

SECL's Approach To India's Coal Dependency Dilemma

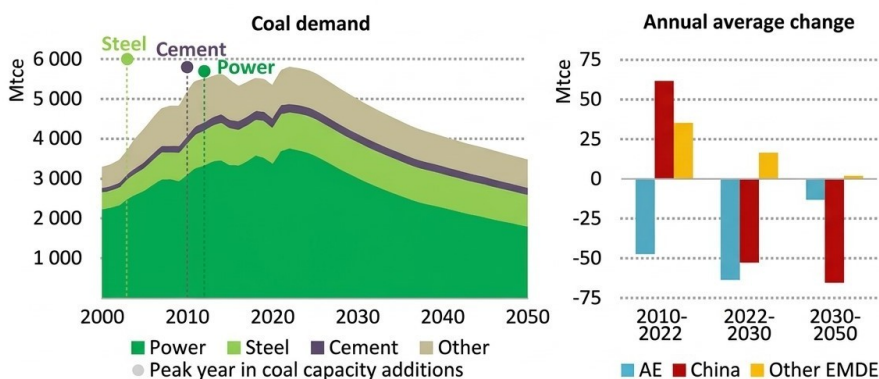
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Introduction

The global industry that backs the energy production sector is the coal industry; it provides affordable electricity, which allows critical sectors to work effectively, such as steel and cement. In India, where an available energy resource is the foundation of economic development, coal is still at the top of the power generation sector. Some of the major subsidiaries in India for this industry are South Eastern Coalfields Ltd, which is a subsidiary of Coal India Limited.

Global coal demand by sector and annual average change by region in the STEPS, 2000-2050



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Peaks in coal capacity additions reached in the power, steel and cement sectors are laying the foundation for global coal demand to peak in the mid-2020s

Note: Mtce = million tonnes of coal equivalent; AE = advanced economies; EMDE = emerging market and developing economies.

Global coal demand

With more and more steps being taken towards increasing renewable resource usage, the pressure on coal, too, would be mounting. To the same is that even the International Energy Agency predicts the global demand of coal to decline and this is based on policy changes and clean energy options. However, India's energy sector is likely to witness rapid growth by 2026, India will use more coal, at an annual growth rate of 3.5%, as the population increases and an economy expands. This puts SECL at a dilemma: how to keep its operations running and supply enough energy for local consumption while not incurring negative environmental implications and responding to the global trend about sustainability.

This dilemma is further underlined by India's peculiar energy context. Though petroleum and natural gas reserves are not plentiful, hydropower projects are highly restricted for ecological concerns and the geopolitics involved in nuclear energy, coal is likely to remain at the top of India's energy agenda well into the future. The company, therefore faces the double challenge of playing the major coal supplier role more or less reluctantly alongside the transition to more responsible practices.

SECL's Overview

South Eastern Coalfields Limited is one of the premier organizations in India's coal sectors. It was established on November 28, 1985 as a subsidiary of Coal India Limited (CIL). Bilaspur, Chhattisgarh is its corporate headquarters, and it is a Mini-Ratna public sector enterprise under the ministry of coal. It is among eight subsidiaries of CIL that meet the energy requirements of the country through extensive capabilities for coal production.

SECL has major coalfield areas which are Central India Coalfield (CIC), Korba Coalfields, and Mand-Raigarh Coalfield. The company operates a total of 59 coal mines, out of which 35 mines operate in Chhattisgarh, and 24 in Madhya Pradesh. These mines include a combination of underground and opencast operations where 41 mines use underground mining techniques, and 18 use opencast mining. The strategic location and diversified mining operations of SECL help it capitalize on the very rich reserves of coal in the region.

In the fiscal year 2023-24, SECL accounted for 24.22% of India's total coal output. The company achieved an impressive increase of 12.19% over the preceding fiscal period from about 187.37 MT of coal FY '23. SECL operates India's largest coal mines, including Gevra OC, Kusmunda OC, and Dipka OC, among others. More than

59 MT was produced by Gevra OC alone in FY 2023-24. The above considerations put SECL in the forefront of coal-producing companies in the Indian subcontinent.

