rise. Among these, the mining sector remains crucial, contributing ~2.1% to India's GDP. Mining plays a vital role in India's economy, providing raw materials for various industries such as power, steel, cement, and infrastructure.

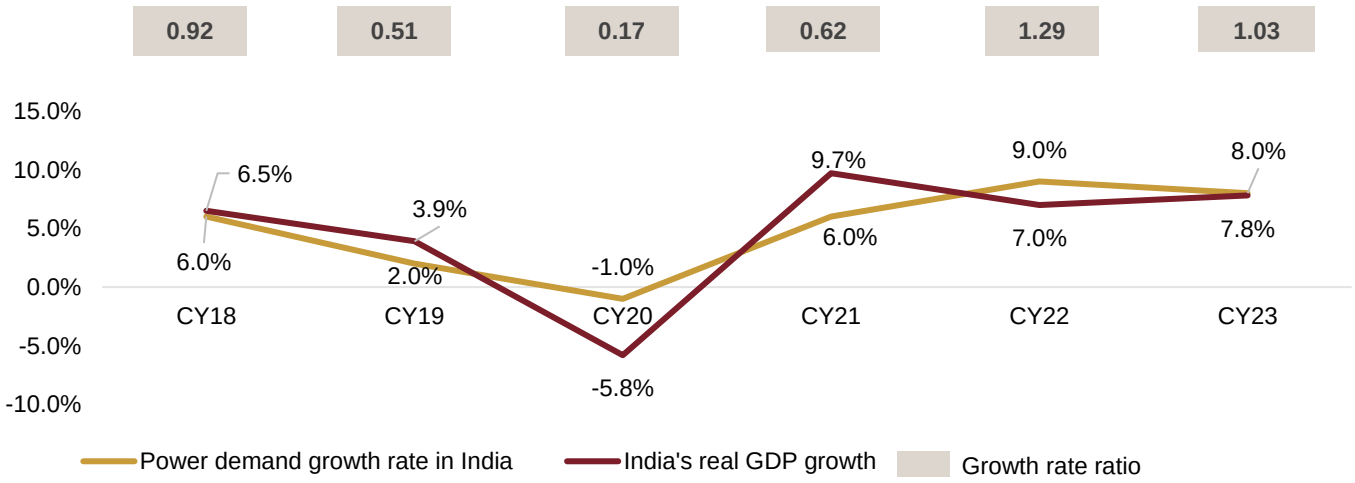
2. Energy requirement and importance of coal

With rapid economic growth, India's future energy requirements are expected to increase rapidly. In terms of energy mix, coal continues to play a dominant role in India and the world.

2.1 Correlation of power and other sector growth with GDP growth

The demand growth of power and GDP growth is highly correlated, with both following a similar trend since 2018[20]. During the pandemic, the demand for power as well as GDP declined till 2021, after which demand for power grew at 9.0% in 2022. In the subsequent year, demand for power grew by 8.0%. The growing multiple of GDP and power in the past four years is a sign of growing power demand with GDP and growing GDP with power demand. The projections of power demand for the future are also high considering growth rates of power in past two years (year 2022 and 2023).

Figure 11: Growth in power demand vs GDP in India



Note: All figures are adjusted to calendar year and the grey boxes represent the ratio of growth rate of India's power demand and real GDP; the GDP growth rates are from IMF; CY- Calendar Year

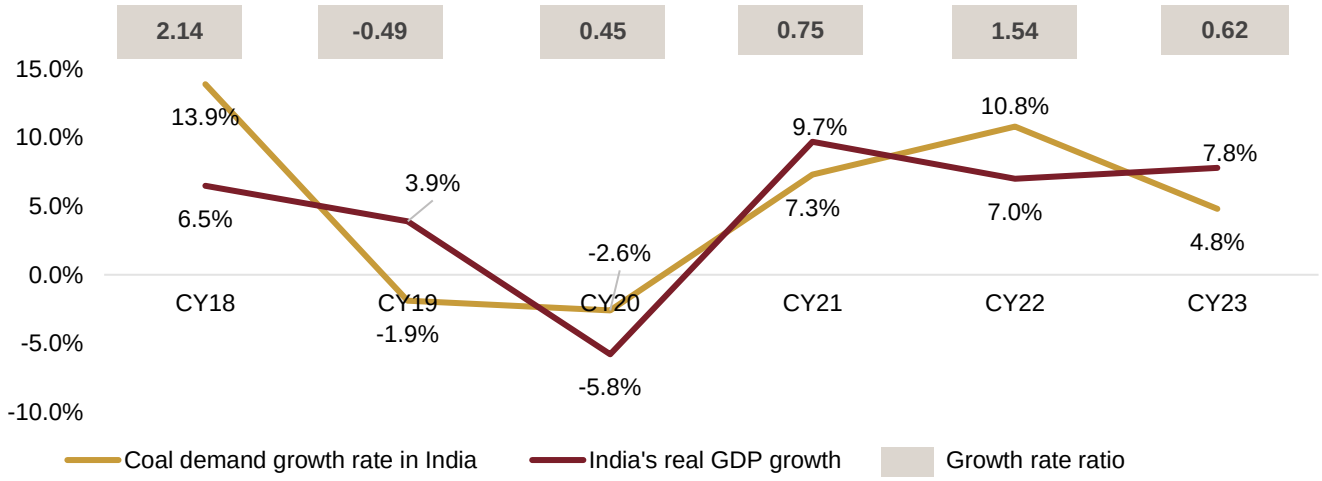
Source: CRISIL MI&A Consulting, industry, Ministry of Power, IMF

2.2 Correlation of growth of coal and GDP

Given the huge population, low level of India's per capita steel consumption and the wide end-use cases of coal, the coal industry has a huge potential to become one of the economic growth drivers of India. A comparative analysis between the growth of coal demand and India's GDP shows both displaying a similar trend. While 2020 witnessed slowdowns in major coal consuming sectors like power, CPP, steel, cement, brick industry etc., 2021 saw multiple Covid-19 pandemic-induced lockdowns.

[20] *Note: All years in this section are calendar years unless otherwise mentioned*

Figure 12: Growth of coal demand vs GDP in India



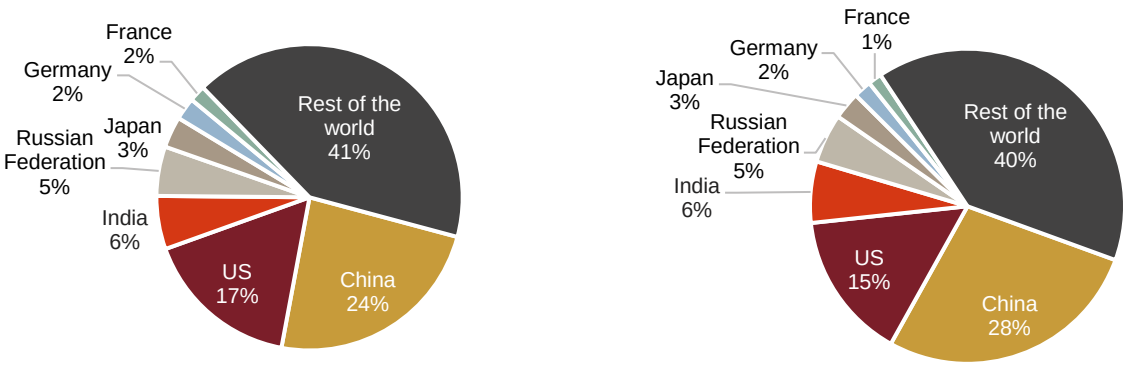
Note: All figures are adjusted to calendar year and the grey boxes represent the ratio of growth rate of Indian's power demand and real GDP; the GDP growth rates are from IMF; CY- Calendar Year

Source: CRISIL MI&A Consulting, industry, Ministry of Power, IMF.

2.3 Country-specific energy consumption and India's position

According to estimates by BP (2024) Statistical Review of World Energy, global energy consumption rose at a CAGR of 1.6% between 2010 and 2023 (from 506 exajoule or EJ to 620 EJ). The country-wise share of energy consumption with major economies are as shown below:

Figure 13: World's energy consumption (EJ) by major countries in CY2018 and CY2023



Source: BP (2024) Statistical Review of World Energy, CRISIL MI&A Consulting, CY- Calendar Year

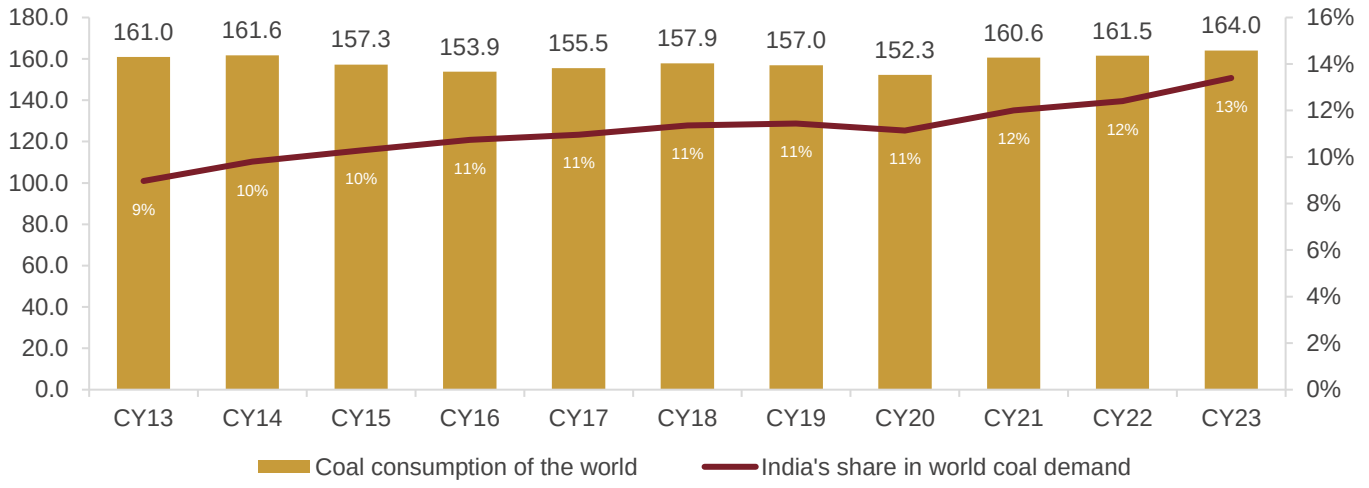
In 2023, global energy consumption reflects significant disparities across major economies, underlining shifts in economic power and energy needs.

- India has emerged as a significant player in the global energy landscape, overtaking Russia to become the third- largest energy consumer. With a 6% share of global energy consumption, India's energy demand has grown at a robust CAGR of 4.2% over the past decade (since 2013 to 2023). This growth is primarily driven by rapid urbanization, industrial expansion, and an increasing population. India's rising energy needs highlight its expanding economy and the government's push for infrastructure development.

2.4 Coal's dominance in India's energy and power sectors

As of 2023, India accounted for 13% of global coal consumption, standing as the second-largest consumer after China (which dominates with a 56% share). In terms of absolute figures, India's coal consumption, measured in EJ, has risen significantly. In 2013, India's coal consumption stood at 14.4 EJ. By 2023, this figure escalated to 21.9 EJ, underscoring a substantial increase in energy demand within the country.

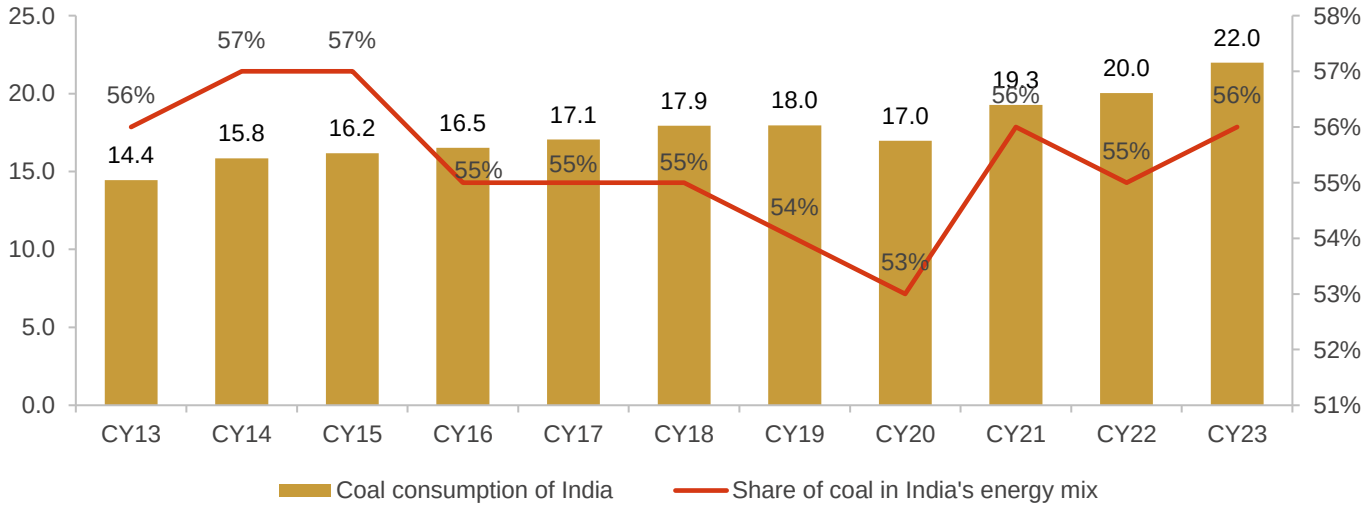
Figure 14: Global coal consumption (EJ) and India's share



Source: BP (2024) Statistical Review of World Energy, CRISIL MI&A Consulting, CY- Calendar Year

Additionally, the share of coal in India's primary energy mix has remained relatively stable, hovering around 56% since 2013. The figure has shown slight fluctuations, ranging between 53% and 57%, indicating coal's enduring role as the backbone of India's energy supply. The trend suggests that coal will continue to play a vital role in powering India's economy, especially in sectors such as power generation and heavy industry.

Figure 15: Coal consumption (EJ) and its share in India's energy mix

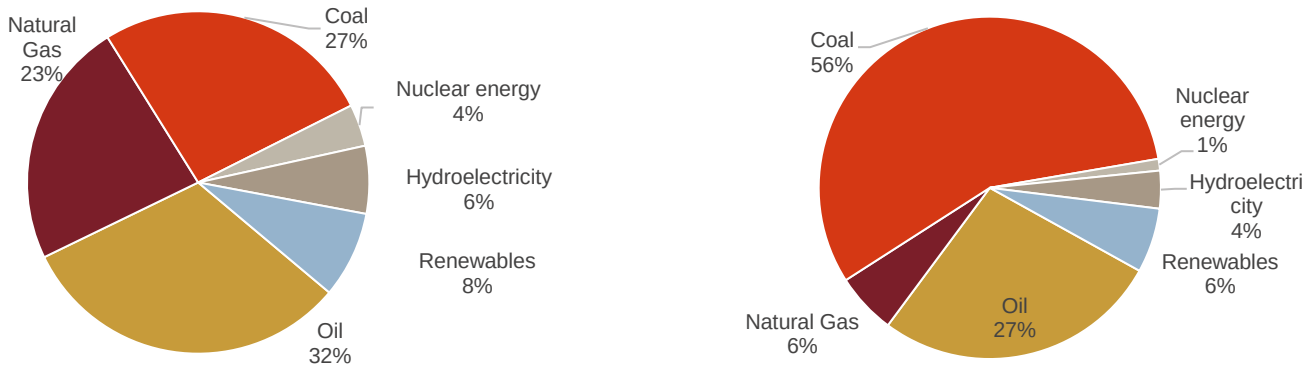


Source: BP (2024) Statistical Review of World Energy, CRISIL MI&A Consulting; CY- Calendar Year

Between 2013 and 2023, India's coal consumption witnessed a CAGR of 4.3%. The steady increase reflects the nation's expanding energy needs, driven by industrial growth and urbanisation. The growth in coal consumption suggests a persistent reliance on coal as a primary energy source in India. This dependency is critical for understanding the country's energy security strategies, particularly as India seeks to balance its energy needs with environmental commitments.

The increase in India's share of global coal consumption, despite the small absolute growth, suggests that coal consumption in other parts of the world has either stagnated or declined. This is likely due to a global shift towards cleaner energy sources, while India continues to rely heavily on coal for its energy needs, given its growing economy and energy demands.

Figure 16: Global primary energy by different fuels | India's primary energy by different fuels CY2023

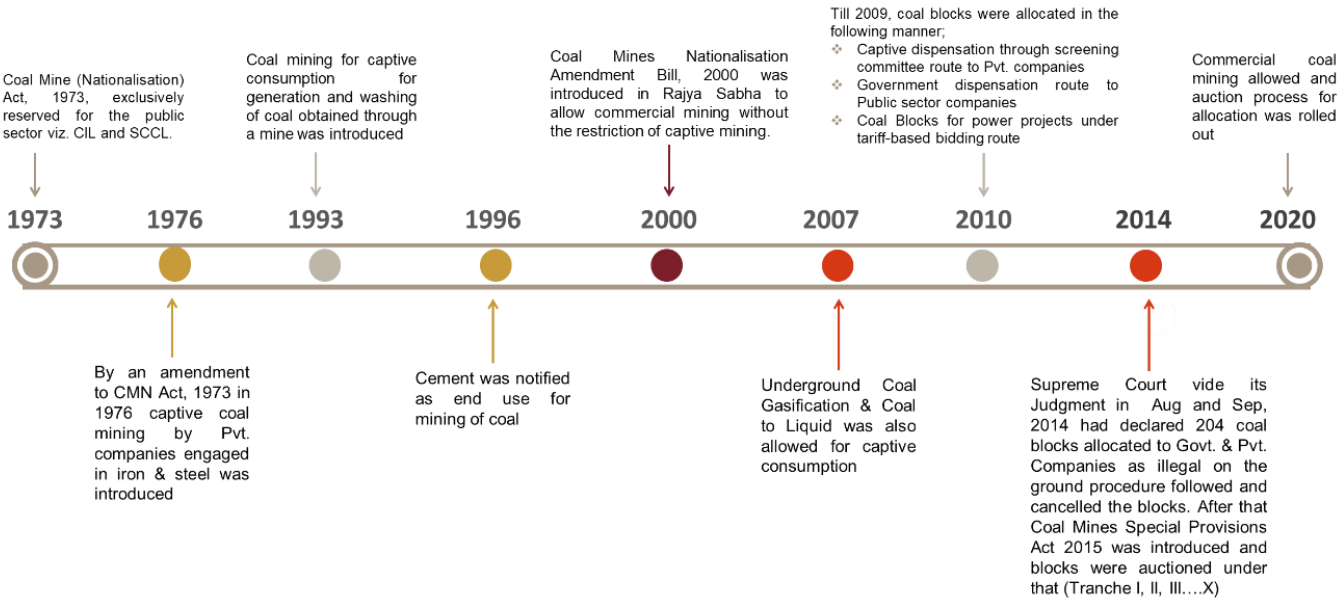


Source: BP (2024) Statistical Review of World Energy, CRISIL MI&A Consulting; CY- Calendar Year

India's power sector remains heavily dependent on coal, a reality that presents both challenges and opportunities. On the one hand, this reliance ensures energy security and supports industrial growth. On the other hand, it poses significant environmental challenges, particularly in terms of carbon emissions. The global trend shows a decreasing reliance on coal, with renewables gradually gaining ground. However, the fact that coal remains the second-most utilised source globally highlights that the transition to cleaner energy is still ongoing and varies significantly across regions. Both in India and globally, renewables are slowly but steadily increasing their share in the power generation mix. However, coal is expected to remain an important part of the energy mix due to its abundance and reliability.

2.5 Analysis of regulatory framework

Figure 17: Coal sector: From nationalisation to commercialisation



Source: CRISIL MI&A Consulting

In March 2020, to boost domestic coal production and restrict imports, the government allowed commercial mining. Participation in coal block auctions was no longer limited to captive users but open to any player, including international ones for mining and selling coal from India. In August 2020, 100% FDI was allowed, removing the last significant vestige of regulation in the coal mining industry. Recently, existing captive allottees have been allowed to sell up to 50% of their coal production in the open market subject to meeting end use plant requirement. Subsequently, nine rounds of commercial coal block auctions have been concluded so far, resulting in successful auctions of 105 blocks. The 10th round (Tranche X) was launched with Notice Inviting Tender (NIT) on June 21, 2024, and is underway (as of August 2024).

Government as well as private sector companies produce coal. Coal India Limited (CIL), Singareni Collieries Company Limited (SCCL), Neyveli Lignite Corporation (NLC), Gujarat Mineral Development Corporation (GMDC), Andhra Pradesh Mineral Development Corporation (APMDC), NTPC Ltd and a few others are government sector companies, while captive mines and commercial players fall under private sector companies.

Figure 18: Key policies influencing the coal market

National Coal Distribution Policy 2007	Guiding policy for sale and distribution of coal in India, introduced Letter of Assurance (LoA)-Fuel Supply Agreement (FSA) regime, sale via nominated agencies and e-auction of coal
CMSP Act 2015	Auctions for allocation of coal block to end-users introduced
Linkage Auction Policy 2016	Policy for allocation of linkages to non-regulated sectors via auctions, prior FSAs are not renewed subsequent to the policy
SHAKTI Policy 2017	Policy for allocation of linkages to power plants, objective of fading away of LoA-FSA regime
MMDR Amendment Act 2020	Coal block auctions opened up to commercial players as well and up to 50% of sale allowed from captive coal blocks

Source: CRISIL MI&A Consulting, Ministry of Coal

2.6 Economic Survey and Union Budget

2.6.1 Infrastructure

The Union Budget has allocated 3.4% of GDP, around Rs 1.11 trillion, to infrastructure for fiscal 2025. The net flow of funds to infrastructure sectors through bank credit between March 2023 and March 2024 was around Rs 0.79 trillion. The credit growth to infrastructure sectors recovered to 6.5% in fiscal 2024 from 2.3% in fiscal 2023. The gross inflow of external commercial borrowings to infrastructure sectors also picked up to ~Rs 0.75 trillion[21] in fiscal 2024, as against an average ~Rs 0.49 trillion[22] during fiscals 2020 to 2023. FDI equity inflows to infrastructure sectors were 0.28% of GDP from fiscals 2020 to 2024, increasing to 0.32% for fiscal 2024.

2.6.2 Coal

The *Economic Survey 2024* emphasises the critical role of coal in the country's energy landscape, as the fuel accounts for over 56% of primary commercial energy and approximately 75% of total power generation. In fiscal 2024, India produced 997 million tonnes (MT) of raw coal, imported 261 MT and hence total consumption is 1,234 MT, with an improving ratio of domestic production to consumption owing to accelerated production growth. Recent initiatives include a government target to gasify 100 MT of coal by 2030 and an Rs 0.085 trillion funding scheme for coal and lignite gasification projects. *The Integrated Coal Logistics Plan for Coal Mines/Blocks*, launched in February 2024, aims to enhance the efficiency and integration of coal logistics. Additionally, the amended *Coal Blocks Allocation (Amendment) Rules 2023* and CIL's plan to install 3,000 MW of renewable energy capacity by 2025-26

[21] *US$ 9.05 billion*
[22] *US$ 5.91 billion*

signify strategic advancements. However, the sector faces challenges, such as technological difficulties owing to limited modern mining equipment, procedural complexities in obtaining clearances and the need for sustainable practices amid global environmental concerns. While domestic thermal coal supply is sufficient, rising demand for coking coal necessitates increased imports and enhanced beneficiation processes. Opportunities for using coal in green energy applications, such as coal mine methane and coal bed methane, are also highlighted, with a focus on progressively tapping these resources.

2.6.3 Power

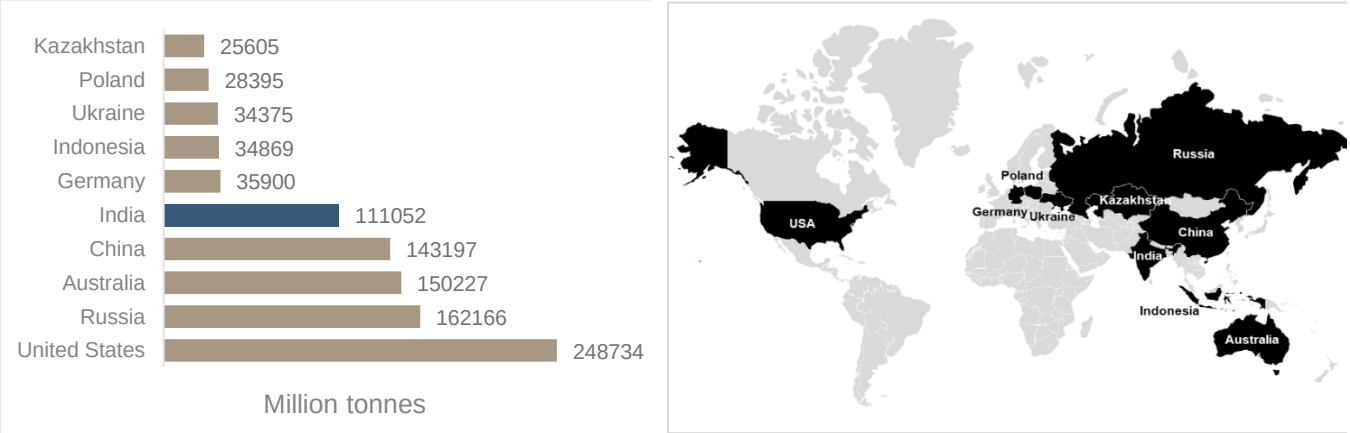
The country's peak electricity demand increased 13% to 243,000 MW in fiscal 2024 compared with fiscal 2023. The government has accelerated its efforts to meet the continuously rising demand for electricity. The composition of the electricity sector has significantly changed because of the increasing adoption of renewables. The share of non-fossil power installed capacity has reached 45.4% as of May 2024 from around 32% in April 2014. Fossil fuel capacity accounted for 239,000 MW of the total installed capacity of 442,000 MW in the country in fiscal 2024 and is likely to reach 277,000 MW out of 777,000 MW in fiscal 2030. **As per CRISIL MI&A Consulting estimates, despite the share of non-fossil power in installed capacity is increasing, the generation share of fossil fuel-based power will continue to dominate power generation from all sources.**

3. Indian coal market overview and assessment

3.1 The Indian coal industry structure and business drivers

Coal is the main source of energy for the world (26% for year 2023) and for India (56% share for year 2023)[23] and will remain so in the future. It is the backbone for many end-use and manufacturing industries (power, steel, sponge iron, cement, paper, brick kilns and other industries) in India. Coal is found in abundance across the globe, with total proven reserves estimated at over 1,074,108 MT as of 2020. India currently stands fifth in terms of coal reserves, accounting for 10% of the total global reserves at ~111,052 MT, after the US, Russia, Australia and China. The geographical distribution of coal across the world is shown below.

Figure 19: Proven reserves of coal in the world (2020)

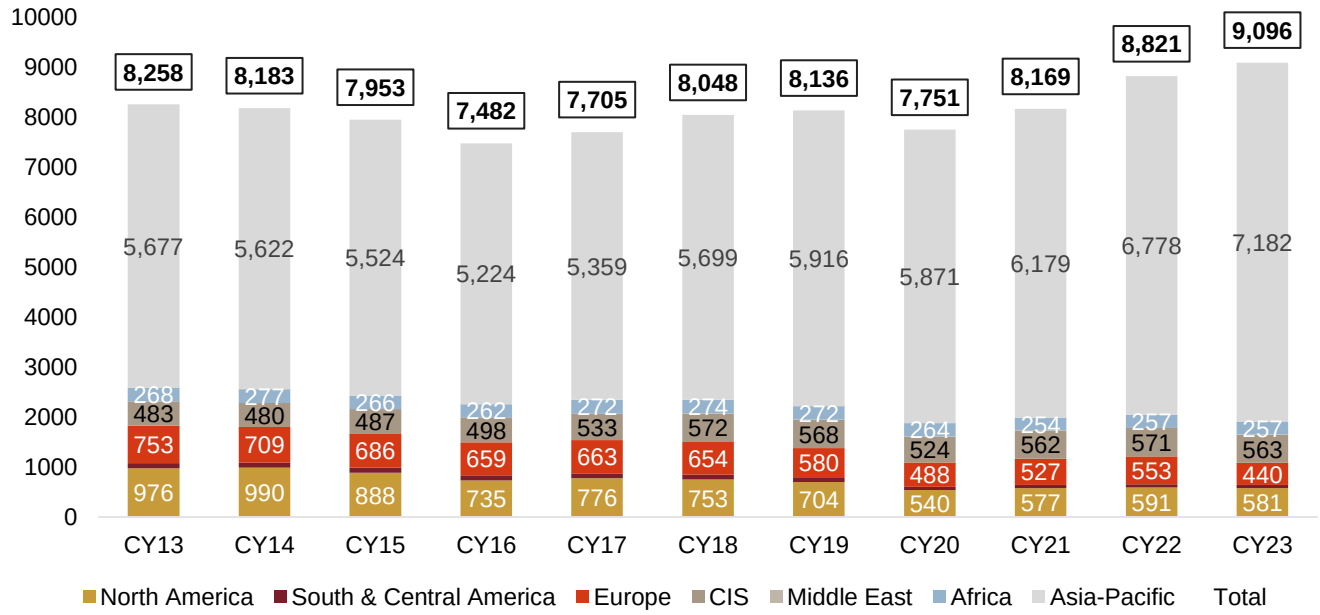


Source: BP (2024) Statistical Review of World Energy

Global coal production grew during the initial part of the decade, peaking at 8,258 MT in 2013 and declining thereafter to 7,482 MT in 2016 and reaching 9,096 MT in 2023, as several countries moved towards cleaner alternatives. However, in the Asia-Pacific, production grew tremendously from 5,677 MT in 2013 to 7,182 MT in 2023. The region's share in terms of tonnage increased from about 69% in 2013 to 70% in 2016 and further to 79% in 2023.

[23] *As per BP (2024) Statistical Review of World Energy, years are calendar years*

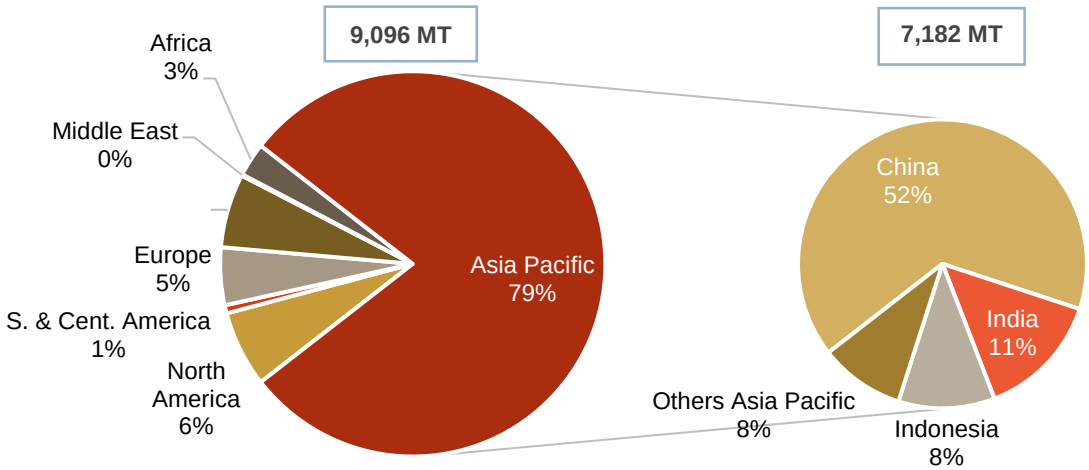
Figure 20: Coal production across regions (MT)



Source: BP (2024) Statistical Review of World Energy, CY- Calendar Year

Coal production has grown at a CAGR of 5.5% in the three years since 2020 (to 9,096 MT in 2023) and is expected to follow a similar trend in the next few years. With increasing coal production, Indian coal reserves are expected to sustain for the next 75 years based on current reserve estimation. The consumption growth has been driven by China and India, and supply by India, Indonesia and Australia. India is the world's second-largest producer of coal after China. The US dropped to the third position from the second a few years ago.

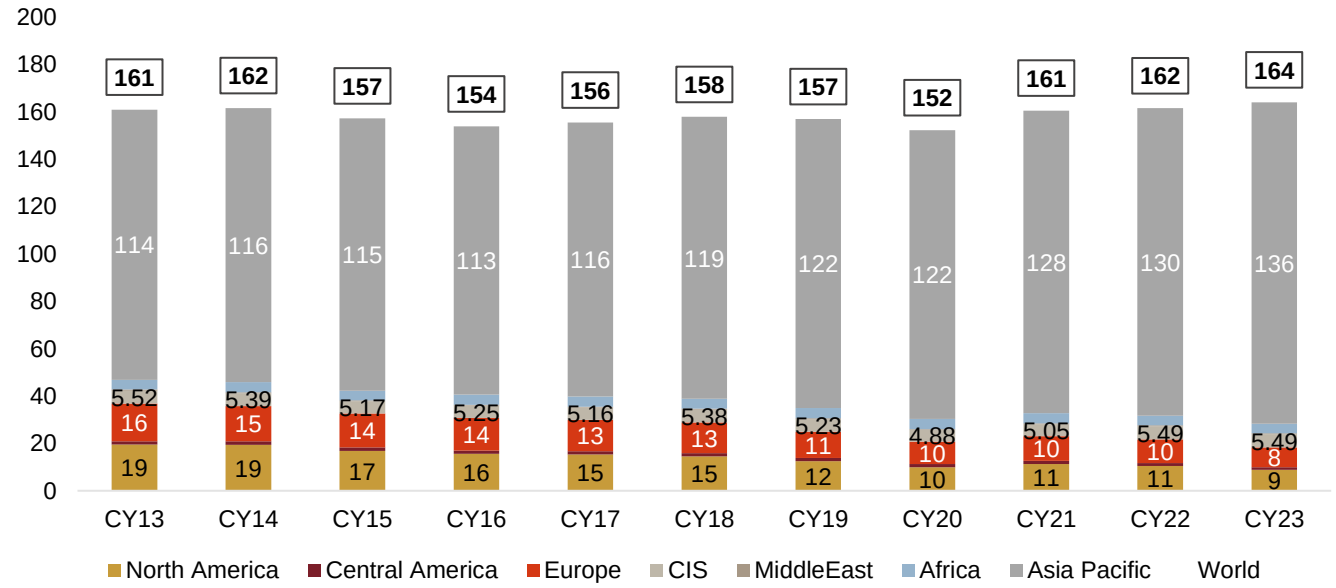
Figure 21: Share of coal production across regions in CY2023



Source: BP (2024) Statistical Review of World Energy, CY- Calendar Year

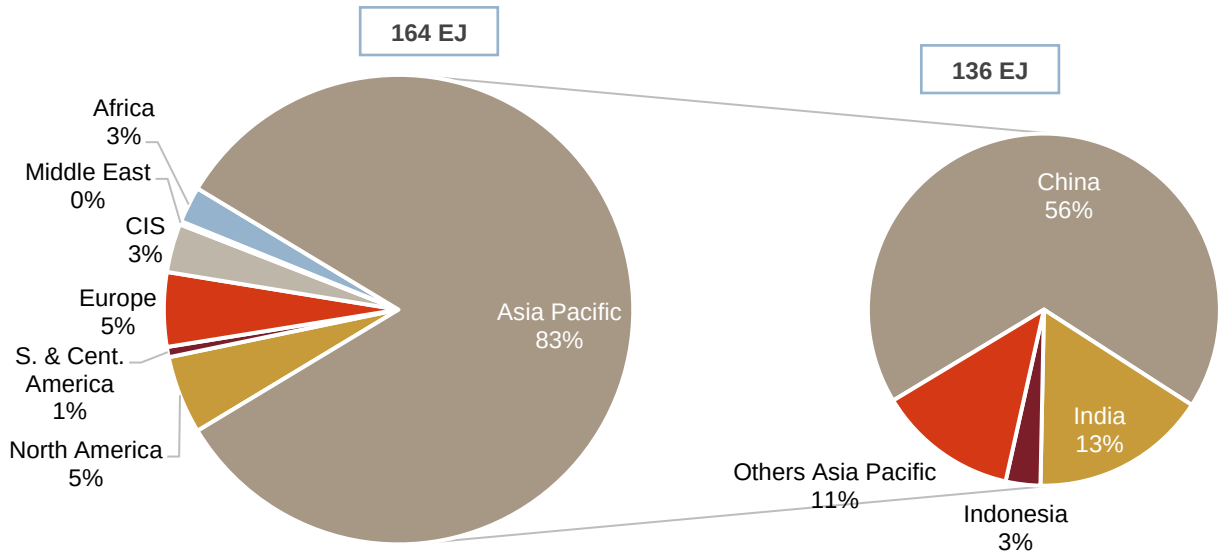
Asia dominates global coal consumption and production, with China and India being the key players. The region's economic expansion has been largely fuelled by coal, which remains the backbone of energy supply, particularly for electricity generation and industrial processes. As the world's largest coal producer (52%) and consumer (56%), China has shaped the global coal market. Its extensive coal-fired power plants and industrial base depend heavily on domestic coal, contributing to nearly half of the world's coal consumption (92 EJ in 2023)[24].

Figure 22: Coal consumption across regions (EJ)



Source: BP (2024) Statistical Review of World Energy, CY- Calendar Year

Figure 23: Share of coal consumption across regions in CY2023



Source: BP (2024) Statistical Review of World Energy; CY- Calendar Year

[24] *As per BP (2024) Statistical Review of World Energy*

India's energy landscape also heavily depends on the fossil fuel, with the country consuming about 13% of the world's coal. This is more than double its share in global energy consumption, which stands at around 6%[25]. Coal-based thermal power plants continue to dominate electricity generation in India, accounting for ~75% in fiscal 2024[26]. Coal mining and power generation are also two of the largest industries in the country, accounting for around 10% of its industrial production and employing 3.6 million people directly and indirectly[27].

India is the second-largest producer (11% share) and consumer (13%) of coal and has the fifth-largest reserves of the fuel in the world. That said, India's coal production is not sufficient to meet its own energy requirements, resulting in coal imports for steel and cement and for blending purpose by coal-based plants.

Coal production in India is dominated by CIL (313 mines) and Singareni Collieries Company Ltd (SCCL; ~40 mines). In fiscal 2024, the combined coal supply of CIL (78%) and SCCL (7%) accounted for ~85% of the total domestic coal supply by volume (~843 MT), with the remaining 15% supply (154 MT) met via captive /other commercial blocks. The following figure maps key agencies and players involved in the Indian coal market:

Figure 24: Structural overview of coal sector in India

	Central government	State government	Private sector
Policy/ regulatory	• Ministry of Coal • Nominated Authority • Coal Controller's Organisation	• Department of Geology and Mining of the state government involved in mineral administration	
Production of coal	• CIL • Neyveli Lignite Company Ltd • NTPC	• SCCL • APMDC, etc.	• Captive miners —Tata, Vedanta, Jindal Steel & Power etc. • Commercial miners — Adani, Jindal Steel &
Consumption	• Central power generating companies like NTPC	• State-owned power generation companies	• Captive miners in various end-use industries such as power generation, DRI and cement

Source: CRISIL MI&A Consulting; GMDC: Gujarat Mineral Development Corporation, APMDC: Andhra Pradesh Mineral Development Corporation

- **The Ministry of Coal (MoC)** is responsible for the formulation of policies and strategies for coal exploration, project approvals and other issues relating to the production, supply, distribution and pricing of coal. It also sets production targets and other performance indicators for CIL through a memorandum of understanding.
- **The Nominated Authority (NA)** has been appointed under Section 6(1) of the *Coal Mines (Special Provisions) Act, 2015,* and is responsible for the auction process and allotment, the execution of the vesting order for transfer

[25] *As per BP (2024) Statistical Review of World Energy*
[26] *As per Niti Aayog's India Climate and Energy dashboard*
[27] *As per CEA reports*

and vesting of Schedule I coal mines pursuant to the auction and executing the allotment order for any government company or corporation. The NA is also involved in the auction process of commercial coal blocks.

