



Indian Chamber of Commerce

The Indian coal sector: Challenges and future outlook

Indian Chamber of Commerce



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Contents

*Overview 06 | Outlook 11 | Innovation and technology 17 |
Policies and regulations 20 | Overseas acquisitions and long-term
strategies 22 | Summary 25*

Foreword

Mining in India is a major economic activity which contributes significantly to the economy of India. The GDP contribution of the mining industry varies from 2.2% to 2.5% only but going by the GDP of the total industrial sector it contributes around 10% to 11%.

Coal with a proven reserve of 860 billion tonnes is mined the most in the world. At the same time, the demand curve for this sector is always on the rising side. The major reasons are the soaring power demand in India and China, the growing worldwide steel production, and lastly, the increasingly stringent environment regulations.

As a prospering economy, India faces energy security as a growing challenge and the coal production is expected to grow at a CAGR of around 7% during 2011-12 to 2013-14. The Indian coal market is set to witness great boost in near future because of the rising government initiatives. Recently, allocation of coal blocks and stake sales in PSU are some of the major steps that were taken by the government to boost the production and investment in the coal industry.

However, the upward pressure would definitely widen the demand supply mismatch in the coming years. To address these concerns, Indian conglomerates are making efforts in overseas acquisitions as well. In addition, it is also exploring un-conventional alternatives such as Coal Gasification for supply of energy. Varied coal gasification technologies are re-evolving over the globe to replace the conventional power generation methods.

In this context, Indian Chamber of Commerce to further strengthen its support amongst industry representatives and policy-makers presents the 4th India Coal Summit during 28th November, 2012 at New Delhi. PricewaterhouseCoopers Pvt Ltd. is the Knowledge Partner of this initiative. This platform will bring together various stakeholders to discuss, share and evolve suitable strategies and development models.



Rajiv Mundhra
President
Indian Chamber of Commerce

Overview

Introduction

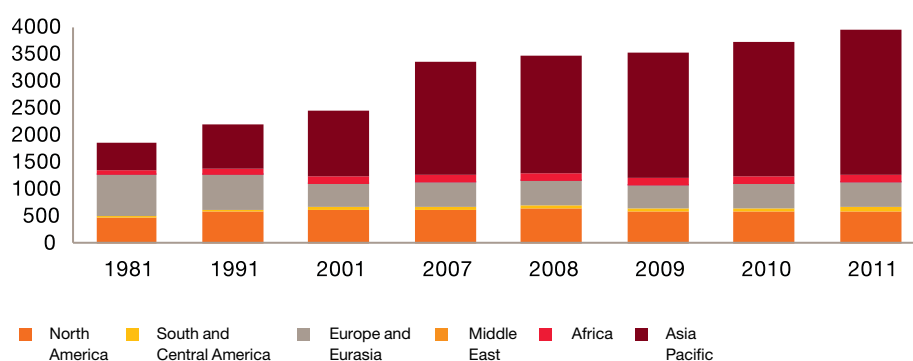
Global coal scenario

Globally, coal resources have been estimated at over 861 billion tonne. While India accounts for 286 billion tonne of coal resources (as on 31 March 2011), other countries with major chunk of resources are USA, China, Australia, Indonesia, South Africa and Mozambique.

Coal meets around 30.3% of the global primary energy needs and generates 42% of the world's electricity. In 2011, coal was one of the fastest growing forms of energy after renewable sources and its share in the global primary energy consumption increased to 30.3%-highest since 1969.

Coal production in the Asia Pacific region has grown tremendously and accounts for over 67% of the total production globally (2011) as compared to about 27% in 1981 (in terms of energy equivalent).

Global coal production (Mtoe)

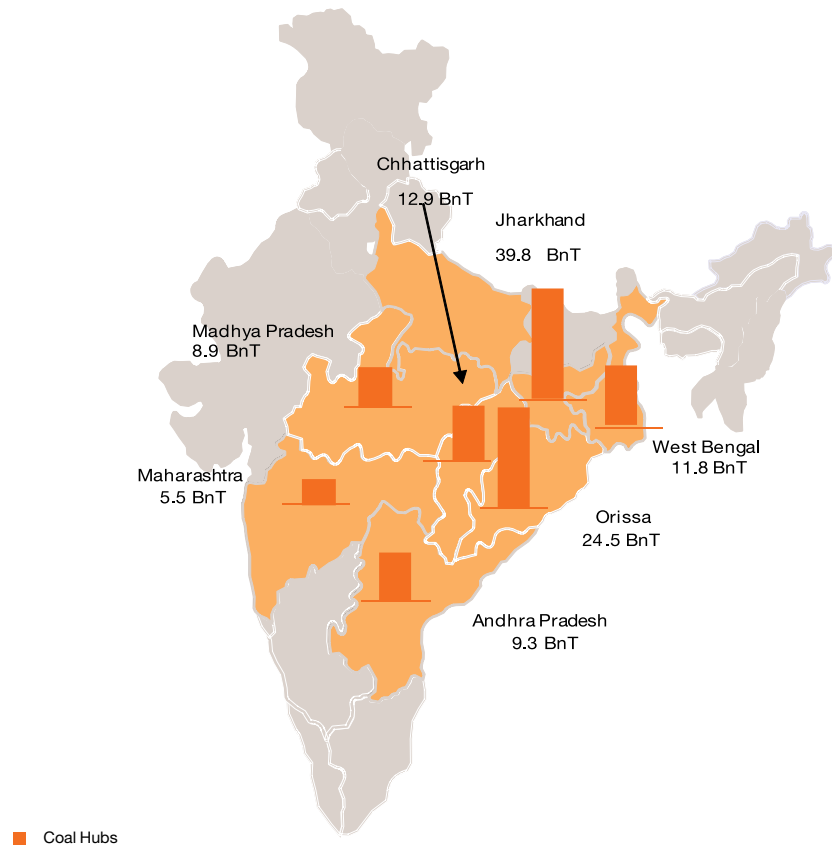


Source: BP's Statistical Review of World Energy, June 2012

Last year, around 6.1 billion tonne of hard coal and 1 billion tonne of brown coal were used worldwide. Since 2000, the global consumption of coal has grown faster than any other fuel. Currently, the five largest coal users are China, USA, India, Russia and Germany. They account for 77% of the total global use.

