



Road Map for
Enhancement of
Coal Production

कोल इण्डिया लिमिटेड
Coal India Limited





Coal India Limited – A Brief Profile

Coal India Limited (CIL), as a state owned coal mining corporate, came into being from 1st November 1975 with the government taking over private coal mines. With a modest production of 79 Million Tonnes (MTs) in the year of its inception, CIL today is the single largest coal producer in the world. Operating through 82 mining areas, CIL is an apex body with 7 wholly owned coal producing subsidiaries and 1 mine planning and consultancy company, spread over 8 provincial states of India. CIL manages 200 other establishments like workshops, hospitals etc. Further, the company also owns 26 technical & management training institutes and 102 Vocational Training Centres. Indian Institute of Coal Management (IICM) as a state-of-the-art Management Training 'Centre of Excellence' – the largest Corporate Training Institute in India - operates under CIL and conducts multi-disciplinary management development programmes.

CIL is conferred with the coveted '**Maharatna**' recognition. It is a privileged status conferred by Government of India to select state owned enterprises in order to empower them to expand their operations and emerge as global giants. So far, the select club has only few members.

Unmatched Strategic Relevance

- Produces around 81% of India's overall coal production.
- Meets around 40% of the country's primary commercial energy needs.
- Supplies coal to 97 out of 100 Thermal Power Stations in the country.
- Empowers power sector as around 78% of CIL's entire off-take is consumed by power utilities.
- One of the highest contributors to the government ex-chequer- both federal and states.



- Among the Top 8 Most Valued Companies of the country in terms of Market Capitalization (as of 1 May 2015).
- CIL alone contributes to around 25% of entire freight loading of Indian Railways.

Production Highlights

CIL produced 494.23 Million Tonnes (MTs) of coal in 2014-15 registering a production growth of 7%.

- Recorded a never-before new high of 32 Million Tonne production increase in a single year during 2014-15.
- During the entire XI Five-Year Plan (2007-12), the production increase was 74.93 Million Tonnes. In a single year (2014-15) CIL has achieved 42.5% of the incremental increase achieved in the total XI Five Year Plan.
- During the last four financial years beginning 2009-10 till 2013-14 the absolute increase in coal production was 31.16 MTs, whereas the production increase in volume terms took a quantum leap to 32 MTs in FY 2014-15 alone.



Improved supplies to Power Utilities

- Despatch of coal and coal products from CIL as a whole to power utilities of the country during 2014-15 surged ahead to 384.18 MTs, up by 30.35 MTs, from that of 353.83 MTs achieved in 2013-14 registering an 8.6% growth as per the annual action plan.



Positives of 2014-15 across Coal India

- A major mega opencast mine of Central Coalfields Limited (CCL) Ranchi became operational in 2014-15. Namely Amrapali (12 MT/Y capacity) from 11 July 2014.
- Eastern Coalfields Limited came out of BIFR.
- Bharat Coking Coal Limited was conferred the Miniratna status.
- Makardhokra 1, Bhanegaon and Panganga in Western Coalfields Limited, and Jampali in South Eastern Coalfields Limited went operational.



Efforts to ramp up coal production

CIL's major challenge is to meet the rising demand from the power sector. CIL is closely monitoring the coal production at various levels and is increasing its operational efficiency. The company is employing various methods such as large-scale contract mining through Mine Developer Operators (MDO), speeding up land acquisition, improving infrastructure at coalfields, modernizing the mines etc, in an effort to increase the production and reduce the country's dependence on imports to minimal level.

So, began the dream of aspiring and achieving the **1 Billion Tonne** coal production.



Gearing ahead to meet the challenge of 1 Billion Tonne of Coal by 2019-20 – A Road Map –

One Billion Tonne initiative – traversed up from grass root level

Basically, the idea of ramping up the production to 1 BT by 2019-20 germinated at the grass-root level and traversed up, growing bigger, as its possible potentiality was realized. CIL's subsidiary companies have decided to take up the gauntlet of meeting the challenging target, with the support from Ministry of Coal, Government of India, which has been monitoring the performance up to mine level.

Performance at mine level in all subsidiaries has been analyzed and improvement areas have been identified. In a unified concerted manner all the seven coal producing companies of Coal India Limited have now a single-pointed focus of attaining the 1 Billion Tonne by 2019-2020.