S. No	Company Name	Coal Production (in MT)		
		FY 2023-24	FY 2022-23	Growth (%)
1	ECL	47.56	35.02	35.81
2	BCCL	41.10	36.18	13.60
3	CCL	86.05	76.09	13.09
4	NCL	136.15	131.17	03.80
5	WCL	69.11	64.28	07.51
6	SECL	187.37	167.01	12.19
7	MCL	206.10	193.26	06.64
8	NEC	0.20	0.20	00.00
CIL (Total)		773.64	703.21	10.02
9	SCCL	70.02	67.14	04.29
10	Captives/Others	153.57	122.72	25.14
Grand Total		997.23	893.07	11.66

SECL performance in comparison to competitors

Strategic Positioning

Against the backdrop of soaring demand for energy in India, which is expected to surge exponentially as the population grows and industries proliferate, the company is in a key location to be an essential component of the Indian energy landscape. However, with the trend worldwide shifting toward renewable energy sources and sustainability more than ever, SECL is sure to face the test of changing the way it operates while still meeting all the needs arising from domestic energy consumption.

SWOT Analysis

SWOT ANALYSIS (SECL)	STRENGTHS	WEAKNESSES
	1. Huge coal reserve 2. Abovementioned PR, EC, FC & Mine Capacity are in Sufficient. 3. Infrastructure for mining & Transportation already is in place.	W1. Higher O&M costs, lower productivity & resource utilization and thereby Increasing cost of production, especially in underground mines.

	4. Experienced Workforce with expertise in mining operation. 5. Productive work culture & IR. 6. Cordial relations with all stakeholders, including Govt. & local communities. 7. Financial Soundness with adequate capital for investment. 8. Good Brand Value in the coal sector. 9. Locational advantage being located at the center of India.	W2. Aging equipment & Technology, lack of indigenous equipment manufacturing facilities & dependence on imports for spares. W3. Slower adoption of technological advancements & changes. W4. Health & safety issues for employees. W5. Lower compliance culture. W6. Environmental concerns & regulations regarding coal usage. Over 93.5% of coal From OC Mines with its issues and problems like land acquisition W7. Infrastructure bottleneck, especially evacuation of coal W8. Revenue dependency of a single source of energy W9. Potential gap in skills and attraction / retention problem with the best talent.
OPPORTUNITIES O1. Increased demand for coal in the expanding Indian economy.	SO STRATEGIES 1. Generate more using advanced Green/Clean Coal technologies to meet the nation's demand for coal.	WO STRATEGIES 1. System improvement & upgradation of skill machines to improve operational efficiency, capacity utilization, productivity, health, safety