India has the fifth largest coal reserves in the world. Of the total reserves, nearly 88% are non-coking coal reserves, while tertiary coals reserves account for a meager 0.5 % and the balance is coking coal. The Indian coal is characterised by its high ash content (45%) and low sulphur content. The power sector is the largest consumer of coal followed by the iron and steel and cement segments.

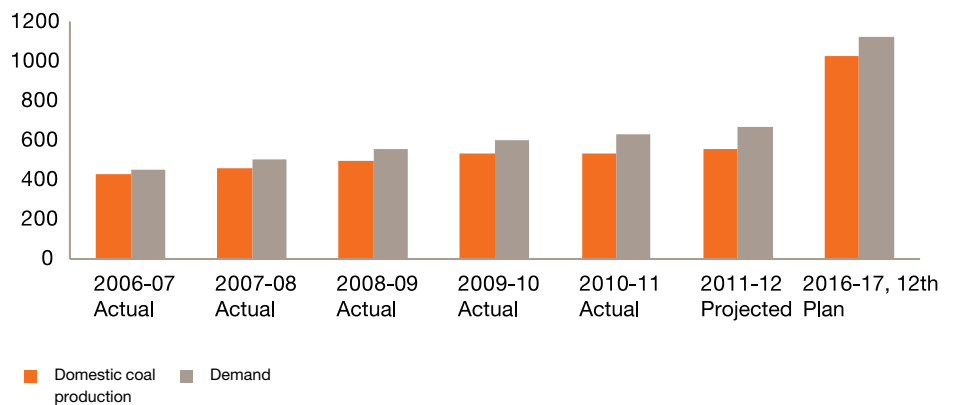
India's Gondwana Coal Reserves



Source: Geological Survey of India

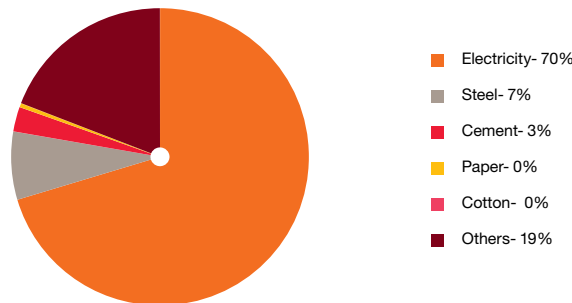
The country's coal production has increased from ~431 MT in 2006-07 to ~554 MT* in 2011-12 (an increase of 28.5%). On the other hand, the demand for coal has grown at a CAGR of more than 7% in the last decade and has reached around 600 MT. The India Energy Book, 2012 pegs the country's total demand-supply gap (including coking coal) at about 98MT. Out of this, India imports about 85 million tonne of coal.

Demand-supply scenario



Source: India Energy Book, 2012 (World Energy Council, Indian Member Committee)

Sector-wise coal consumption in India (2010-11)



Source: Annual report, Ministry of coal

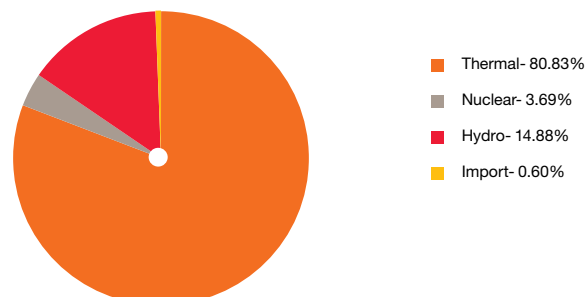
Industry structure

Currently, the government enjoys a monopoly in producing coal with over 90% of the production coming from government-controlled mines. The policy for captive mining was introduced in 1993. This opened the coal sector to private investment, although no promising progress has been made in the captive coal blocks allotted by the government. Out of the 200 allocated blocks (22 have been de-allocated), only 30 mines have commenced production due to various reasons. The combined production from these was merely 36.30 MT in FY 2010-11 against a target of 104 MT. Contentious issues, availability of geological data, land acquisition and R&R, environment clearances, mining lease, etc. are the primary reasons behind the dismal production. Currently, coal block auction is proposed and detailed mechanism is being formulated for transparency and efficient processing.