Synergic Mining

1 Billion Tonne production essentially is a synergic effort with coal bearing States and Railways to access the resources and speed up logistics for coal evacuation respectively. Only a unified concerted momentum in a perfect symphony can make it a reality.

Coal India has decided to put its best foot forward with the help of all concerned



agencies and take its production into higher growth trajectory. This booklet is a road map that charts out the strategies and challenges to reach that dream goal.

Overview

Coal India with a glorious past and dynamic present, now is gearing up for an inspiring future.

The company has the primary responsibility of fulfilling the energy demands of the Nation to the tune of 1.215 Billion Tonnes. It is endeavouring to meet this challenge in the Nation's interest. Contribution from identified projects will be 908 Million Tonnes. And identification of projects for balance quantity is under progress.

Category-wise Production from Projects

- Existing coal projects to contribute 164.96 Million Tonnes (MTs)
- Projects under implementation to contribute 561.48 MTs
- And, future projects to generate 181.66 MTs

Contribution from Subsidiaries in pursuit of 1 Billion Tonne

- Mahanadi Coalfields Limited and South Eastern Coalfields Limited to play a



pivotal role with an anticipated contribution of 250 Million Tonnes and 240 Million Tonnes respectively.

- Other Subsidiary companies are envisaged to contribute as follows: Eastern Coalfields Limited – 62 MTs; Bharat Coking Coal Limited - 53 MTs; Central Coalfields Limited - 133 MTs; Northern Coalfields Limited – 110 MTs and Western Coalfields Limited– 60 MTs.

Major Challenges

The 1 Billion Tonne production by 2019-20 can be realized with the help of:

- Three critical railway lines coming up
- Switching over to full mechanization and latest technology adoption
- Large scale contract mining
- Upgrading skills of employees and deployment of sufficient manpower
- Speedy acquisition of land
- Expeditious Environmental and Forest clearances
- Speedy State level clearances

The dream of providing 1 Billion Tonne of coal to the Nation will be achieved only in a unified concerted effort through CIL, Railways and States.



Key Strategies

(I) Critical Railway Links - Collaboration with State Governments & Railways

Movement of coal through rail route is the preferred choice in the country. Around 55% of the entire coal transportation of CIL is through rail mode. Relatively it is inexpensive, safer, environmentally conducive and large volumes of coal can be moved. So, railways play a pivotal role in coal transportation.

However, there are a few coalfields in the country which have huge production potential but are bereft of rail linkages for evacuation of the coal produced. Among these, 3 rail lines linked to Central Coalfields Limited (Jharkhand), Mahanadi Coalfields Limited (Odisha) and South Eastern Coalfields Limited (Chattisgarh) are critical and



expected to play a key role in evacuation of coal. Simultaneously, the production also increases when the evacuation facility is made available.

To monitor and speed up the commissioning of these three rail lines 'Special Purpose Vehicle' (SPVs) have been formed in a tripartite partnership between Ministry of Railways, Ministry of Coal and the respective State governments with a win-win strategy for all stakeholders. It is a mutually beneficial situation for all, as the States stand to gain from increased royalties, the railways would generate more freight loading and revenue and the coal companies will be able to supply more coal to consumers with a positive effect on their bottom line. Most importantly, it helps the country generate more power and bring about prosperity to nation and the common citizenry of the country. IRCON and RITES Limited an engineering consultancy company, specializing in the field of transport infrastructure will have a major role in developing and maintaining following three rail links and other rail despatch logistics like railway sidings.



1. CCL: Tori-Shivpur single line, Tori-Shivpur double line and Shivpur-Kathotia under CCL, Jharkhand. Each of the lines expected to move 24 Million Tonnes of coal making it a total of 72 Million Tonnes of coal movement.

2. MCL: Jharsuguda-Barpali-Saradega single and Angul-Kalinga connectivity for unidirectional movement of rakes in much congested Talcher Coalfields.

3. SECL: 1st phase of East Corridor (Kharsia-Gharghoda-Dharamjaigarh up to Korba with a spur from Gharghoda to Donga Mauha to connect mines of Gare-Pelma block) and East-West Corridor from Gevra Road to Pendra Road via Dipka, Katghora, Sindurgarh, Pasan.