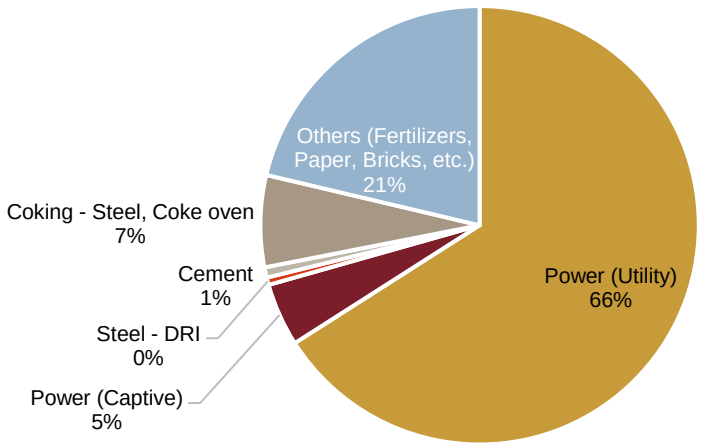
- **The Coal Controller's Organisation (CCO)** is a subordinate office of the MoC, which sets the standards and procedures to assess coal quality, inspects coal quality, acts as an arbitrator in the event of quality disputes, issues project approvals, collects excise duties and manages coal-related statistics.
- **State governments** approve mining licences and leases and are involved in the overall process of mineral administration.
- **Private sector entities** are engaged in captive mining of coal, including those auctioned after the enactment of the *Coal Mines (Special Provisions) Act 2015*. Since 2020, private entities have also been engaged in commercial mining of coal blocks.

3.2 Demand and supply in India

3.2.1 Demand

Coal is a useful source of energy not only for the power sector (utilities and CPPs) but also for others such as steel, direct reduced iron (DRI), sponge, cement and bricks. The power sector (power utilities and captive power plants (CPPs) accounts for ~71% of coal consumption and, thus, is central to the outlook for coal in the country. The cement industry, DRI, paper and brick manufacturing, among others, are end-use / heat-consuming sectors related to coal. With its annual usage of raw coal at 1,234 MT[28], India is the second-largest consumer of coal globally, behind China.

Figure 25: India's coal demand by end-use sectors fiscal 2024 (MT)



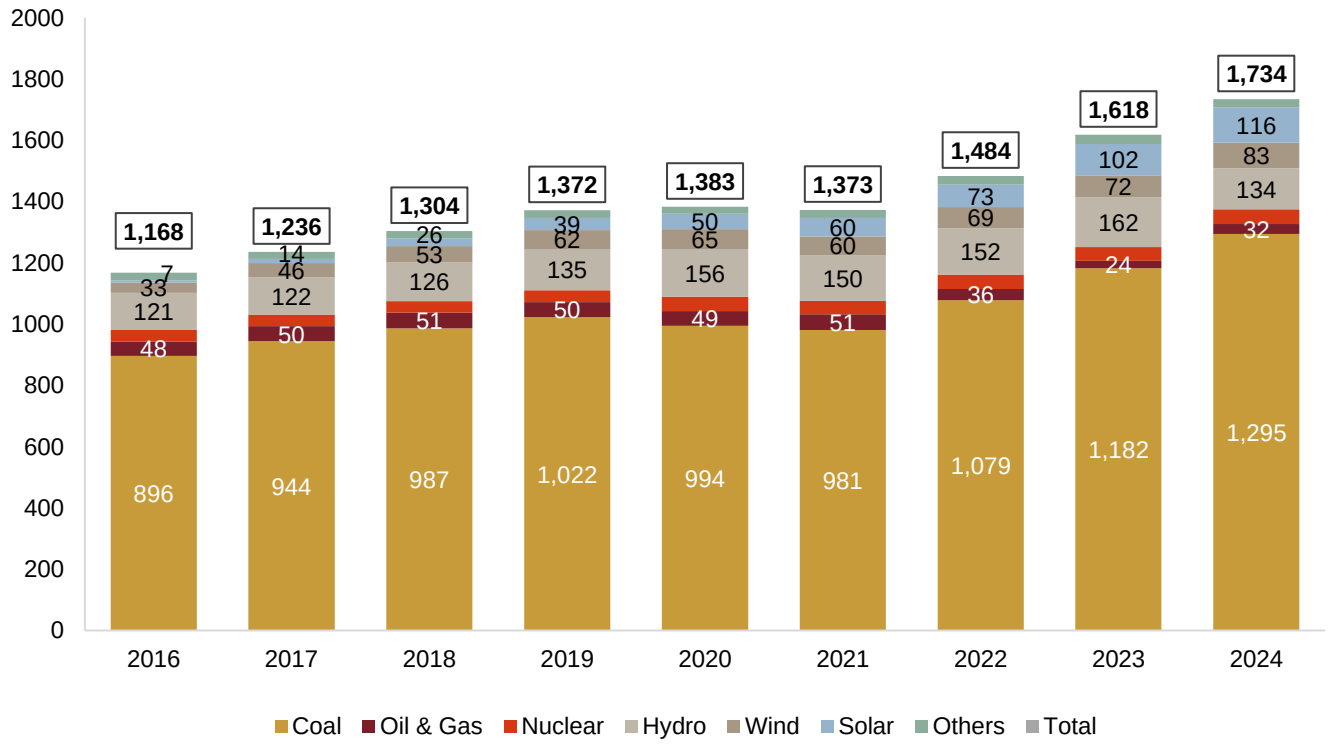
Source: Ministry of Coal Annual Report 2023-24 (Projected); Others include imports as well which are being used in Power, Power (Captive), cement, Steel-DRI etc. and hence actual share of these sectors will vary.

[28] *Projected demand as per Annual Report 2023-24 of Ministry of Coal*

About 75% of the total power generation is coal-fired. Coal production, meanwhile, has accelerated in the past five years, leading to reduced import dependence. In fiscal 2024, India produced 997 MT of raw coal, imported 261 MT and consumed 1,234 MT, as per the Ministry of Coal as per raw coal data[29].

As shown below, coal-based power generation in 2016 was 896 BU (77%) of the total electricity generation of 1,168 BU. In 2024, it was 1,295 BU (75%) of the total 1,734 BU. The CAGR growth of coal-based power generation for 8 years is 4.7% (from 2016 to 2024) and post COVID, CAGR growth is 9.7% for 3 years (2021 to 2024) for coal-based power generation. Hence total electricity generation is expected to grow at a CAGR of ~6.5% from fiscal 2024 to fiscal 2030.

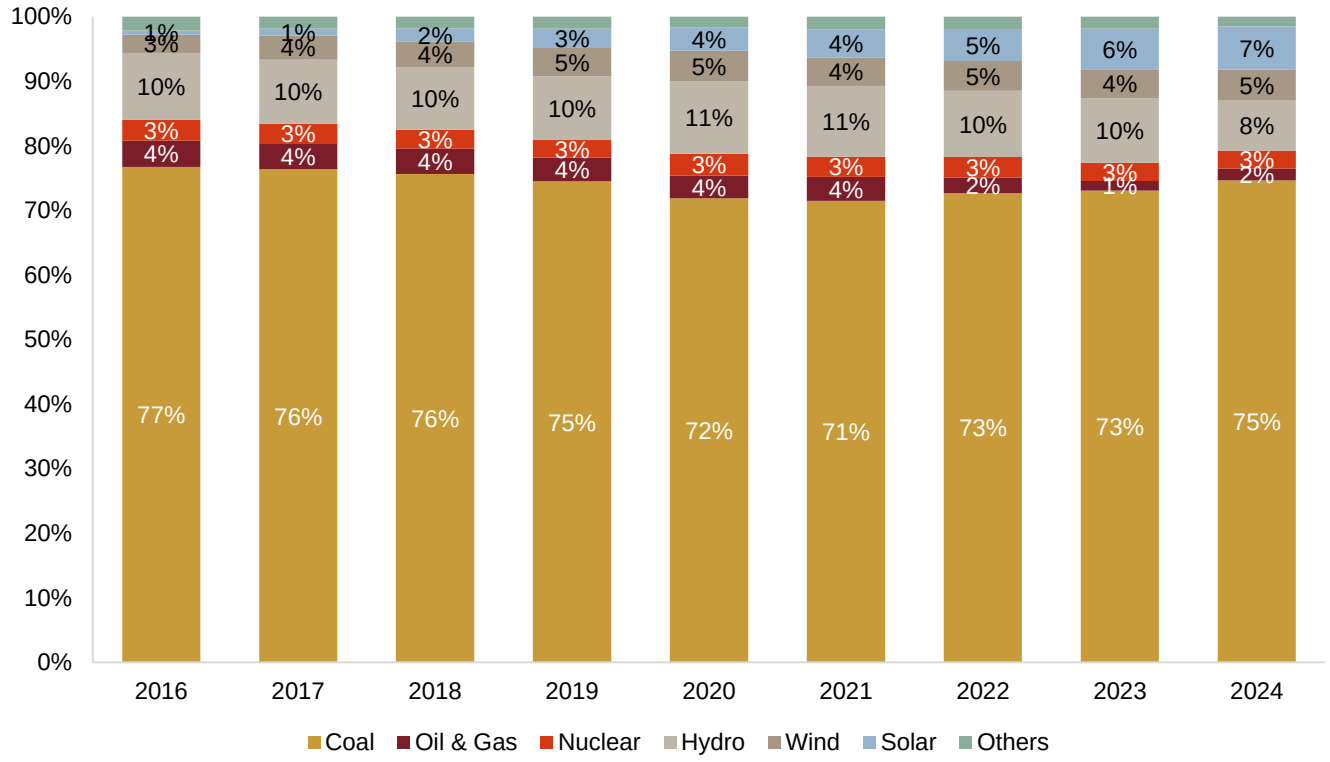
Figure 26: India - Power generation from different sources (in billion units)



Source: CEA, Niti Aayog; All years are fiscal years

[29] *Raw coal is actual data of coal production and supplied based on the grade of production. Coal demand is generally normalized at G10 level. On all India level basis, the average grade of coal production is G11 (inferior grade than G10 grade)*

Figure 27: India – Power generation share from different sources, %

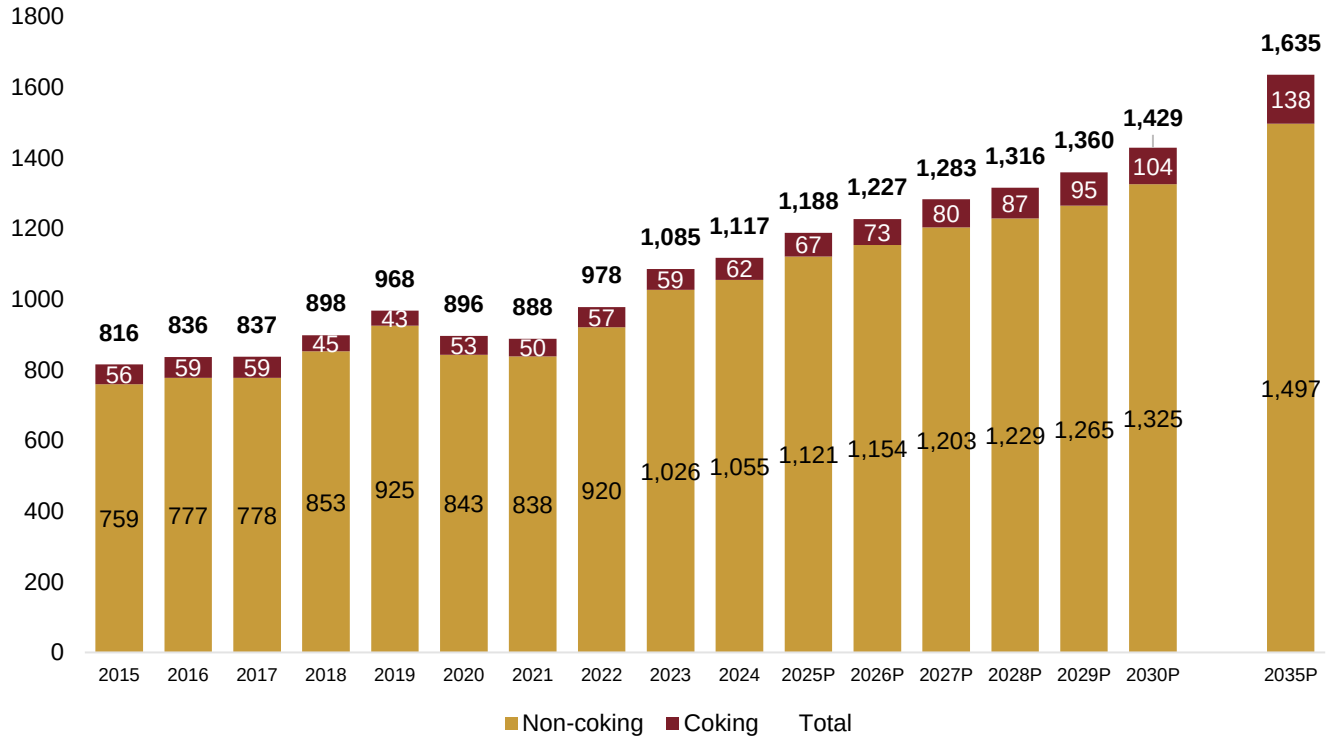


Source: CEA, Niti Aayog; All years are fiscal years

The *Economic Survey 2024* suggested that adopting a gasification technology in India can revolutionise the coal sector. This will reduce the dependence on imports for various resources made with the help of coal, such as natural gas, methanol, ammonia, and other products, and will help India in meeting its net zero carbon emissions goal. Additionally, the government has launched several coal initiatives, such as *Coal Gasification Mission*, to gasify 100 MT of coal by 2030 through surface coal or lignite gasification projects.

Coal demand grew at a 3.6% CAGR between fiscals 2015 and 2024 and is expected to grow at a 3.5% CAGR between fiscals 2024 and 2035, leading to a more than 60% share in power generation (thermal and captive) by fiscal 2030, despite the world's push on reduction of non-fossil fuels. Below is the analysis of coal demand in the country. While the estimation of demand has been done at a levelised grade of G10, the actual demand for raw coal will be higher as Indian coal average production was G11 and going forward expected to further reduce.

Figure 28: Overall coal demand in India – thermal coal (non-coking) and coking coal (MT)



Source: CRISIL MI&A Consulting; All years are fiscal years; P: Projected; Note: demand of coal is based on the G10 grade of coal for Power and CPP sectors.

India's coal demand has risen consistently over years, with significant growth in both thermal and coking coal consumption. According to CRISIL MI&A Consulting estimates, total levelized coal demand in fiscal 2020 was 896 MT (for levelised grade at G10), with thermal coal comprising 843 MT and coking coal accounting for 53 MT. By fiscal 2024, levelized demand rose to 1,117 MT, with thermal coal at 1,055 MT and coking coal at 62 MT (a substantial jump of 25% in thermal coal and 17% in coking coal, due to power demand). Total levelized coal demand is expected to be 1,429 MT[30] in fiscal 2030 (1,325 MT from thermal coal and 104 MT from coking coal) and1,635 MT by fiscal 2035 (thermal coal at 1,497 MT and coking coal at 138 MT). This implies a CAGR of 3.5% between fiscals 2024 and 2035, with coking coal's share growing at a faster pace than that of thermal coal.

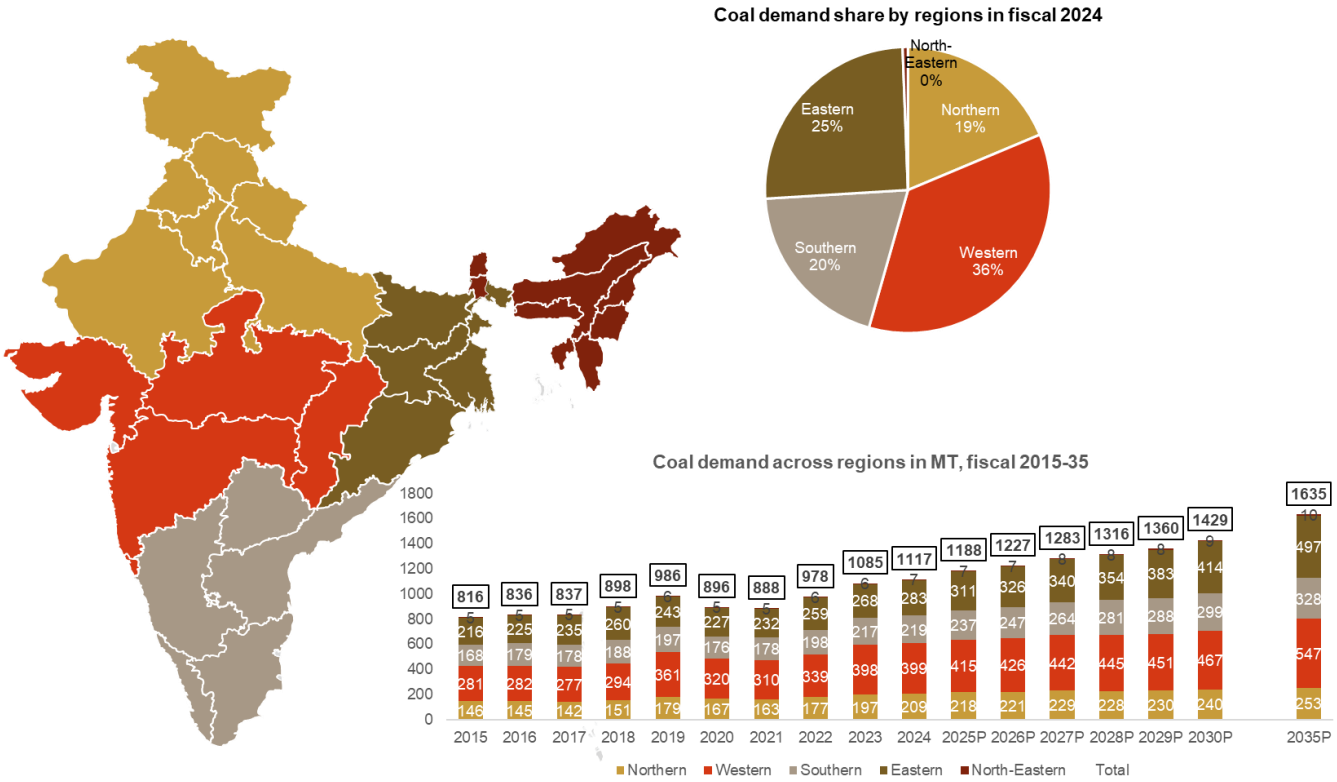
The forecast increases in the share of coking coal in India's total coal demand, rising from 62 MT in fiscal 2024 to 138 MT by fiscal 2035, underscores a critical shift in the composition of coal consumption that has profound implications for India's industrial landscape, particularly the steel sector. The growing share of coking coal reflects the expected surge in steel production, driven by India's ongoing urbanisation, infrastructure development, and manufacturing expansion. As steel remains a backbone of these sectors, demand for coking coal, which is essential for blast furnace-based steel manufacturing, will continue to rise. This trend aligns with India's broader economic goals, such as the 'Make in India' initiative, which emphasises domestic manufacturing and infrastructure projects. The steel industry, unlike the power sector, has deeply entrenched processes that are highly dependent on coking

[30] *Demand calculated at G10 grade for Power, CPP, Cement and other sectors except Steel/ coking coal grades.*

coal. The transition to alternative methods, such as using hydrogen or recycled scrap in EAFs, faces significant technical, economic, and logistical barriers. This inertia means that coking coal will remain a critical input in steel production for the foreseeable future. As India's energy mix increasingly incorporates renewables, demand for thermal coal is expected to stabilise. This shift in energy sources, while beneficial for reducing emissions in the power sector, leads to a relative increase in the importance of coking coal within the overall coal demand framework.

India's limited domestic reserves of high-quality coking coal will likely increase its dependence on imports, making the country more vulnerable to global market fluctuations, pricing volatility, and geopolitical risks.

Figure 29: Coal demand growth across regions in India



Source: CRISIL MI&A Consulting; All years are fiscal years; P: Projected

India's coal demand is not only increasing but also shows distinct regional variations, reflecting the diverse industrial and economic activities across different parts of the country. According to CRISIL MI&A Consulting's estimates, total coal demand was 1,117 MT in fiscal 2024. In fiscal 2024, the western region remains dominant, increasing its demand to 399 MT (36%). The eastern region follows with 283 MT (25%), the northern region at 209 MT (19%), the southern region at 219 MT (20%), and the north-eastern region at 7 MT (~1%). In fiscal 2030, coal demand is expected to reach 1,429 MT. The western region is expected to continue the lead with 467 MT, followed by the eastern region rising to 414 MT, the southern region rising to 299 MT, the northern region growing to 240 MT, and the north-eastern region reaches 9 MT.

The western region consistently leads in coal demand, driven by its industrial activities, particularly in Maharashtra and Gujarat, which have significant power generation and industrial requirement. The region's share of the total demand remains the highest across all years, reflecting its ongoing industrial expansion and energy requirement. However, there is a slight decline in its share of coal demand from 36% in fiscal 2024 to 33% in fiscal 2035. The eastern region shows a robust increase in coal demand. This growth can be attributed to the region's coal-rich states, such as Jharkhand, Odisha, and West Bengal, which not only consume coal locally but also have expanding industries that drive higher demand. Its share of coal demand increased slightly from 25% in fiscal 2024 to 30% in fiscal 2035. The southern region's demand grows steadily from 19.6% of the demand share in fiscal 2024 to 20.1% in fiscal 2035. While the northern region shows an increase in coal demand, its growth rate is slower compared with the western and eastern regions, with its share falling from 19% in fiscal 2024 to 15% in fiscal 2035. This could be due to a more diversified energy mix in the north, including significant contributions from hydropower and renewables.

Table 7: Source-wise coal demand in India (MT)

Sector	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025P	2026P	2027P	2028P	2029P	2030P	2035P	CAGR 2015-24	CAGR 2024-35P
Power Utilities	435	483	491	520	568	490	490	561	641	666	703	714	738	747	766	792	850	4.8%	2.2%
CPP	62	35	44	66	77	113	112	118	125	131	148	159	173	181	187	211	274	8.7%	6.9%
DRI	30	20	16	20	25	37	34	37	43	46	47	49	50	51	51	52	58	4.9%	2.1%
Cement – Domestic	11	9	6	8	9	12	13	15	17	20	23	25	28	31	34	38	52	6.9%	9.1%
Other	64	85	89	77	55	99	95	102	106	111	117	122	128	133	139	145	174	6.3%	4.2%
Imported non-coking	168	159	149	161	184	91	93	88	94	81	84	85	87	86	87	87	89	-7.8%	0.9%
Total non-coking coal	**772**	**792**	**795**	**851**	**916**	**842**	**837**	**921**	**1,026**	**1,055**	**1,121**	**1,154**	**1,203**	**1,229**	**1,265**	**1,325**	**1,497**	**3.5%**	**3.2%**
Coking Coal	44	45	42	47	52	53	50	57	59	62	67	73	80	87	95	104	138	3.9%	7.5%
Total Coal Demand	**816**	**836**	**837**	**898**	**968**	**895**	**887**	**978**	**1,085**	**1,117**	**1,188**	**1,227**	**1,283**	**1,316**	**1,360**	**1,429**	**1,635**	**3.6%**	**3.5%**

Source: CRISIL MI&A Consulting; Year is fiscal year; Projection of coal, demand at G10 grade of coal; P: Projected

The analysis of coal demand by sector type from fiscal 2024 to fiscal 2030 reveals key insights into the major drivers of growth in India's coal consumption. The sectors of power utilities, captive power generation, and coking coal are the primary contributors, collectively accounting for nearly 80% of the total coal demand.

Power utilities remain the largest consumer of coal in India, driven by the country's need to meet the growing energy demand. Despite the relatively modest growth rate of CAGR 2.2% from fiscal 2024 to fiscal 2035, this sector continues to account for a significant portion of coal demand, due to its established infrastructure and the ongoing reliance on coal-fired power plants for electricity generation. While captive power generation shows a robust growth rate, reflecting the increasing trend of industries to secure their energy requirement independently. The high CAGR of 6.9% for fiscal 2024 to fiscal 2035 for CPP indicates that more industries, particularly in sectors such as iron and steel, aluminium, and cement, are investing in captive power plants to ensure reliability and cost-effectiveness. The

preference for steam power plants, which predominantly use coal, underscores this sector's growing demand for coal.

The coking coal segment exhibits the highest growth rate at a CAGR of 7.5% from fiscal 2024 to fiscal 2035, among the major coal demand sectors, driven by the steel industry's expansion. Coking coal, essential for blast furnace-based steel production, is seeing increasing demand as India scales up its steel production capacity to meet the domestic and export demand. This sector's rapid growth highlights the challenges of decarbonising the steel industry and the continued reliance on coking coal.

3.2.1.1 Demand drivers of coal demand

Coal demand is dynamic and is driven by different factors. A few of the major factors responsible for coal demand are:

1) **Power utilities demand increase**: As global and domestic power demand continues to rise, driven by population growth, urbanisation, and industrialisation, coal remains a critical fuel source for electricity generation, especially in regions where alternative energy infrastructure is still developing. Despite the shift towards renewables, coal-fired power plants will continue to play a significant role in meeting this growing demand, particularly in countries with abundant coal reserves and established coal-based power infrastructure.

2) **Capital investments in steel, aluminium and cement due to infrastructure focus by the government**: The government's focus on infrastructure development is spurring significant capital investments in key industries, such as steel, aluminium, and cement. These sectors are heavily dependent on coal for both energy and as a raw material (e.g., coking coal in steel production). Besides, it is harder to replace coal when it is used as a raw material for production of commodities, such as steel. As infrastructure projects expand, demand for these materials — and consequently coal — is expected to increase. The ongoing and planned expansions in these industries will further solidify coal's role as a vital input.

3) **No major alternatives to coal in CPPs:** In fiscal 2023, the iron and steel sector accounted for 28% of total captive power generation in India, with aluminium following at 23%, mineral oil and petroleum at 12%, cement at 9%, sugar at 7% and both paper and chemicals at 4% each[31]. Notably, coal-fired steam power plants were the major contributors to captive power generation. Aluminium production relied entirely (~98%) on these captive steam power, followed by the sugar industry at 96%, iron and steel at 86%, paper at 88%, and cement at 74%. Across all sectors combined, 60% of captive power was generated by steam power plants utilising coal. The high reliance on steam power for captive generation in key sectors underscores the significant role of coal in meeting the industrial power demand. The iron and steel, aluminium, and cement sectors are particularly coal-intensive and are responsible for a major share of the total captive for of India, amplifying the demand for coal in India. Given that these sectors are integral to infrastructure and manufacturing, coal's role in powering them is crucial for economic stability.

[31] *As per CEA reports*

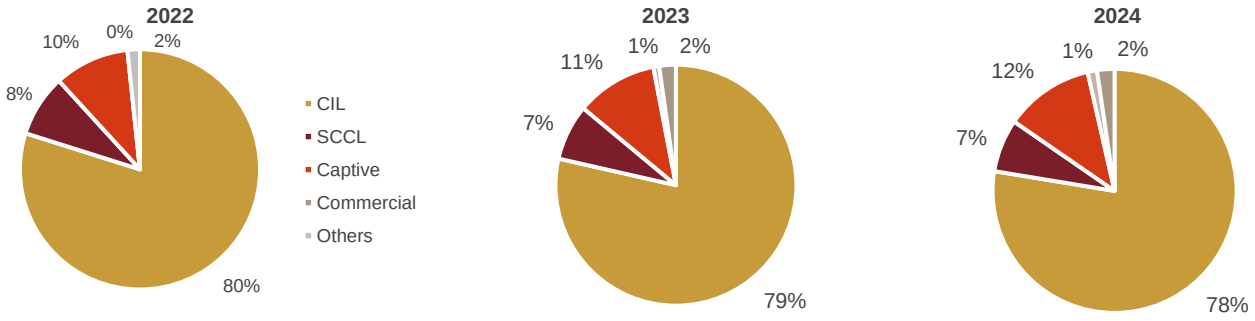
3.2.2 Supply

On the supply side, a duopoly structure is present in India with two supply sources, namely domestic and imported coal sources. The domestic coal sources are dominated by Coal India Ltd (~313 operating mines) and Singareni Collieries Company Ltd. (with ~42 mines), both of which account for 85% of the supply (843 MT) and rest 15% (154 MT) was from captive coal blocks and other blocks. The captive coal blocks allocated account for 14% of the supply (142 MT) and the balance (11 MT) 1% is contributed by recently auctioned commercial coal blocks (~9 operating mines).[32]

The total raw coal supply in India in year 2024 was 997 MT from different sources with 11% increase from 893 MT in 2023. The production in fiscal 2015 was 556 MT, showing a CAGR growth of ~6.7% from fiscal 2015 to 2024. While non-coking coal is used for power generation as well as in the industrial sector constitutes the largest share, consumption of coking coal has been increasing over the years with rising steel production:

- Non-coking coal accounts for ~93% of India's coal production in fiscal 2024.
- Coking coal accounts for ~7% of total coal production, and it is used in steel making in the blast furnace - blast oxygen furnace route.

Figure 30: India's raw coal supply sources



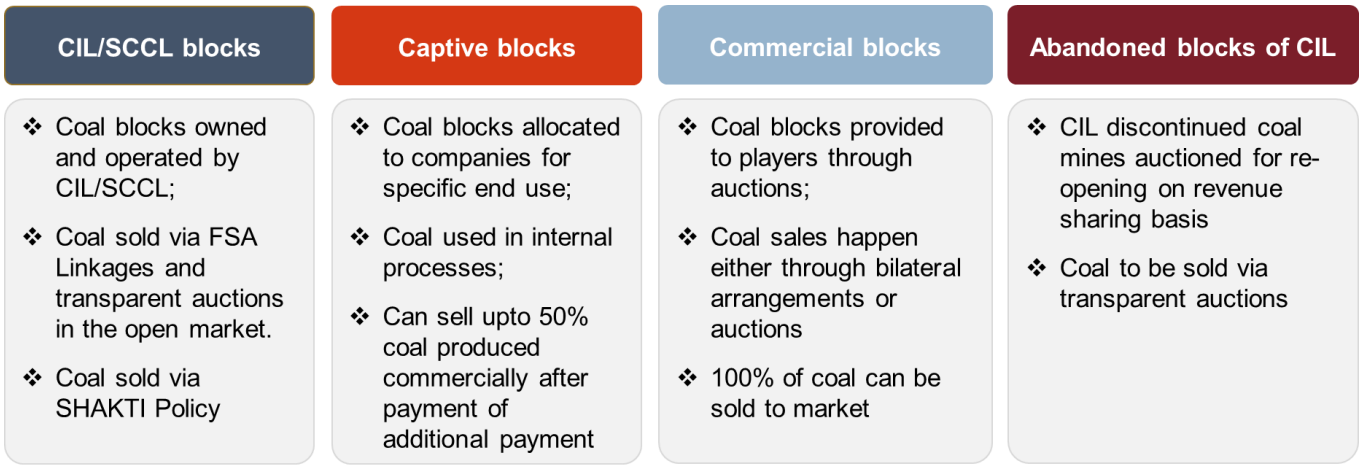
Source: Ministry of Coal-Coal Directory of India for 2021-22, 2022-23, CRISIL MI&A Consulting; All years are fiscal years

In fiscal 2024, total demand for raw coal in the country was 1,234 MT *(provisional),* where coal sourced from domestic sources accounted for 79% and the balance 21% was met through imported coal[33]. CIL and SCCL contributed ~843 MT of coal and the balance ~154 MT of coal is supplied by other private and public mining companies.

Currently, there are four types of coal blocks in India, namely:

[32] *Data as on 22nd July 2024*
[33] *Ministry of Coal-Annual Reports 2023-24*

Figure 31: Types of coal blocks in India



Source: CRISIL MI&A Consulting

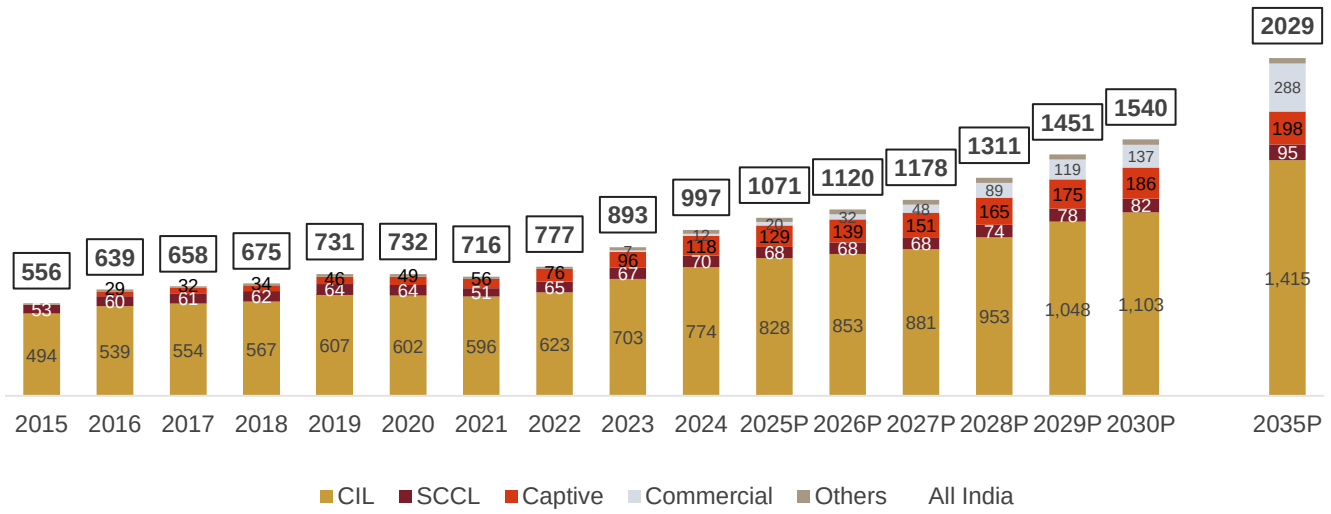
- **CIL / SCCL blocks –** The majority coal blocks are owned by Coal India Limited (CIL) and Singareni Collieries Company Limited (SCCL). Prior to commercialisation of coal sector in India, all commercial production of coal in the country was routed through CIL/SCCL.

- **Captive coal blocks –** A handful of coal blocks are with companies having specific end-uses. These are called captive blocks. These companies use coal for their internal consumption. Prior to 2015, blocks were awarded on a nomination basis for captive use, after CMSP Act 2015 came into force, coal blocks were allocated as captive blocks (for regulated sector and non-regulated sector). Within the auctioned segment, initially (CMSP tranches VIII, IX, X) companies were allowed to sell 25% of coal commercially after meeting their end use requirement.

- **Commercial coal blocks** – After the commercialisation of the coal sector in 2020, the government started auctioning coal blocks for commercial production. To date, the auction process of a total of 105 coal blocks has been completed with an estimated annual peak capacity of ~327 MTPA.

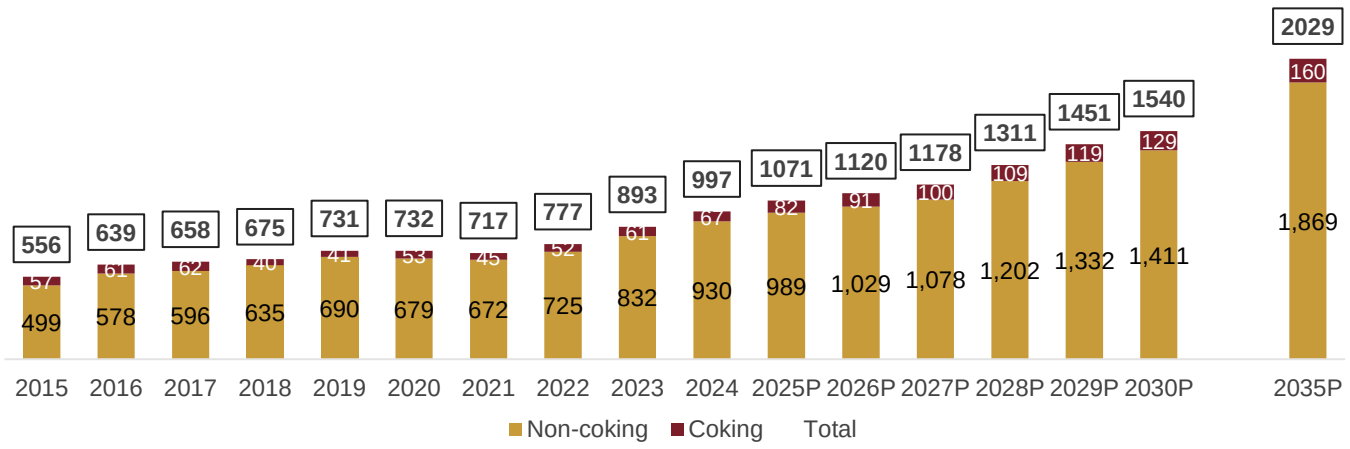
- **Abandoned mines/ discontinued blocks** – In 2022, CIL started auctioning the discontinued coal mines for re-opening on revenue-sharing basis to bring them back into operation. These are classified here as abandoned/ discontinued blocks. By fiscal 2024, a total of 24 such mines have been awarded so far out of 34 identified mines. CIL has awarded 11 such mines during fiscal 2024 on revenue sharing model to successful bidders. The cumulative peak rated capacity (PRC) of these mines is ~18 MTPA, while the total extractable reserves are estimated at ~267 MT. The abandoned blocks offered will be operated by mine operators who will develop and operate the block and sell the coal on behalf of the owner of the mine. They will be required to share the final revenue generated from the sale proceeds with the owner of the mine (e.g. CIL/ SCCL) as per the coal mining agreement.

Figure 32: India's raw coal production scenario from different sources (MT)



Source: Past data as per Ministry of Coal-Coal Directory of India 2022-23, Projections as per CRISIL MI&A Consulting; Year is fiscal year; P: Projected

Figure 33: India's raw coal production coal type wise – non-coking and coking (MT)



Source: Past data as per Ministry of Coal-Coal Directory of India 2022-23, Projections as per CRISIL MI&A Consulting; Year is fiscal year; P: Projected

India produced ~997 MT of raw coal in fiscal 2024 and the raw coal supply has been growing at a CAGR of 6.7% from fiscal 2015 to fiscal 2024. Further, according to CRISIL MI&A Consulting estimates, raw coal production is expected to reach 1,540 MT by fiscal 2030 growing at a CAGR of 7.5% from fiscal 2024 to fiscal 2030. In terms of

quantum supply, majority of additional supply i.e. ~329MT out of 543 MT shall be from CIL and its subsidiaries, followed by commercial coal blocks (~125MT), captive coal block (~68MT), SCCL (~12MT) and rest by others.