Current scenario

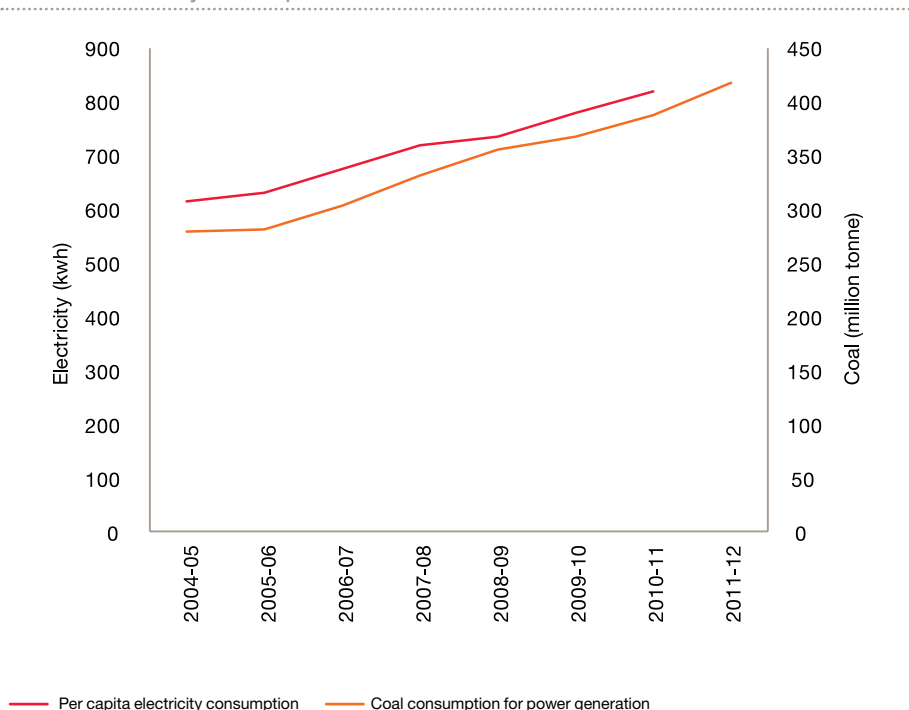
India is the world's fifth largest energy consumer, accounting for 4.1% of the global energy consumption. Maharashtra is the leading state in electricity generation. The current per capita consumption of energy in India is 0.5 toe against the global average of 1.9 toe, indicating a high potential for growth in this sector. Of the total electricity consumed in the country, approximately 80% is produced from coal.

Sources of electricity generation



(Generation figures mentioned above excludes generation from plants up to 25 MW capacity)

Coal and electricity consumption



Source: CEA, September, 2012

Steel sector

Coal is an essential input in the production of steel. In 2011, the world crude steel production reached 1,518 MT, reflecting a growth of 6.2% over 2010. The per capita finished steel consumption in 2011 is estimated at 215 kg for world and 460 kg for China, while that for India it is estimated currently at 55 kg (provisional). This clearly indicates scope for increasing the per capita steel consumption, a factor which correlates to the coking coal availability and production within the country.

India has very limited reserves of coking coal which is a key raw material for the production of steel. Coking coal accounts for only 15% of the country's overall proven coal reserves. The Jharia coalfield, located in the state of Jharkhand, holds the majority of the coking coal reserves. The Indian steel industry has been facing acute shortage of coal for the last several years. As per the report of the Working Group of Coal and Lignite for the 12th Five Year Plan, the steel production by 2016-17 is projected to be 105 MT. The corresponding requirement of coking coal for this quantity of steel is worked out at 67.2 MT in 2016-17.

Cement sector

India is the second largest producer of cement in the world. Large amount of energy is required during the production of cement and coal is used as an energy source. During the process, coal is usually burnt in the form of powder. Around 450g of coal is consumed to produce 900g of cement.

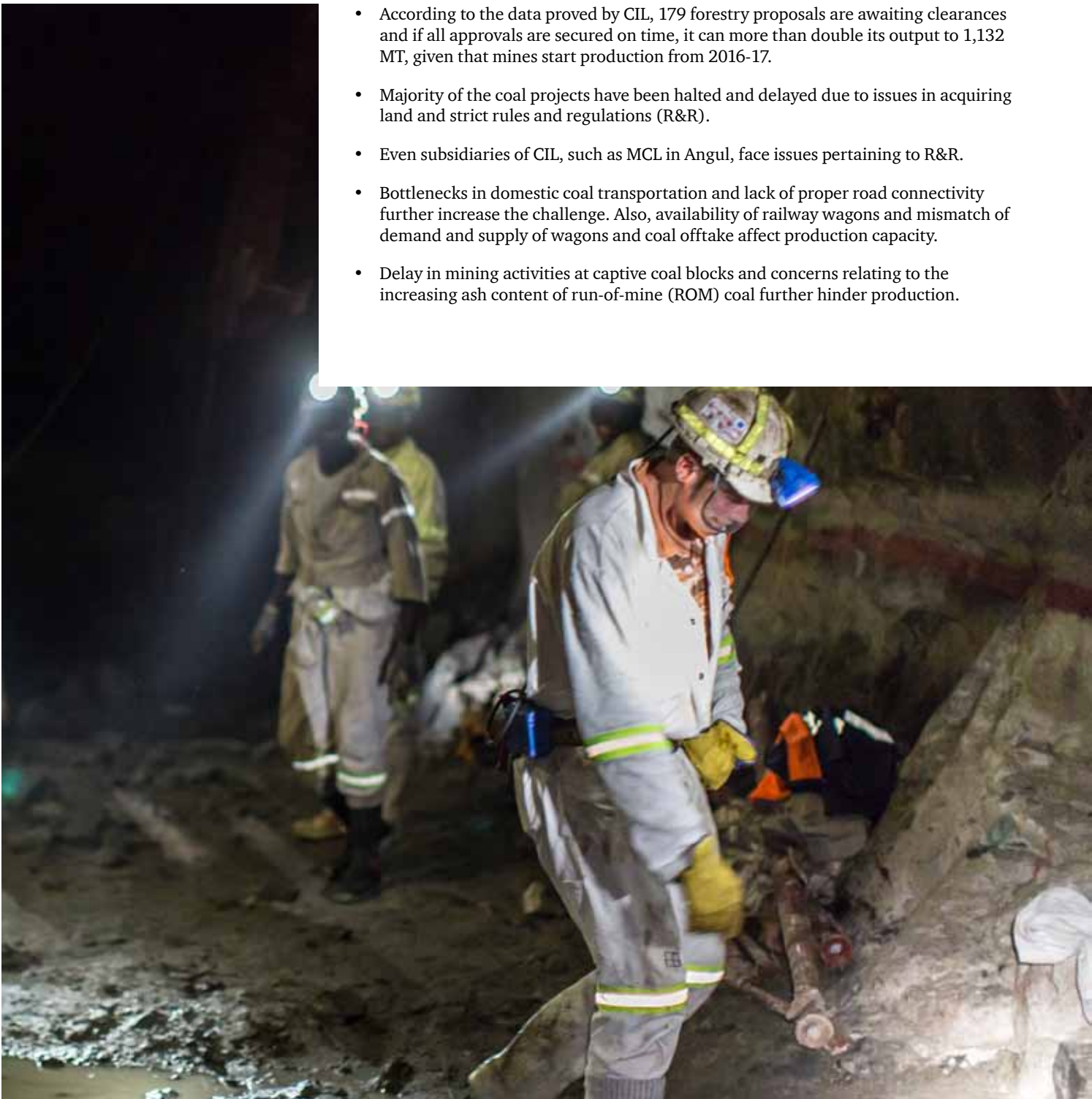
The cement industry is the third largest consumer of coal in the country. Due to the high cost and inadequate availability of oil and gas, coal is used as the main fuel in the industry. However, in the last few years due to rapid adoption of the dry process, the specific consumption of coal for producing cement has reduced significantly. It has also improved efficiency in cement kilns and increased the use of fly ash (produced in power plants) and granulated slag (produced in blast furnaces of steel plants) in the production of cement (Coal Vision, 2025).