(ii) Technology Development

(a) Geology

- More use of Hydrostatic Drilling for high rate - presently 8 in operation, 5 more to be added by 2016-17
- More use of geophysical loggers - 5 in operation and 5 more by 15-16
- Optimisation of number of coring boreholes based on the complexity of geology of the block
- More use of 2D/3D Seismic Survey Technology

(b) Opencast Mines

- High capacity equipment
- Operator independent Truck Dispatch Systems
- Vehicle Tracking System using GPS/GPRS
- CHP and SILOS for faster loading
- Monitoring using Laser Scanners

(c) Underground Mines

- Continuous Miner Technology on large-scale
- Long-wall Technology at selected places
- Man Riding system in major mines
- Use of Tele-monitoring techniques

(iii) International Collaboration - Mine Developers & Operators

- To enhance the coal production in the ensuing years, one of the methods that CIL has adopted is to infuse international technologies and partner with Mine Developers and Operators having requisite experience and know-how in coal mining. This will get the advantage of efficiency in operations and ease of technology transfer. In this regard, a Model Contract Agreement has been approved by CIL Board and circulated to subsidiary companies for implementation.

- At present 2 Opencast Projects totaling 42 Million Tonnes/Year at Rajmahal Project (Eastern Coalfields Limited) and Bhubaneshwari Project (Mahanadi Coalfields Limited) are under operation.

(iv) Role of HR

- Human Resource has to play a dominant role if CIL has to achieve the challenging goal of 1 Billion Tonne coal production by 2019-20. HR Division had recently conducted a two-day workshop to identify various areas that would supplement CIL's efforts in this regard and is charting out a plan of recruiting multi-disciplinary professionals, skill upgradation of existing employees, identifying areas of improvement etc.
- Coal India recently signed a Memorandum of Understanding with National Skill Development Corporation (NSDC) to promote special education and employment enhancing vocational skills especially among children, women, elderly and differently abled for their livelihood enhancement. Entirely funded by Coal India the project would impart training to lakhs of people over next two years.

Other Improvement Areas

(i) Coal Washing - A step towards Quality improvement

- With limited scope of product differentiation, competitiveness of generic products like coal primarily centers around quality and price.
- To make the product better qualitatively, CIL has decided to bring in consistency in quality.
- CIL is setting up a 15 coal washeries of which 6 are coking coal and 9 non-coking coal with a total proposed washing capacity of 97.6 Million Tonnes/Year. The 6 coking coal washeries are being set up in Bharat Coking Coal Limited with a washing capacity of 18.6 Million Tonnes/Year. Construction has already begun for 3 of these coking coal washeries. Of the remaining 9 non-coking coal washeries 3 will be set up in Central Coalfields Limited (24 Million Tonnes/Year) 2 in South Eastern Coalfields Limited (15 Million Tonnes/Year) and 4 in Mahanadi Coalfields Limited (40 Million Tonnes/Year).

Setting up of these washeries will result in reducing the ash content and improved consumer satisfaction. Environmental concerns arising out of coal transport was another factor for CIL favouring this option.

(ii) System Improvements

- E-procurement of equipment and spares
- E-tender of work and services
- Implementation of Coal net
- Establishment of connectivity
- Revision of guidelines and manuals
- Use of GPS for monitoring operational efficiency in road transport of coal

Corporate Social Responsibility

- Corporate Social Responsibility apart from improving the quality of lives of people is also to take them along towards the goal of the company by partnering with them. While pursuing the enhancement of Coal production, CSR is being undertaken to have inclusive growth of villagers and affected community.
- Health: Coal India as a whole runs 80 hospitals with 5749 beds, 405 dispensaries, 592 ambulances, 38 fully equipped mobile vans. (as of March 2015)
- Education: A total of 668 educational institutions are run by Coal India and subsidiary companies which includes privately managed schools where recurring grant-in-aid is provided; fully funded project schools, privately managed schools etc. (as of March 2015)
- Drinking Water: Provides potable drinking water to around 20 Lakh local populace in and around mining areas.
- Infrastructure Development: CIL has been proactively developing roads, bridges, community centres, sports infrastructure and other facilities for the growth of rural economy and well being of the affected persons.