Table 8: Average thermal coal grade across CIL subsidiaries in fiscal 2023

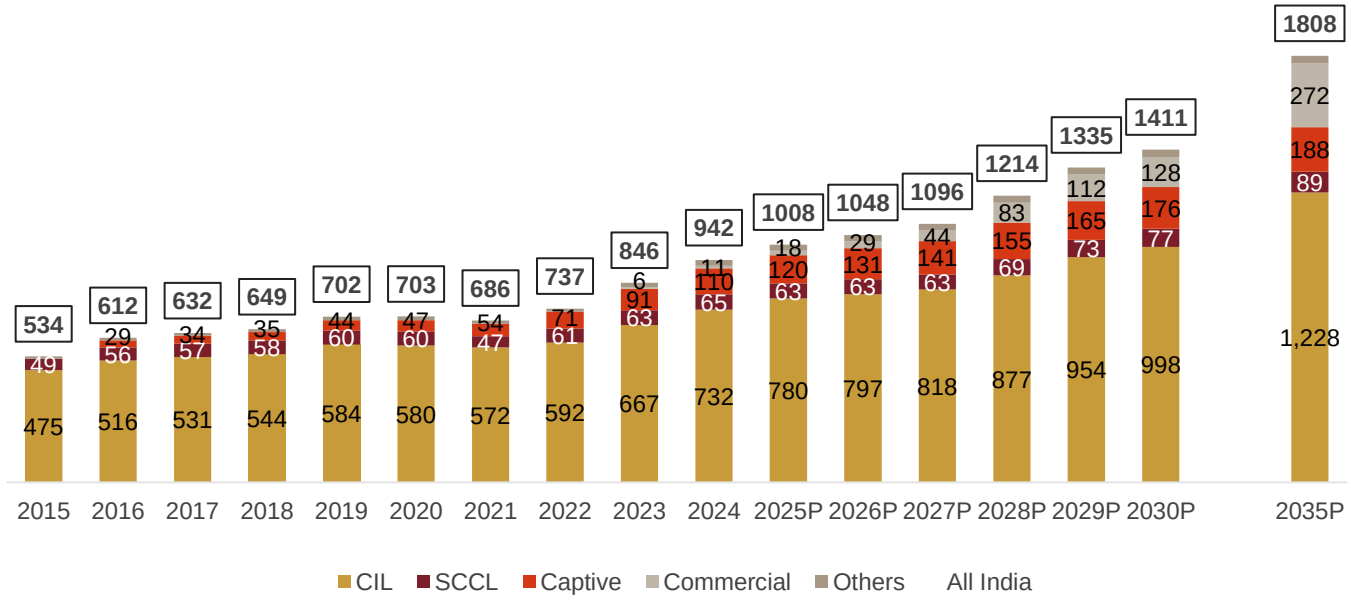
Thermal coal grade	ECL	BCCL	CCL	NCL	WCL	SECL	MCL	NEC	CIL
Avg GCV	*5610*	*5335*	*4255*	*4692*	*4233*	*4182*	*3539*	*6625*	*4187*
Avg Grade	G6	G8	G11	G9	G11	G11	G13	G4	G11

Source: Provisional Coal Statistics of Ministry of Coal 2022-23

Non-coking coal in India is classified into various grades based on its gross calorific value (GCV), which measures the energy content of coal. The GCV ranges from G1, the highest quality, to G17, the lowest. The average grade of coal produced in India is generally on the lower side, due to the geological characteristics of the coal reserves. NEC has the best coal grade within CIL, categorised as G4. This coal has a much higher calorific value, making it more efficient and desirable for industries requiring high-energy fuel. ECL follows with a G6 grade, which is also of high quality but slightly lower in calorific value than G4. MCL produces coal with an average grade of G13, which is on the lower end of the spectrum. This coal has lower energy content and higher ash content, making it less efficient. The lower average grade of coal in India, particularly CIL's average grade of G11, implies that the coal used in power generation and other industries is less energy efficient. This necessitates higher coal consumption to meet the energy requirement, leading to increased emissions and higher transportation costs. Power plants and industries using MCL's G13 coal may face operational inefficiencies, requiring more coal to generate the same amount of energy as compared to using NEC's G4 or ECL's G6 coal. Besides these MCL mines have a major share of CIL's coal which shall further deteriorate the grade.

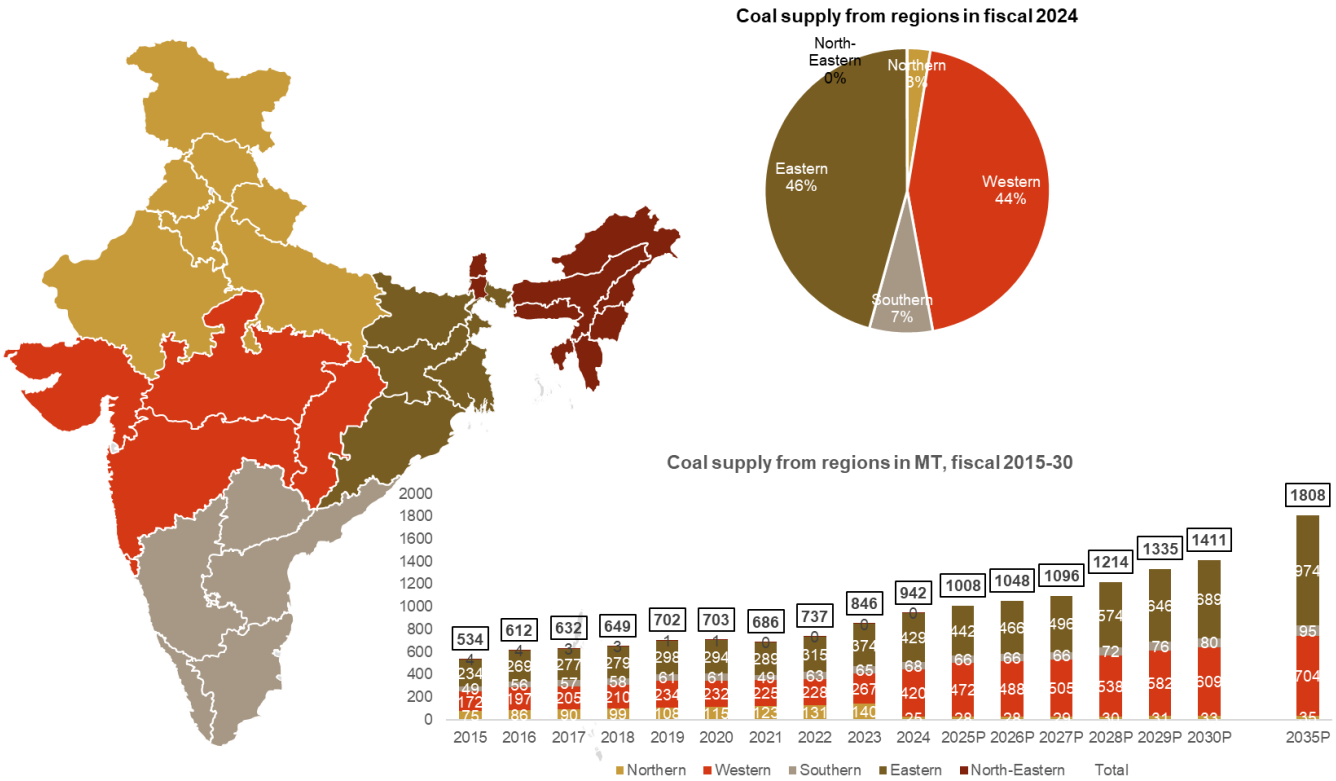
As the subsidiaries of CIL produce coal of various grades, grades need to be levelised before computing the total coal supply. Grade levelisation has been done based on GCV value at G10 grade. **Hence, after levelisation is done at G10 grade, the total projected coal supply in fiscal 2030 comes out to be 1,411 MT.**

Figure 34: India's levelised (at G10) coal production scenario from different sources (MT)



Source: Past data from Ministry of Coal-Coal Directory of India 2022-23, Projections by CRISIL MI&A Consulting; Year is fiscal year levelised production at G10 grade; P: Projected

Figure 35: India's region-wise levelised (at G10) coal production scenario

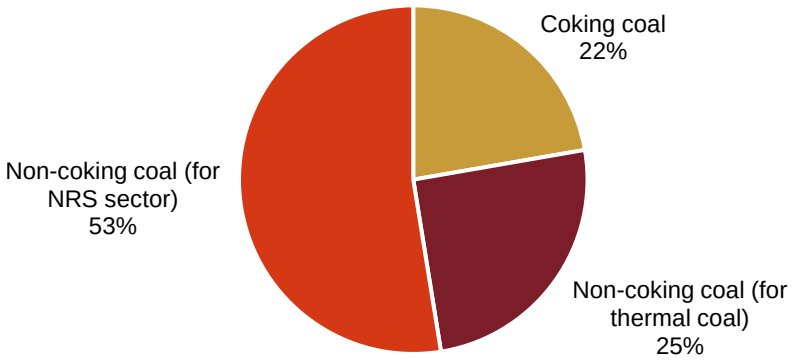


Source: CRISIL MI&A Consulting; Year is fiscal year; Levelised production at G10 grade; P: Projected

3.2.3 Imports

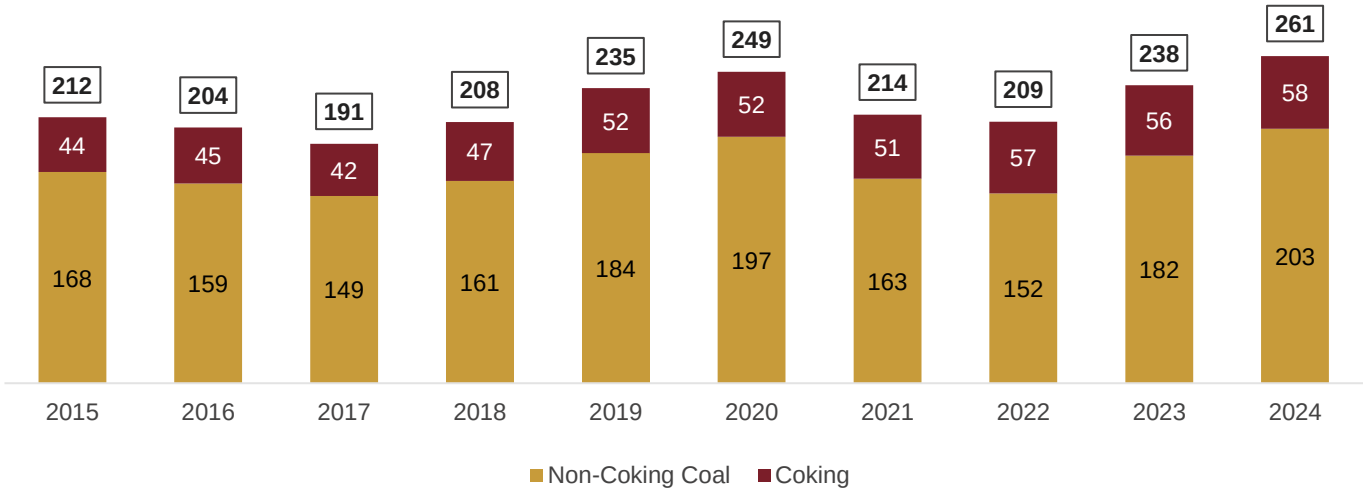
Domestic supply sources are not able to sufficiently cater to overall demand for coal in India. As a result, India is the second largest importer of coal, accounting for about 18% of global non-coking coal imports. In fiscal 2024, India imported ~261 MT of coal. Coal is imported by both power and non-power sectors in India. There are some power plants in the coastal regions with ~18,000 MW cumulative capacity that cannot use domestic coal and thus are dependent on imported coal for blending purposes. Higher domestic coal supply to the power sector has led to higher increased imports by the non-power sectors.

Figure 36: India's type-wise coal imports in fiscal 2024 (MT)



Source: Ministry of Coal Annual Report 2023-24; NRS: Non-regulated Sector (Steel, Sponge, CPP, Cement and others)

Figure 37: Coal imports by India since fiscal 2015 (MT)

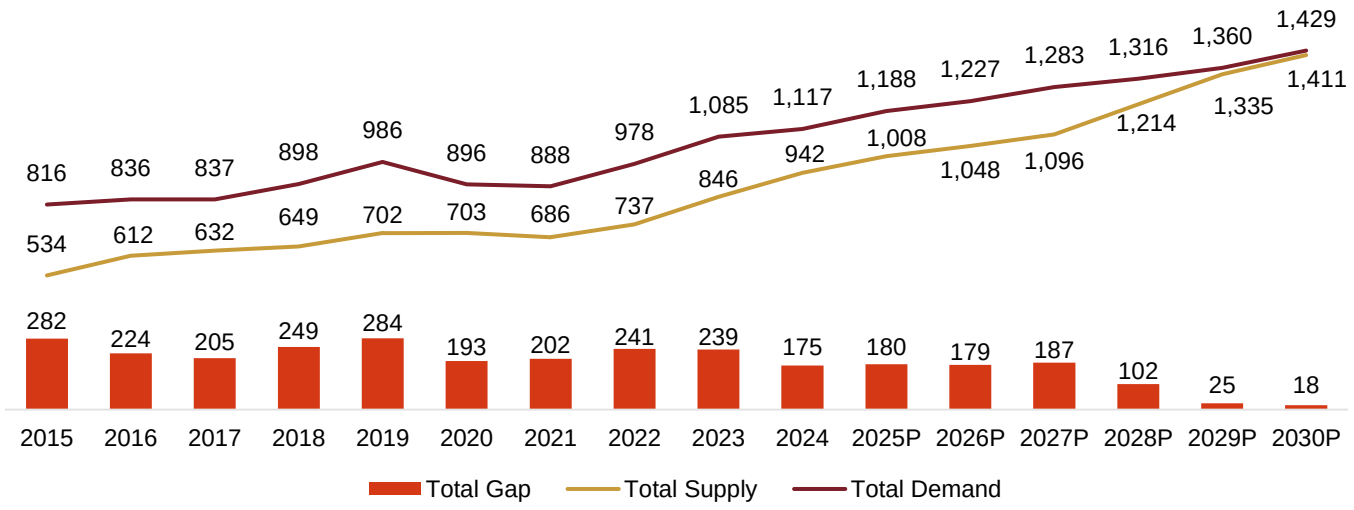


Source: Ministry of Coal-Coal Directory of India 2022-23, Ministry of Coal Annual Reports 2023-24, Year is fiscal year; P: Projected

As a result, deficit of coal is expected to continue in India for the coming years, hence the government is having a lot of focus on increasing coal supply which will require more exploration to identify potential resources and mines to operationalise, appointing private contractors / Mine Developer and Operator (MDO) having capabilities to enhance production and focus on transport and logistic arrangements to provide coal at respective end-use plants.

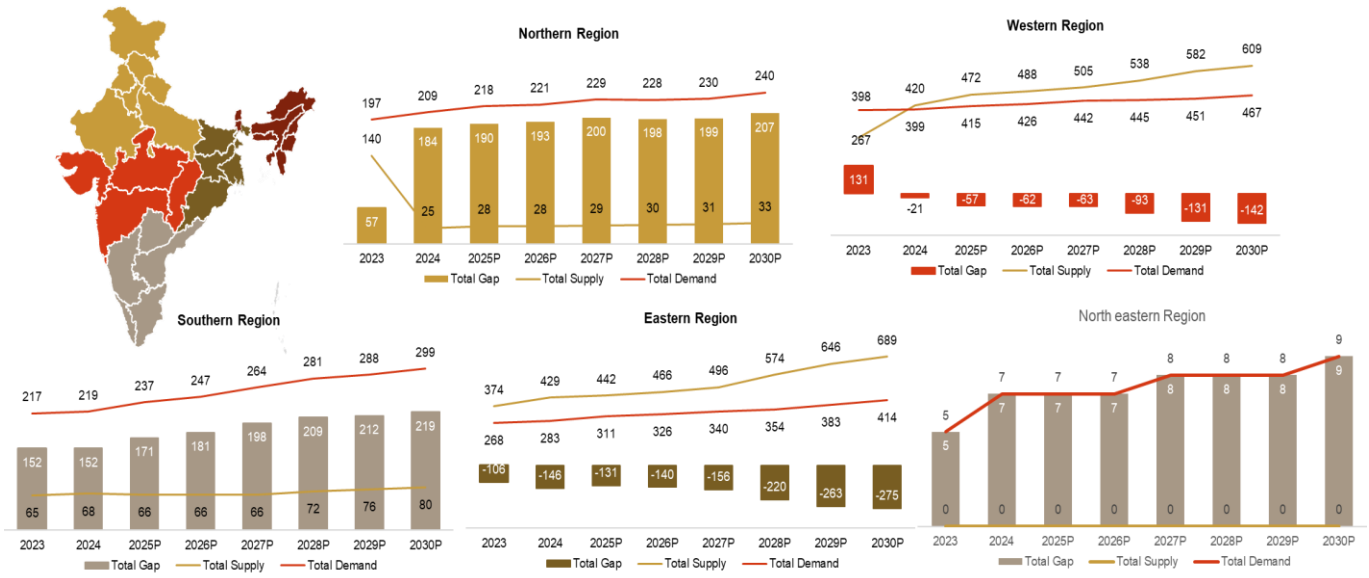
Domestic coal production meets ~78% of the country's requirements, while ~22% coal is imported every year (on average from 2020 to 2024).

Figure 38: India's demand-supply gap of coal



Source: CRISIL MI&A Consulting; Year is fiscal year; Coal supply levelised at G10 grade; P: Projected

Figure 39: Region wise demand-supply gap of coal



Source: CRISIL MI&A Consulting; Year is fiscal year; Coal supply levelised at G10 grade; P: Projected

The coal demand supply situation is quite dynamic in nature with following factors affecting the surplus supply of coal in India by 2030.

Factors favouring deficit to continue beyond fiscal 2029[34]

- Surrender of high-premium blocks by developers, considering surplus supply and low premiums from CIL
- Efforts by the government / technology improvements for coking-coal washery will affect the supply of coking coal for thermal
- Delay in the development of bigger blocks (capacity of 10 MTPA and more) may disturb the demand-supply balance.
- After fiscal 2030, many of the mines of NCL, SCCL will be exhausted; further, CIL may also close its high cost/ high SR mines considering low recovery of cost.

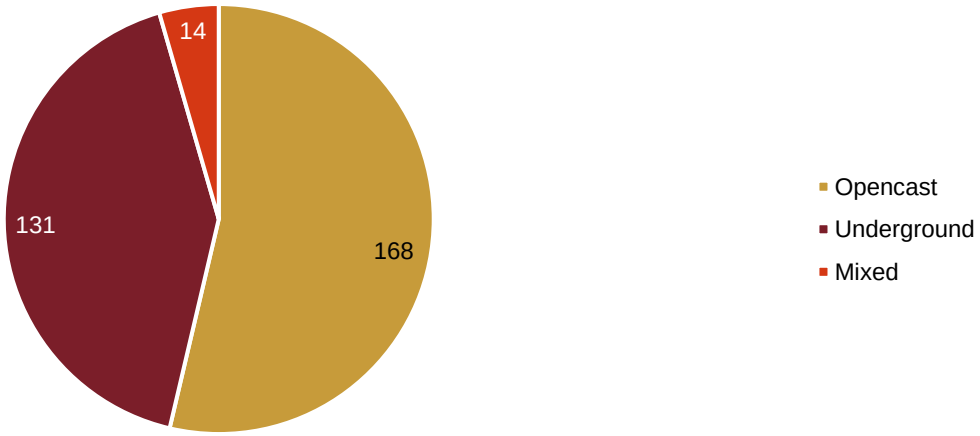
Factors favouring surplus before fiscal 2029[35]

- Thermal-coal demand from coastal-based TPPs will continue to be import-dependent (~18,000 MW capacity)
- Cement-based companies will continue to import coal due to higher quality requirement
- Washery-grade coking-coal production being used for thermal / blending purpose shall be ~60-80 MT
- Fast-track of clearances for blocks can start the blocks before scheduled consideration.

3.3 Share of opencast and underground mining and key players

CIL supplies 78% of India's coal requirement, of which 97% is through opencast mines and the balance 3% from underground mines.

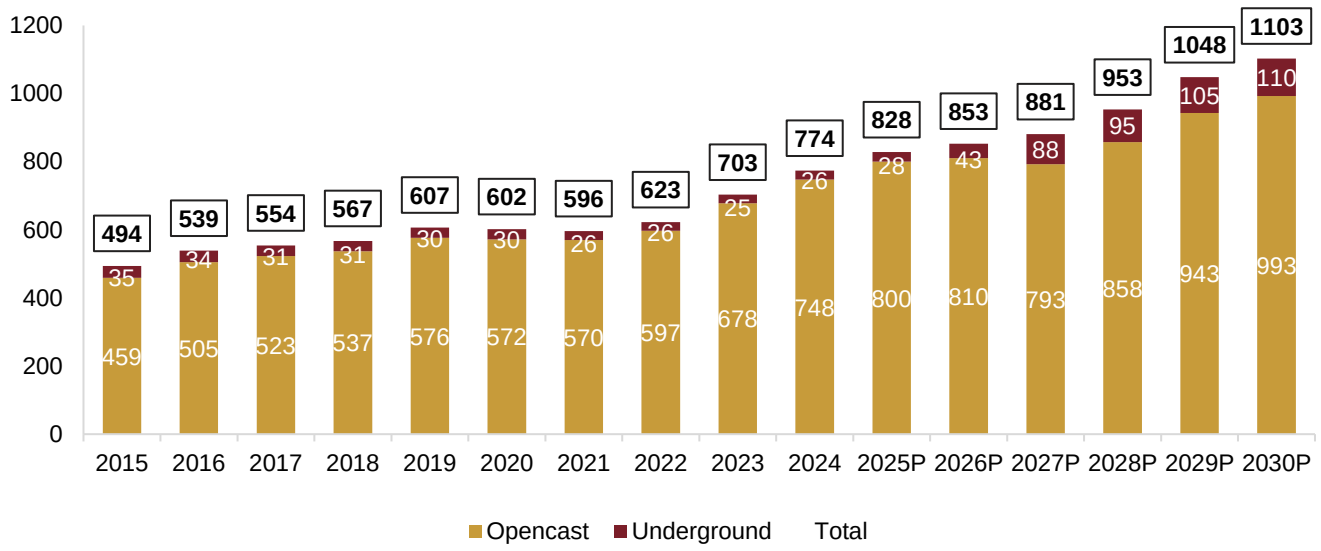
Figure 40: Number of operating mines of CIL in fiscal 2024



Source: CIL annual report for fiscal 2024, CRISIL MI&A Consulting

[34] *As per estimates only as market is dynamic*
[35] *As per estimates only as market is dynamic*

Figure 41: Opencast and underground coal production by CIL (MT)



Source: CIL annual reports, CRISIL MI&A Consulting; year is fiscal year; P: Projected

Currently, CIL produces most of its coal through opencast method. The government aims to increase the share of underground mines to approximately 95 MT by fiscal 2028 and to 110 MT by fiscal 2030, which will be 10% of the total domestic production. The MoC is also auctioning underground mines to the private sector to boost production.

The increase in underground mining indicates a strategic shift towards more sustainable and less environmentally intrusive mining. Higher underground coal production means better operational efficiency and lower surface mining impact. This aligns with global sustainability trends. CIL is actively looking at increasing the share of underground coal production and has undertaken many initiatives (e.g. focus on MDO).

Risks involved in opencast and underground mining

Opencast mining extracts coal appearing near the surface while underground mining involves excavation to reach coal seams that typically exist at a depth below 200m. Underground mining more challenging and requires specialised mining equipment and skilled manpower, leading to higher capital investment and operating costs with longer development period. Additionally, underground mines are highly risk prone resulting in higher safety costs to comply with the guidelines of the Directorate General of Mines Safety (DGMS). With focus shifting towards underground mining, private players are venturing into this sector. Some of the players engaged in underground mining operations are as JMS Mining Pvt Ltd, Maheshwari Mining Pvt Ltd, Indu Group, IVRCL, Vensar Construction Company Ltd, Teknomin Construction Limited, Minsol Ltd (Cuprum Bagrodia Ltd) and RK Transport & Constructions Ltd.

3.4 Govt initiatives for the coal sector

Following are some of the government initiatives for the coal sector:

- **Vision 2030:** The Ministry of Coal (MoC) is focused on supporting the target of producing 1.5 BT (1,500 MT) of coal by fiscal 2030 by ensuring that infrastructure development keeps pace with production increases.
- **Vision 2047:** As per Vision @2047, coal is likely to be the major contributor for energy security of the nation. As per CIL's 1 BT plan, CIL and its subsidiaries target to achieve 1 BT (1,000 MT) production by fiscal 2027. Further, considering the domestic demand for coal, the tentative long-term production projections for CIL are expected to peak at 1,300 MTPA by fiscal 2035.It is expected that the company will have to maintain 1 BT (1,000 MT) production until 2047 owing to the domestic demand.
- **Underground vision plan:** CIL has prepared and finalised the underground vision plan document in fiscal 2023 envisaging 100 MT coal production by fiscal 2030 from its underground mines. It has planned to introduce more and more Mass Production Technology (MPT) in its UG mines to achieve this milestone.
- **Commercial coal mining:** In fiscal 2020, the government allowed commercial coal mining, allowing private players to enter coal mining and sales with no restrictions on the end use of the fuel. Until August 2024, a total of nine tranches for commercial coal mining were launched with around 105 blocks successfully auctioned. Currently, tranche No XX (20th round) is being auctioned under the CMSP/ X tranche (10th round) of auctions under MMDR is ongoing with 61 coal mines put up for auction. The government views coal as a pivotal contributor to the vision of becoming a US$ 5 trillion economy.
- **Indian mining structural reforms 2021:** The Mines and Minerals (Development and Regulation) Amendment Act in 2021 paved the way to increase domestic production and curtail imports, private sector participation and mining employment. The Act facilitates auctions to reallot mining blocks facing legacy cases. Another reform is regarding captive mines for which end use was previously restricted to the mine leaseholder. The provision also allowed the sale of 50% of the mineral production in the open market after utilising the production to be used in the company plant after payment of additional payment
- **Mission coking coal:** The MoC launched Mission Coking Coal as part of the Atmanirbhar Bharat initiative. Domestic raw coking coal production is expected to reach 129 MT by 2030, as per CRISIL MI&A Consulting estimates. CIL plans to increase production from existing mines and also identify new mines. Until February 2024, the ministry has allocated 16 coking coal blocks to the private sector and most of them are expected to start production by fiscal 2025.
- **Reopening of discontinued mines on revenue sharing modal:** Discontinued mines are a national loss because large amounts of reserves remain unextracted. Therefore, the ministry has started offering these mines to companies including private players under a revenue-sharing model in a bid to re-operationalise them. Out of the 34 identified abandoned mines, letters of allocation (LoAs) have been issued for 19 until fiscal 2024.
- **Grant of coal linkages to the power sector:** The Scheme for Harnessing and Allocating Koyala (Coal) Transparently in India (SHAKTI), 2017, aims to shift coal linkages from nomination-based to auction-/tariff-based bidding. Amendments were introduced in 2019, providing various options for power plants to obtain short,

medium and long-term coal linkages. Coal supplies under the SHAKTI are now available against medium- and short-term power purchase agreements.

- **Single window for e-auction of coal:** In 2022, the government approved a new e-auction mechanism for coal companies, eliminating the sectoral e-auction windows of CIL. This single e-auction window will cater to all sectors, including traders, removing market distortions and increasing operational efficiency, ultimately increasing domestic coal demand.
- **Amendment to NCDP:** The New Coal Distribution Policy of 2007 has been amended to allow transparent and objective sales of coal from closed/ abandoned/ discontinued mines of CIL/ SCCL, following the MoC guidelines. Also, initiatives such as extraction of coal bed methane gas, exploring coal to hydrogen, carbon capture and storage and coal beneficiaries through washeries can reduce emissions and enhance environmental sustainability.

3.5 Market drivers, restraints, opportunities and challenges

Some of the major drivers and opportunity in coal demand are:

- **Increased power demand owing to economic expansion, rising population, increasing urbanisation and industrialisation:** Between fiscals 2019 and 2024, the country's gross domestic product (GDP) logged 4.3% CAGR. The per capita GNI (at current prices) increased from Rs 1.41 lakh in fiscal 2019 to Rs 1.70 lakh in fiscal 2023[36], largely driven by increased industrialisation, rapid growth of the services sector and urbanisation. During the period, energy demand clocked 5% CAGR, making the country the third largest energy consumer globally.
- **Rise in per capita consumption with increased electrification and deeper penetration of energy-intensive appliances such as air conditioning systems:** The per capita electricity consumption rose from 1010 kWh in fiscal 2015 to 1,331[37] kWh in the fiscal 2023, clocking a CAGR of ~3.5%, owing to increased power availability, investments in the power sector, reduction in transmission and distribution losses and rising disposable income of households. Even so, the country's per capita energy consumption lags developed economies. In fact, per capita consumption is far lower than the global average of ~3,700[38] kWh. But, with consumption levels progressively converging towards those of higher income countries, demand for power will increase.
- **Growth in the manufacturing segment:** Besides power generation, coal is also used directly in industry as fuel and as a reactant in the production of steel (coking coal). Sectors such as aluminium and cement, too, use large quantities of coal.
- **Infrastructure development:** Coal finds application in the manufacture of steel and cement — two critical inputs for infrastructure development. Cement production in fiscal 2023 stood at 375 MT, up from 328 MT in fiscal 2019.

[36] *NSO 2024 reports*
[37] *As per General Review 2024, Central Electricity Authority*
[38] *General Electricity Review, May 2024 by Ember, Sandbag Climate Campaign CIC*

Coal-based sponge-iron production also rose from ~28 MT to 36 MT during the period, logging a 4-year CAGR of 6.5% (from 2019 to 2023) and driving demand for non-coking coal.

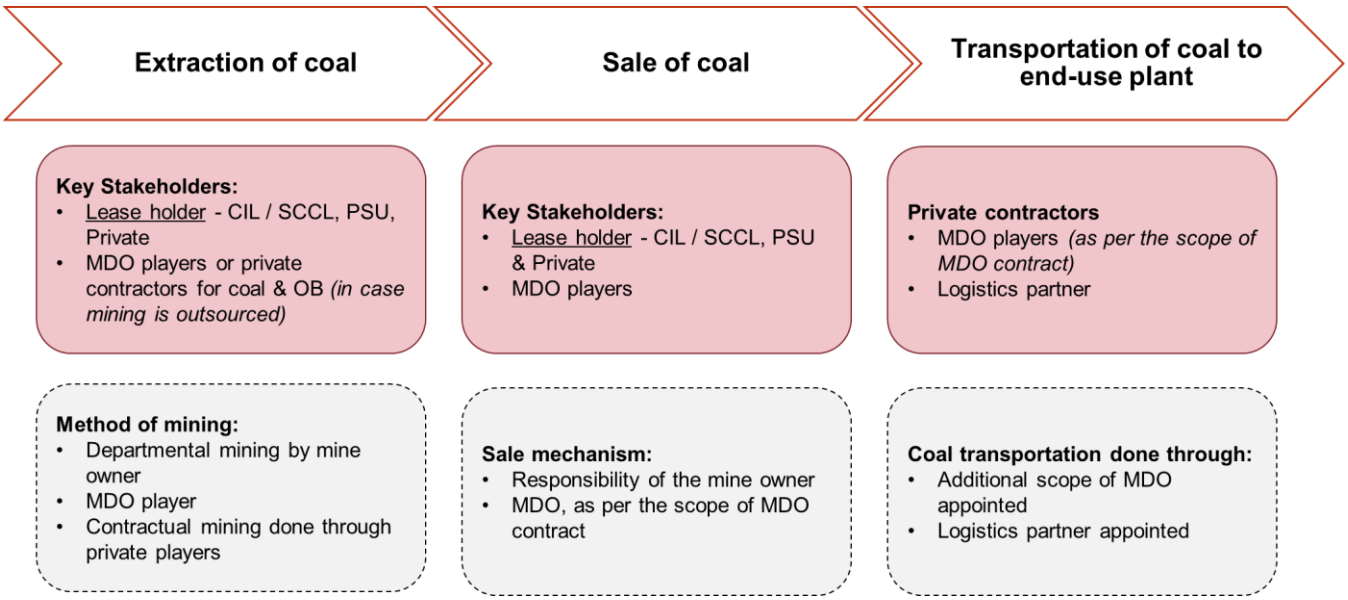
Key restraints and challenges in expansion of domestic coal production:

- **Mining industry's share decreasing in GVA:** Gross Real GVA grew 7.2% in fiscal 2024 compared with 6.7% in fiscal 2023. The growth was mainly owing to a significant 9.9% growth in manufacturing in fiscal 2024 (-2.2% in fiscal 2023) and 7.1% growth in mining and quarrying (1.9% in fiscal 2023). Overall, despite the growth, the contribution of the mining and quarrying sector in real GVA declined from 2.6% in fiscal 2019 to 2.1% in fiscal 2024.
- **Capacity addition:** With CIL increasing its production capacity (as per CIL's 1 BT plan, it targets 1 BT (1,000 MT) of production by fiscal 2027), more emphasis is placed on contract mining as there are internal constraints in departmental mining. Going ahead, the additional capacity is expected to be taken up by private players, but since the private contract mining business is highly staggered with limited players, taking up additional capacity by smaller players will be a challenge.
- **Approvals and processes for starting of mines:** The allocation and operationalising of coal projects in India is subject to several processes and approvals. Coal projects require input from multiple agencies across various levels of government, reflecting the complex institutional structure. The government, too, has identified streamlining of processes for coal mines as one of its key priorities, and has undertaken structural reforms over the last few years such as incorporating a single-window clearance system and appointing third-party consultants. Nonetheless, coal projects continue to face challenges.
- **Land acquisition:** Land acquisition is also a major challenge for operationalising coal projects in India. This is because large coal projects often involve acquisition of large swathes of land, including forest areas and scheduled areas**.**
- **Competition and private investment:** At present, coal production in India is dominated by CIL and SCCL. In 1993, captive coal mining was permitted following the denationalisation of mines, but it did not lead to any substantial production growth.
- **Logistics issues:** Logistics infrastructure is yet another major constraint in India. While demand for coal comes from across the country, production is concentrated in its eastern and central regions. As a result, domestically produced coal has to travel long distances to reach the demand centres. Logistics issues are further compounded by the lack of adequate rail infrastructure and high cost of coal transportation. The railways handle ~50% of the coal transported in India. Hence, challenges in the railway network have a direct bearing on coal transportation. Key issues include bottlenecks such as inadequate rail lines, shortage of railcars and line congestion. In India, dedicated coal freight corridors are not yet fully developed, and passenger services are given priority over freight.

3.6 Assessment of contract mining market

In fiscal 2024, India produced 997 MT of raw coal. Coal supply has been growing 6.7% annually since fiscal 2015. Further, as per CRISIL MI&A Consulting estimates, the raw production is expected to grow 7.5% every year over fiscals 2024-2030 to reach 1,540 MT. CIL is expected to enjoy the largest share at 72% and SCCL 5%, followed by captive blocks (private and PSU blocks) 12%, commercial blocks 9% and rest 2% by others.

Figure 42: Value chain of coal mining business



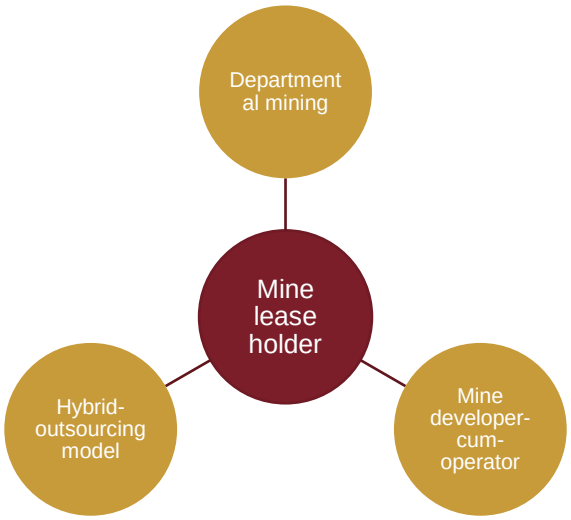
Source: CRISIL MI&A Consulting

Different modes of contract mining under different routes

There are different modes of coal mining in India:

1. Departmental mining (own development and operations)
2. Hybrid, involves outsourcing of a few services (coal extraction, overburden removal, logistics and mining engineering procurement and construction contractor)
3. MDO — Mine developer-cum-operators outsource larger portion of services including development

Figure 43: Types of mine operations (contract mining) models prevailing in India



Source: CRISIL MI&A Consulting

Departmental mining or self-mining model is adopted by companies with large mining portfolios and those seeking to develop in-house capacity to extract the best value from across the value-chain. The lease holder undertakes all mining activities in-house. It retains all rights and obligations of the block, financing all capital investments and operations and maintenance. It acquires the capabilities and expertise to develop the mine, including hiring skilled staff or contracting operators, buying or leasing equipment, setting up workshops, etc.

Hybrid model or outsourcing model is similar to departmental mining except the lease holder undertakes mining and other related operations by use of rate contracts, such as for OB (overburden) removal, coal extraction, drilling, blasting, development of raise in the mines and transportation. This model was developed as the lease holders did not have the expertise to carry out mining activities and hence contracts for different activities were signed with different contractor companies, responsible for bringing in the technical expertise, skills and potential equipment.

MDO model in India represents a significant shift in how coal mining is managed and executed, reflecting the country's evolving approach to public-private partnerships (PPP) in the extractive industry. This model was born out of necessity, as the government had limited resources and production levels had to be enhanced in a capital-efficient manner. By outsourcing, mining operations to private entities, the miners aimed to inject much-needed expertise, technology and capital into the sector, ensuring a more efficient and productive coal industry. The MDO market in India has been gaining significant momentum, particularly in the coal sector, as coal remains the cornerstone of India's energy and industrial requirements. This model allows public sector entities such as CIL to outsource the development and operation of coal mines, thereby overcoming their operational and technical constraints. Under this setup, the MDO is responsible for a range of activities from pre-commencement tasks — such as land acquisition (although ownership of land remains with mine holder), resettlement, and infrastructure development — to the actual excavation and transportation of coal. The MDO earns a mining charge linked to achieving specified production

levels, with contracts typically extending over the life of the mine. This comprehensive role has contributed to achieving production targets more effectively.

The risks associated with the MDO model is that the projects face delays owing to regulatory approvals, land acquisition challenges and environmental clearances, which hinder project timelines. The financial viability of MDO projects is influenced by cost escalations and the overall economic environment. Ensuring consistent financial returns while managing operational risks remains a challenge for the MDOs. With the backing of supportive policies and a clear regulatory framework, the MDO model is expected to attract more private investment, drive technological advancements and enhance the overall efficiency of coal mining operations in India.