Challenges

Although India has the fifth largest reserves of coal in the world, it is not able to meet its domestic demand. Since FY 04, the country's coal import has grown at a CAGR of 15% (till 2010-11). During the same period the thermal coal import grew at a CAGR of ~25%. According to projections, India's coal import requirement will be more than 200 MT by the end of the 12th Five Year Plan.

Some of the challenges in increasing the production capacity are as follows:

- According to the data proved by CIL, 179 forestry proposals are awaiting clearances and if all approvals are secured on time, it can more than double its output to 1,132 MT, given that mines start production from 2016-17.
- Majority of the coal projects have been halted and delayed due to issues in acquiring land and strict rules and regulations (R&R).
- Even subsidiaries of CIL, such as MCL in Angul, face issues pertaining to R&R.
- Bottlenecks in domestic coal transportation and lack of proper road connectivity further increase the challenge. Also, availability of railway wagons and mismatch of demand and supply of wagons and coal offtake affect production capacity.
- Delay in mining activities at captive coal blocks and concerns relating to the increasing ash content of run-of-mine (ROM) coal further hinder production.

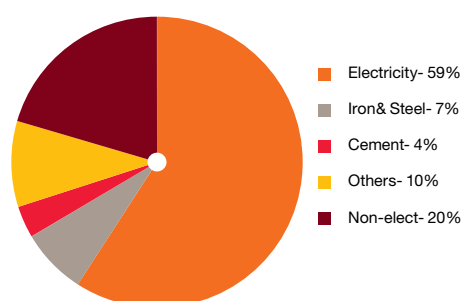


Demand and supply

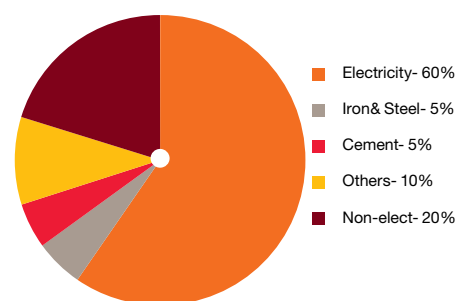
The overall long-term demand of coal is closely linked to the performance of the end-use sectors. In India, the end-use sectors of coal mainly include electricity, iron and steel and cement. Demand from the unorganised small scale sector comprising primarily of the brick and ceramic industry is relatively large though infirm as users switch between coal, firewood and biomass depending on their relative prices. Other industries using coal have only a marginal impact on the long-term demand for coal.

The charts show the projected sector-wise coal consumption in India by the end of the 12th Plan and 15th Plan.

Estimated sector-wise coal consumption in India (2016-17)



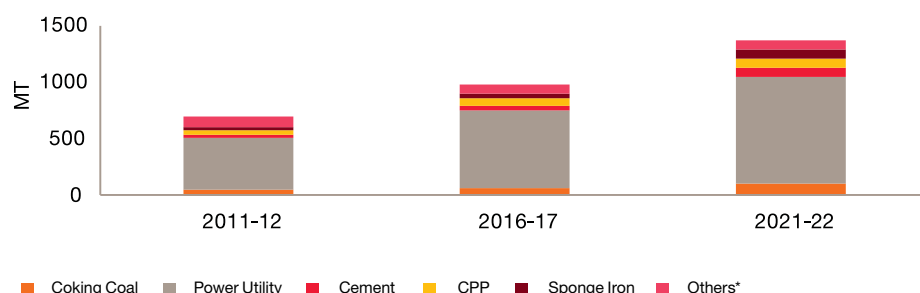
Estimated sector-wise coal consumption in India in 2031-32



Source: India Energy Book 2012, (World Energy Council, Indian Member Committee)

The report of the Working Group of Coal and Lignite for the 12th Five Year Plan projects the coal demand in India to grow at a CAGR of 7.1% till 2016-17 and reach 980.5 MT annually under realistic demand. At a CAGR of 7.0%, the demand is expected to reach 1,373 MT by 2021-22.