- Clean India Initiatives: CIL's Subsidiaries have taken up construction of 48,735 separate toilets for boys and girls in 30,340 schools. Construction for over 8,300 toilets has already begun.
- Skill Development: Coal India recently signed a Memorandum of Understanding with Ministry of Skill Development and Entrepreneurship to promote special education and employment enhancing vocational skills especially among children, women, elderly and differently abled for their livelihood enhancement. Entirely funded by Coal India the project would impart training to lakhs of people over next two years.

Environmental Care - Eco System Development

- Coal India is unwavering in its commitment to protect environment and nature.
- Tree Plantation: The company undertakes massive tree plantation programme all over its companies and so far has planted 81 Million trees.
- CIL keeps the environment mitigation measures next only to production of coal in the order of priority along with safety. Coal India is committed to make its working areas and surroundings 'Clean and Green'.
- Water management is essential for restoration of eco system. The environmental, ecological, cultural and economic values of water have also led to greater scrutiny of responsible water usage.



- Water Management: Coal India and its subsidiary Companies adopt various measures to ensure minimal water pollution due to coal mining and its proper uses to build a well managed eco system in mining areas.

Restoration of Eco System By Attracting Migratory Birds



Creation of Water Bodies Over Mined out Area



Effluent Treatment Plants (ETP) and Oil and Grease traps are installed and operated in major workshops to treat the workshop effluent.

- Mine Water usage: In order to conserve rain water and replenish the ground water reservoir, rain water harvesting projects are being undertaken in all subsidiary companies. For efficient water management, CIL is undertaking the following:

- (a) The entire mine's industrial water demand is mostly met from the mine water. The treated mine water is used for domestic and agricultural need.

- (b) The surplus treated mine water is discharged into the local ponds, agricultural fields and finally to the natural courses.



- (c) After cessation of mining, a part of the open cast mine area is reclaimed and the final void is converted into a water reservoir which in turn works as water recharge structure and source of water for the locals.

- (d) Similarly underground mine after exhaustion also serves as water recharging structure.

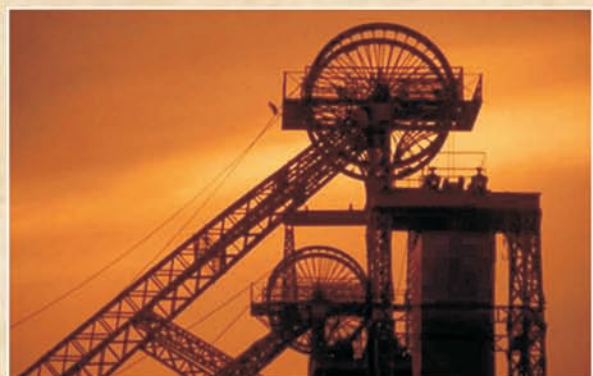
- (e) The closed water recirculation system has been adopted in the washeries to stop the discharge of water outside the premises and minimize water requirement. The treated water is used for water sprinkling in coal transfer points, good housekeeping and plantation for overall improvement of the environment.

- Water Conservation Initiatives: Abandoned quarry voids are used as water harvesting structure for recharge of ground water. Water Treatment Plants (WTP) operational under integrated water supply schemes and small scale water filtration units for domestic supply are existing.

Surface water sources are mostly not affected due to the withdrawal of water from operations. Pumped water from mines is recycled for domestic & industrial consumption and supplied to surrounding villages. Remaining water wherever feasible is stored in the mine voids / reservoirs and used for aquifer recharging etc.



With a glorious past and dynamic present
Coal India is gearing up for an inspiring future.
With unabated zeal **Coal India** aspires to meet
the challenge of producing
1 Billion Tonnes by 2019-20



Strategic VISION



The strategic vision of Coal India Limited is to place the company on a path of accelerated growth with enhancement in productivity, competitiveness and profitability while meeting the growing demand of coal in the country taking care of environment and social needs of the people in a sustainable manner through good governance.



कोल इण्डिया लिमिटेड
Coal India Limited

भारत सरकार का उपक्रम
A Government of India Undertaking

एक महारत्न कम्पनी A Maharatna Company

Fuelling India's Growth Story