O2. Technological breakthrough in clean coal technologies and carbon capture utilization & storage (CCUS) & government incentives & subsidies for cleaner energy generation. O3. New mine management system through Normal MDO & Revenue Share MDO Modes. O4. Foray into other alternative renewable energy sources like Solar, Pump Storage Plant (PSP), Coal to Chemicals, Coal Bed Methane (CBM), Thermal Power & critical Minerals. O5. Collaboration/ Strategic partnership/ JV with technological companies/Research Institution for hybrid energy projects/ diversification/ innovation, etc.	2. Collaboration of research institutions and industry experts with the adoption of Digitalization. 3. Automation of all activities related to mining of coal, from exploration towards evacuation to the Environment Management, Mine Closure with technological advancement. 4. Investment in R&D on Clean Coal Technologies and capitalizing on government support & funding for R&D on clean coal technologies. 5. Identifying and Rapidly expanding the operations into emerging markets with increasing coal demand domestically as well as internationally. 6. Partnerships & Collaborations with renewable companies to enrich the business and create new market opportunities 7. International partnerships for knowledge sharing, technology transfer & market expansion	& environmental performances. 2. Modernization of the operations keeping in tune with the changing market trends, regulations and technological advancements to adopt changing conditions effectively 3. Continuous coordination with government bodies & other industry stakeholders to address the concerns on the environment 4. Enhancing the share of production from the UG Mines UG Vision Plan 5. Completion of Rail Corridor (CERL) at an accelerated pace & CEWRL) programmes of SECL. 6. Diversification of energy basket through Exploration and investment in renewable energy sources, PSP, Coal to Chemicals, CBM, Thermal Power and Critical Minerals 7. Talent Acquisition and Retention by providing competitive compensation package and career opportunities.
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	8. Critical Minerals blocks/ assets acquisition in India as well as abroad	
THREATS T1. Poor image & public perception of coal mining. T2. Strict environmental regulations & access to finance is not easy as there are environmental concerns, reduced carbon emission, perceived introduction of carbon pricing or carbon tax. T3. Economic and political environment is also uncertain for coal mining T4. Private players will take advantage as the coal sector is opened to commercial mining. T5. The competition will increase in terms of the option of other energies sources (CNG, Renewables, etc.) T6. Energy Price volatility & market uncertainty	ST STRATEGIES 1. Public relation campaigns to improve public perception of coal. 2. Communication & promotion of the company's commitment towards socio-environmental sustainability. 3. Developing an awareness of changing regulations and policy updates, thereby enabling compliance, while exploring possible incentives or subsidies for clean coal technologies. 4. Improving operational efficiency to reduce costs and keep pace with private sector producers of coal. 5. Mutual adaptation of change in market conditions by diversify energy portfolio and search for alternative sources of energy.	WT STRATEGIES 1. Employee training, system improvement, green/clean coal technologies, health & safety measures to minimize risk. 2. Proactive approach towards the environment and regulatory pressures. 3. Sustainable mining practice and investment in environmental measures to address concerns related to coal mining. 4. Capacity Utilization campaign to achieve more than 100% departmental capacity utilization 5. 100% compliance culture pan SECL. 6. Other than coal products diversification to reduce dependence. 7. Quality campaign for better grade conformation. 8. Employee Recruitment/ up-skilling through skill building and training programs for an effective

T7. Transition towards cleaner renewable sources. T8. Increasing customers' expectations for quality and ESG (Environment, Social & Governance) compliances	6. Explore strategic partnerships or alliances with renewable energy companies. 7. Participate proactively in campaigns for quality improvement of coal quality conformation. 8. Eco-friendly mining technologies and decarbonization activities that cut carbon footprints.	adaptation of their skill sets toward digitalization, automation, and energy transition, etc.
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Strategic Initiatives from SECL

- ***Increase in Production Capacity***

SECL seeks to increase its production of coal to cater to the increasing domestic demand. The company is positioned with a production capacity of 285.63 MTY and this is only going to scale up with incremental EC of the existing mines. The company has placed an increment of 6.97 MT for FY 2024-25, which would be further elaborated to 71.83 MT in FY 2025-26 in line with one billion tonne plan of Coal India Limited.

- ***Fast Mechanized Coal (FMC) Projects***

SECL has also taken up the execution of FMC projects for effective and safe coal loading and evacuation. Six FMC projects, out of nine planned for a total capacity of 146 MT in this program, have already been commissioned. Three more are in the process of commissioning and will be completed by FY 2024-25. Mechanization would thus increase the efficiency of operations but with lesser environmental impacts.

- ***Infrastructure Development***

SECL is developing rail corridors to evacuate better coal from its mining areas. Two major rail links, Central Eastern Rail Link (CERL) and Central Eastern Western Rail Link (CEWRL), are under commissioning, enhancing coal transport capacity by over 150 MT.

- **Investment in Cleaner Technologies**

Given this global trend, SECL is looking into investment into cleaner technologies that would be able to mitigate the emissions that are associated with coal mining and in its usage. This includes research into more advanced mining techniques along with possible diversification into renewable energy sources.