Coal demand in India

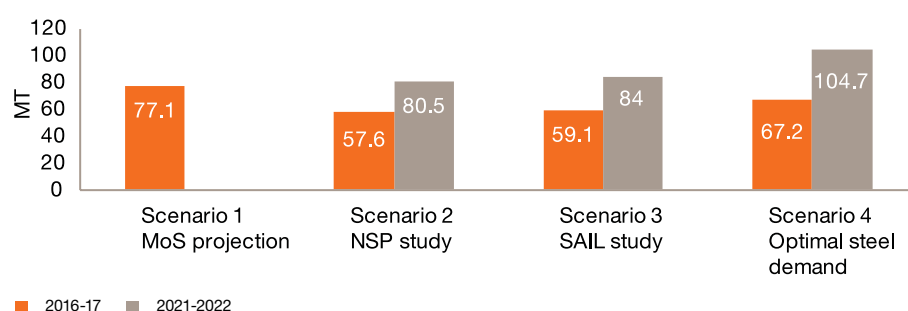


*Others in 2011-12 include e-auction quantity.

Source: The report of the Working Group for Coal and Lignite for 12th Five Year Plan

Further, the Ministry of Steel (MoS) projected to build steel production capacities of 200 MT by 2020 to meet the rising demand. Out of this, almost 70% of the steel might be based on basic oxygen furnaces (BOF) technology. Different scenarios for coking coal requirement are also proposed under different studies, and their projections are as follows:

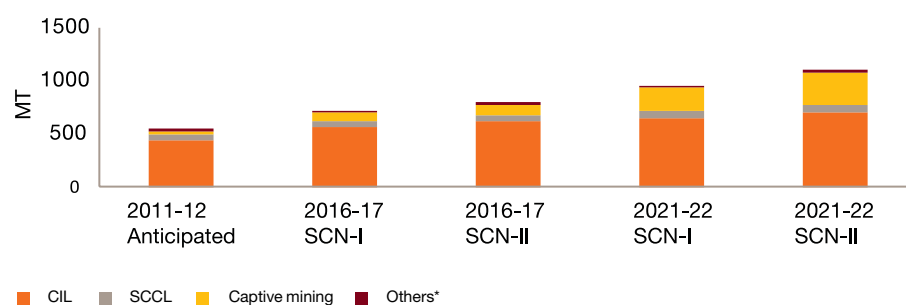
Coking coal demand for steel



The current shortage of coal stands at 84 MT and the same is expected to rise to 300 MTPA in medium-term if all the letters of assurance issued by the state-owned coal companies materialise. Some of this shortfall will be met by supplies from captive coal blocks and rest through imports. Also, the choice between the supplies from domestic and imported coal is mainly driven by timely availability of coal from domestic sources, quality requirements and the economics of landed cost of coal at the end-use plant.

Captive coal mining in India was, gradually, being permitted by amending the Coal Mines Nationalisation Act, primarily in iron and steel making, power generation and cement production. However, the capacity augmentation from captive coal blocks was dismal as only 30 mines could come online as compared to a targeted 76 mines. Hence, it became important for India to secure coal through imports from international market to meet their significantly rising coal demand. However, import is mainly dependent on availability of coal in global market, increasing competitive scenario and affordability.

Coal availability in India

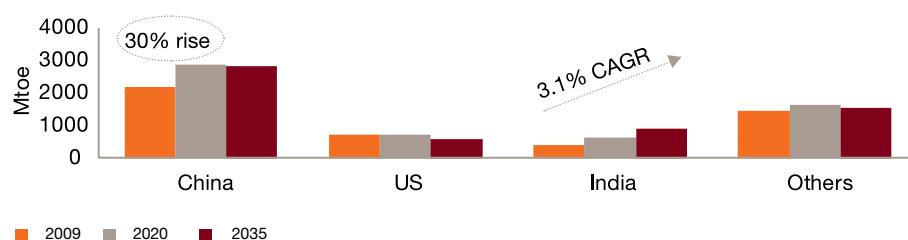


SCN-I: Business as usual, SCN-II: Optimistic scenario

Source: The report of the Working Group for Coal and Lignite for Twelfth Five Year Plan

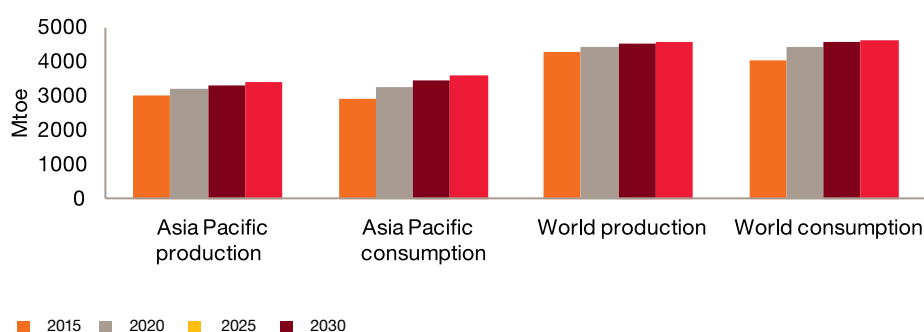
In the global market, China, India and Indonesia are expected to account for nearly 80% of the total incremental growth in demand for coal. As per projections, by 2035, China will remain the world's largest consumer of coal, followed by India, US and Indonesia. Coal-based thermal power projects will be the main drivers of demand in China and India. The projected coal fired generation capacity in Asia will rise to 1,464,000 MW in 2020 up from 918,000 MW this year, while for India it will rise from 95,000 MW to 294,000 MW over the next 11 years (a 300% increase).

Primary coal demand*



*As per the new policies scenario
Source: IEA, WEO 2011

Coal production and consumption



Source: BP Energy Outlook 2030, January 2012

Asia Pacific is expected to account for 70.8% of the global coal production and 71.3% of the global consumption in 2015 with China and India being two largest consumers. The demand and supply gap is expected to widen in 2030 as Asia Pacific is expected to produce 73.8% of the global coal production but consume 77.7% of the total consumption. The negative coal balance will have significant impact on coal prices.