Figure 44: MDO model

Source: CRISIL MI&A Consulting

Table 9: Risk assessment of various mine operations models

Departmental mining	Hybrid mining	MDO
Owner's responsibility • **Capex:** To be fully funded by the lease holders • **Operational expenditure or opex:** Mining expertise to be developed in-house with complete control on associated risks	**Owner's responsibility** • **Capex:** To be fully funded by the lease holders • **Opex: Whichever is not under the scope of contractors** • Supervision • Contract management for contractors/ other outsourcing tasks	**Owner's responsibility** • **Capex:** Whichever is not under the scope of contractors • **Opex:** Whichever is not under the scope of contractors • Additional scope whichever is not included in the MDO's scope • Supervision • Contract management for the MDO and other outsourcing tasks

Departmental mining	Hybrid mining	MDO
Contracting mechanism/ selection process Competitive bidding by PSUs/ Private mines and direct negotiations for private mines subject to technical eligibility/ experience and/ or financial eligibility and/ or capacity in terms of equipment/ machine/ manpower etc.	**Contracting mechanism/ selection process** **Competitive bidding by PSUs/private mines and direct** negotiations for private mines subject to technical eligibility/ experience and/ or financial eligibility and/ or capacity in terms of equipment/ machine/ manpower etc.	**Contracting mechanism/ selection process** **Competitive bidding by PSUs/ private mines and direct** negotiations for private mines subject to technical eligibility/ experience and/ or financial eligibility and/ or capacity in terms of equipment/ machine/ manpower etc.
Risks • Delay in development or loss of coal production or any other **cost escalation** • Statutory compliance risk • **Risks related to selling** of coal and contractual obligation with the authority (MoC/ nominated authority)	**Risks** • Delay in development or any other cost escalation • Statutory scope and related risk • Payment to the contractors • Risks related to selling of coal and contractual obligation with the authority (MoC/ nominated authority)	**Risks** • Statutory scope and related risks • Payment to the MDO contractor • Risks related to selling of coal and contractual obligation with the authority (MoC/ nominated authority)
Contractor's responsibility and risks Not applicable	**Contractor's responsibility and risks** • **Opex:** As per scope of specific services (e.g. OB or coal mining) • Delay in production/ loss of coal production/ any other opex	**Contractor's responsibility and risks** • **Capex: CAPEX** complete funding to be done by MDO contractor • **Operational expenditure:** Complete operations to be handled by MDO contractor • **Delay in development or loss of coal production or any other cost/ escalation, potential delays in securing regulatory clearances, land acquisitions, R&R, mine development, etc.** • **MDO fee escalation owing to strip ratio adjustment and the cost escalation formula after the production starts at the mine (the contract will have a different formula to calculate cost escalation once the production starts) can reduce the profitability of the MDO**

Source: CRISIL MI&A Consulting

Contract mining market assessment and addressable market for CMLL

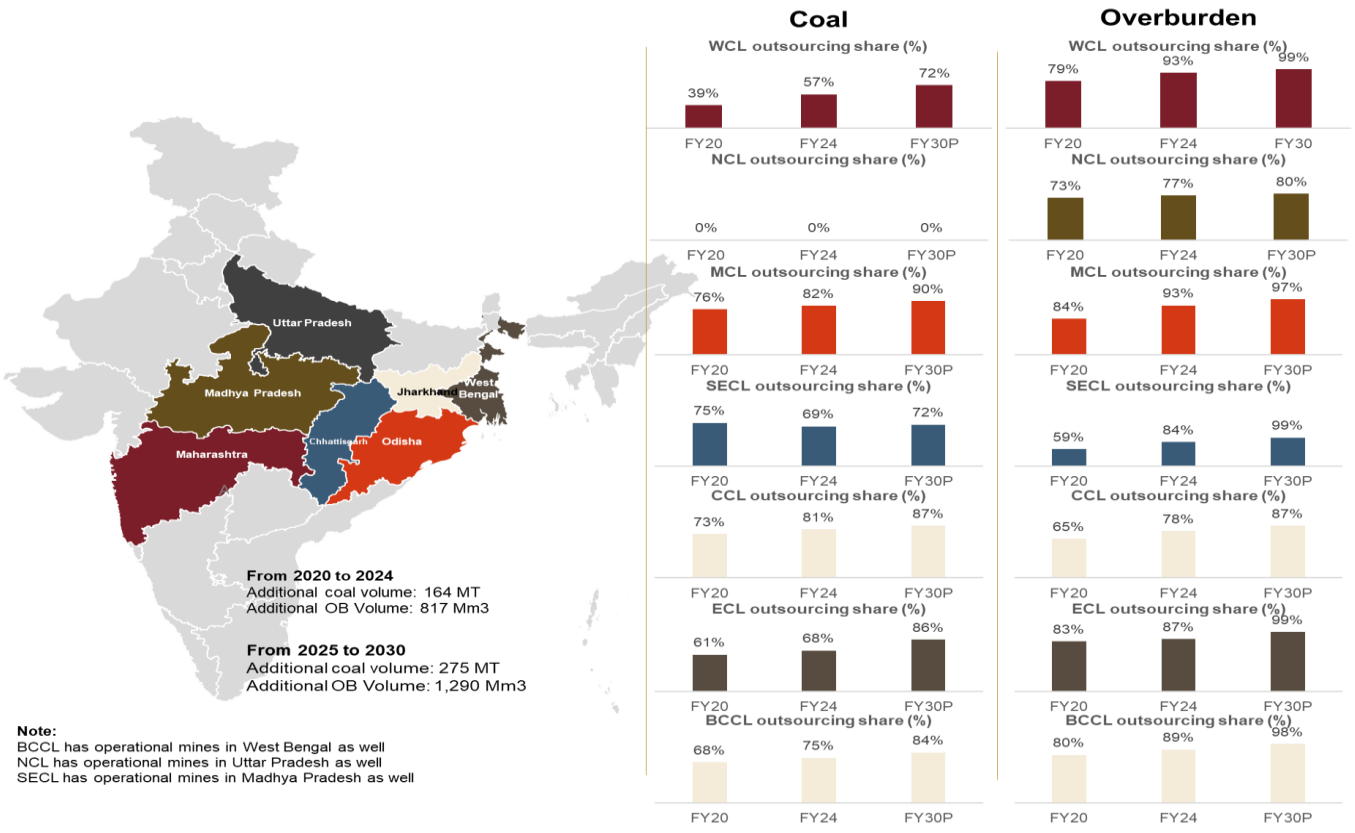
For CMLL, the target addressable market is outsourcing services of CIL/ SCCL, other PSUs and MDO contracts of both PSUs and private companies. A detailed assessment of contract mining from different companies follows.

CIL — Volume of coal/OB as per the model selected

A. Contract mining/ Outsourcing coal/ OB

CIL, the biggest miner in the world, uses both departmental mining and outsourcing/ contract mining options to run the operations and produce coal. In fiscal 2024, the company outsourced approximately 61% of its coal mining and around 86% of OB removal through external contractors. The share of outsourcing/ contract mining is increasing every year in CIL. As per the CIL's 1 BT plan, CIL targets to achieve 1,000 MT raw coal production by fiscal 2027 (773 MT in fiscal 2024) by focusing on contract mining for both coal and OB. Thus, by fiscal 2030, share of contracting is expected to rise to ~67% for coal mining and ~92% for OB removal[39]. Further, share of outsourcing varies with subsidiary. For instance, for MCL, the share of outsourcing/ contact mining in coal is the highest at 82% and in OB removal at 93%. NCL does not outsource coal mining but 77% of OB removal is outsourced.

Figure 45: Expected new volume from CIL

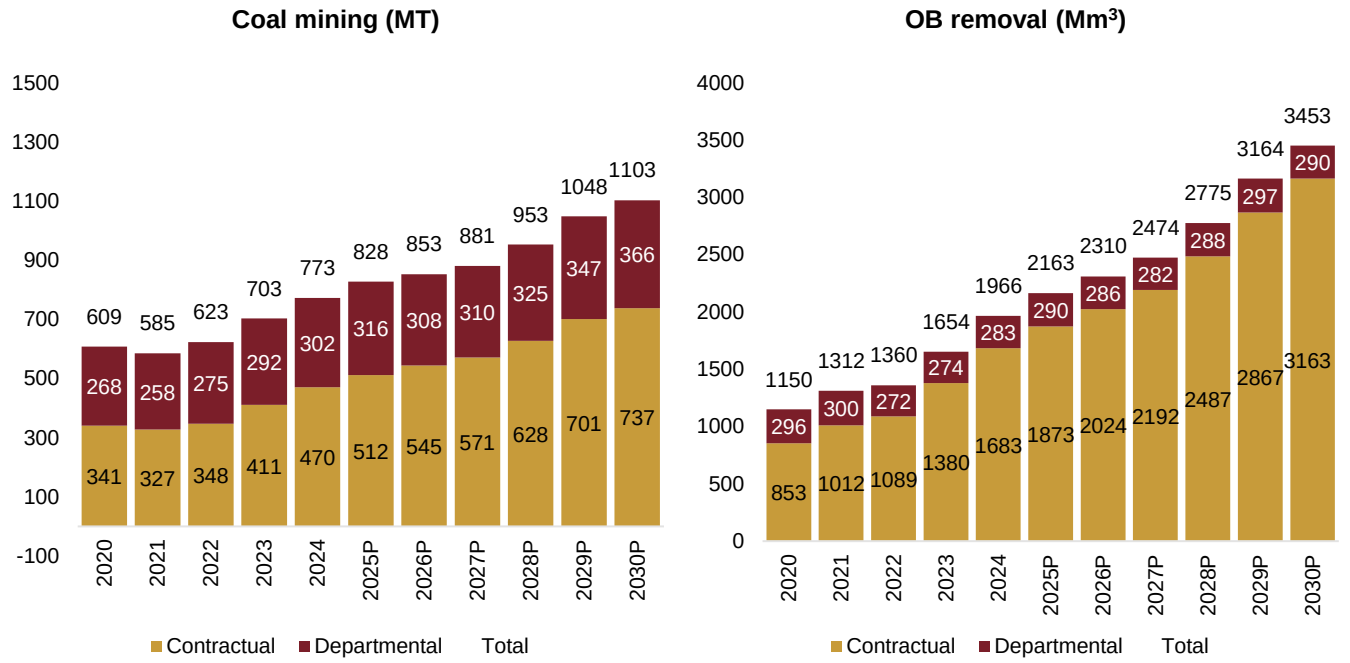


Source: CRISIL MI&A Consulting

[39] *Based on the growth in outsourcing activities by CIL for last 4 years.*

In fiscal 2024, CIL's outsourced raw coal production stood at 470 MT (61%) and departmental raw coal production at 302 MT (39%). In OB removal, the outsourced volume stood at 1,683 million cubic metre (Mm^3) (86%) and volume under departmental mining stood at 283 Mm^3 (14%).

Figure 46: Historical contractual and departmental production volume of CIL

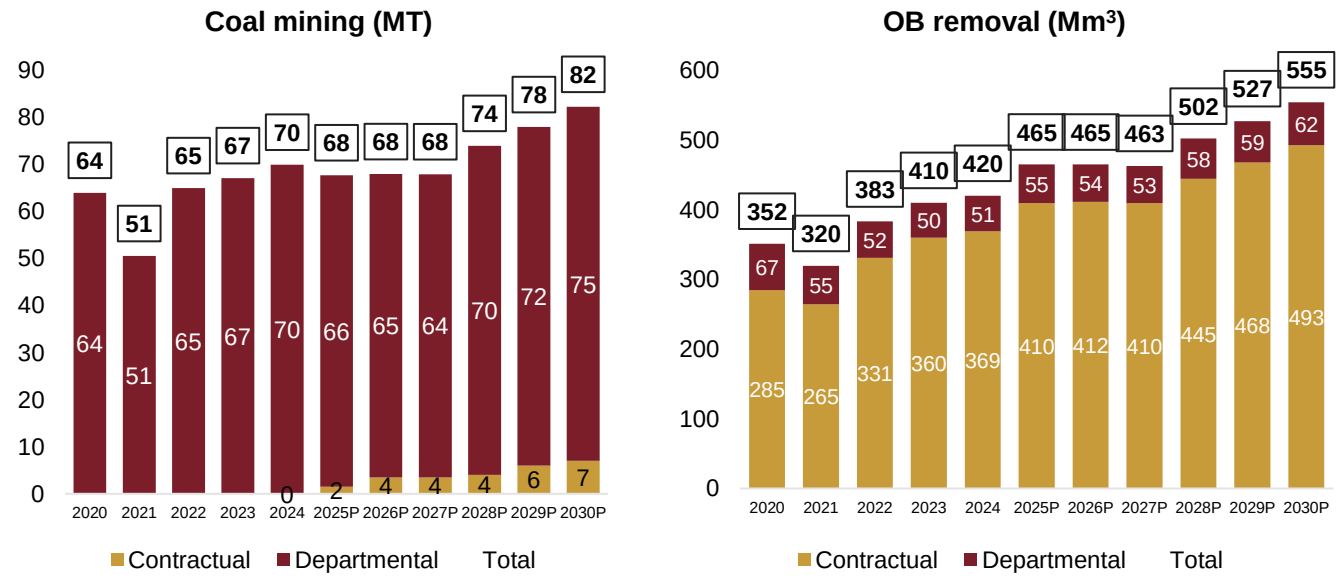


Source: Ministry of Coal-Monthly Statistics, CRISIL MI&A Consulting; Year is fiscal year; P: Projected [40]

Between fiscals 2024 and 2030, contractual coal volume is expected to log a ~7.8% CAGR and OB removal volume ~11.1% owing to increased strip ratio of mines of CIL. At less than 5%, the share of outsourced coal mining for SCCL is lower than CIL. By fiscal 2030, the share of outsourced coal mining is expected to be ~9% for SCCL. For SCCL, the share of outsourcing in OB removal has remained constant at ~88% during fiscals 2023 and 2024.

[40] *Coal and OB volumed estimated as per the upcoming projects of CIL*

Figure 47: Estimated contractual and departmental production volumes of SCCL



P – projected[41]

Note: Year is fiscal year

Source: Ministry of Coal-Monthly Statistics, CRISIL MI& Consulting

A. Mine developer-cum-operator

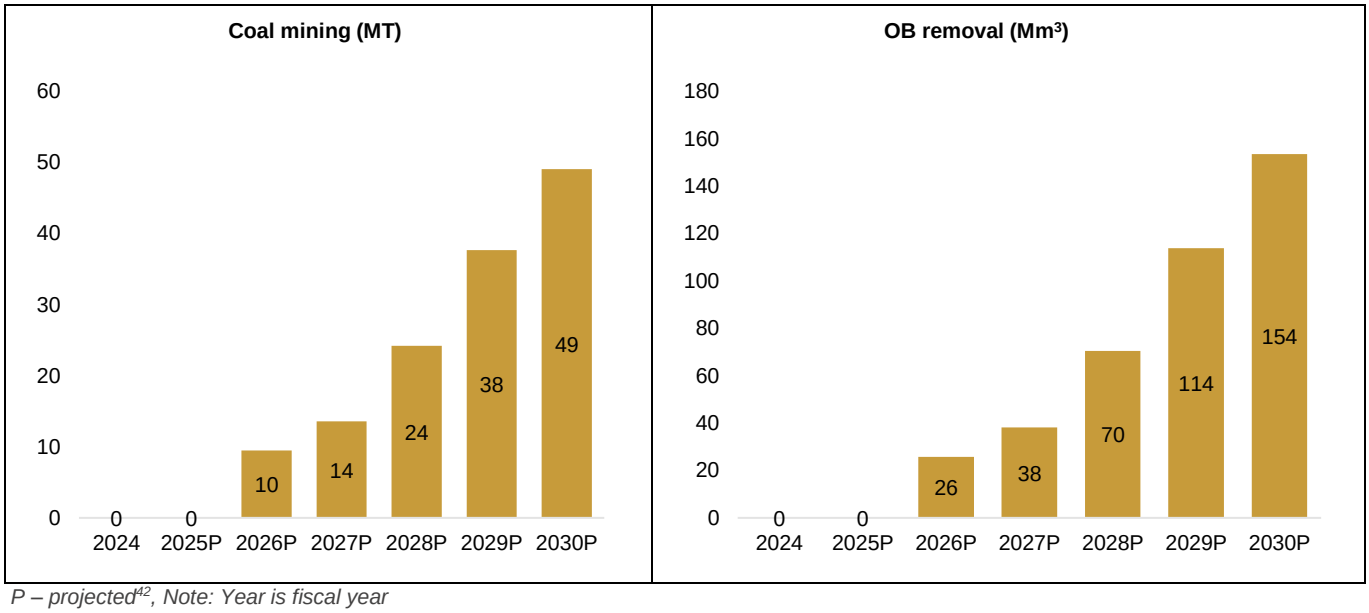
CIL is also undertaking capacity expansion, with a major focus in furthering the MDO model. Of a total of 31 projects that have been identified, the company has earmarked 15 MDO projects (11 OCs and four UGs) for outsourcing production as of fiscal 2024, totalling 173 MTPA of raw coal production (to be ramped up as per the annual approved Mining Plan), with proportional OB removal capacity as well. These mines are expected to add another ~49 MT of raw coal production by fiscal 2030. Also, CIL has identified all resources **to execute the projects**, **including addressing** issues such as environmental clearance, and land acquisition and transportation constraints to achieve its raw coal production target of 1 BT (1,000 MT) by fiscal 2027 according to its 1 BT plan from the current 773 MT, as outlined in CIL's fiscal 2024 annual report. The coal major is in the process of deploying MDOs in greenfield as well as brownfield projects.

Work orders for 13 projects, totalling raw coal production of 141 MTPA peak rated capacity (with raw coal production capacity estimated at ~49 MT by fiscal 2030), have been already issued and mining operations have begun for four projects, which contributed ~7 MT of raw coal in fiscal 2024. MDO selection of the next **16** projects, having a combined capacity of ~85 MTPA of raw coal production, is planned in the coming fiscals (although these may not contribute to **overall** production in fiscal 2030).

[41] *Coal and OB volumed estimated as per the upcoming projects of SCCL*

By fiscal 2030, the production volume of coal and OB from these already awarded MDOs mines is expected at ~49 MT of raw coal production and 154 Mm^3 of OB.

Figure 48: Estimated production volume of CIL's MDO projects



P – projected[42]*, Note: Year is fiscal year*

Source: MoC Monthly Statistics, CRISIL MI&A Consulting

B. Abandoned mines

In fiscal 2022, CIL began outsourcing non-operational and loss-making mines via the bidding process on production-/ revenue-sharing basis (as per the abandoned mining policy). CIL awarded 11 such mines in fiscal 2024 on revenue-sharing basis to successful bidders. The cumulative peak rated capacity of these mines is ~18 MTPA of raw coal while the total extractable reserves is estimated at ~267 MT of raw coal production.

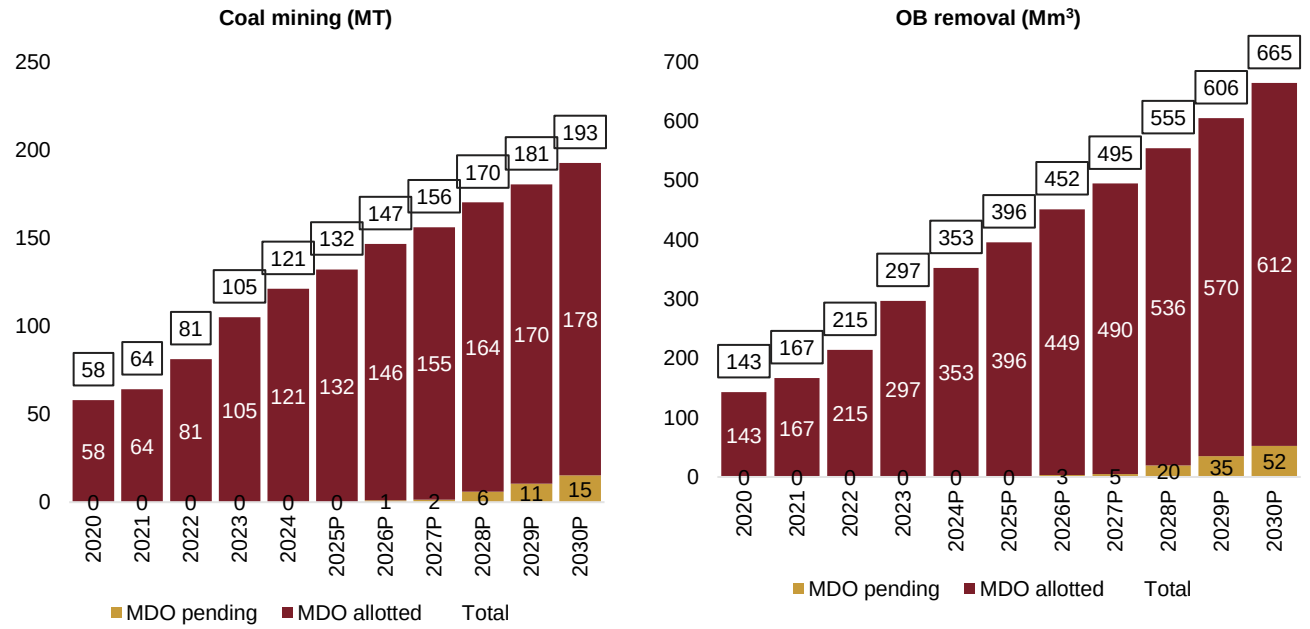
3.6.1 PSU blocks: Coal/OB volume executed as per model selected – MDO or hybrid

Since 1991, many coal blocks have been allotted to central (~20 blocks) and state (~40 blocks) PSUs on nomination basis, including to NTPC Limited, NMDC Limited and APMDC, as well as state power generation companies and ultra mega power projects (UMPPs). These lease holders subsequently appointed MDOs to undertake mining and other mine development activities.

Of a total of 52 successfully allotted blocks (peak rated capacity of ~323 MTPA), currently 30 projects are in production, with peak rated capacity of ~257 MTPA of raw coal production. The remainder are at various stages of development. Of the ~257 MTPA peak rated capacity allotted, ~200 MTPA has been allotted to MDOs for mining, with production of ~121 MT in fiscal 2024. **Another ~57 MTPA of peak rated capacity are yet to be finalised by the PSUs** (with production potential of ~15MT by fiscal 2030). Considering the remaining blocks as potential **for** MDOs, the expected coal and OB volumes are estimated at:

[42] *Coal and OB volumed estimated as per upcoming CIL MDO projects*

Figure 49: Estimated production volume of PSU blocks (from allotted MDOs and pending MDO contracting)



P – projected[43]; Note: Year is fiscal year

Source: Ministry of Coal-Monthly Statistics, CRISIL MI&A Consulting

3.6.2 Private sector blocks: Volume of coal/OB executed as per model selected – MDO or hybrid

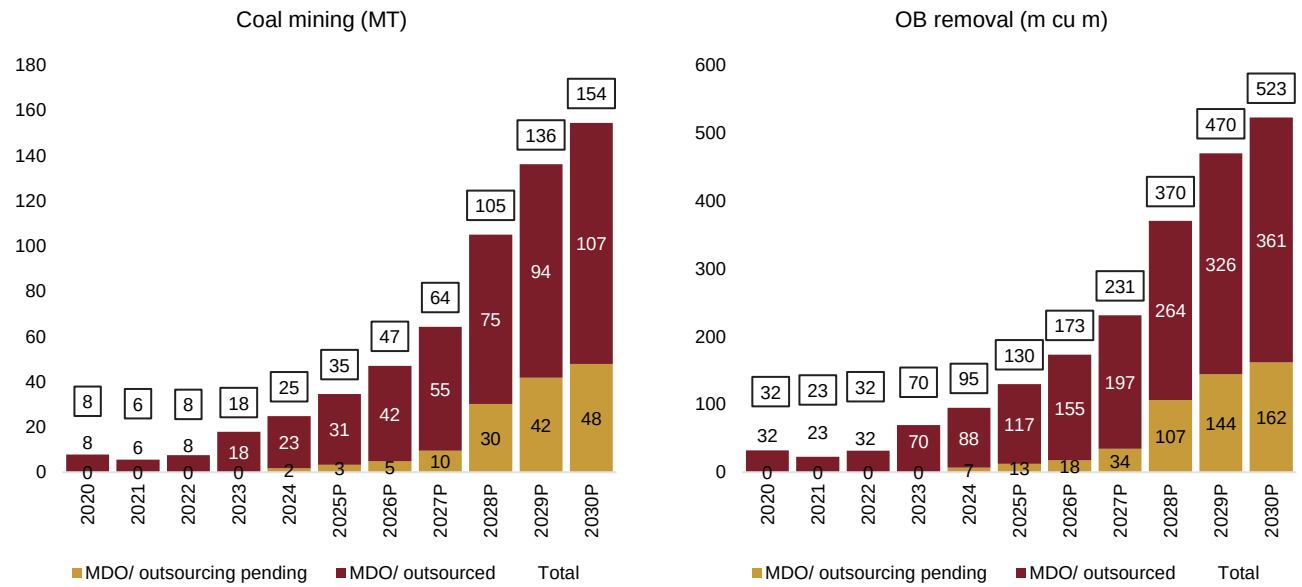
Coal blocks were also auctioned as captive blocks to private companies as per their end-use requirement, as per CMSP Act 2015. A total of 10 rounds of auctions were conducted till 2019, where ~37 blocks were successfully auctioned, of which 14 blocks are operational, six are at various stages of development and the rest have been terminated/ surrendered[44]. The raw coal production from these blocks is ~12 MT in fiscal 2024 and is projected to increase to ~18 MTPA in fiscal 2030.

Post commercialisation of the coal sector in 2020, the government began auctioning coal blocks to private players for commercial production. These are termed as 'commercial blocks' in this report. To-date, the auction process of a total of 105 **commercial** coal blocks through nine rounds of auctions has been completed, with an estimated annual peak rated capacity of ~327 MTPA (forecast production in fiscal 2030 is ~136 MT from ~12MT produced in fiscal 2024). Currently, Tranche X (10th round) is underway. These commercial blocks have been won by large integrated players such as Adani Group, Jindal Steel & Power, JSW Steel, Vedanta, Hindalco, Shree Cement, Dalmia Cement, JK Cement, etc of their various businesses, such as thermal power generation, steel plants, cement plants and aluminium refineries, and smaller mining players for commercial sale of the coal.

[43] *Coal and OB volumed estimated as per the expansion plans of PSU coal blocks*
[44] *As per estimates and various sources*

Considering the large integrated players would carry out mining activities via the MDO model[45], the estimated coal and OB volumes are:

Figure 50: Estimated production volume of private blocks (from allotted MDO and pending MDO contracting)



P – projected[46]

Note: Year is fiscal year
Source: Ministry of Coal-Monthly Statistics, CRISIL MI&A Consulting

3.6.3 Summary of assessment

Based on the assessment of expected coal production from different sources and the share of contract mining (outsourcing of coal/ OB removal) through different modes by different companies, the estimated market potential of raw coal production via contract mining (outsourcing coal/ OB production, MDO model or hybrid mode) is ~857 MT by fiscal 2030 (out of a total of 1,533 MT expected raw coal production by all modes including departmental mining) and OB volume production via contract mining (outsourcing coal/ OB production, MDO model or hybrid mode) is ~4,024 Mm^3 (out of total of 5,195 Mm^3 expected OB removal by all modes including departmental mining). The total volume split estimated from different sources are as below and market assessment in terms of Rs lakh has been elaborated in the next section.

Table 10: Estimated total coal production and OB volumes

Particulars	2020	2021	2022	2023	2024	2025P	2026P	2027P	2028P	2029P	2030P
Coal (MT)											
CIL	609	585	623	703	773	828	853	881	953	1,048	1,103

[45] *Remaining capacity of private coal mines has been assumed to be mined through departmental mining*
[46] *Coal and OB volumes estimated as per timelines of the commercial coal blocks*

Particulars	2020	2021	2022	2023	2024	2025P	2026P	2027P	2028P	2029P	2030P
SCCL	64	51	65	67	70	68	68	68	74	78	82
PSU blocks	58	64	81	105	121	132	147	156	170	181	193
Private blocks	8	6	8	18	25	35	47	64	105	136	154
Total coal (MT)	**738**	**705**	**777**	**893**	**989**	**1,063**	**1,115**	**1,169**	**1,302**	**1,443**	**1,533**
OB (Mm^3)[47]											
CIL	1,150	1,312	1,360	1,654	1,966	2,163	2,310	2,474	2,775	3,164	3,453
SCCL	352	320	383	410	420	465	465	463	502	527	555
PSU blocks	143	167	215	297	353	396	452	495	555	606	665
Private blocks	32	23	32	70	95	130	173	231	370	470	523
Total OB (Mm^3)	**1,677**	**1,821**	**1,990**	**2,431**	**2,834**	**3,154**	**3,401**	**3,664**	**4,203**	**4,767**	**5,195**

Source: CRISIL MI&A Consulting; P – projected

Notes:1) Year is fiscal year 2) Raw coal production as per estimates

In fiscal 2024, ~472 MT of raw coal extraction was outsourced, a number that is expected to surge to ~857 MT by fiscal 2030, which is a CAGR of 10.5%. The increasing share of outsourced coal is a testament to the evolving dynamics of the Indian coal sector, where private players are taking on a more significant role in meeting production targets.

Also, the OB removal segment, critical for the operational efficiency of coal mines, is projected to grow to 4,024 Mm^3 by fiscal 2030 from 2,059 Mm^3 in fiscal 2024. This growth underscores the escalating need for stripping off the OB to access deeper coal seams, particularly as India explores new and abandoned mines.

Table 11: Estimated contractual coal and OB volume trend

Particulars	2020	2021	2022	2023	2024	2025P	2026P	2027P	2028P	2029P	2030P
Coal (MT)											
CIL – Contractual	341	327	348	411	470	512	545	571	628	701	737
CIL – MDO	-	-	-	-	-	-	10	14	24	38	49
SCCL	-	-	-	-	-	2	4	4	4	6	7
PSU blocks	-	-	-	-	-	-	1	2	6	11	15
Private blocks	-	-	-	-	2	3	5	10	30	42	48
Total coal (MT)	**341**	**327**	**348**	**411**	**472**	**517**	**563**	**600**	**692**	**797**	**857**
OB (Mm^3)[48]											
CIL – Contractual	853	1,012	1,089	1,380	1,683	1,873	2,024	2,192	2,487	2,867	3,163
CIL – MDO	-	-	-	-	-	-	26	38	70	114	154

[47] *Volume of OB has been estimated based on the average stripping ratio of the company/ CIL subsidiary.*
[48] *Volume of OB has been estimated based on average stripping ratio of CIL*

Particulars	2020	2021	2022	2023	2024	2025P	2026P	2027P	2028P	2029P	2030P
SCCL	285	265	331	360	369	410	412	410	445	468	493
PSU blocks	-	-	-	-	-	-	3	5	20	35	52
Private blocks	-	-	-	-	7	13	18	34	107	144	162
Total OB (Mm^3)	**1,138**	**1,277**	**1,420**	**1,740**	**2,059**	**2,296**	**2,482**	**2,679**	**3,128**	**3,629**	**4,024**

Source: CRISIL MI&A Consulting; Year is fiscal year, P – projected

3.7 Market assessment of contract mining

Coal contract mining in India is growing at a significant pace as the country intensifies efforts to meet its coal production targets to address the rising demand for energy. The total coal and OB market in value terms, which was Rs 42,18,700 lakh in fiscal 2024, is projected grow to Rs 90,38,200 lakh by fiscal 2030, which is a CAGR of 13.5%[49].

Figure 51: Market assessment of total mining (Rs lakh)

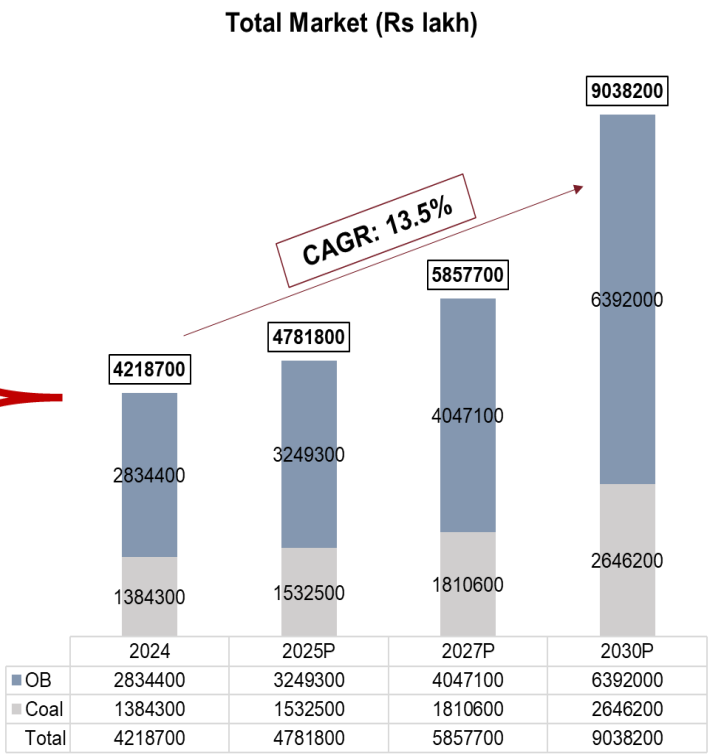
CIL	2024	2025P	2027P	2030P
Coal	10,81,800	11,94,100	13,48,300	18,45,400
OB	19,66,200	22,28,300	27,04,800	41,26,500

CIL - MDO	2024	2025P	2027P	2030P
Coal	0	0	20,800	82,100
OB	0	0	41,700	1,83,600

SCCL	2024	2025P	2027P	2030P
Coal	98,000	97,700	1,04,000	1,37,700
OB	4,20,300	4,79,300	5,06,400	6,62,700

PSU blocks	2024	2025P	2027P	2030P
Coal	1,69,700	1,90,800	2,39,100	3,22,500
OB	3,52,900	4,08,000	5,41,300	7,94,600

Others - Private	2024	2025P	2027P	2030P
Coal	34,700	49,900	98,300	2,58,400
OB	94,900	1,33,700	2,52,800	6,24,600



Source: CRISIL MI&A Consulting; P – projected

Notes: 1) Market size has been considered as per prevailing contractor prices for coal and OB and escalations expected going forward as per WPI inflation maintaining the same level in future as well 2) Year is fiscal year

[49] *Market size has been considered as per prevailing contractor prices for coal and OB and escalation expected in the future as per WPI inflation maintaining the same level in future as well*

Of the total coal and OB market size in value terms, the market size for contract mining was estimated at Rs 27,19,900 lakh (out of total of Rs 42,18,700 lakh) in 2024, with projections indicating a rise to Rs 62,42,200 lakh by fiscal 2030 (out of a total of Rs 90,38,200 lakh), marking a CAGR of 14.8%. This includes contractual mines of CIL and SCCL as well as those mines of PSUs and private players where the appointment of MDO is pending. This growth trajectory is being primarily driven by increasing reliance on outsourcing by CIL which will be producing more than 1,100 MT of coal by 2030.

Figure 52: Market assessment of contract mining (Rs lakh)

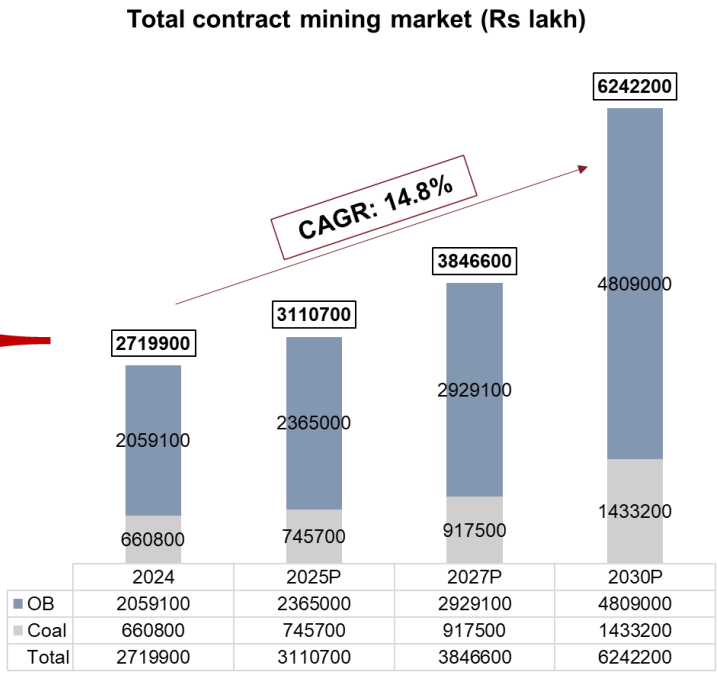
CIL - Contractual	2024	2025P	2027P	2030P
Coal	6,58,400	7,38,700	8,74,500	12,33,800
OB	16,83,200	19,29,800	23,96,600	37,80,100

CIL - MDO	2024	2025P	2027P	2030P
Coal	0	0	20,800	82,100
OB	0	0	41,700	1,83,600

SCCL - Contractual	2024	2025P	2027P	2030P
Coal	0	2,200	5,400	11,700
OB	3,69,200	4,22,300	4,48,000	5,89,000

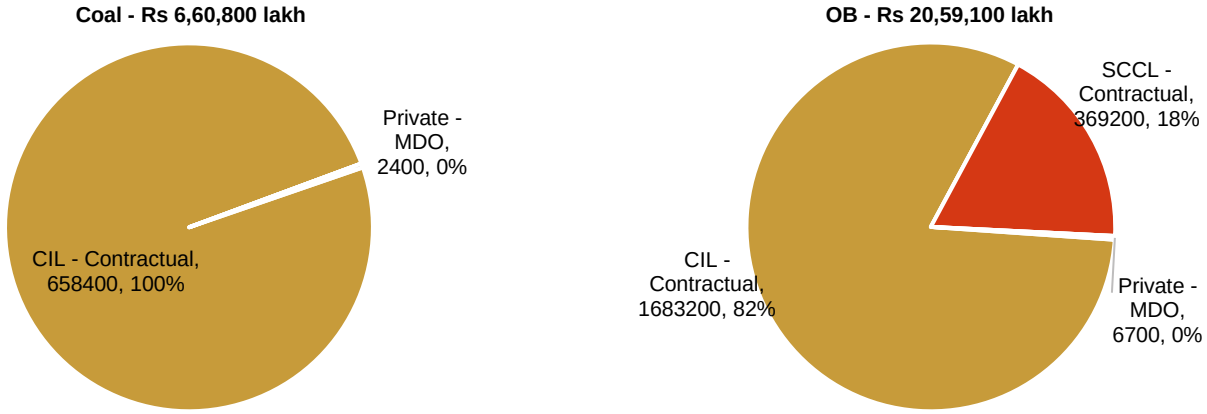
PSU blocks	2024	2025P	2027P	2030P
Coal	0	0	2,300	25,400
OB	0	0	5,200	62,600

Others - Private	2024	2025P	2027P	2030P
Coal	2,400	4,800	14,600	80,200
OB	6,700	13,000	37,600	1,93,700



P – projected
1) Note: Market size has been considered as per prevailing CIL contractor prices for coal and OB and escalation expected in the future as per WPI inflation maintaining the same level in future as well 2) Year is fiscal year
Source: CRISIL MI&A Consulting

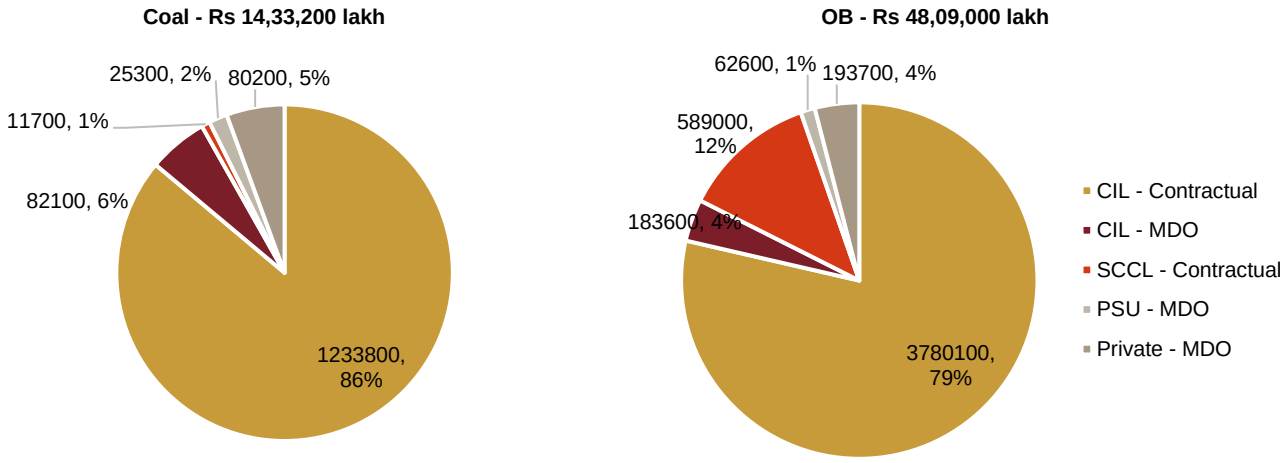
Figure 53: Total addressable market for CMLL in fiscal 2024 (Rs lakh)



Source: CRISIL MI&A Consulting

Contract mining is expected to grow at 14.8% CAGR between fiscals 2024 and 2030, to Rs 62,42,200 lakh, with coal market contributing 23% share (Rs 14,33,200 lakh), and the remainder 77% from OB removal (Rs 48,09,000 lakh). The major share in contract mining market is expected from CIL mines, at ~86% in coal and ~79% in OB in fiscal 2030. With this expected growth, CMLL's coal mining and OB removal business are expected to grow at similar rates, as it is involved in the contract mining business with CIL.