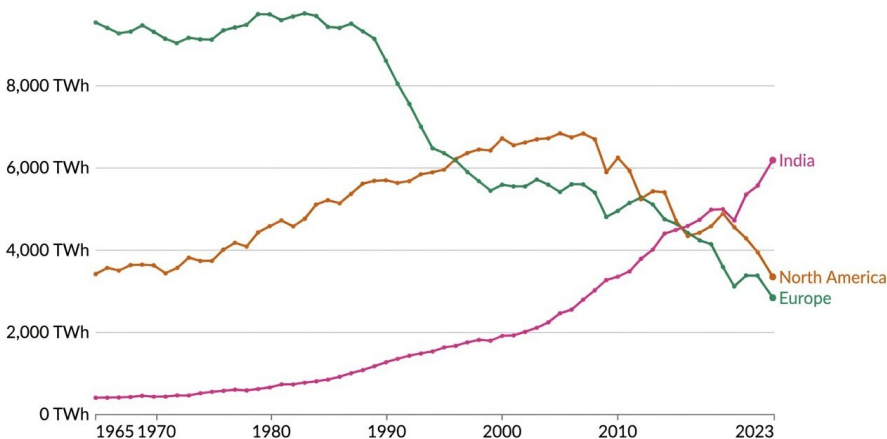
- **Diversification in Non-Coal Sectors**

SECL is looking to scout for diversification opportunities. This would include investments in alternative energy sources or other industrial sectors that complement its core coal operations to reduce the risks associated with the coal dependency.

Key Factors

- Coal will always play a crucial role in ensuring that electricity is produced inexpensively.
- India's demand for electricity remains strong, and India has hardly any alternatives.
- India's commercial primary energy consumption has increased by about 700% in the last 40 years. From the above growth figure, it can be easily understood that the per capita energy consumption in India is still much lower than that of developed countries. The glaring gap in per capita energy consumption refers to a huge potential for future energy demand growth.

Annual consumption of coal for primary energy, measured in terawatt-hours (TWh).



Data source: Energy Institute - Statistical Review of World Energy (2024)

OurWorldInData.org/fossil-fuels | CC BY

Coal Consumption in India

- SECL produced 24.22% of all Indian coal during FY 2023-24, amounting to 187.37 MT of coal up by 12.19% from last year. The company has some of the largest mines in India and a few are among the largest producers in the country, particularly Gevra OC and Kusbunda OC.

Recommended Strategies for SECL

- ***Carbon Capture and Storage (CCS) Technologies***

Carbon capture and storage technologies would be instrumental in reducing carbon emissions from the coal production and usage of SECL. It may position SECL at the forefront of sustainable mining operations and give strength to positions against the pressure from climate change regulations.

- ***Hybrid energy solutions development***

SECL can construct hybrid energy systems that utilize coal in collaboration with renewable sources of energy. This way, the transition between a balanced energy supply and more use of clean energy would be smoother.

- ***Enhancing R&D***

A specific R&D center on mining technology innovation, clean coal, and alternative sources of energy can enable efficiency improvements and minimize adverse environmental effects. Collaboration with academic or technological institutes helps in innovation.

- ***Adoption of Smart Mining Technologies***

Smart mining technologies with IoT sensors and data analytics can be expected to improve safety, efficiency, and resource use efficiency. Real availability of data in real-time shall further support better decision-making and predictive maintenance for equipment. This technology can offer real-time data for better decision making and predictive maintenance of equipment.

- ***Strategic Alliances with Renewable Energy Companies***

This strategic alliance or partnership with renewable energy companies will provide knowledge sharing and resources for innovative solutions as follows: That collaboration will hasten the transition of SECL to cleaner energy practices by using coal synergies and renewable energies.

- ***Investment in Digital Transformation***

The Digital transformation across all operations from exploration to production will enhance efficiency and decrease the costs of the mines. Emerging technologies in supply chain management such as AI, machine learning, and blockchain can significantly streamline the operation.

References

This case study has been designed using proprietary data sourced from the internal management reports and analyses regarding South Eastern Coalfields Limited (SECL).