Impact of coal shortages

As presented above, approximately 57% or 118.7 GW of India's total installed generating capacity of 207.9 GW is coal-fired¹ while over two-thirds of electricity generation is from coal-based plants. At a global level, coal accounts for 30% of the world's primary energy consumption².

The average plant load factor for coal plants (which is a function of coal availability, repair and maintenance and connected demand) was 61.30%. Part of this can be attributed to the fact that only 89% of the total requirement of coal (30.6 MT of coal against the demand of 34.4 MT) was available in September.

1. CEA- Coal stocks position as on 30 September 2012

2. As per a news article dated 5 July 2012, Coal India offered up to 70 MT of coal lying at pitheads to power producers, highlighting the inadequacy of transport infrastructure - http://www.thehindubusinessline.com/industry-and-economy/economy/article3606803.ece?ref=wl_industry-and-economy

At the end of September 2012, 35 coal-based power plants had less than seven days of coal stocks . This was due to the following:

- Twenty-two of these occurrences is due to no, inadequate or delayed receipt from Coal India or one of its subsidiary firms.
- Ten of these instances are due to plants running at above-planned PLFs.
- Five instances are due to inadequate import of coal.

Similarly, for the first half of 2012-13, the average PLF of coal-based plants has been 68.27%, as opposed to 71.20% for the same period a year ago. Approximately 12.3 BU of generation shortfall in this period is directly attributable to the shortage of coal.

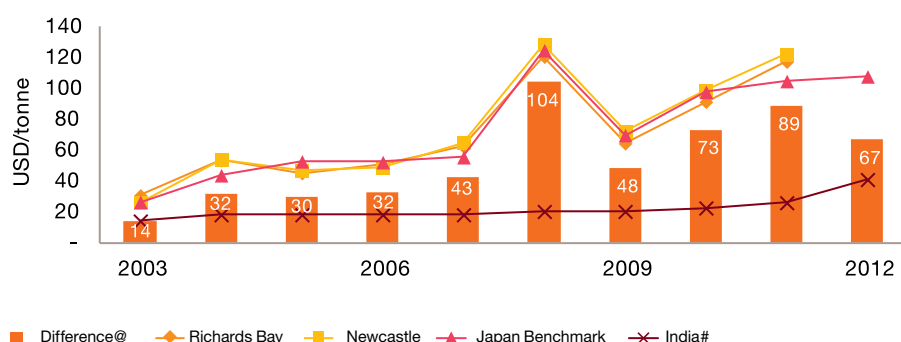
Considering the above facts, it is clear that the shortage of coal has lead to installed capacity remaining unutilised and shortfall in power generation. On the other hand, electricity being a basic and necessary public service, any nation wanting to grow in economic and social terms must be able to provide sufficient and efficient power generation. Neither manufacturing, industrial production, finance nor commerce can function without electricity.

Coal contributes to about more than 1.5% of the GDP of the country. The unavailability of coal will have significant impact on the power generation in the country which in turn would impact new proposed projects in the manufacturing and cement sector in the country and retard overall economic growth.

Coal prices

Like in every other commodity, the price of domestic coal is determined by the level of supply and demand. However, the response of overall demand and supply to price variations is slow due to the structure of the coal industry as well as the nature of the user industries. The two government-owned companies of India, namely Coal India Ltd and Singareni Collieries Company Ltd, working in different geographies, see their role as one of fulfilling the production targets fixed by the government and take up plans and projects to meet the targets, with very little surplus to serve any unanticipated or sudden increase in demand. Domestically, coal prices in comparison to international prices are as follows:

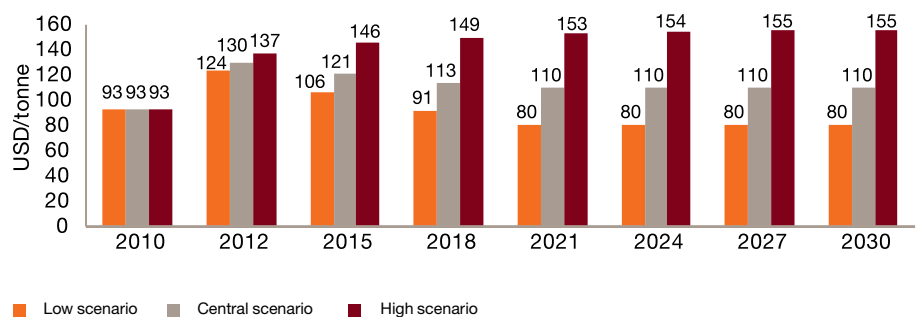
Coal Price Movement



@ Difference between arithmetic average (of Richards Bay, Newcastle and Japan Benchmark (JFY) and Indian coal prices in USD; # Indian coal prices are for D grade ROM coal, which is the one of the best grade coals available for Indian pithead power generating companies, with GCV range: 5200 to 5500 kcal/kg. Conversion Rate 1 USD = 50 INR. Source: AME and Coal India Limited

Also, the coal price projection report of the Department of Energy and Climate Change (DECC), UK in October 2011, incorporates the impacts of CO2 pricing on coal prices. Further, the carbon pricing may affect the demand for coal globally. The DECC projects coal prices in three scenarios as follows:

Coal price projections



Source: DECC, UK, October, 2011

Ways to increase coal supplies in India

Following are the areas of improvement which can be considered and deliberated for addressing the issues in the country to improve the coal supplies:

Issue type	Issue	Possible actions by the Indian government
Operational or sustenance issues	Fund raising	Exploration is a specialised job and is considered a risky venture. So investment should be encouraged in this sector through proper incentive and security of tenure.
	Performance improvement	Ways of performance improvement in mining operations may be explored and implemented in Indian mines.
	All the minerals are not reported as per UNFC classification. Hence, there is low level of confidence among investors to invest in explored areas.	State governments may be requested to agree for training camps to be held through IBM or state DMG. The cost for running the training camps could be met by the state as well as through mandatory paid registrations.
Key administrative issues	Long queue of mining applications pending at different levels with the state and centre: This is a deterrent for future investments.	State or centre may take action on these applications within a time-bound manner.
	Single window clearance agency (SWCA)	At present, all related subjects such as land, water, mineral, environment and forest, etc are administered by different independent departments and ministries at the state and central levels. Since the functions of departments and ministries are dependent and complimentary to each other with regard to the allocation and regulation of minerals, it is suggested that a single window agency at the state and central level may process the application. A single window committee will help to streamline the entire approvals process and bring about speed and consistency in decision-making.
	Large number of compliance reports to be filed by the investors to CCO, state DMG, DGMS, tribunals, state and central agencies.	State or central government should consider online web portals through filing of returns which are considered essential. Online payment mechanism for royalty can also be explored.
	Multiple registration requirements for miners, transporters, traders and end-users	States could create a single point registration facility preferably through an online web-based system. IBM could issue a single universal format for intra state transit, interstate transit, exports and imports.

Regulatory issues	Lack of policy support for transfer of mining concessions	A lot of mining leases have been provided in the past comprising small areas to individuals. The mine owners are not able to mine scientifically while complying to all the environmental norms and would like to dispose off these areas or develop them through forming a joint venture. States may allow transferring these assets at a premium so that these dormant assets can be developed to increase supply in domestic market, leading to the utilisation of dormant resources.
	Blocking of resources	<ol style="list-style-type: none"> 1. States have reserved some mineral areas for development by state PSUs. However, PSUs have not been able to develop the assets due to various reasons. These areas could either be developed through JV with private mining companies or fresh applications may be invited through Gazette notifications. 2. Numbers of reconnaissance permits (mainly non-coal) have been granted but negligible exploratory work has been done in these areas. Moreover, extensions have also been granted for exploration works for these areas. 3. The government must strictly adhere to timelines as per the MMDR act and MCR, and extension should be granted only on genuine cases as permitted under law.
	Lack of incentives for exploration	The exploration and exploitation for minerals requiring huge capital should be extended the same benefits and incentives which are available to the oil and gas sector under the new exploration licensing policy (NELP).
Fiscal issues	Poor connectivity of mining areas and poor evacuation facilities	States could consider creating infrastructure facilities through PPP route where the miners may be requested to invest in the project.
Infrastructural issues	Cadastral (Khasra) maps are either not digitised or the geo-referencing has not been done properly. This creates problems in lease boundary determination, thus hampering genuine miners.	The states may be requested to create a state nodal agency that will invite and accredit companies for digitisation activities, and these accredited companies will be used by existing miners.

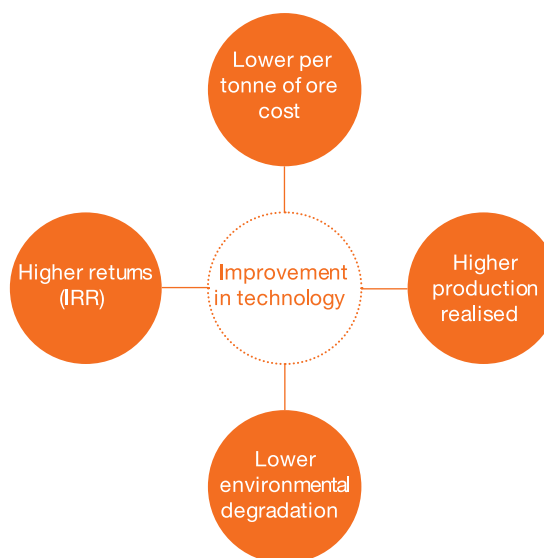
In subsequent chapters, we have elaborated on following points, which may help in increasing coal supplies in India:

- Improvements in innovation and technology
- Regulatory reforms and timely regulatory clearances for the mining projects
- Overseas acquisitions and sustainable import of coal

Innovation and technology

Increase in coal production

Today, as the world has already started looking after a 'sustainable practice', in any domain and industrial and commercial practices, we really need to start assessing our potential and compare practices in the country vis-a-vis the other parts of the world which are more advanced in the sector.



With the developments in mining in terms of technological improvements, production and productivity improvements have been observed. For example, there is now a trend to move from smaller capacity shovel to bucket sizes of even 25-80 cu.m. capacities, depending on factors such as mine geology, size of mine, etc., having digging capacities of the order of 11,000 MT per hour.

Within India itself, plans are being developed to produce 50 MTPA coal which when scaled down to monthly production, counts to nearly 4.2 MT which is, in many cases, the annual production of many mines in India. Operating such mines requires advanced technology, large equipments, involving a huge capital infusion at the starting of the project, followed by re-investments of a similar order.

Effective exploitation of reserves

Evaluation of mineral resource potential involves a complex process based on geologic analogy of promising or favourable geologic environments with geologic settings that contain known economic deposits (geologic models). Such subjective assessments or judgments depend upon available information concerning the area as well as current knowledge and understanding of known deposits. The government of India, along with its subsidiaries, is involved in continuous exploratory and evaluation works, establishing the country's potential of coal reserves.

As on 1 April 2011, estimates for coal deposits in India are shown below:

Category	Proved	Indicated	Inferred	Total
Total coal resource	114001.60	137471.10	34389.51	285862.21

With the limitation of non-renewable resources, the need is to develop operational practices whereby the extraction percentage is maximised. Whereas surface mining methods (open cast method or OCM) provide maximum extraction percentage, focus is to be given to the upcoming and existing underground mining methods (UGM). Generally, whereas, in OCM, the extraction percentage has been in the range of approximately 90%, the extraction percentage in UGM lies in the range 20-70%, depending on the choice of mining technology. This shows a huge gap that UGM can fill leading to a maximised level of exploitation.