Figure 54: Total addressable market of CMLL in fiscal 2030 (Rs lakh)



Source: CRISIL MI&A Consulting

To be sure, the role of private outsourcing contractors/ MDOs in India's coal production ecosystem is becoming increasingly vital. The growth in this sector is driven by the government's push to enhance coal output while minimising the burden on state-owned enterprises such as CIL. This shift not only aids in meeting production targets but also in introducing advanced mining technologies and better management practices, which are often the strengths of private players.

As the market expands, competition among MDOs is expected to intensify. However, companies such as CMLL, with a strong track record in managing complex mining projects, particularly those involving coal and OB removal, will be better positioned to win contracts. Also, these have their own fleet as well as in-house maintenance capabilities and a focused approach on low capex and high returns vs the MDO business. The focus will be on technological innovation, cost-efficiency, and adherence to environmental and safety standards as well.

4. Coal logistics industry overview

4.1 Overview of India's coal logistics industry

Infrastructure is a vital cog in sustaining India's economic growth trajectory. In recent years, the government has taken several steps to accelerate infrastructure development, with focus on transportation, energy, smart cities, water, and social and digital infrastructure. The government has also made efforts to attract foreign investors through policy reforms.

In Union Budget 2024-25, the government outlined capital expenditure of Rs 11.11 trillion, i.e. equivalent to 3.4% of the GDP, towards the sector. This is an increase of 11.1% from the Rs 10.0 trillion earmarked in Union Budget 2023-24 and ~17% higher compared with actual expenditure of Rs 9.48 trillion in fiscal 2024.

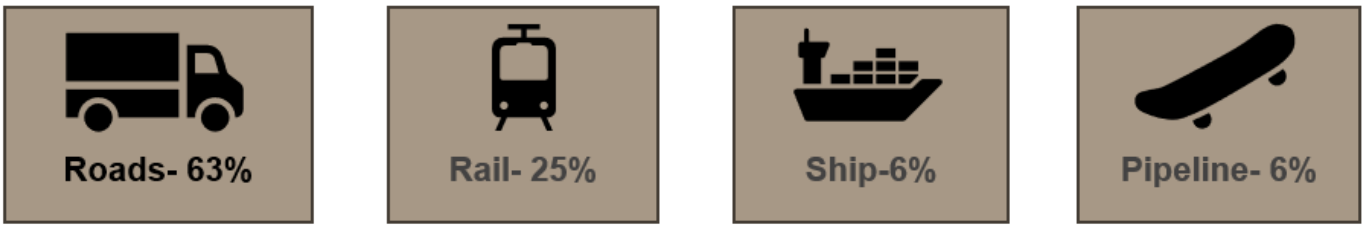
Within the infrastructure space, logistics is a vital component, playing a crucial role in the movement of goods and materials. The importance of logistics can be gauged from the nearly 50% of the budgetary allocation for fiscal 2025 towards the Ministry of Road Transport and Highways (Rs 2.78 trillion) and the Minister of Railways (Rs 2.56 trillion). And for the Ministry of Housing and Urban Affairs, the Centre has allocated Rs 0.28 trillion[50].

To be sure, India's logistics sector has been undergoing a transformative phase, driven by technological advancements, government initiatives, and increasing demands of a burgeoning consumer base. Consequently, the sector is projected to grow 8.8% annually to ~Rs 40.7 trillion by 2029 from ~Rs 26.7 trillion[51] in 2024.

In fact, through several initiatives, the government has target to raise the country's ranking in the *Logistics Performance Index*[52] to 25 from the current 38.

As per *analysis* the total modal-wise freight movement in tonne-km, roads contributed 63% share of the movement, followed rail (25%), shipping (6%) and pipeline (6%)[53]. (*A detailed analysis of each mode is provided below with focus on commodity transportation, specifically coal and iron ore.*)

Figure 55: Mode-wise split of freight movement in tonne-km (fiscal 2024)



Source: CRISIL MI&A Research – *Domestic freight transportation services – August 2024*

[50] *As per Union Budget 2024-25*
[51] *According to IBEF Infrastructure Industry Report, May 2024, which estimates the market at US$317.26 billion in 2024, and projects growth to US$484.4 billion in 2029*
[52] *World Bank*
[53] *CRISIL MI&A Research – Domestic freight transportation services – August 2024*

4.1.1 Road transport

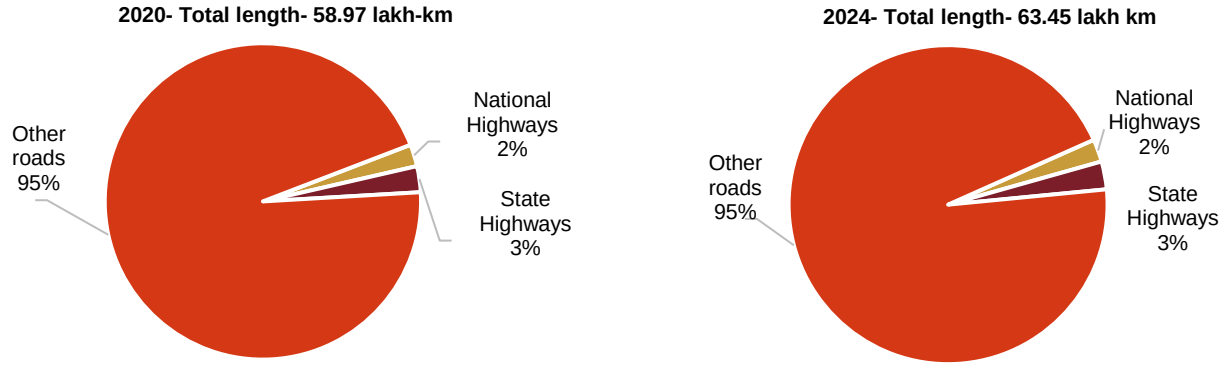
India has the second-largest road network in the world, totalling ~63.45 lakh km as of fiscal 2024, comprising 1.46 lakh km of national highways, 1.79 lakh km of state highways and 60.19 lakh km of other roads consisting of district, rural, urban and project roads. The total road network in 2020 was 58.97 lakh km. Therefore from 2020 to 2024, the country is adding ~307 km of roads every day.

In fiscal 2024, capital investment towards road projects by the government and the private sector rose to ~1.0% of GDP (~Rs 3.01 trillion), from 0.4% of GDP in fiscal 2015. The government has allocated Rs 2.78 trillion[54] to the Ministry of Road Transport & Highways for fiscal 2025. Capital expenditure of the ministry (including private investment) increased to ~Rs 3.01 trillion in fiscal 2024 from ~Rs 0.53 trillion in fiscal 2014, or 5.7x.

Also, over the past 10 years (2014 to 2024), there has been significant progress in the development of national highways, which has increased 1.6x.

Roads are an important mode for the transportation of commodities, especially coal, with 214 MT of coal transported in fiscal 2024 of a total dispatch of 973 MT, thereby comprising 22% share.

Figure 56: Total road network length in India – fiscal 2020 to 2024 (lakh km)



Source: Annual Report 2023-24, Ministry of Road Transport and Highways

4.1.2 Rail transport

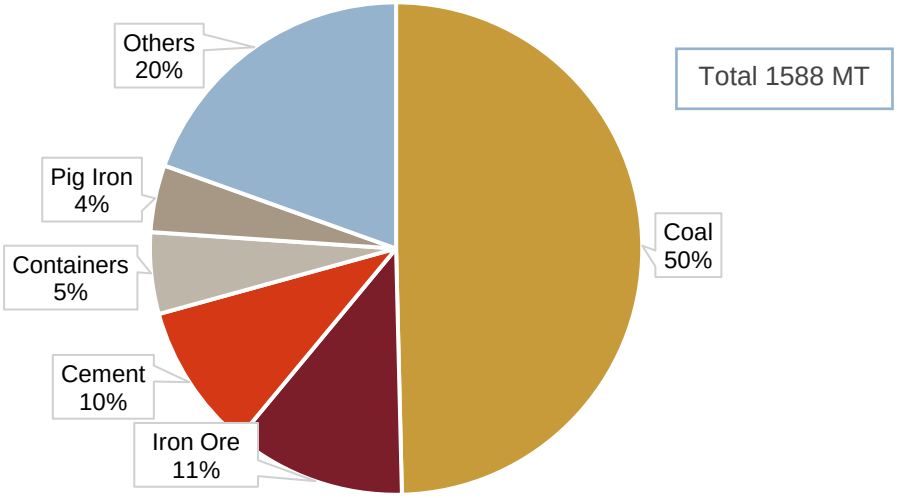
The government's capital expenditure on improving the rail network has increased 77% over the past five years, from Rs 1.48 trillion in fiscal 2020 to Rs 2.62 trillion[55] in fiscal 2024, which was a CAGR of 15.3%, with significant investments in the construction of new lines, along with gauge conversions and doubling of tracks – route length increased to 68,584 km in fiscal 2023 from 66,918 km in fiscal 2017, i.e., an average of 280 km of track length were added annually. By fiscal 2030, the total route length is forecast to increase to ~71,000 km.

[54] *As per Union Budget 2024-25*
[55] *Economic Survey 2024*

The railways are critical for the transportation of commodities, with the Indian Railways achieving freight loading of 1,588 MT[56] in fiscal 2024, which was 5.02% higher than 1,512 MT fiscal 2023.

The railways are the backbone of the coal logistics supply chain, comprising 62% share of domestic coal dispatched. Coal also contributes 49.6% share of total rail freight volume (788 MT), followed by iron ore (11%) and cement (10%).

Figure 57: Commodity-wise rail freight dispatch in volume terms (MT) in 2024



Source: Economic Survey

To cater to the rising transportation of coal via rail, the Ministry of Railways has taken up eight railway projects at an estimated cost of Rs 0.17 trillion. *The Integrated Coal Logistics Plan for Coal Mines/Blocks*[57] has recommended 20 new railway lines, including six in Odisha, three each in Chhattisgarh and Maharashtra, two each in Madhya Pradesh, Jharkhand and Uttar Pradesh, and one each in Telangana and West Bengal, considering the expected high demand of coal.

The *Ministry of Coal Action Plan 2024-25* also proposes a strategic shift towards a railway-based system in *first mile connectivity (FMC)* projects, aiming for a 14% reduction in rail logistic costs and an annual cost saving of Rs 0.21 trillion. Eight new FMC projects were commissioned in fiscal 2024, with a capacity of 93.5 MT per annum, which is expected to increase to 1,039 MT per annum, with a total of 103 FMC projects by fiscal 2029.

4.1.3 Ports

India's long coastline of 7,517 km has 13 major ports (12 operational and one under implementation) and 213 minor and intermediate ports. The total cargo handled by the ports was 1,539 MT in fiscal 2024, of which major ports handled 818 MT[58] and minor ports 721 MT.

Although rail remains the primary mode for long-distance coal transportation, research data and industry experts suggest that including coastal shipping in the modal mix, i.e. rail-sea or rail-sea-rail, could lead to considerable cost

[56] *Economic Survey 2024*
[57] *Ministry of Coal, September 2023*
[58] *Ministry of Ports, Shipping and Waterways*

savings, especially with regard to the southern part of India, which has several waterways. In fiscal 2023, 40 MT of coal was transported through the rail-sea-rail mode, which is expected to increase to 120 MT in fiscal 2030[59].

4.1.4 Airports

Airports play a significant role in the development of the national economy, owing to the global connectivity provided by airlines. In March 2024, the *Ministry of Civil Aviation* inaugurated 15 airport projects totalling Rs 1 trillion, which are expected to be operational by 2028. In India, 158 airports are operational with the construction of 84 airports over the past decade. By fiscal 2047, the number of airports is expected to reach 300. However, currently, bulk commodities (coal/ iron ore) are not transported via airplanes/ cargo planes.

4.2 Domestic transportation of commodities

For the domestic transportation of commodities, rail as well as road are the main modes. As per analysis,[60] of the total cargo freight movement in tonne-km, roads contributed 63% share, followed by rail (25%), shipping (6%) and pipeline (6%).

As per our analysis, of the ~1,800 MT[61] production of major minerals in India in fiscal 2024, coal volume was 997 MT, followed by limestone (450 MT) and iron ore (280 MT). The production of all other minerals (chromite, manganese, zinc concentrate, lead concentrate, phosphorite, etc) was 35-40 MT.

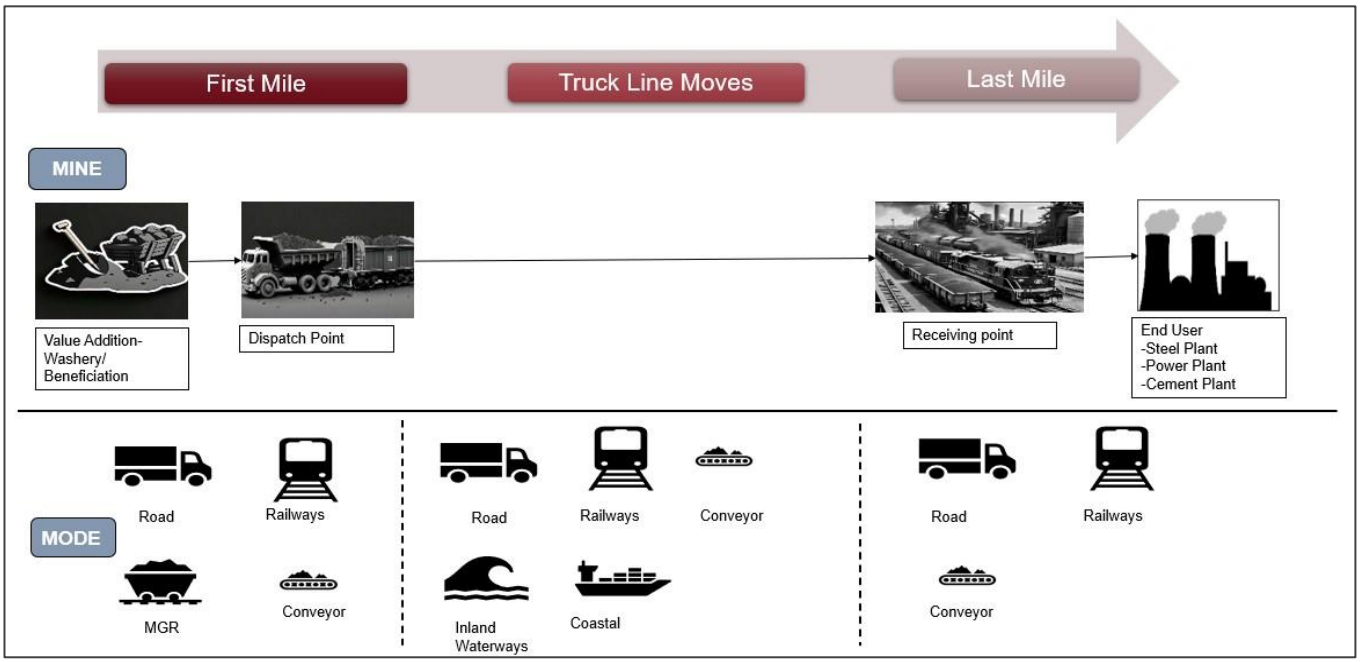
Considering the volume share of coal and iron, we have restricted our focus on coal and iron ore transportation. Also, though the volume of limestone is more than iron ore, it is a low value bulk commodity, and the clinker plants are located in proximity to limestone mines; thereby, most of the limestone is either transported through conveyor belts or mines are integrated near / within the plant boundary.

4.2.1 Coal transport

Coal is used in multiple industries, including power, CPP, steel, cement, sponge iron, bricks and paper. The coal logistic chain involves extraction of coal from the mine, which is loaded onto railway wagons, trucks or conveyor belts at the dispatch points. End-users such as steel, power and cement plants utilise the coal for production of required resource. In a few cases, coal is transported to washery plants to remove impurities or upgrade the coal to a higher calorific value and reduce ash.

[59] *As per Integrated Coal Logistics plan for coal mines/blocks by Ministry of Coal in September,2023*
[60] *CRISIL MI&A Research- Domestic freight transportation services – August 2024*
[61] *Bulk production of coal and iron ore as per Ministry of Coal and Ministry of Mines/ Indian Bureue of Mines*

Figure 58: Coal logistics value chain



Source: CRISIL MI&A Consulting

Transportation of coal is dependent on coal demand, which is dependent on demand from the power and steel sectors, as well as sectors such as cement, bricks, etc.

Figure 59: Demand drivers for coal*

Power plants

- Demand expected to increase from 1,630 BU in fiscal 2024 to 2,378 BU in fiscal 2030
- Coal demand from power plants to increase from 666 MT in fiscal 2024 to 792 MT in fiscal 2030

CPP

- Demand expected to increase from 210 BU in fiscal 2024 to 335 BU in fiscal 2030
- Coal demand from CPP to increase from 131 MT in fiscal 2024 to 211 MT in fiscal 2030

Steel

- Demand expected to increase from 144 MT in fiscal 2024 to 222 MT in fiscal 2030
- Coal demand for steel to increase from 62 MT in fiscal 2024 to 104 MT in fiscal 2030

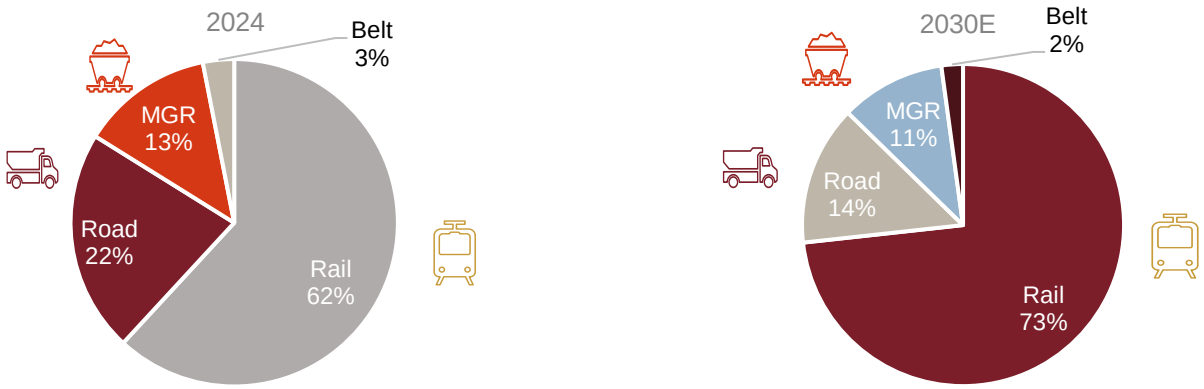
Source: CRISIL MI&A Consulting

The volume of coal dispatched in fiscal 2024 (973 MT) by different modes was driven by rail (including road cum rail; 62%, 602 MT domestic coal), followed by road (22%, 214 MT), MGR (13%, 127 MT) and conveyor belt (3%, 28 MT) in fiscal 2024[62]. Railways (including RCR) contributed 62% of total domestic coal supplied in the country last fiscal,

[62] *Quarterly booklet on coal and lignite sectors (4th Quarter 2023-24), Ministry of Coal*

which is expected to increase to 73% by fiscal 2030, according to *Integrated Coal Logistics plan for Coal Mines/Blocks*.[63]

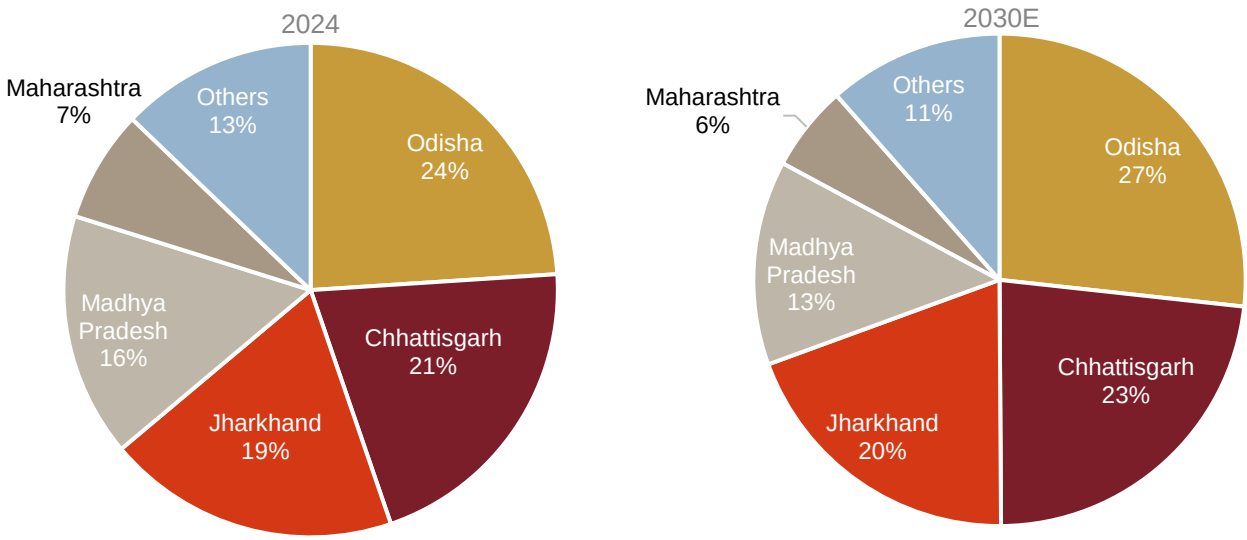
Figure 60: Coal handled by volume (MT) through various modes in fiscals 2024 and 2030E



Source: Quarterly booklet on coal and lignite sectors, 4th Quarter 2023-24 by Ministry of Coal and Integrated Coal Logistics Plan for Coal Mines/Blocks

About 87% of supply in fiscal 2024 came from Odisha, Chhattisgarh, Jharkhand, Madhya Pradesh and Maharashtra. However, the demand is pan India for coal.

Figure 61: State-wise coal supply in fiscals 2024 and 2030E (%)



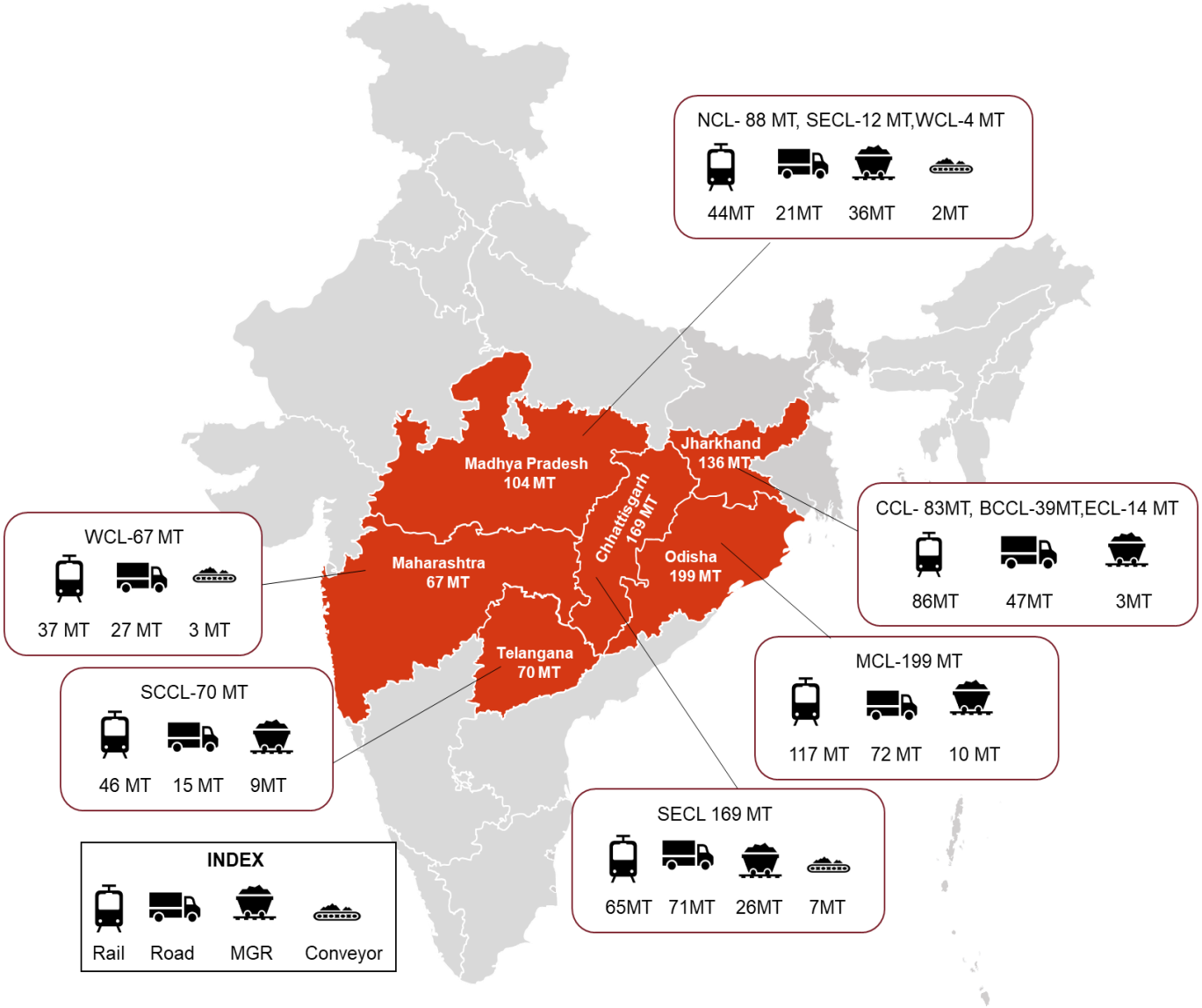
Source: Quarterly report on Coal and Lignite Sectors, 4th Quarter 2023-24, Ministry of Coal

[63] *Ministry of Coal, September 2023*

In fiscal 2024, CIL and its subsidiaries dispatched 753 MT coal and SCCL dispatched 70 MT. MCL, SECL and NCL dispatched 199 MT, 181 MT and 138 MT, respectively. Out of 823 MT dispatched, rail transported 436 MT, followed by roads at 263 MT, MGR at 111 MT and belt at 13 MT[64].

Odisha, Chhattisgarh, Jharkhand, Madhya Pradesh and Maharashtra dispatched 199 MT, 169 MT, 136 MT, 104 MT and 67 MT, accounting for 82% of CIL's and SCCL's dispatch in fiscal 2024[65]. Rail transported 52% of CIL's dispatch. Odisha and Jharkhand are hugely dependent on rail. Madhya Pradesh is much dependent on rail, at 43%. Chhattisgarh and Maharashtra transport over 40% of coal by roads.

Figure 62: State-, mode- and subsidiary-wise dispatch of coal by CIL and SCCL in fiscal 2024



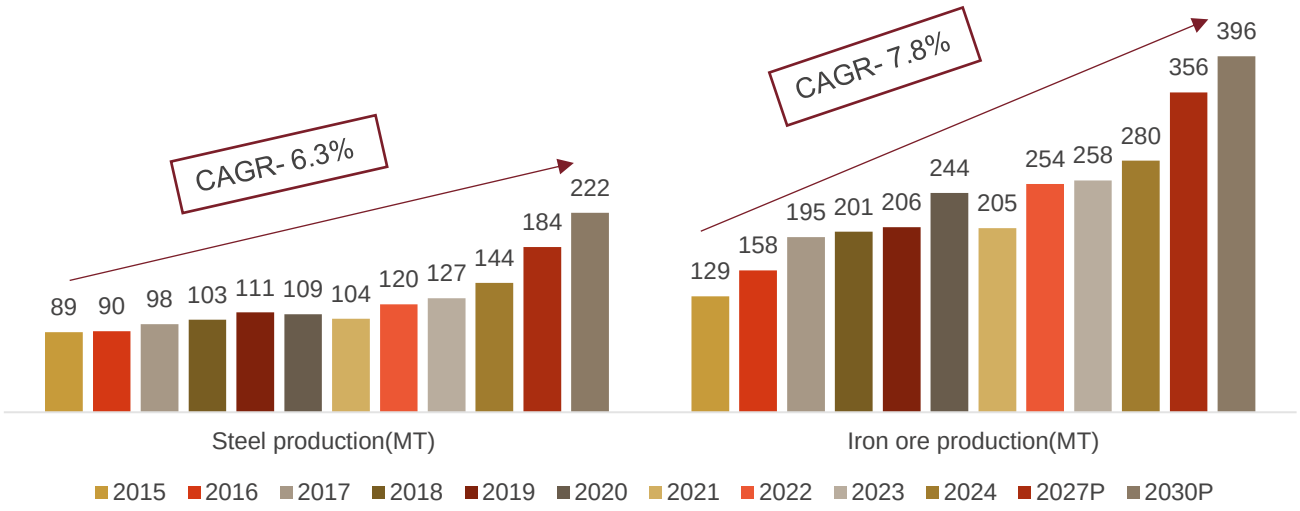
Source: Monthly Statistical Report Ministry of Coal, March 2024

[64] *Quarterly booklet on coal and lignite sectors, Ministry of Coal, 4th Quarter 2023-24*
[65] *Monthly statistical report, Ministry of Coal, March 2024*

4.2.2 Iron ore

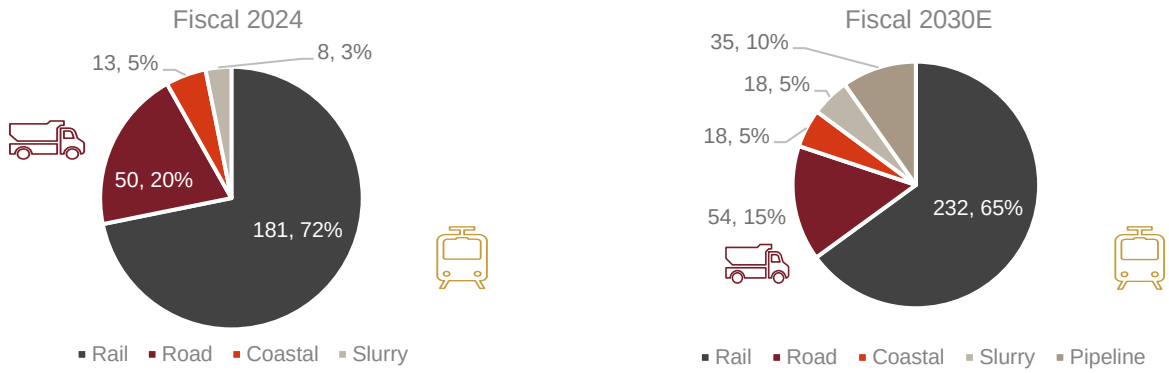
Owing to the continuous increase in demand for steel, demand for iron ore is expected to increase rapidly. Steel production is expected to increase from 144 MT in fiscal 2024 to 222 MT in fiscal 2030, while iron ore production is expected to increase from 280 MT to 396 MT over the same period[66]. Demand needs to be fulfilled by the capacity expansion of iron ore mines and steel plants. In fiscal 2024, 252 MT of iron ore was dispatched, of which rail transported 72%, roads 20%, coastal 5% and slurry 3%[67]. Although there is focus on reducing road transport and increasing rail, roads will continue to be the preferred mode for a while due to increase in volumes of minerals and delay in rail projects. In fiscal 2030, 356 MT iron is expected to be dispatched, of which rail expected to transport 65%, road 15%, pipeline 10%, and coastal and slurry 5% each.[68]

Figure 63: Steel and iron ore production by volume



Source: CRISIL MI&A Consulting, Joint Plant Committee (JPC) reports of different years

Figure 64: Iron ore handled by volume (MT) through various modes



Source: Indian Railways Yearbook and Logistics Plan for Iron and Steel Sector, September 2023

[66] *Based on CRISIL MI&A Consulting estimates*
[67] *Indian Railways Yearbook, Logistics Plan for Iron and Steel Sector, Ministry of Steel, September 2023*
[68] *Logistics Plan for Iron & Steel Sector, Ministry of Steel, September 2023*

4.3 Industry size for mineral transport industry

4.3.1 Coal

In fiscal 2024, domestic coal dispatch was 973 MT, up at a CAGR of 5.4% between fiscals 2015 and 2024. The railways (including RCR) contributed ~62% of this dispatch. In fiscal 2030, domestic dispatch is expected to reach 1,481 MT[69], of which rail is expected to transport 73% (1,085 MT), followed by roads (14%), MGR (11%) and others (2%). Increase in rail transport requires more wagons. The number of rakes is expected to increase from 412 per day in fiscal 2024 to 743 per day in fiscal 2030 at an average capacity of 4,000 tonne per rake.

In fiscal 2024, domestic dispatch totalled 973 MT, for which the total industry size is estimated at Rs 99,25,800 lakh[70], of which rail constitutes Rs 66,75,400 lakh, roads Rs 29,91,100 lakh, MGR Rs 2,53,100 lakh and belt Rs 6,300 lakh. For fiscal 2030, total domestic dispatch is projected at 1,481 MT[71], for which the total industry size is projected at Rs 1,77,94,000 lakh, of which rail would likely constitute Rs 1,38,06,500 lakh, roads Rs 35,93,100 lakh, MGR Rs 3,86,200 lakh and belt Rs 8,100 lakh. Therefore, the market is expected to grow at a CAGR of 10.2% from fiscal 2024 to fiscal 2030.

Table 12: Mode-wise dispatch and market size of coal

Fiscal	Rail (MT)	Road (MT)	MGR (MT)	Belt (MT)	Total dispatch (MT)	Rail market (Rs lakh)	Road market (Rs lakh)	MGR market (Rs lakh)	Belt market (Rs lakh)	Total market (Rs lakh)
2015	297	168	94	49	608	22,99,800	17,07,600	1,44,800	8,400	41,60,600
2016	314	172	98	48	632	25,17,100	18,11,400	1,57,500	8,500	44,94,600
2017	327	179	95	49	650	27,11,600	19,58,500	1,58,600	9,000	48,37,800
2018	335	201	103	49	688	28,82,400	22,76,600	1,76,900	9,300	53,45,200
2019	339	245	107	42	733	30,22,000	28,66,900	1,91,600	8,200	60,88,700
2020	330	243	110	23	707	30,51,200	29,51,900	203,900	4,800	62,11,900
2021	372	169	114	36	691	34,03,400	21,25,100	2,35,600	7,300	57,71,300
2022	423	228	118	51	819	42,63,100	29,66,600	2,37,500	10,200	74,77,500
2023	417	289	122	50	877	46,10,100	39,01,000	2,42,000	10,100	87,63,300
2024	601	214	127	31	973	66,75,400	29,91,100	2,53,100	6,300	99,25,800
2025P	669	217	132	32	1049	76,93,000	31,41,900	2,73,900	6,600	1,11,15,500
2026P	720	212	134	31	1097	85,85,100	31,85,500	2,87,100	6,800	1,20,64,500
2027P	780	208	136	31	1154	96,29,500	32,33,500	3,02,400	7,000	1,31,72,400
2028P	892	214	146	33	1284	1,14,15,400	34,52,800	3,36,400	7,600	1,52,12,200
2029P	1014	218	156	34	1422	1,34,51,100	36,44,300	3,71800	8,100	1,74,75,300
2030P	1085	207	156	33	1481	1,38,06,500	35,93,100	3,86,200	8,100	1,77,94,000

P: Projected

Source: Indian Railways Yearbook, Quarterly booklet 2023-24, Ministry of Coal. Market size is estimated by CRISIL MI&A Consulting analysis

[69] *Note: Of total domestic supply of 1,511 MT in fiscal 2030, 98% is expected to be dispatched, i.e. 1,481 MT*
[70] *Assumptions: Rail - 555 km lead and Rs 2 per tonne-km unit cost, road - 200 km lead and Rs 7 per tonne-km unit cost, MGR - 100 km lead and Rs 2 per tonne-km unit cost, belt - 20 km lead and Rs 1 per tonne-km unit cost*
[71] *Of total domestic supply of 1,511 MT in fiscal 2030, 98% is expected to be dispatched, i.e. 1,481 MT*

4.3.2 Iron ore

Production for steel rose from 89 MT in fiscal 2015 to 144 MT in fiscal 2024, at a CAGR of 5.5%, which boosted demand for iron ore. Domestic iron ore production is expected to increase from 280 MT in fiscal 2024 to 396 MT by fiscal 2030, at a CAGR of 5.9%.

The iron ore logistics industry is valued at Rs 18,66,900 lakh as of fiscal 2024, led by railways (Rs 13,91,800 lakh) and roads (Rs 3,02,400 lakh). Coastal and slurry mode comprise Rs 1,66,300 lakh and Rs 6,400 lakh, respectively[72].

The industry is expected to clock a CAGR of 8% from fiscal 2024 to fiscal 2030 to reach Rs 29,55,000 lakh by fiscal 2030[73], of which rail will likely constitute Rs 22,05,000 lakh, roads Rs 3,97,000 lakh, coastal Rs 2,91,200 lakh, slurry Rs 17,600 lakh and pipeline Rs 44,100 lakh.

Table 13: Mode-wise dispatch and market size of iron ore

Fiscal	Rail (MT)	Road (MT)	Others (MT)	Total dispatch (MT)	Rail market (Rs lakh)	Road market (Rs lakh)	Others market (Rs lakh)	Total market (Rs lakh)
2015	113	13	1	**126**	6,75,100	54,900	6,600	**7,36,700**
2016	117	30	1	**148**	7,25,300	1,33,400	14,500	**8,73,200**
2017	138	37	12	**187**	8,84,000	1,74,500	1,12,400	**11,70,900**
2018	140	39	17	**196**	9,32,300	1,89,800	1,70,600	**12,92,700**
2019	137	39	20	**196**	9,45,300	1,96,800	1,79,300	**13,21,500**
2020	153	45	29	**227**	10,96,600	2,36,800	2,20,300	**15,53,700**
2021	159	44	18	**221**	12,66,100	2,38,400	2,06,100	**17,10,600**
2022	168	48	23	**240**	13,25,600	2,67,800	2,26,600	**18,20,000**
2023	160	46	26	**232**	12,31,400	2,68,900	2,22,000	**17,22,400**
2024	**181**	**50**	**21**	**252**	**13,91,800**	**3,02,400**	**1,72,700**	**18,66,900**
2025P	205	56	29	**290**	16,33,300	3,45,600	2,11,700	**21,90,500**
2026P	211	56	37	**304**	17,44,200	3,58,800	2,36,000	**23,39,000**
2027P	219	56	45	**321**	18,76,100	3,74,500	2,64,900	**25,15,500**
2028P	224	56	54	**333**	19,87,600	3,84,200	2,92,700	**26,64,500**
2029P	229	55	62	**346**	21,00,300	3,92,300	3,22,500	**28,15,200**
2030P	**232**	**53**	**71**	**356**	**22,05,000**	**3,97,000**	**3,52,900**	**29,55,000**

P: Projected

Source: Ministry of Mines, Logistics Plan for Iron and Steel Sector by Ministry of Steel, September 2023. Market size is estimated by CRISIL MI&A Consulting

[72] *Assumptions: Rail - 360 km lead and Rs 2.1 per tonne-km unit cost, road - 100 km lead and Rs 6 per tonne-km unit cost, coastal – 1,200 km lead and Rs 1.1 per tonne-km unit cost, slurry - 100 km lead and Rs 0.8 per tonne-km unit cost, pipeline - 125 km lead and Rs 0.8 per tonne-km unit cost*

[73] *For 2030 - cost escalation at 3.62% per annum*

4.3.3 Limestone and other minerals

Demand for limestone, predominantly used in the cement sector, has been steadily increasing. Production of limestone increased from 293 MT in fiscal 2015 to 450 MT in fiscal 2024, at a CAGR of 4.9%. Major modes to transport limestone by volume are roads (80%), rail (10%) and coastal (10%). Cement demand is expected to increase to 641 MT in fiscal 2030 from 458 MT in fiscal 2024, while limestone demand is estimated at 650 MT[74] in fiscal 2030. The logistics industry, estimated at Rs 9,28,700 lakh in fiscal 2024[75], is projected to grow to Rs 19,79,300 lakh in fiscal 2030, at a CAGR of 13.4% from fiscal 2024 to fiscal 2030.

Table 14: Mode-wise dispatch and market size of limestone

Fiscal	Rail (MT)	Road (MT)	Coastal (MT)	Total dispatch (MT)	Rail market (Rs lakh)	Road market (Rs lakh)	Others market (Rs lakh)	Total market (Rs lakh)
2015	23	249	21	**293**	1,55,300	1,64,100	1,35,900	**4,55,400**
2016	25	261	21	**307**	1,68,500	1,78,000	1,47,400	**4,94,000**
2017	25	266	22	**313**	1,78,100	1,88,200	1,55,900	**5,22,200**
2018	27	289	24	**340**	2,00,600	2,11,900	1,75,500	**5,88,100**
2019	30	323	27	**380**	2,32,000	2,45,100	2,03,000	**6,80,200**
2020	31	305	23	**359**	2,42,300	2,40,200	1,84,100	**6,66,500**
2021	31	297	22	**349**	2,52,800	2,41,800	1,76,400	**6,71,000**
2022	36	333	22	**392**	3,09,700	2,81,300	1,89,500	**7,80,500**
2023	36	345	24	**405**	3,17,600	3,02,000	2,09,500	**8,29,100**
2024	**36**	**383**	**32**	**450**	**3,16,800**	**3,34,700**	**2,77,200**	**9,28,700**
2025P	40	403	36	**478**	3,63,600	3,65,100	3,27,200	**10,55,900**
2026P	44	424	41	**509**	4,16,600	3,98,300	3,84,500	**11,99,300**
2027P	49	446	46	**541**	4,76,600	4,34,400	4,50,100	**13,61,000**
2028P	54	470	52	**575**	5,44,500	4,73,700	5,25,000	**15,43,200**
2029P	59	494	58	**611**	6,21,300	5,16,600	6,10,500	**17,48,400**
2030P	**65**	**520**	**65**	**650**	**7,08,000**	**5,63,200**	**7,08,000**	**19,79,300**

P: Projected

Source: Indian Railways Yearbook. Market size is estimated by CRISIL MI&A Consulting

Other minerals produced in the country include bauxite, chromite, gypsum, clay and granite, totalling 35-40 MT in fiscal 2024. These are largely transported via roads. The logistics industry, estimated at Rs 61,300 lakh in fiscal 2024[76], is expected to reach Rs 1,13,800 lakh in fiscal 2030, transporting 53 MT of minerals.

[74] *Assumptions: Cement demand projected at 641 MT in fiscal 2030*
[75] *Assumptions: Rail - 550 km lead and Rs 1.6 per tonne-km unit cost, road - 25 km lead and Rs 3.5 per tonne-km unit cost, coastal - 800 km lead and Rs 1.1 per tonne-km unit cost*
[76] *Assumptions: 100% transport by road with average lead of 50 km lead and Rs 3.5 per tonne-km unit cost*

Table 15: Mode-wise dispatch and market size of other minerals

Fiscal	Road (MT)	Total dispatch (MT)	Road market (Rs lakh)	Total market (Rs lakh)
2015	19	**19**	24,200	**24,200**
2016	20	**20**	26,800	**26,800**
2017	22	**22**	29,700	**29,700**
2018	23	**23**	33,000	**33,000**
2019	25	**25**	36,600	**36,600**
2020	27	**27**	40,500	**40,500**
2021	29	**29**	44,900	**44,900**
2022	31	**31**	49,800	**49,800**
2023	33	**33**	55,200	**55,200**
2024	**35**	**35**	**61,300**	**61,300**
2025P	37	**37**	67,900	**67,900**
2026P	40	**40**	75,300	**75,300**
2027P	43	**43**	83,500	**83,500**
2028P	46	**46**	92,600	**92,600**
2029P	49	**49**	1,02,600	**1,02,600**
2030P	**53**	**53**	**1,13,800**	**1,13,800**

P: Projected

Source: Annual Report by Ministry of Mines 2023-34. Market size is estimated by CRISIL MI&A Consulting

4.3.4 Minor minerals

Minor minerals include sand, gravel, marble, gypsum and boulders, which are mainly transported via roads and have small lead distance. Production of minor minerals is projected to increase from 843 MT[77] in fiscal 2024 to 1,265 MT in fiscal 2030, at a CAGR of 7%. The logistics industry, estimated at Rs 7,37,700 lakh[78] in fiscal 2024, is expected to reach Rs 13,70,300 lakh in fiscal 2030.

Table 16: Mode-wise dispatch and market size of minor minerals

Fiscal	Road (MT)	Total dispatch (MT)	Road market (Rs lakh)	Total market (Rs lakh)
2015	459	**459**	2,91,300	**2,91,300**
2016	491	**491**	3,23,000	**3,23,000**
2017	525	**525**	3,58,100	**3,58,100**
2018	562	**562**	3,97,100	**3,97,100**
2019	601	**601**	4,40,300	**4,40,300**
2020	643	**643**	4,88,100	**4,88,100**
2021	688	**688**	5,41,200	**5,41,200**

[77] *According to Sand Mining Framework, which states consumption of sand in 2017 was ~515 MT*
[78] *Assumptions: 100% transport by road with average lead of 25 km lead and Rs 3.5 per tonne-km unit cost*

Fiscal	Road (MT)	Total dispatch (MT)	Road market (Rs lakh)	Total market (Rs lakh)
2022	736	**736**	6,00,100	**6,00,100**
2023	788	**788**	6,65,300	**6,65,300**
2024	**843**	**843**	**7,37,700**	**7,37,700**
2025P	902	**902**	8,17,900	**8,17,900**
2026P	965	**965**	9,06,800	**9,06,800**
2027P	1033	**1033**	10,05,400	**10,05,400**
2028P	1105	**1105**	11,14,700	**11,14,700**
2029P	1182	**1182**	12,35,900	**12,35,900**
2030P	**1265**	**1265**	**13,70,300**	**13,70,300**

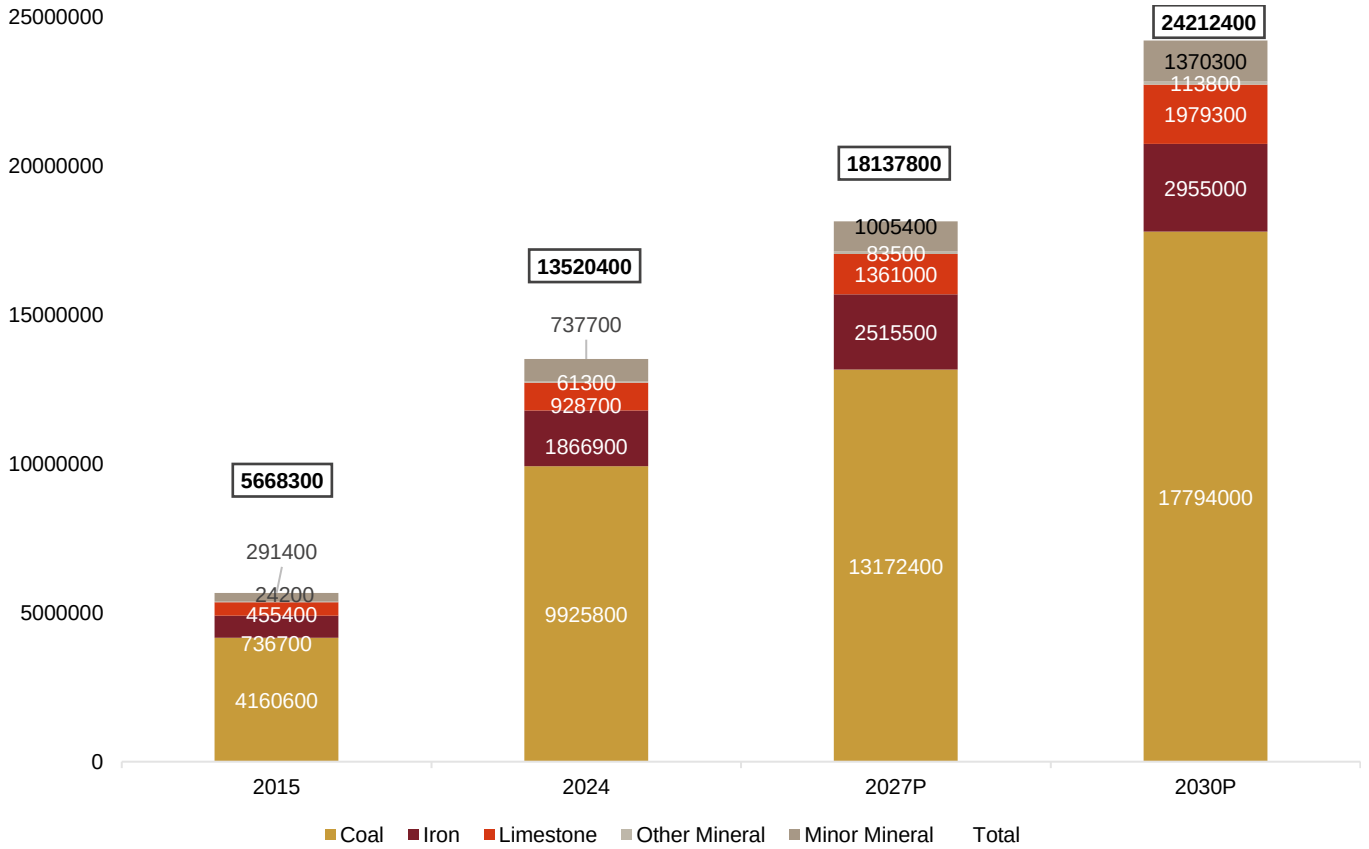
P: Projected

Source: Sand Mining Framework 2018. Market size is estimated by CRISIL MI&A Consulting

4.3.5 Summary

Owing to the increase in domestic demand for minerals, **the size of the logistics industry is expected to increase at a CAGR of 10.2% between fiscals 2024 and 2030. Therefore, the industry size for transporting minerals, estimated at Rs 1,35,20,400 lakh in fiscal 2024, is expected to increase to Rs 2,42,12,400 lakh in fiscal 2030.**

Figure 65: Mineral-wise size of the logistics industry (Rs lakh)

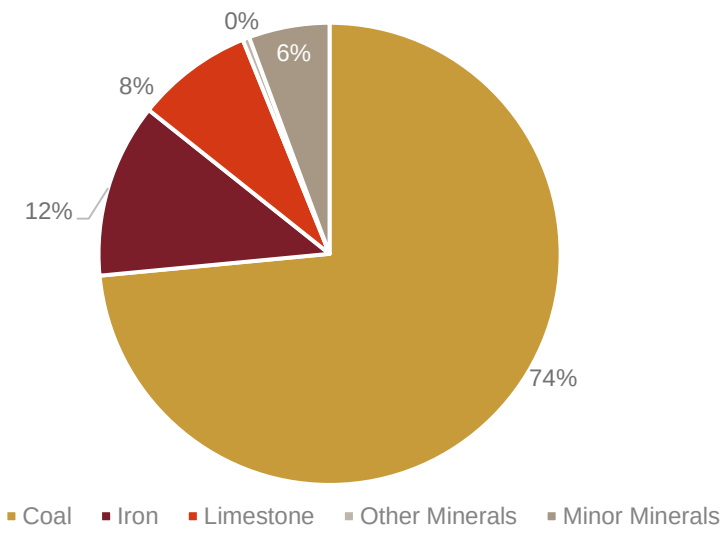


P: Projected

Source: Market size is estimated by CRISIL MI&A Consulting

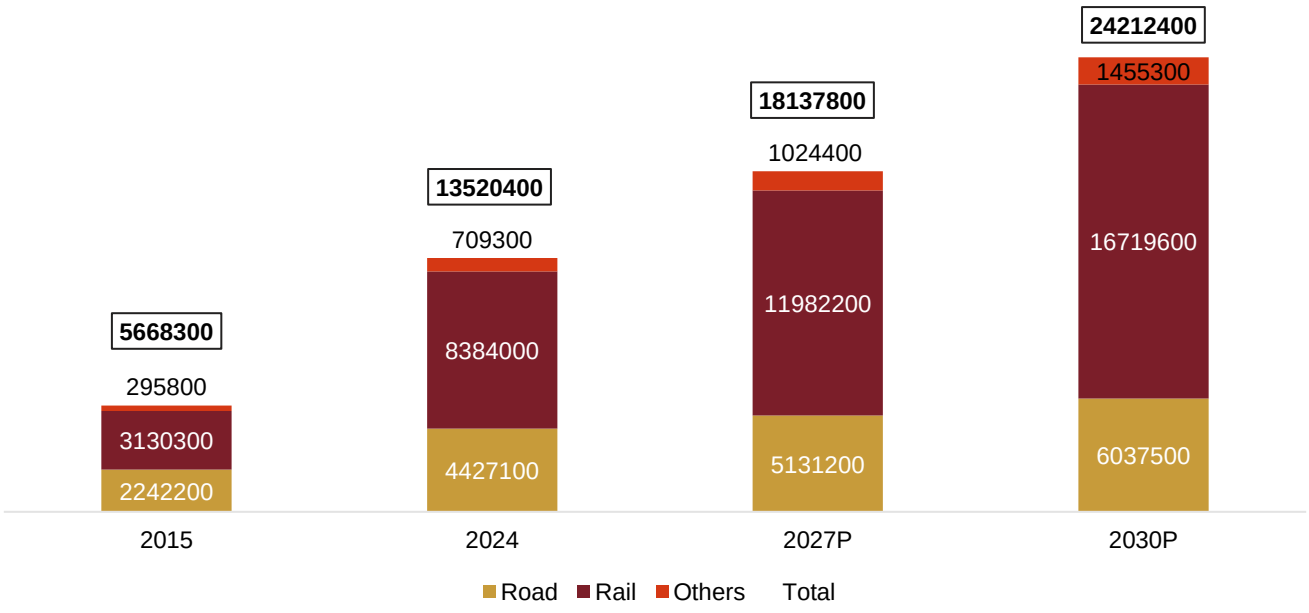
Coal is expected to continue as the major contributor to the logistics industry with 74% share in fiscal 2030, followed by iron ore at 12%. Other minerals and minor minerals are expected to contribute the remaining 14% in fiscal 2030.

Figure 66: Mineral-wise market share of the logistics industry (fiscal 2030E)



Source: Market size is estimated by CRISIL MI&A Consulting

Figure 67: Mode-wise logistics industry size for minerals (Rs lakh)



Source: Market size is estimated by CRISIL MI&A Consulting: P: Projected

CMLL operates in both contract mining (coal/ OB outsourcing) business and logistics operations. The company caters to Maharashtra, Madhya Pradesh and Chhattisgarh. It operates mainly in the road logistics segment, transporting coal and iron ore. The market for coal through road, estimated at Rs 29,91,100 lakh in fiscal 2024, is expected to grow to Rs 35,93,100 lakh in fiscal 2030. Similarly, the market for iron ore through road, estimated at Rs 3,02,400 lakh in fiscal 2024, is expected to grow to Rs 3,97,000 lakh in fiscal 2030. **The company can expand its logistics business in different minerals. Therefore, the target market for CMLL, estimated at Rs 44,27,100 lakh in fiscal 2024, is expected to increase to Rs 60,37,500 lakh in fiscal 2030, at a CAGR of 5.3% during this period.**

4.4 Challenges faced by the mineral logistics industry

- **Transportation Cost**

Transportation cost is a major component in the landed cost of coal at end-use plants. Logistics accounts for more than 50% of the landed coal cost for a plant located almost 2,000 km from the coal field. Further, coal accounts for the highest revenue realisation among all commodities transported by railways. The cost of hauling coal by rail increased to ~Rs 2/km in fiscal 2024 from ~Rs 1.5/km in fiscal 2020. Due to such high costs, domestic coal has become more expensive than imported coal in many cases, especially for power plants located near coastal regions, thereby affecting coastal infrastructure as well as foreign exchange outflows. Road transport is more expensive as it caters to short distances, and there are no dedicated high-capacity roads, which highlights the importance of high-capacity wagons and dedicated freight corridors. Hub-and-spoke model can be used for increasing efficiency. RSR routes, along with coastal shipping, needs to be explored for making logistics cost competitive.

- **Availability**

The limited means of coal extraction makes mining cumbersome for some mines. Appropriate railway projects are required in major coal-bearing states to increase the output. Private players also face problems such as availability of haul roads, making end-use plants economically unviable. Therefore, there is a need to improve existing infrastructure, focusing on critical railway projects, developing inland waterways and fast-tracking conveyor belt projects.

- **Time**

Transportation time is another major bottleneck for coal logistics. Wagon turnaround time—the average time a wagon takes to complete its typical loaded trip and becomes available for loading again—is posing problems for transportation of coal through railways. Oversized coal shipments increase wagon turnaround time, resulting in higher freight costs via demurrage. To counter this, predictive procurement of wagons should be undertaken to avoid delays and surcharges. Rapid loading systems should be developed and better-designed wagon using lightweight aluminium bodies should be deployed.

4.5 Scope for technological innovations in coal/mineral logistics to improve efficiency

As coal production is increasing, supply remains constrained due to major logistics and/or coal transportation challenges. Road transport (through trucks) is neither fast nor cost-effective compared with the railway. Hence railway is the most viable option for transport, though it becomes heavily congested at major nodal points. Given these logistics' constraints, the *Smart Coal Logistics* initiative that promotes automation can be used in the following ways to improve efficiency.

- Integration with Smart weighbridge to collect coal dispatch details at entry and exit points
- Integration with Silo weighing device to collect coal dispatch details when MGR is the mode of transport
- Volume scanning of coal at exit points
- Volume scanning of coal moving through conveyors
- Volume scanning solution for volume information of coal in stockyards
- Tracking vehicles carrying coal when the means of transport is roadways
- Integrating with pre-existing vehicle-tracking systems to track coal movement through roadways
- Integrating with FOIS of Indian railways to track coal movement through railway

5. Profiling of Caliber Mining and Logistics Limited (CMLL)

5.1 Business profile

Caliber Mining and Logistics Limited (CMLL) is a prominent mineral-contracting company that specialises in overburden (OB) and mineral extraction (coal and iron ore), along with handling logistics operations, and loading and unloading services. The company was incorporated in 2014 as Caliber Mercantile Private Limited (CMPL) and was later renamed as Caliber Mining and Logistics Private Limited and recently named as Caliber Mining and Logistic Limited)[79]. The company is promoted by the Chadda Group and is quite active in different parts of India, with high concentration in Maharashtra. It caters to several large players in mining, power and infrastructure domains. With a rich legacy spanning 35 years, **CMLL provides a comprehensive suite of integrated mining solutions encompassing coal mining, OB removal coal logistics, coal trading, rake loading and iron-ore logistics, along with other services.**

CMLL is currently managed and supervised by its promoters – *Mr. Mohit Chadda (Chairman and Managing Director), Mr. Manish Chadda (Director-Strategy), Mr. Rahul Chadda (Director-Mining and Operations) and Mr. Anuj Chadda (Head- Maintenance and Procurement).* **The company has a robust fleet comprising 1,473 vehicles (equipment and machines related to mining) (representing a strong asset base in the mining contracting business) and hold the distinction of being a leading commercial fleet owners in central India.** CMLL has a team of 3,742 employees (as on 31st Oct 2024) ensuring seamless operations and unparalleled service delivery, which is one of the highest under a single company[80]. The directors (second-generation promoters) are deeply involved in the business, evident from the strong growth in the company's financial numbers over the last five years. Collectively, the directors bring 10-15 years of industry experience, united by the shared vision of sustainable growth and continued success. Their deep understanding of market dynamics has enabled the company to build strong, lasting relationships with key customers.

The company has a few subsidiaries based on its service offerings or the contractual requirements for ease of doing business:

Figure 68: Details of CMLL's subsidiaries and associate companies

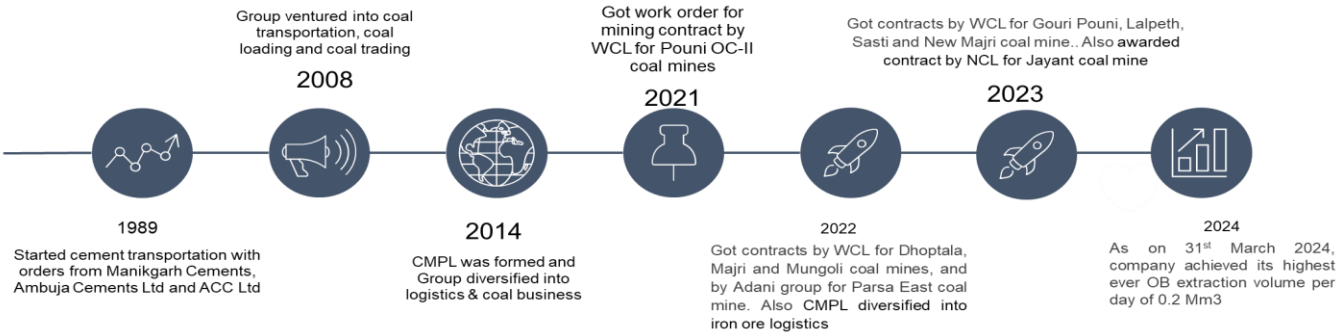
[79] *As per ROC Notification dated 10.09.2024*
[80] *As per Company- CMLL*

Source: Company

5.2 Corporate history

CMLL's growth dates back to 1989, when the group first started providing logistics services for cement companies. Till date, the group has achieved many milestones and diversified its portfolio into multiple businesses, with a focus on core sectors such as mining and logistics services. CMLL's clientele includes prominent entities such as the world's biggest mining company – Coal India Limited (CIL) and its subsidiaries – Western Coalfields Limited (WCL) and Northern Coalfields Limited (NCL), along with other renowned private companies having larger operations across mining and infrastructure projects (Adani Group, GMR Warora Energy limited, Auro Enterprises (Aurobindo Group), Dhariwal Infrastructure Ltd., Indorama Synthetics Ltd, etc.). The table below shows some of the major events in the group's history:

Figure 69: Major events in the group's history

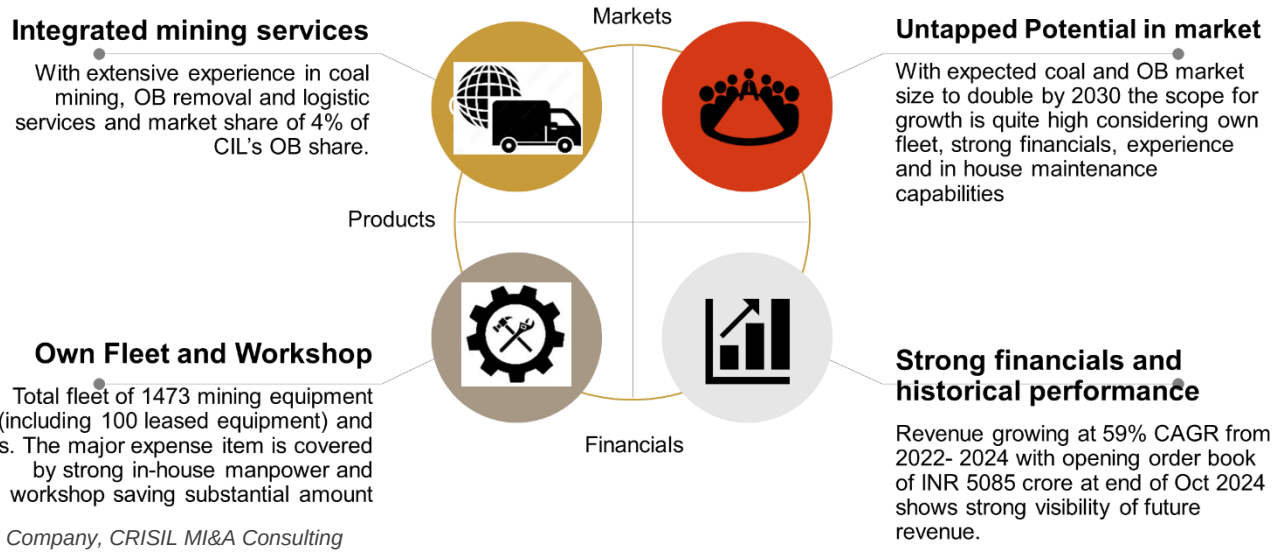


Source: Company, CMPL was renamed as CMLL in Sep 2024

5.3 Key differentiators

Figure 70: Key differentiators

Key differentiators for CMLL



Source: Company, CRISIL MI&A Consulting

The company's key opportunities in mining contract services include the untapped potential and opportunities available in the market from State-run CIL, along with many central and State PSUs, as the market size is expected to increase to Rs 62,42,200 lakh in fiscal 2030 from Rs 27,19,900 lakh[81] in fiscal 2024, clocking a 14.8% CAGR. The company has a unique proposition of offering services in coal and OB removal, with its own fleet having in-house maintenance capabilities and experienced manpower. It is also backed by promoters having ~15 years of industry experience, with a clear understanding of market dynamics and strong relationships with marquee customers. Further, the company has a strong reputation, long-standing relationships with key customers, including CIL, resulting in repeat business, no default of any financial institutions/bankers/lenders and strong financials that place it in a unique position to execute its existing orders as well as take new orders.

5.4 Financial performance

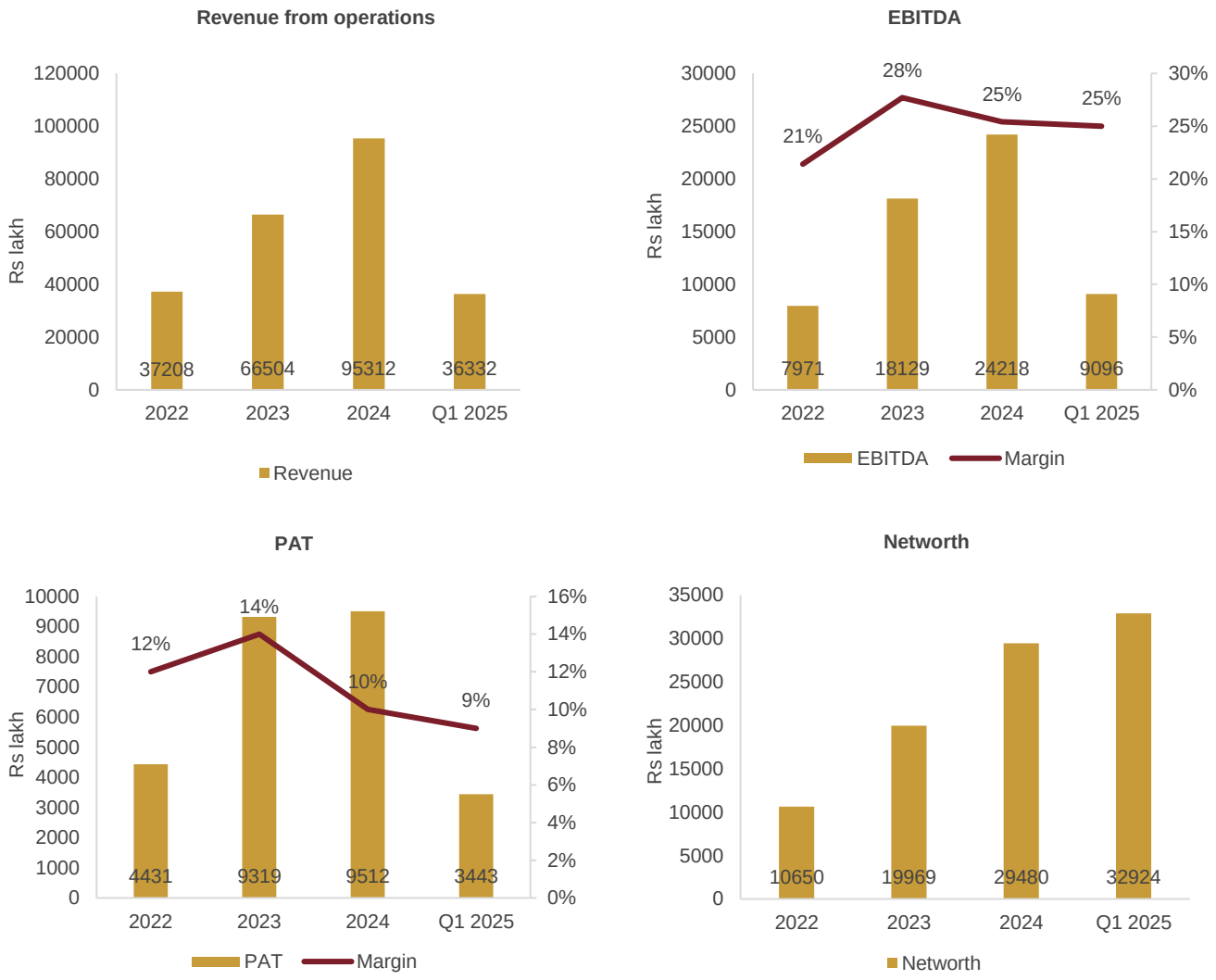
CMLL is the fastest-growing company in the mining contracting space, with strong historical financial performance. The company's total revenue has clocked a 59%[82] CAGR from fiscal 2022 to 2024. Its total revenue increased to Rs 95,818 lakh at the end of fiscal 2024, compared with Rs 37,957 lakh in fiscal 2022. EBITDA grew to Rs 24,218 lakh at the end of fiscal 2024, compared with Rs 7,971 lakh in fiscal 2022 while PAT grew to Rs 9,512 lakh, compared with Rs 4,431 lakh in fiscal 2022. EBITDA and PAT CAGR from 2022 to 2024 were 74% and 47%, respectively. In continuation of the strong growth path the Q1 2025 total revenue was Rs 36,394 lakh with EBITDA of Rs 9,096 lakh and PAT Rs 3,443 lakh. Overall EBIDTA and PAT percentages of revenue were 25% and 10%, respectively, in fiscal 2024, which makes CMLL stand apart from its key competitors. The company's net worth also increased substantially to Rs 29,480 lakh in fiscal 2024 from Rs 10,650 lakh in fiscal 2022. Networth of the company

[81] *Refer Chapter 3.8 for market estimation*
[82] *Growth from fiscal 2022 to fiscal 2024 with total revenue of Rs 37,957 lakh in fiscal 2022 to Rs 95,818 lakh in fiscal 2024.*

has further increased to Rs 32,924 lakh in Q1 2025. Further, CMLL has an opening orderbook of ~Rs 5,08,471[83] lakh to be executed in the next 3-5 years.

5.4.1 Financial highlights

Figure 71: Key financials and profitability in the last 3 years (Rs lakh)



Source: Company's Restated Financial Statements, CRISIL MI&A Consulting

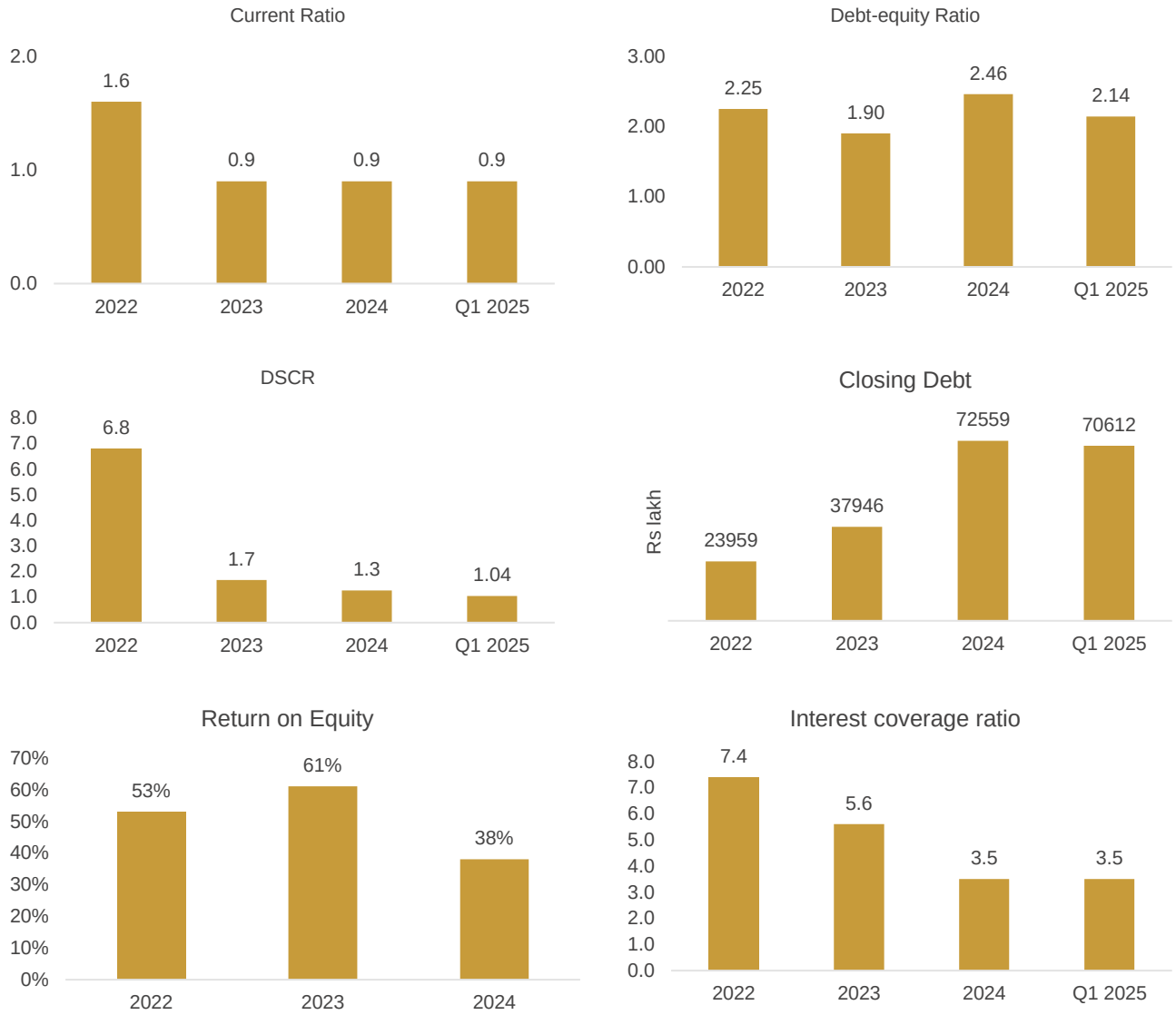
The company's financial leverage is high and has shown a rising trend, indicating a significant reliance on debt. Although debt allows for rapid growth in revenue and EBITDA, it also leads to elevated interest expenses. Financial leverage is essentially the use of borrowed funds to amplify returns on investment. Although this can lead to accelerated growth, it also increases the company's financial risk. The company's debt-equity ratio has increased over the last three years, implying more use of debt in its capital structure, thereby increasing its leverage. CMLL's debt-equity ratio has increased to 2.46 in fiscal 2024 from 1.90 in fiscal 2023. DSCR of 1.26 in 2024 implies that the

[83] *As on 31 Oct 2024. The order book contains coal mining, OB removal and logistics services.*

company generates enough cash flow to cover 1.26 times its debt obligations. However, in the context of rising leverage, this stability in DSCR suggests that the company is managing its debt servicing well and the rising debt is being used productively. In addition, in fiscal 2024, the interest expenses on the debt part were only Rs 5,145 lakh, against revenue of Rs 95,818 lakh, which is less than 6%, considering the growing PAT margins.

As on 30 June 2024, based on the repayment schedule, the debt-equity ratio was 2.14. **CMLL is in a phase of rapid expansion, necessitating higher leverage to fuel its growth. Debt financing is often necessary for companies in such stages of growth, as it provides the capital needed to scale quickly.**

Figure 72: Key ratios (in %), except closing debt (in Rs lakh)



Source: Company's Restated Financial Statements, CRISIL MI&A Consulting

5.4.2 Operational highlights

CMLL is operating in the coal logistics space since fiscal 2016; the group achieved a total revenue of Rs 37,957 lakh in fiscal 2022. In fiscal 2020, CMLL took a transformative decision by venturing into the mining business, marking a pivotal moment in the company's growth and diversification. In fiscal 2024, revenue from mining services was Rs 66,180 lakh, which accounted for 69% of the total revenue of Rs 95,818 lakh. CMLL's total revenue has clocked a 59% CAGR from fiscal 2022 to 2024, with the majority contribution (69%) in fiscal 2024 from coal mining and OB removal and the rest from logistics (28%) and others (3%). Since January 2021, CMLL has been engaged in coal mining and OB removal, leading to a significant increase in revenues.

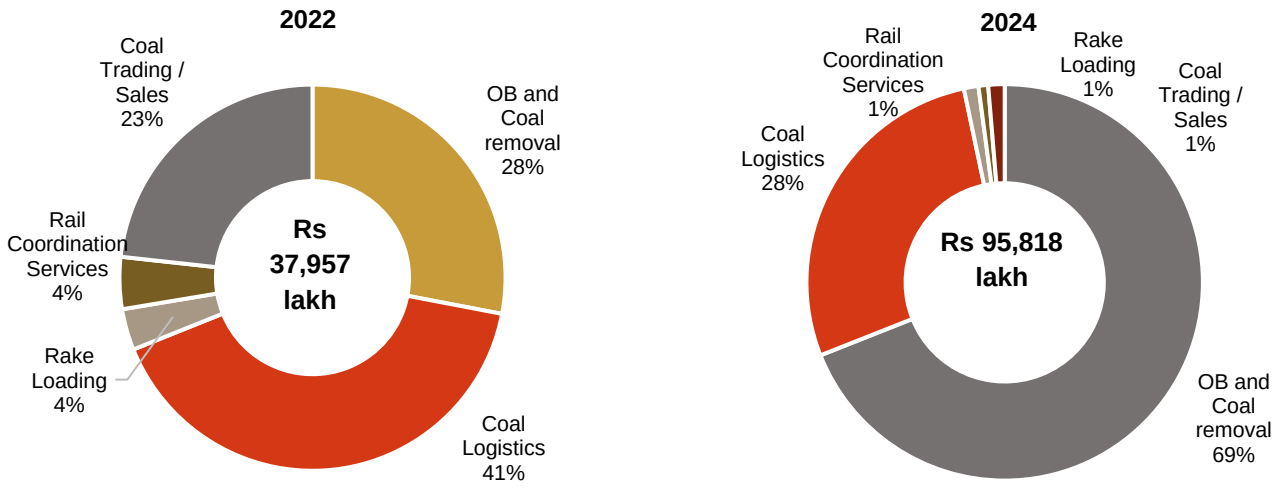
Table 17: Total revenue split of CMLL from different operations (Rs lakh)

Particulars	2022	2023	2024
Coal mining & OB removal	10,630	40,725	66,180
Coal logistics	15,534	18,135	25,518
Iron ore logistics	-	-	1,041
Rake loading receipts	1,309	968	1,140
Rail coordination services	1,652	1,124	753
Coal trading sales & others	8,832	5,282	1,186
Total	**37,957**	**66,234**	**95,818**

Source: Company

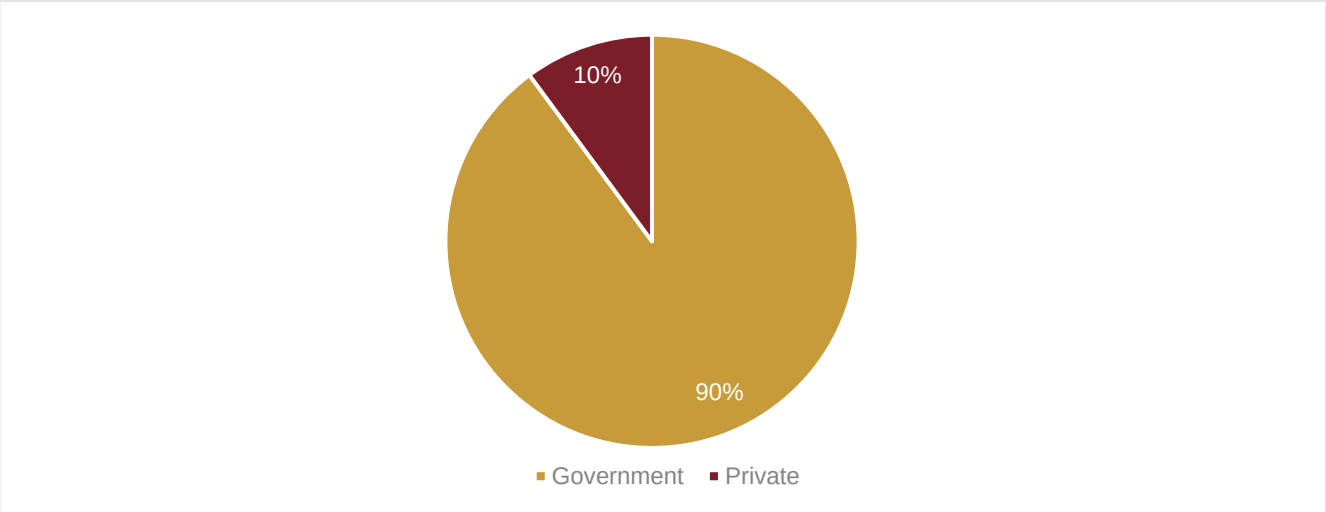
The group's total revenue from different service offerings is shown below:

Figure 73: Total revenue share from various business segments in fiscals 2022 and 2024 (Rs lakh)



Source: Company

Figure 74: Total revenue share from government and private clients in fiscal 2024

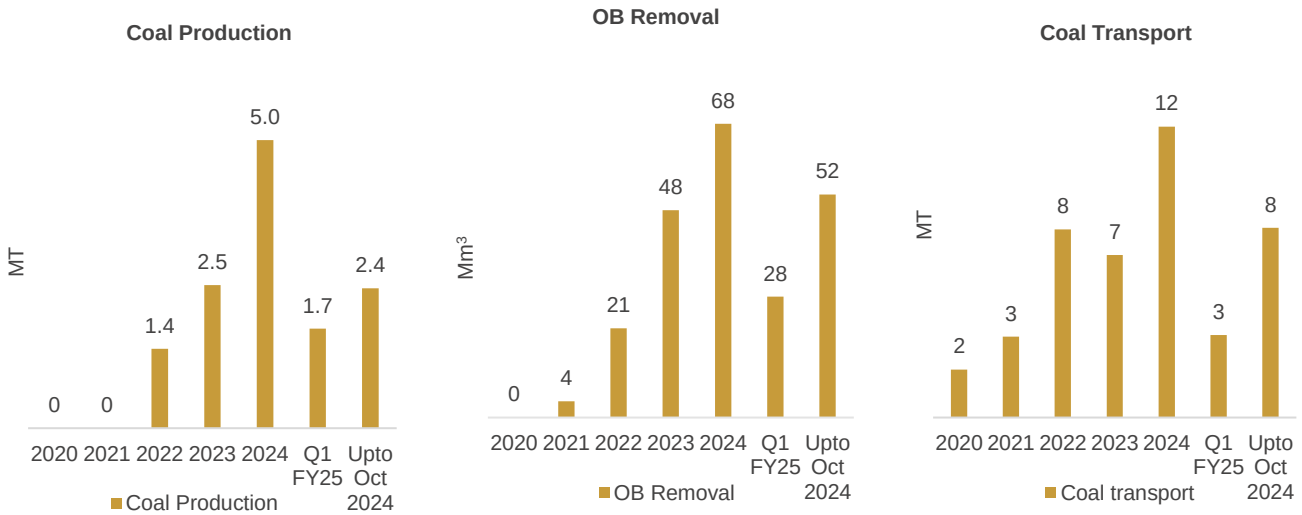


Source: Company; Government includes PSUs of Central/State as well

During fiscals 2024, the revenue share of government clients reached 90%, driven by continued business and long-term contracts, ensuring CMLL's revenue security from CIL (the parent company of WCL and NCL), which is a AAA-rated company[84].

In terms of volume growth of OB and coal removal, the group has grown by leaps and bounds over the last five years. Coal extraction volume has grown from zero in fiscal 2020 to 4.98 MT in fiscal 2024. Similarly overburden (OB) removal volume has grown from zero in fiscal 2020 to 68.06 million cubic meters (Mm^3) in fiscal 2024. The share of contracting with PSUs (CIL and its subsidiaries) in coal and OB removal is 84% and 89%, respectively, assuring payment security.

Figure 75: Coal and OB production, and mineral transport in the last 5 years



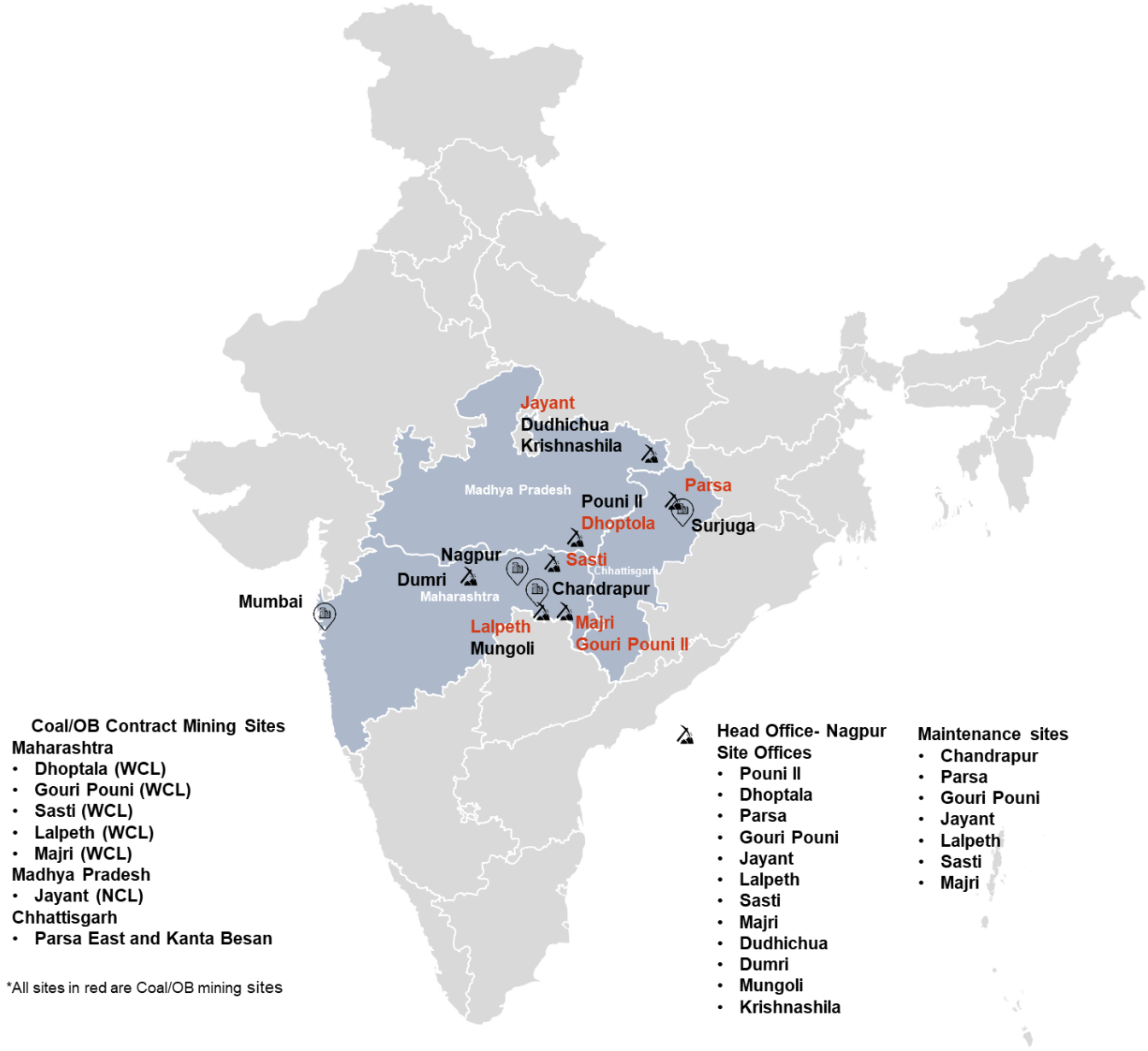
Source: Company

[84] *As per Annual Report of CIL 2023-2024 rated by CARE Ratings*

CMLL is amongst one of the top 10 mining operators managing OB removal, coal extraction and coal logistics together as an integrated services provider[85]. It also has ancillary businesses such as coal coordination via rail and rake loading for different companies. CMLL has presence in Maharashtra, Madhya Pradesh and Chhattisgarh, and is now expanding its footprints in Odisha and Jharkhand as well (Odisha tops coal production in India with a 25% share). In fiscal 2020, CMLL had presence only in Maharashtra (100% revenue contribution).

The company has seven sites with elaborate infrastructure for maintenance (see the figure below).

Figure 76: CMLL's presence in India (office locations and contract mining sites)



Source: Company

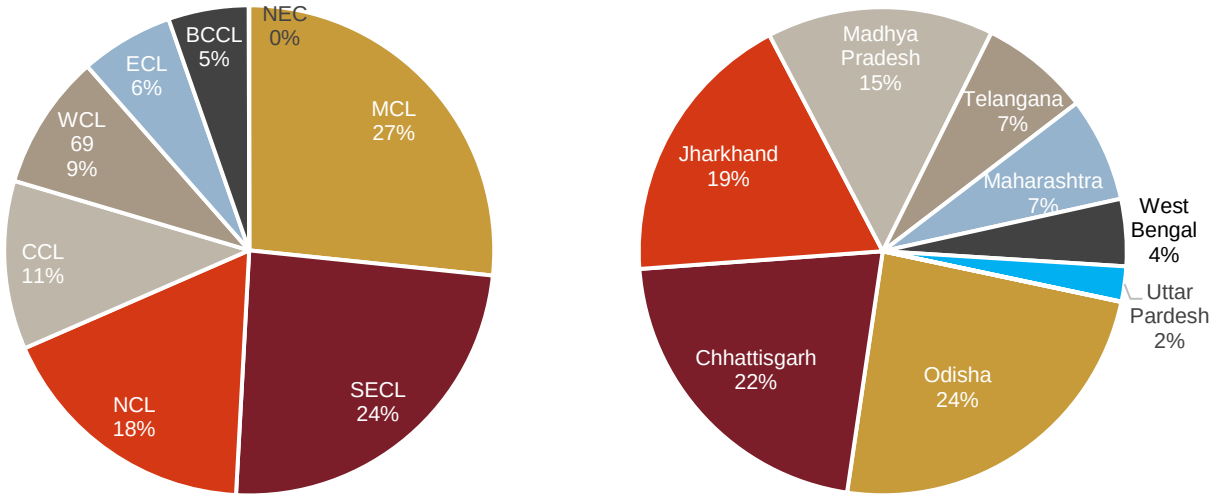
[85] *Based on market share of contract mining players in fiscal 2023/2024. Refer Chapter 6 for market share.*

CMLL performed coal/OB contract mining operations from five mines of WCL in Maharashtra. The company operated in Jayant OCP of NCL in Madhya Pradesh and Parsa East Kanta Besan mine of Adani Enterprises in Chhattisgarh.

5.4.3 Market share of CMLL in contractual production

In India, CIL is the biggest producer of coal with a production share of ~78% in fiscal 2024[86]. As per estimates[87], by fiscal 2030, the production from CIL is expected to be 1,103 MT at a CAGR 6.1%[88]. The biggest share of new production will be from the mines of MCL (Odisha), SECL (Chhattisgarh and Madhya Pradesh) and CCL (Jharkhand and West Bengal). CIL's production share from different subsidiaries and states is as follows:

Figure 77: CIL's subsidiary-wise coal production in fiscal 2024| State-wise production share in India in fiscal 2024



Source: Coal Directory, CRISIL MI&A Consulting

With CIL focusing on increasing production and efficiency, it has outsourced the coal and OB extraction activities to contractors. The share of outsourcing by CIL is increasing every year which is visible from the graph below. With target production of 1,103 MT by fiscal 2030, the estimated coal production from outsourcing activities will be 67% as compared to 61% in fiscal 2024 and 56% in fiscal 2020[89]. In terms of volume, in the last four years, this additional ~5% has added 130 MT of coal. Similarly, ~6% or 267 MT of coal will be added per annum in future (with the total volume of coal production from outsourcing expected to touch ~737 MT by fiscal 2030). Further, the estimated OB production from outsourcing activities would be 92% as compared to 86% in fiscal 2024 and 74% in fiscal 2020. In terms of volume, in the last four years, this additional 12% has added 830 (Mm^3) of OB. Going ahead, ~6% or 1,480

[86] *CIL produced 773MT out of India's total production of 997MT in fiscal 2024*
[87] *Estimates by CRISIL MI&A Consulting*
[88] *As per CRISIL MI&A Consulting, supply expected from raw coal production*
[89] *The Ministry of Coal's monthly statistical report for March 2024 and earlier reports*

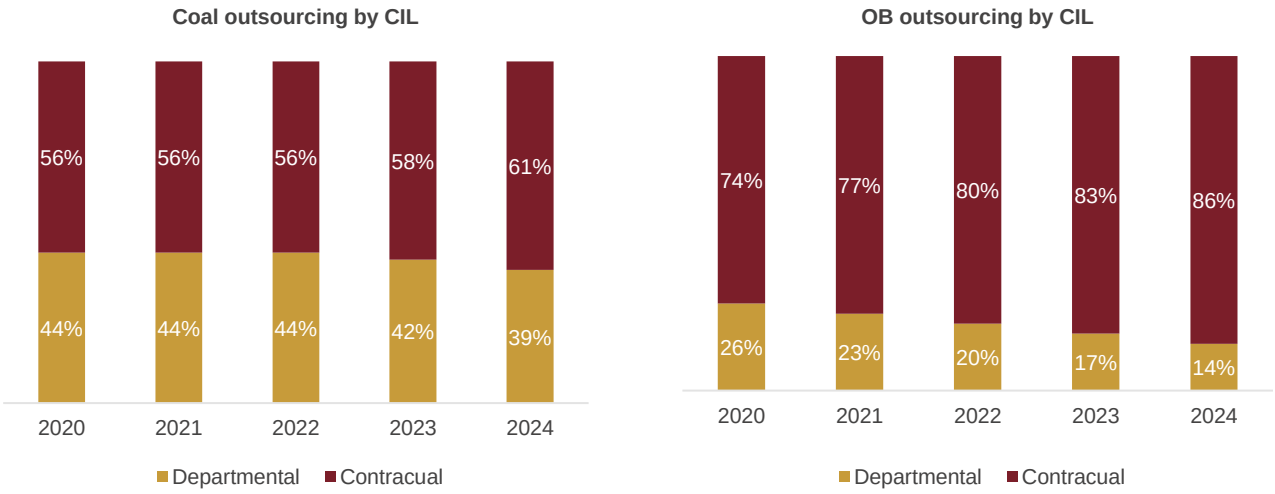
MT of coal is expected to be added per annum, taking the total volume to 3,163 Mm^3 by fiscal 2030. The worst- and best-case scenario for the additional volumes expected in the future are given below:

Case 1: In case a similar % of volume is outsourced by CIL i.e. 61% of total coal produced and 86% of total OB produced, the expected additional volume of coal will be 201 MT and 1,273 Mm^3 of OB by fiscal 2030.

Case 2: In case % of outsourced volume is increased to 67% of coal volume by 2030 and 92% of OB volume is outsourced by CIL (as per CIL's target plan), the expected additional volume would be ~267 MT of coal and ~1,480 Mm^3 of OB by fiscal 2030.

With this, contracting opportunities in coal and OB removal will rise manifold compared to the opportunities available at present. Although CMLL has captured a substantial share of OB and coal removal volumes, a lot of potential remains untapped, and the group is gearing up to achieve the next level of production with a target share of 10% from overall CIL volumes compared with 4% in fiscal 2024.

Figure 78: Coal and OB outsourcing share of CIL (%)



Source: Coal Directory, CRISIL MI&A Consulting

CMLL's share in coal production on an all-India level from CIL was ~1% in fiscal 2024, against nil in 2020. Its share in OB was 4% in fiscal 2024 as compared to nil in 2020 from CIL's mines. Subsidiary-wise, CMLL's share in coal production out of WCL contractual production increased from nil in 2020 to 6% in fiscal 2022 and ~10% in fiscal 2024[90]. CMLL's share in OB production out of WCL contractual production increased from nil in 2020 to ~9% in fiscal 2022 and ~12% in fiscal 2024. Similarly, CMLL's share in NCL OB removal increased from nil in fiscal 2020 to 4% in fiscal 2024.

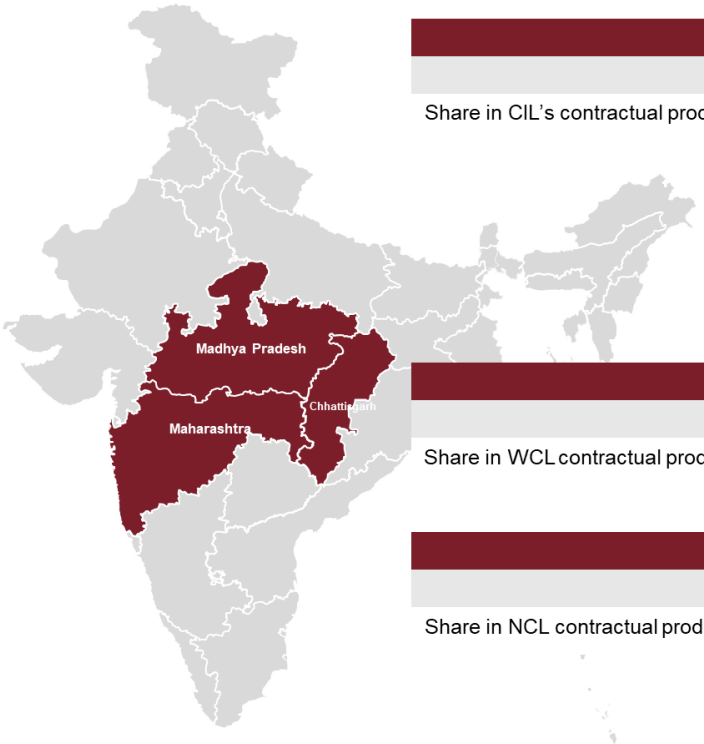
CMLL has a strong presence in WCL with a market share of 12% of total WCL OB contractual volumes in fiscal 2024. With the increase in the volume of outsourcing by WCL, the market share of CMLL is expected to

[90] *As per market share calculation by CRISIL MI&A Consulting*

increase. Also, the group has expanded into the NCL geography with a market share of ~4% in NCL contractual OB removal within the first project itself. The group is also exploring options for entry into the MECL and SECL area with a potential for larger volumes of OB and coal coming from these two subsidiaries as per the plan.

Currently, the mineral logistics industry is estimated at Rs 1,35,20,400[91] lakh with coal accounting for 73%. Coal logistics amounts to Rs 99,25,800[92] lakh, whereas road logistics contributes Rs 29,91,100 lakh. CMLL recorded a revenue of Rs 26,559 lakh with coal and mineral logistics handling 11.80 MT of coal in fiscal 2024, contributing to ~0.9% of the market share. CMLL is planning to diversify into other minerals and is, therefore, expected to increase its share in the future.

Figure 79: Market share of CMLL in contractual coal production and OB removal



	Coal			Overburden		
	2020	2022	**2024**	2020	2022	**2024**
Share in CIL's contractual production	0%	0.4%	**1%**	0%	2%	**4%**

	Coal			Overburden		
	2020	2022	**2024**	2020	2022	**2024**
Share in WCL contractual production	0%	6%	**10%**	-	9%	**12%**

	Coal			Overburden		
	2020	2022	**2024**	2020	2022	**2024**
Share in NCL contractual production	-	-	**-**	-	-	**4%**

Source: Company, MoC Monthly Statistics Report, CRISIL MI&A Consulting

5.5 SWOT Analysis

Strengths

- **Extensive industry experience of the promoters:** The company is promoted by the Chadda family, managed by Manish, Anuj, Mohit and Rahul Chadda, who have over 10-15 years of industry experience. This expertise has allowed them to understand market dynamics well and build strong relationships with key customers. Over time, the management has diversified the business into mining excavation, transportation, unloading and

[91] *As per market estimation calculation by CRISIL MI&A Consulting*
[92] *As per market estimation calculation by CRISIL MI&A Consulting*

offloading services and coal trading, leading to significant total revenue growth from Rs 37,957 lakh in fiscal 2022 to Rs 95,818 lakh in fiscal 2024.

- **In-house maintenance team and workshops:** The company has a large maintenance workshop equipped with all necessary infrastructure at Chandrapur in Maharashtra, where all the vehicles are serviced, leading to reduction in running cost. This has, in turn, led to effective handling of vehicles as old as 15 years+, contributing to the company's revenue.

- **Healthy orderbook and established customer relationships**: The company has a strong reputation and long-standing relationships with key customers, including CIL, resulting in repeat business. The mining segment and its associated transportation services are projected to grow steadily, supported by tied-up contracts of Rs 5,08,471 lakh[93] as on 31st October 2024, ensuring adequate revenue visibility for the medium term.

- **Own fleet**: **CMLL owns a fleet size of 1,373[94] and 100 leased vehicles which is the backbone of its mining and transport operations.** The major operational expenses of the mining contractors are towards high-speed diesel (HSD) and maintenance of equipment. The debt on equipment as of March 31, 2024, was Rs 63,158 lakh and Rs 61,340 lakh as on June 30, 2024. By fiscal 2025, the equipment will be debt-free as per the company's plan and increase its PAT. The company has an in-house maintenance infrastructure, which has enabled it to save a substantial amount of money and increase EBIDTA and PAT as compared to its peers. Further, HSD is purchased at preferential rates owing to long-term contracts of the company with HSD suppliers, thereby saving a huge amount of money (annual HSD consumption of the company is ~90,984 kilolitres(kl)).

	 Tippers + Tip trailers	 Excavators	 Dozers + Loaders	 Grader	 Tankers	 Others
Numbers (1,473)	71%	7%	6%	2%	4%	10%

- **Strong net worth and debt protection measures:** The company's net worth stood at approximately Rs 29,480 lakh as of March 31, 2024, up from Rs 19,969 lakh the previous year, due to reserve accruals and equity infusion. The company has been rated BBB (positive) by CRISIL Ratings Ltd, dated October 16, 2023. The net worth and debt protection measures are expected to remain strong in the medium term, supported by continued stable profitability.

Opportunities

- **Capacity enhancement:** Logistics and mining will see opportunities owing to increase in the capital outlay by the Government of India, which is evident from CIL's plans to enhance production to achieve its 1 BT coal

[93] *As per company*
[94] *As on 31st October 2024*

production. The capacity of contractual production will increase significantly, thereby opening up more capacity for CMLL in the future.

- **Diversification into new sectors:** CMLL diversified into iron ore logistics in December 2022. With new upcoming iron ore mines in Maharashtra, there is ample opportunity for CMLL to expand its business into various other minerals. Additionally, the government’s focus on logistic parks gives it an opportunity to diversify in the related field.

Threats and weaknesses

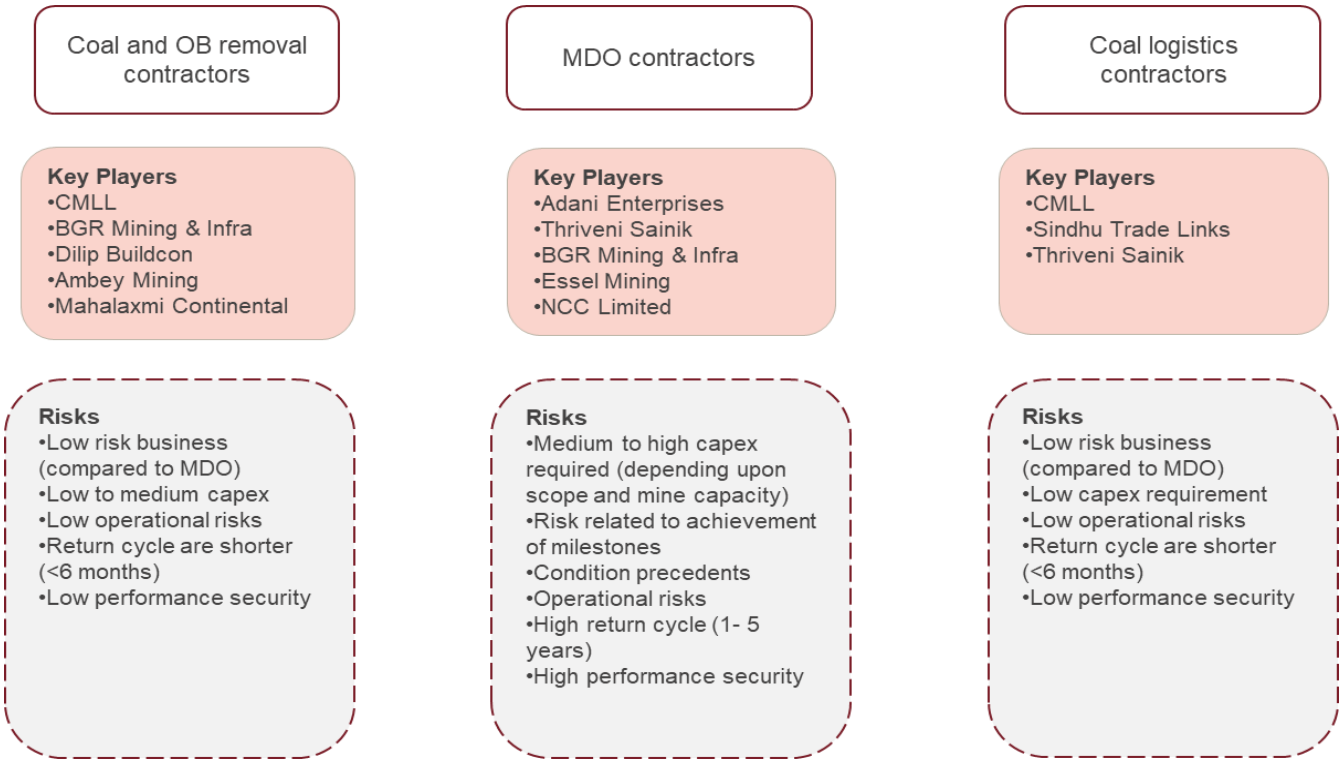
- **Exposure to tender-based operations and cyclicality in end-user industry:** The company's revenue and profitability entirely depend on winning tenders. The segment is highly competitive, often necessitating aggressive bidding, which may constrain profitability in the medium term. Additionally, reliance on 2-3 large work orders leads to order book concentration, where significant project execution delays or payment delays from counterparties could impact revenue and working capital cycles. The company's operations are also exposed to the cyclical nature of the end-user industries, primarily mining and power, for excavation and transportation businesses.
- **Moderate capital structure:** The capital structure is moderate as indicated by total outside liabilities to adjusted net worth and gearing ratios of around 2.46 times as on March 31, 2024, owing to high reliance on external debt to fund working capital and equipment needs. The capital structure is expected to improve in the medium term with strengthening net worth, but it remains a key factor that bears watching.

6. Competition benchmarking across key players

6.1 Market structure of contract mining[95]

India produced 997 MT of raw coal as of fiscal 2024. Coal demand is expected to grow to 1,429 MT[96] by fiscal 2030. Given the continuous rise of demand for energy in the country as well as focus on infrastructure, demand for steel, cement and aluminium will go on increasing. The contract mining model is expected to grow owing to this requirement. There are three major types of players — first, which excavate coal and OB (coal/OB contractors), second, which do complete MDO contracting, and third, which transport coal or overburden by tippers (transporters). Some players offer multiple services as well.

Figure 80: Key players and risks associated in different types of mining contracts



Source: CRISIL MI&A Consulting

The market structure is not equally favourable to all the players and poses different types of risks in various mining contracts. Coal and OB contract mining is less risky (as compared to MDO) with low-to-medium capex. The returns cycle is also shorter. Own fleet management with maintenance capabilities is a game changer in the coal and OB space. In comparison, MDO contracting is a capex-heavy operation wherein all the risk lies with the MDO contractor during the development phase (may vary from 1 year to 5 years depending upon the type of the block and scope of

[95] *Note: In this chapter, for all comparisons the revenue from operations for all companies has been considered, unless otherwise mentioned. Hence, revenue refers to revenue from operations.*
[96] *Demand of coal based on G10 grade of coal, CRISIL MI&A Consulting analysis*

the MDO contractor), there is a long gestation period for revenue to start flowing (post development and starting of mining operations). That said, there is the advantage of revenue flowing for several years, thereby providing players a good outlook for the future once operations are stabilised.

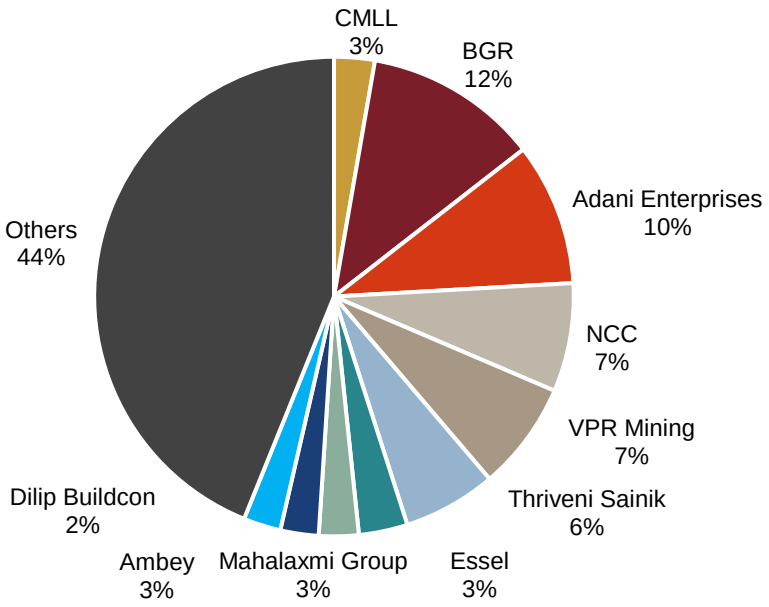
It is tough for new players to foray into contract mining as there are many entry barriers in this space. For e.g.: capex for fleet and manpower along with maintenance capabilities, experience in coal and mining, technical expertise in areas and adhering to compliances as per the regulatory provisions. Non-uniformity in the selection criterion of tenders leads to limited participation, making it difficult for new entrants as well. Many of the contracts (especially of MDOs) require condition precedents to be fulfilled by the contractors in a particular timeline to avoid operational delays and incur costs. Another challenge in MDO tenders is aggressive bidding by contractors to win big contracts, which leads to lower margins and projects turn out to be risky.

The contract mining market was valued at Rs 27,19,900[97] lakh in fiscal 2024, up 12% from ~Rs 24,30,000 lakh in fiscal 2023 and is currently dominated by a few players having a presence in the MDO business e.g.: BGR Mining & Infra (12%), Adani Enterprises (10%), NCC (7%), VPR Mining Infrastructure (7%) and Thriveni Sainik (6%). Coal/OB contractors are mainly dominated by players such as Dilip Buildcon, Ambey Mining, Essel Mining, CMLL, and Mahalaxmi Continental. Further, some players available in transport services along with the contract mining business are CMLL, Thriveni Sainik and Sindhu Trade Links (without considering MDO players having transportation scope as well in their scope). Most of these players are involved in open cast mining and UG mining, a niche market. Some of the players involved in UG mining are JMS Mining, Maheshwari Mining Pvt Ltd, Indu Group, IVRCL and Vensar Construction Company Ltd. The players engaged in the MDO have other businesses as well and most of them are involved in the infrastructure/construction sector (e.g. Adani Enterprises, BGR Mining & Infra, NCC, Dilip Buildcon etc.) These players constitute majority of the market and had a combined revenue of ~Rs 13,20,000 lakh in fiscal 2023 in their mining operations.

Further, there are many small companies that are engaged in small contracting/outsourcing work of different coal minerals. Further, the focus of players has changed from only coal/OB contracting to MDO contracting to owning mines at present. E.g. Adani Enterprises, JMS Mining and Aurobindo Group have won their own coal blocks in commercial coal block auctions to produce and sell coal. The risk associated in each type of market is different. **CMLL is a leading mining contractor with a strong presence in coal and OB contracts, as well as in coal logistics services.**

[97] *Market estimates only consider the coal and OB related market and do not consider any other capex being spent by MDO as per scope.*

Figure 81: Market share of companies in contract mining (Coal/OB or MDO or hybrid market) (fiscal 2023)



Source: Company Reports and CRISIL MI&A Consulting analysis

Mining contracts have been rising significantly in the past five years (since 2019)[98], both in terms of value and duration. Some of the biggest mining contracts that have been awarded in the last five years are the Siarmal OCP MDO contract given to Dilip Buildcon with a project value of ~Rs 36,80,000 lakh for 25 years by MCL, the Amlohri OB removal contract worth ~Rs 1,35,000 lakh by NCL and others.

Figure 82: Big MDO and contract mining (coal/ OB outsourcing) projects with awardees, project value and contract duration

Siarmal MDO MCL	Kerandari MDO NTPC	Amlohri OB Outsourcing- NCL	Nigahi III OB Outsourcing-MCL	Manoharpur MDO OCPL	Parsa East Kanta Besan MDO RRVUNL
• Dilip Buildcon • PRC -50 MTPA • 36800 crores • 25 years	• BGR Mining • PRC- 6 MTPA • 20400 crores • 25 years	•Sical Mining •1344 crores •4 years 3 months	• Dilip Buildcon • 1800 crores • 4 years 5 months	• BGR Mining • PRC- 16 MTPA • 10 years	• Adani Enterprises • PRC- 18 MTPA • 30 years

Source: Company reports, news sources

6.2 Financial benchmarking[99]

Competition comparison in terms of financial benchmarking has been done based on the players[100] available for contract mining in India. The different aspects of financial components are compared with CMLL in terms of the industry average and highest/lowest components.

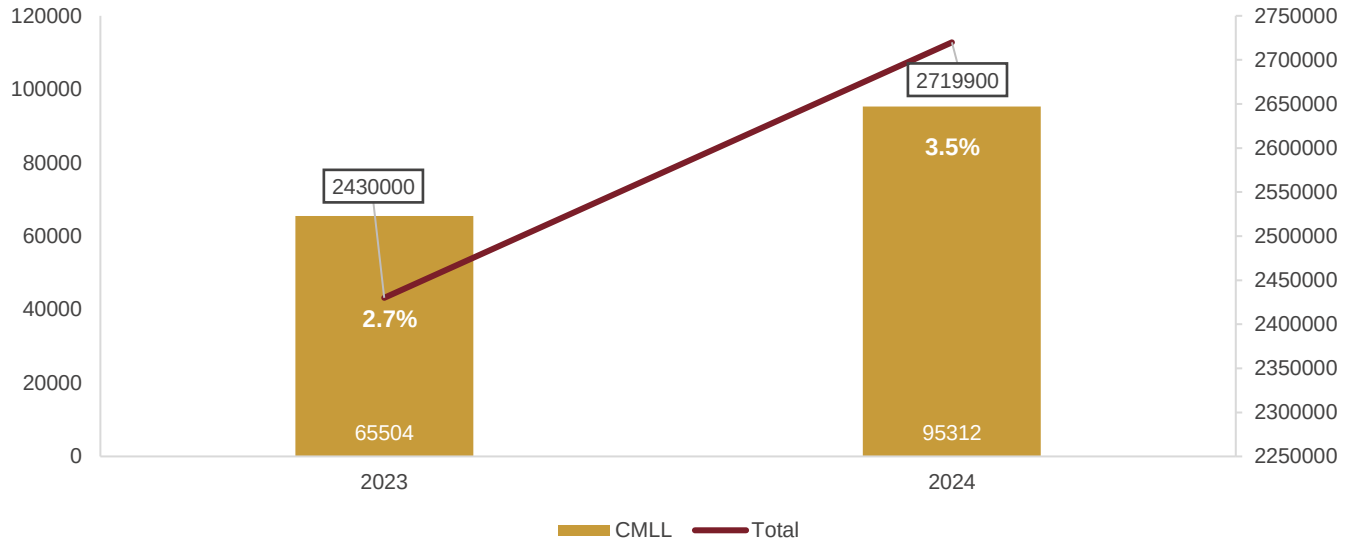
[98] *Refer Chapter 3.8 for market estimation*
[99] *Key players - Ambey Mining (standalone), BGR Mining & Infra (standalone), Essel Mining (standalone), Mahalaxmi Continental (standalone), Thriveni Sainik (standalone), and VPR Mining Infrastructure Pvt Ltd (standalone)*
[100] *Adani Enterprises has not been considered for financial benchmarking as the company operates in various businesses such as airports, roads solar manufacturing, defence and aerospace, mining, etc. and the segment-wise break-up of financials is unavailable.*

Industry average refers to the arithmetic mean of the parameters of key players in the market. The industry high and low are the maximum and minimum value, respectively, of that financial parameter among the players.

6.2.1 Market share

The total contract mining market was valued at Rs 27,19,900 lakh in fiscal 2024. It is expected to grow to Rs 31,10,700 lakh in fiscal 2025 and reach Rs 62,42,200 lakh [101] in fiscal 2030 at a CAGR of 14.8% from 2024 to 2030. CMLL is a rapidly growing company, increasing its revenue[102] from Rs 37,208 lakh in fiscal 2022 to Rs 95,312 lakh in fiscal 2024 at a CAGR of 60% from 2022 to 2024.The company had a market share of <1% in fiscal 2020, which increased to 2.7% in fiscal 2023 and 3.5% in fiscal 2024 (in terms of value).

Figure 83: Revenue of CMLL and market size (Rs lakh) along with market share (%) of CMLL

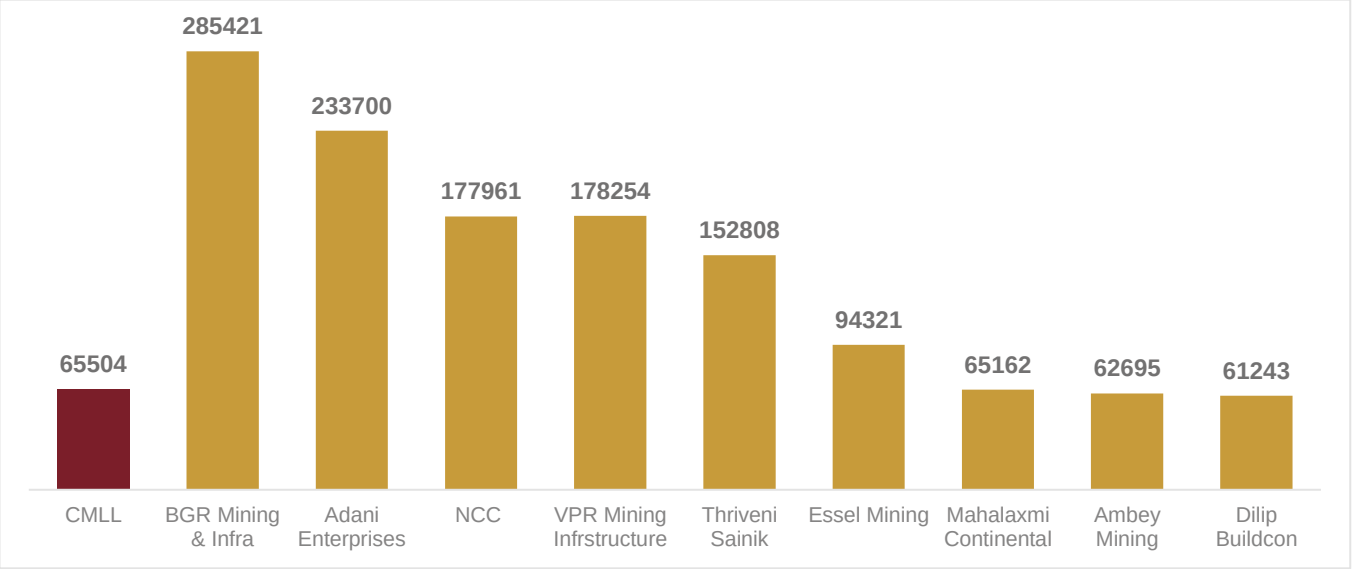


Source: Company Reports, CRISIL MI&A Consulting

Comparison with competitors: In fiscal 2023, CMLL's revenue was ~Rs 65,504 lakh while the peers in contract mining e.g.: BGR Mining & Infra (revenue of Rs 2,85,421 lakh), Adani Enterprises (revenue Rs 2,33,700 lakh), NCC Ltd (revenue Rs 1,77,961 lakh), VPR Mining Infrastructure (revenue Rs 1,78,254 lakh), Thriveni Sainik (revenue Rs 1,52,808 lakh), Essel Mining (revenue Rs 94,321 lakh), Mahalaxmi Continental (revenue Rs 65,162 lakh), Ambey Mining (revenue Rs 62,695 lakh) and Dilip Buildcon (revenue Rs 61,243 lakh). However, most of these players are also involved in MDO business for coal blocks and other business as well. Also, there are few other players who are also owning coal blocks along with contract mining (e.g. JMS Mining, Neelkanth Infra Mining, Ambey Mining).

[101] *Refer Chapter 3.8 for market estimation*
[102] *Note: For all comparisons, revenue from operations is considered*

Figure 84: Revenue of CMLL and peers in 2023 (Rs lakh)



Source: Company Reports

6.2.2 Revenue share and growth

CMLL's revenue has increased from Rs 37,208 lakh in fiscal 2022 to Rs 65,504 lakh in fiscal 2023 and Rs 95,312 lakh in fiscal 2024. The company recorded a revenue growth of 76% in fiscal 2023 and 46% in fiscal 2024. The combined revenue of the peers was ~Rs 13,20,000 lakh in fiscal 2023. The industry averaged low growth of 2% in fiscal 2023 which is much less than that of CMLL. Among the peers, Thriveni Sainik logged 75% in fiscal 2023. **CMLL is the fastest growing company amongst the peers.**

Table 18: Revenue growth percentage of CMLL and peers

Revenue growth	CMLL	Peers average	Ambey Mining	BGR Mining	Essel Mining	Mahalaxmi Continental	Thriveni Sainik	VPR Mining
2023	76%	2%	-6%	22%	-75%	-10%	75%	5%

Source: CMLL- Company's Restated Financial Statements, Peers- Company Reports

6.2.3 EBITDA

EBITDA margins provide a comprehensive picture of a company's operational efficiency, profitability, and overall financial health, especially in a capital-intensive and cyclical industry like mining. CMLL reported EBITDA of Rs 7,971 lakh in fiscal 2022, Rs 18,129 lakh in fiscal 2023 and Rs 24,218 lakh in fiscal 2024, with an EBITDA margin of 28% in fiscal 2023 and 25% in fiscal 2024, which is better than the peers' average. During the period, the average EBITDA margin of competitors ranged from 16% to 19%. In fiscals 2022 and 2023, Essel Mining reported the highest EBITDA of 51% and 42%, respectively as Essel Mining is operating since many decades in coal/ mining sector. **CMLL performance is better than most of the peers.**

Table 19: EBITDA margin of CMLL and peers

EBITDA %	CMLL	Peers average	Ambey Mining	BGR Mining	Essel Mining	Mahalaxmi Continental	Thriveni Sainik	VPR Mining
2022	21%	16%	15%	16%	51%	3%	-4%	16%
2023	28%	19%	13%	32%	42%	5%	5%	15%

Source: CMLL- Company's Restated Financial Statements, Peers- Company Reports

6.2.4 Profit after tax

The Profit After Tax (PAT) of CMLL was Rs 4,431 lakh in fiscal 2022, Rs 9,319 lakh in fiscal 2023 and Rs 9,512 lakh in fiscal 2024. CMLL had PAT margin of 12% in fiscal 2022, 14% in fiscal 2023 and 10% in fiscal 2024, better than the industry average. During the period, the average PAT margin of its competitors increased from 8% to 9%. In fiscal 2022, Essel Mining reported the highest PAT margin of 34% as Essel Mining is operating since many decades in coal/ mining sector. In fiscal 2023, BGR Mining & Infra reported the highest PAT margin of 18% among the peers. **CMLL performance is better than most of the peers.**

Table 20: PAT margin of CMLL and peers

PAT %	CMLL	Peers average	Ambey Mining	BGR Mining	Essel Mining	Mahalaxmi Continental	Thriveni Sainik	VPR Mining
2022	12%	8%	5%	5%	34%	2%	-5%	6%
2023	14%	9%	8%	18%	15%	3%	3%	6%

Source: CMLL- Company's Restated Financial Statements, Peers- Company Reports

6.2.5 Return on equity (ROE)

The return on equity (ROE) assesses the profitability of a company in relation to shareholders' equity. It is a key indicator of how effectively management is using equity capital to generate profits. The return on equity of CMLL was 53% in fiscal 2022, 61% in fiscal 2023 and 38% for fiscal 2024, which is much better than its peers. **CMLL showcased highest ROE among its peer indicating an optimal use of its equity capital resource.**

The average return on equity of peers improved from 9% to 20% during fiscals 2022 and 2023. In fiscals 2022 and 2023, highest margin of 30% and 42% was achieved by Mahalaxmi Continental and BGR Mining & Infra, respectively.

Table 21: Return on equity of CMLL and peers

Return on Equity %	CMLL	Peers average	Ambey Mining	BGR Mining	Essel Mining	Mahalaxmi Continental	Thriveni Sainik	VPR Mining
2022	53%	9%	8%	15%	8%	30%	-23%	18%
2023	61%	20%	11%	42%	1%	29%	20%	16%

Source: CMLL- Company's Restated Financial Statements, Peers- Company Reports

6.2.6 Total debt to equity ratio

The total debt to equity ratio of CMLL had increased from 2.2 in fiscal 2022, 1.9 in fiscal 2023 and 2.5 in fiscal 2024, indicating higher debt per capital. The average ratio of peers has decreased from 1.2 to 1.0 during fiscals 2022 and 2023. Essel Mining had the lowest ratio of 0.1 during fiscals 2022 and 2023 due to high equity capital compared to its peers.

Table 22: Total debt equity ratio of CMLL and peers

Debt equity ratio	CMLL	Peers average	Ambey Mining	BGR Mining	Essel Mining	Mahalaxmi Continental	Thriveni Sainik	VPR Mining
2022	2.2	1.2	0.2	2.4	0.1	0.5	3	0.8
2023	1.9	1.0	0.2	2.4	0.1	0.9	1.9	0.5

Source: CMLL- Company's Restated Financial Statements, Peers- Company Reports

6.3 Operational benchmarking[103]

6.3.1 Contract mining scenario of key players

In India, majority of coal (87%) is supplied by five states Odisha, Chhattisgarh, Jharkhand, Madhya Pradesh and Maharashtra, with major production from CIL subsidiaries NCL, MCL, BCCL, CCL and SECL and other central and state PSUs such as SCCL and NTPC. The MDO/ mining contractors are working with CIL/ its subsidiaries and other PSUs/ private companies in different projects (either as MDO player or as contract mining players). E.g. BGR Mining & Infra Limited has ongoing projects in Jharkhand, Odisha, Madhya Pradesh and Chhattisgarh. Kerandari MDO project (PRC[104]- 6 MTPA) of NTPC in Jharkhand and Manoharpur MDO project (PRC-16 MTPA) of OCPL in Odisha are two these projects. Adani Enterprises has four operational and four upcoming MDO projects, including Parsa East (PRC- 18 MTPA), Gare Palma III (PRC- 5 MTPA) in Chhattisgarh and Talabira II & III (PRC- 20 MTPA) in Odisha. While Dilip Buildcon has two MDO projects—Siarmal (PRC- 50 MTPA) in Odisha and Pachhwara Central (PRC- 7 MTPA) in Jharkhand. VPR Mining Infrastructure has projects in Telangana along with these major contributing states.

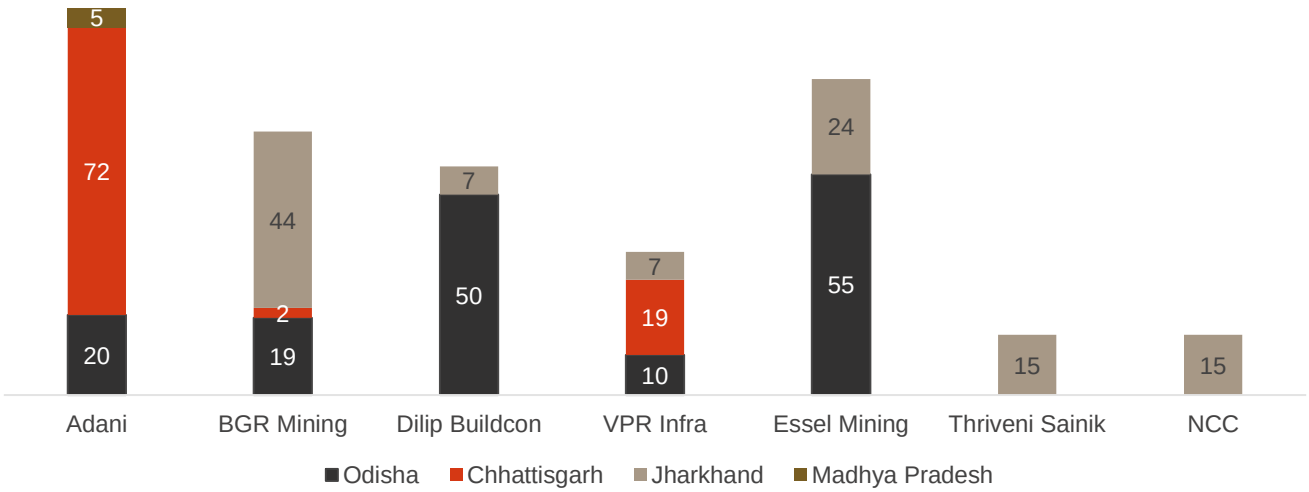
[103] *Key players: Adani Enterprises, Ambey Mining, BGR Mining & Infra, Dilip Buildcon, Essel Mining (standalone), Mahalaxmi Continental, NCC Limited, Thriveni Sainik, and VPR Mining Infrastructure Pvt Ltd*
[104] *PRC- Peak Rated Capacity*

Figure 85: Major projects in different regions of CMLL and peers

CMLL	BGR Mining & Infra	Adani Enterprises	Dilip Buildcon	Ambey Mining	Essel Mining
• Coal/OB outsourcing- 5 Maharashtra, 1 Madhya Pradesh, 1 Chhattisgarh	• 6 MDO- 3 Jharkhand, 2 Odisha, 1 Chhattisgarh • Coal/OB outsourcing- Madhya Pradesh, Jharkhand, Odisha	• 8 MDO- 4 operational, 4 upcoming • 6 in Chhattisgarh, 1 Odisha, 1 Madhya Pradesh	• 2 MDO- 1 Odisha, 1 Jharkhand • OB outsourcing- Madhya Pradesh, Odisha	• 4 MDO- 3 West Bengal, 1 Jharkhand • OB outsourcing- Jharkhand	• 1 MDO- Jharkhand • Coal/OB outsourcing- Maharashtra, Telangana

Source: Company reports, CRISIL MI&A Consulting

Figure 86: State-wise MDO projects with total capacity (MT) awarded to competitors[105]



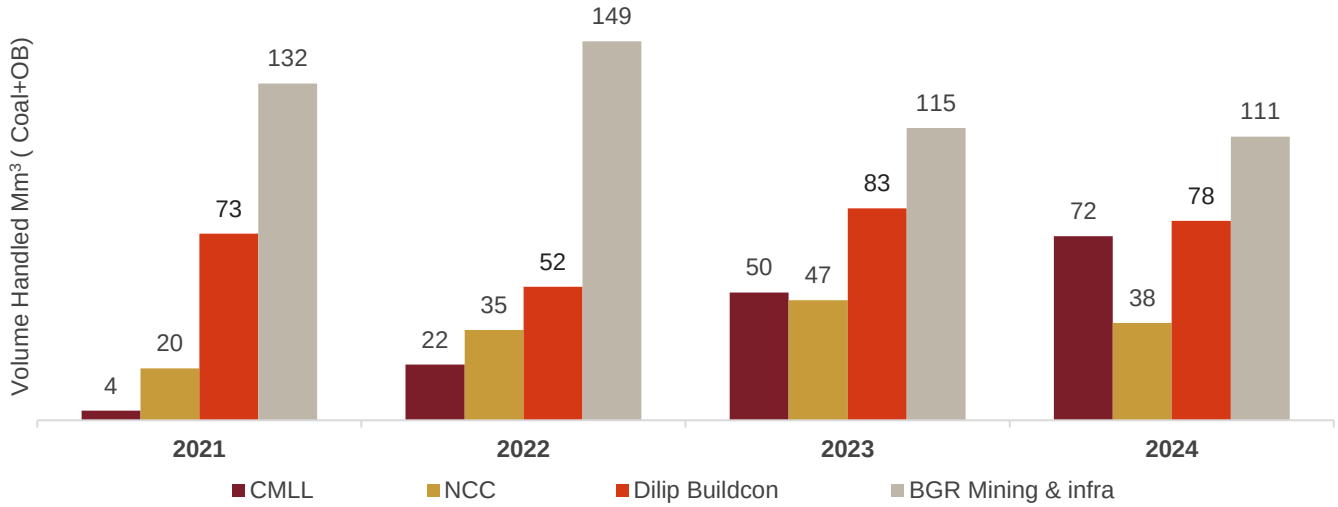
Source: Company Reports, CRISIL MI&A Consulting

6.3.2 Coal/OB outsourcing volume handled by key players[106]

CMLL competes with several major players in coal/OB outsourcing market. CMLL has increased the total coal and OB volume handled substantially from 4 Mm^3 in fiscal 2021 to 22 Mm^3 in fiscal 2022. Further, the company handled 50 Mm^3 volume in fiscal 2023 which further increased to 72 Mm^3 in fiscal 2024. CMLL has started gaining pace and surpassed big-scale companies in this segment. The volume growth of other peer group is less compared to CMLL volume growth.

[105] *Essel Mining has one MDO project of 25MTPA PRC and 49 MTPA PRC in contract mining projects*
[106] *Assumption: To calculate the volume of coal and OB handled by key players, project life duration data and active project status has been used to map volume handled. Density of coal is assumed as 1.2 t/m^3*

Figure 87: Coal and OB volume (Mm³) handled by key players[107]

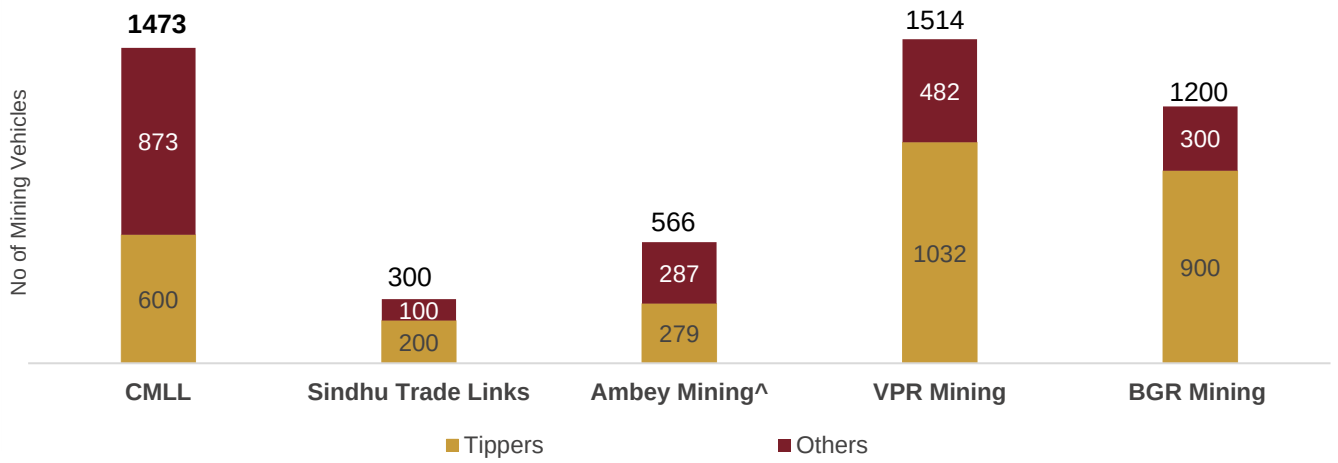


Source: Company website, Ministry of Coal, CRISIL MI&A Consulting (data for 2024 for other peer group companies are not available)

6.3.3 Fleet size comparison with peers

CMLL has robust fleet size of 1,473 (including 100 leased trucks, equipment and machines) vehicles as on 31st October, 2024 comprising of 600 tippers, 46 loaders, 96 excavator, 447 tip trailers, etc. Other major players like BGR Mining Infra and VPR Mining Infrastructure have fleet size of 1,200 and 1,514 vehicles respectively. Sindhu Trade Links, a major player in coal logistics owns 300 tippers and loaders. Ambey Mining owns 566 mining vehicles with 279 tippers.

Figure 88: Fleet size of key players[108]



Source: Company reports, Company website, Credit rating reports, ^For Ambey Mining the fleet size as in fiscal 2021*

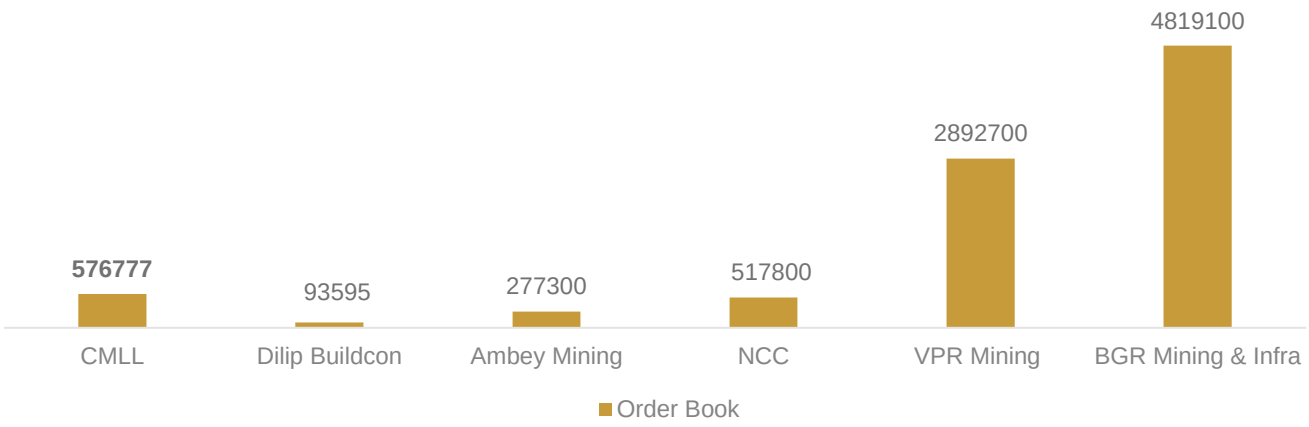
[107] *Adani Enterprises, Thriveni Sainik and Essel Mining operate only in MDO segment and have not been considered. The data for VPR Mining Infrastructure and Ambey Mining were not available.*

[108] *Fleet size solely related to mining operations for Adani Enterprises, NCC Limited, Dilip Buildcon, Essel Mining and Mahalaxmi Continental is not available. * For Sindhu Trade links- Annual report of fiscal 2024, Ambey Mining and BGR Mining- rating report, VPR Mining Infrastructure- company website as accessible on 10th December 2024. Fleet size of CMLL also includes 100 leases equipment.*

6.3.4 Order Book

CMLL has a healthy order book position at Rs 5,76,777 lakh as on 31st March 2024 which provides good medium term revenue visibility. BGR Mining & Infra, VPR Mining Infrastructure and NCC Limited has order book value owing to long term MDO projects (ranging from 10 years to 25 years). This shows the revenue visibility of different companies based on the existing order book. The increasing order book value with service diversification positions CMLL well in the segment.

Figure 89: Order Book value (Rs lakh) of key players[109]



*Source**: Company report, Rating report, Annual reports*

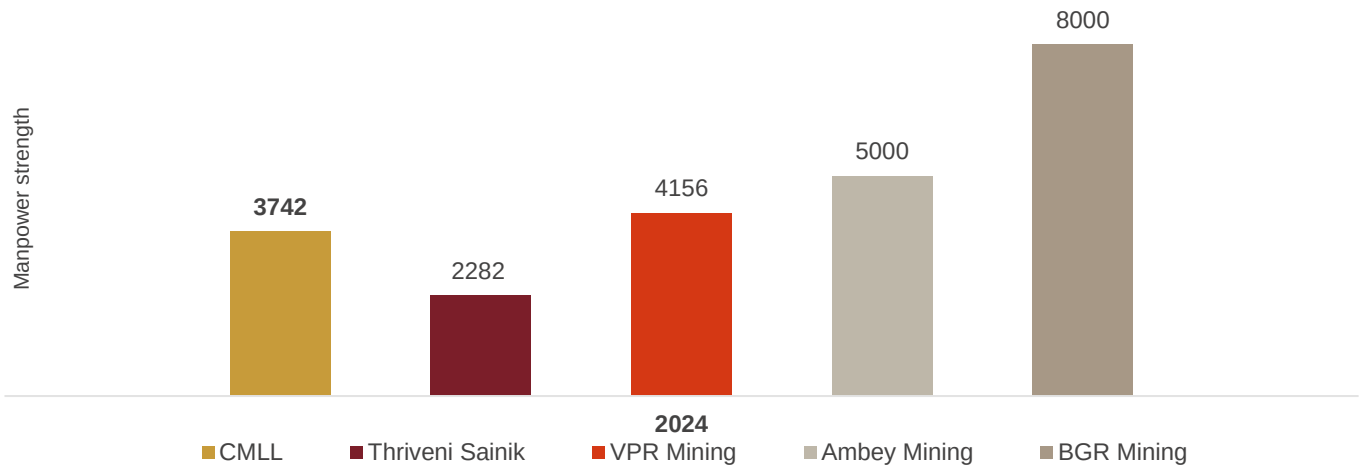
6.3.5 Manpower strength[110]

CMLL has manpower of 3,742 employees who are adequately trained and well equipped to handle day to day operational activities and ensure smooth operations in the mine. BGR Mining and Infra has manpower strength of 8000 employees, followed by Ambey Mining at 5000, VPR Mining Infrastructure at 4,156 and Thriveni Sainik at 2,282.

*[109]Order book value solely related to mining operations for Adani Enterprises, Essel Mining, Thriveni Sainik and Mahalaxmi Continental is not available. **For CMLL- Company, Dilip Buildcon and NCC Limited- Annual report of fiscal 2024, Ambey Mining, VPR Mining Infrastructure and BGR Mining & Infra- rating report. For VPR Mining Infrastructure, the order book value as on 30th November 2023 and for BGR Mining & Infra, the order book value as of April 2023. For others, the order book value is as on 31st March 2024.*

[110] Manpower strength solely related to mining operations for Adani Enterprises, Dilip Buildcon, NCC Limited, Essel Mining and Mahalaxmi group is not available.

Figure 90: Manpower strength of key players



Source: For CMLL as on 31st October 2024, Thriveni Sainik and VPR Mining Infrastructure- EPFO establishment search as on Q12024, Ambey Mining and BGR Mining & Infra- Company website as accessible on 10th December 2024

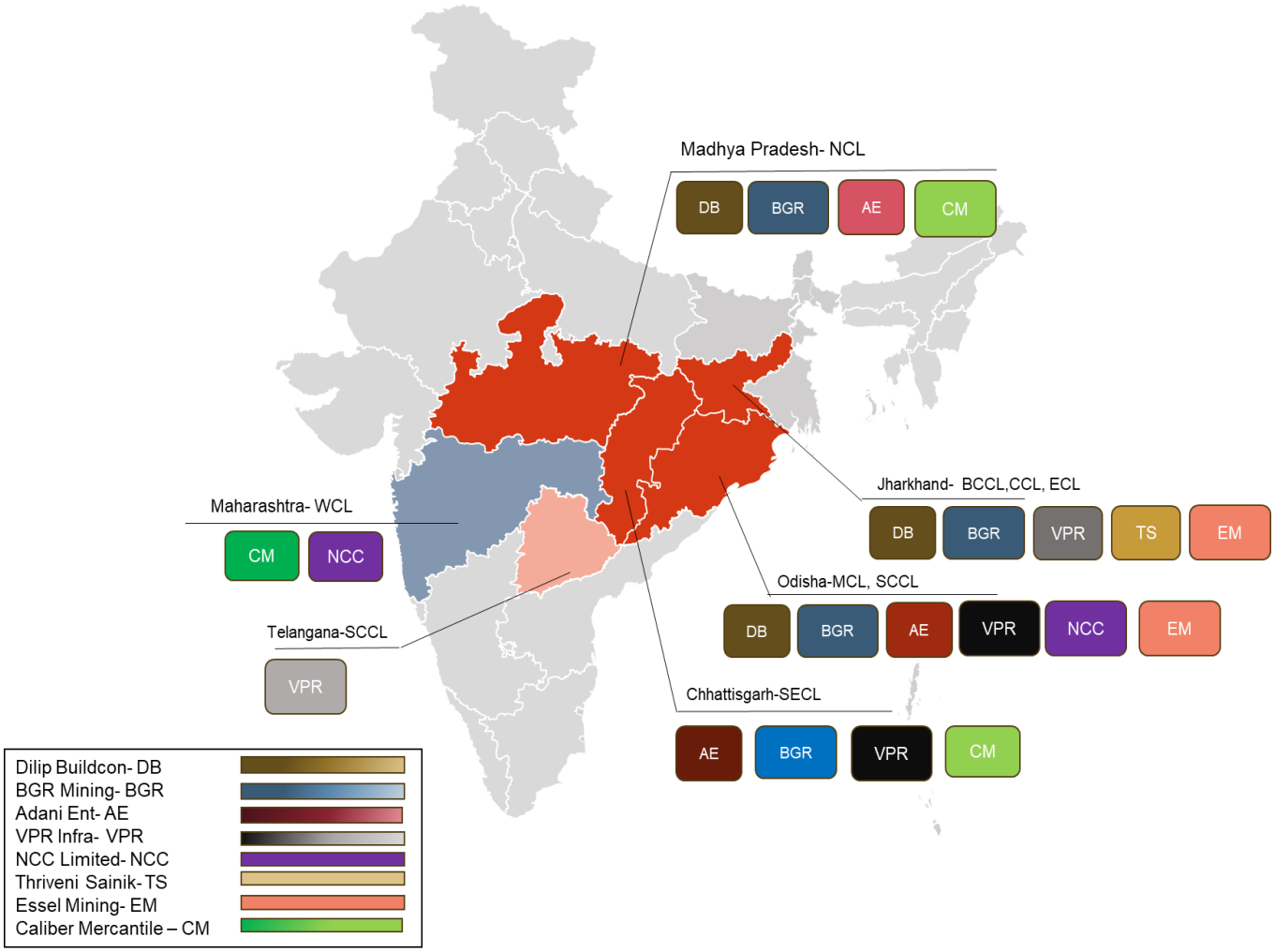
6.3.6 Operational states for key players

The key players, including Adani enterprises, Dilip Buildcon, BGR Mining & Infra, and VPR Mining Infrastructure majorly operate in states of Odisha, Chhattisgarh, Jharkhand and Madhya Pradesh. These companies have projects from CIL subsidiaries operating in these states. MCL and SCCL operate in Odisha, SECL in Chhattisgarh, BCCL and CCL in Jharkhand, NCL in Madhya Pradesh and SCCL in Telangana. NCC Limited has contract mining projects from WCL and SCCL in Maharashtra and Telangana respectively. Thriveni Sainik has one MDO project in Jharkhand. Essel Mining has projects from MCL and ECL in Odisha and Jharkhand respectively.

In Maharashtra, only a few contractors have active projects. WCL, which majorly operates in Maharashtra is the major revenue producing region of CMLL. Majority of the peers are concentrated in two or three states in a particular region. CMLL has better diversification than its peers and shows its presence in Maharashtra, Madhya Pradesh and Chhattisgarh in different regions. The company is further expanding its footprint in states like Odisha and Jharkhand.

The map shows the active presence of the companies in these states.

Figure 91: Major operating states and CIL subsidiaries of key players



Source: Company reports, CRISIL MI&A Consulting

6.3.7 Coal logistics

The coal logistics is another business front in which CMLL operates. **CMLL did a revenue of Rs 26,559 lakh[111] from coal and mineral logistics in fiscal 2024, which contributed to 28% of its revenue , better than fiscal 2023, where coal logistics revenue was Rs 18,135 lakh. CMLL owns 600 tippers out of a robust fleet size of 1,473 vehicles (including 100 leased trucks, equipment and machines) [112].** Although there are many small-scale players in logistics of coal and iron ore, but few integrated players are earning substantial revenue from coal/OB and transport at the same time. **As per our view, In the logistics industry, service providers with access to their own trucks, equipment and in house maintenance capabilities like CMLL, have competitive advantages over leased fleets including cost, scheduling and customer service.**

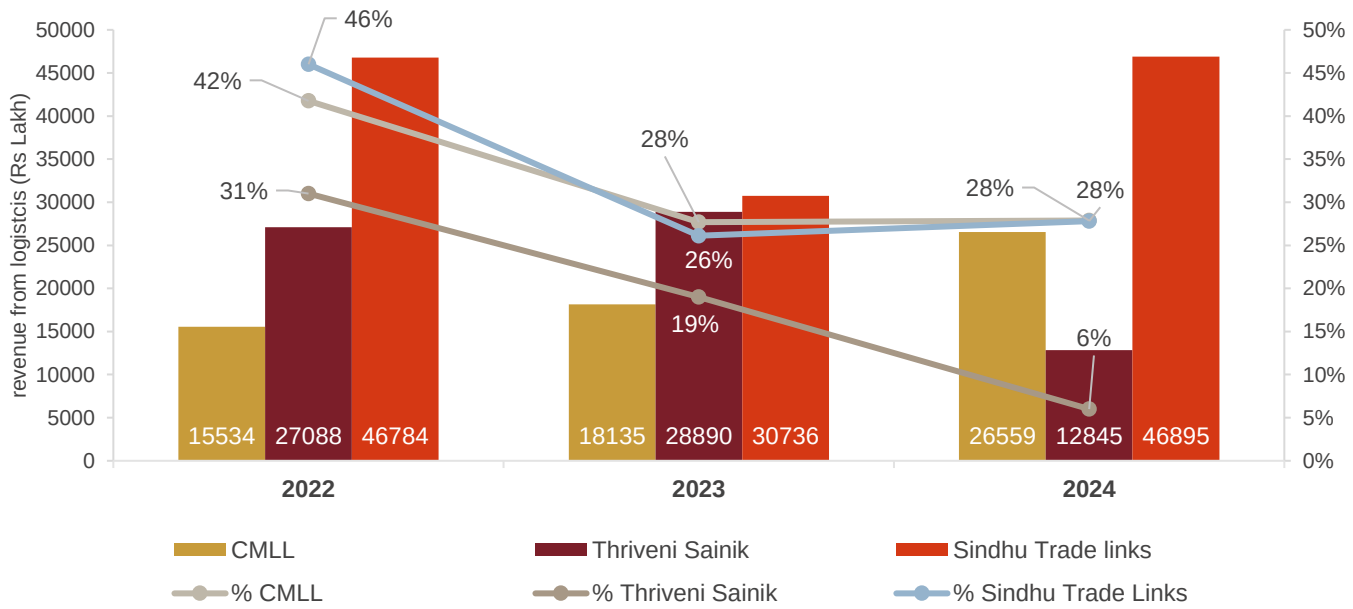
[111] *It includes iron ore logistics revenue of Rs 1,041 lakh.*
[112] *As on 31st October 2024*

Sindhu Trade Links operates in this segment and owns 200 tippers, and 100 loaders involved in loading/ transportation of raw coal. The company recorded a revenue of Rs 1,68,606 lakh in fiscal 2024, of which the transportation and logistics segment contributed 28% amounting to Rs 46,895 lakh. In fiscal 2023, it earned a revenue of Rs 1,17,669 lakh and coal transportation revenue of Rs 30,736 lakh. Other major revenue sources of Sindhu Trade Links are Coal trading and Media operations which contributed 52% and 11% respectively to the revenue in fiscal 2024. Other revenue sources include power generation, oil and lubricants, and operation and maintenance income.

Thriveni Sainik is another major player in this segment. The company earned a revenue of Rs 2,01,180 lakh in fiscal 2024, of which the coal loading and transportation revenue was Rs 12,845 lakh. In fiscal 2023, it earned a revenue of Rs 1,52,808 lakh and coal transportation revenue of Rs 28,890 lakh. The company incurs its remaining revenue as mining fees through MDO projects. Considering the total road transport market size of Rs 29,91,100 lakh in fiscal 2024[113], the market share of CMLL is 0.9%, Sindhu Trade Links 1.6% and Thriveni Sainik 0.4%.

The percentage share of revenue from transportation business has dropped from 31% in fiscal 2022 to 6% in fiscal 2024 for Thriveni Sainik. Sindhu Trade Links' revenue share from logistics has dropped from 46% in fiscal 2022 to 28% in fiscal 2024. While, CMLL has maintained a steady range in the past three years and increased its revenue from logistics business.

Figure 92: Coal logistics revenue (Rs lakh) and its share as percentage of revenue[114]



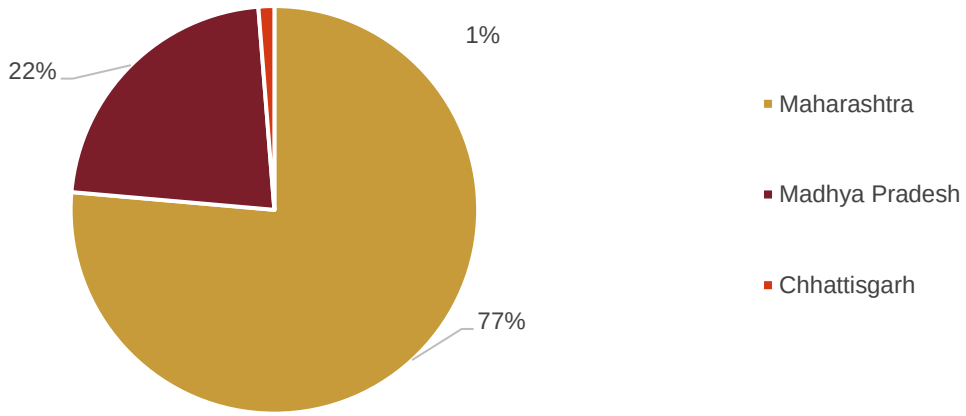
Source: Company reports

[113] *Refer Chapter 4.3 for market estimation*
[114] *The coal logistics revenue includes revenue generated from coal logistics and other mineral logistics for all the players as mineral wise breakup is not available for peers.*

6.4 Competitive advantage

CMLL generated 77% of revenue from Maharashtra in fiscal 2024 and has operational advantage as few small players operate in the region. The company generated 22% of revenue from Madhya Pradesh and the remaining from 1% Chhattisgarh.

Figure 93: Statewise revenue split of CMLL in fiscal 2024



Source: Company reports

Given the expansion of WCL and the current market share of 10% in coal and 12% in OB in WCL, the company has good prospects in the region. CMLL generated 69% of its revenue from coal and OB removal and 28% from coal logistics in fiscal 2024. **A few companies are involved in both coal-OB removal and logistics, therefore CMLL has great competitive advantage to expand as it is the only company operating in both Coal-OB removal and logistics business at such a scale with good profit margins and return on equity margins.**

Figure 94: Competitive advantage of CMLL over peers

Source: CRISIL MI&A Consulting

6.5 Summary

Mineral contracting industry is highly fragmented and competitive, with the presence of a few large players (with revenue of more than Rs 1,00,000 lakh), few medium (revenue Rs 10,000 lakh to Rs 1,00,000 lakh) and large number of small players (revenue less than Rs 10,000 Lakh). The industry has its own challenges and possess threats to new entrants. The industry is dominated by players, such as Adani Enterprises, BGR Mining & Infra, NCC Limited, Thriveni Sainik, and VPR Mining Infrastructure, who have relevant technical expertise to sustain in the business. However, most of these players are now in MDO space as well as commercial mining space, with contract mining space for coal and OB for the other players to grow significantly (medium sized players).

CMLL entered the market of Coal/OB contract mining, along with logistics business, providing a unique combination of services. **The company has performed well financially, and the revenue is clocking a CAGR of 59% from fiscal 2022 to 2024, which is much better than the industry average. It has consistently generated profit after tax margins in range of 10-14% during fiscals 2022 and 2024, much better than the competitors. The company operates in Maharashtra, Madhya Pradesh and Chhattisgarh. Maharashtra is the major revenue producing region for CMLL. The company also owns a robust fleet of 1,373 vehicles[115] and 100 leased vehicles. Considering these aspects i.e. with its technical expertise, unique service offerings and strong regional presence, CMLL is well positioned for future growth and expansion in the mine contracting industry**.

[115] *As on 31st October 2024*

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