Implication of effective extraction of mineral resources may be demonstrated with the following diagram:



A sustainable development framework (SDF) comprises level of percentage extraction as one of the strongest pillars. Mining methods and/or technologies adopted in a mining project should also have a large focus on the level of extraction, keeping in mind the fact that these non-renewable sources of energy, and other end-usage, belong to a nation which is to be preserved and used in a scientific manner so as to contribute to the SDF.

There may be numerous ways by which we may target a maximised extraction percentage. These are as follows:

- Use of proper and scientifically proven mining technology
- Adopting the correct mining method (OCM/Longwall/other variants)
- Combining smaller mining areas to develop these into one single mine of large capacities
- Promoting mining industries to have a maximum level of extraction by giving them incentives/tax rebates
- Close monitoring by our government agencies in each mining project to cross-check the progress of each mining project in terms of percentage extraction
- Meeting targets of mining projects not only in terms of production (per annum), but also on per annum level of extraction to match with the overall mineable reserves of a mining project

Coal quality improvements

Typically, Indian coal is characterised by the following quality aspects:

- Lower to medium grade coal
- High ash
- Low moisture
- Low sulphur

While the sulphur content does not pose a serious threat in terms of coal quality (as India has low sulphur content in general) which has a significant effect on the environment, the focus always lies on having a balancing process whereby ash and grade are as per the desired input to the various consumers, while providing a maximum yield.

The major issues being faced by the coal industry today, leading to further quality deterioration as follows:

- Increased production from lower seams
- Lower liberation size
- Low washability index
- Enhanced production from OCM consisting of larger dirt particles and foreign materials
- Depletion of good quality coal seams (coking as well as thermal coal)

Owing to a very wide spectrum of coal usage, ranging from power generation to steel production to infrastructure and commercial usage, we need to improve the quality of coal by washing, etc to reduce the environmental impact, enhance coal quality and increase process efficiency. The CFRI has developed the following:

- Improved froth floatation process
- Oleo flotation process
- Oil agglomeration process

Coal washing and coal beneficiation processes are to be given major thrust in terms of developing strong research cells for developing better practices, suiting requirements of all the coalfields of India. Various quality measurements should be put into place complying with India ISO standards, or any other globally accepted standards, even at the waheries/beneficiation plants operating at smaller capacities. Apart from such processes, focus must also be given to our mining practices and stringent norms and practices should be put in place for better mining practice, so as to avoid contamination at the beginning level itself.

Improvements in transport and infrastructure

One of the major issues being faced by the industry for the coal movement within India is transportation and infrastructure. Following are the major challenges being faced in coal transportation:

- Lack of availability of proper transportation mode for produced coal
- Mismatch between the demand and supply of railway wagons
- Lack of infrastructure to support a coal movement at full capacities

Some of the steps to improve the transport facilities and infrastructural requirements in order to compliment the coal industry rather than hamper its progress are as follows:

- Enhanced road connectivity across mineral zones and consumers
- Infrastructure developments driven by PPP
- Restructuring and/or reallocation of railway networks to connect with the coal bearing areas
- Doubling of railway routes at places where coal movement is higher
- Enhancing port capacities as well as evacuation efficiency and augmenting the existing capacities from existing ports

Policies and regulations

Present issues and proposed reforms

Post nationalisation, the coal industry is monopolised by a single producer. A bill was introduced in the parliament in 2000 to amend the acts pertaining to private participation and allow private participants in coal mining and production but the bill failed to gain the necessary support. Other major legislation affecting coal mining and production are the Mines and Minerals (Development and Regulation) Act, land acquisition laws, and environment related legislation.

The report on 'Competitiveness in the Coal Sector', by the Ministry of Corporate Affairs, highlights that the policies and practices of the Ministry of Coal and Ministry of Power also have a direct bearing on the production chain, priority of sales, price, etc. The absence of legislative amendments required to induct competition make the sector vulnerable to the ill effects, viz. lack of quality technology and production methods, lack of transparency in coal block allocations, falling production, price increases, etc. Within the last three years, there have been three price increases notified by Coal India Ltd. (the most recent on 1 January 2012, resulting from a re-categorisation of coal on the GCV method), leading to a significant increase of domestic prices. Production on the other hand has remained largely stagnant compared to the last fiscal. The upshot of these figures shows a projected gap of approximately 200 MT of coal by the end of the 12th Five Year Plan.

Recently, the government has taken initiatives to bring reforms in the legal system governing the mineral sector. The latest MMDR Bill, 2011 (as introduced in the parliament) has attempted to address the key industry concerns of transparent concession systems, scientific mining, sustainable development and curbing illegal mining by repealing MMDR, 1957. The Draft Act in line with National Mineral Policy 2008 aims to achieve speedy application processing by delegating power to the state government for award of mineral concessions with prior consent of central government required only in case of coal and atomic minerals.

Some of the key reforms proposed by the government are as follows:

- Auction of coal licenses/non-coal minerals via competitive bids: This will lead to robust licensing process and will boost the investor confidence. Auctioning of coal blocks only after exploration and preparation of the geological report will provide better clarity of asset base.
- MMDR Bill, 2011 guarantees assured annuity to the local population either through a 26% share of profits (post tax paid) earned by the miner in case of coal or an amount equal to mineral royalty in case of non-coal minerals, resettlement and rehabilitation



of the local population through employment and skill enhancement as outlined by the concerned state government. The current bill's tenets resemble the intent of the Black Economic Empowerment (BEE) Act, 2003 which required holders of mining rights to achieve 26 % ownership participation by historically disadvantaged South Africans in their mining operations by 30 April 2014, of which 15 % were needed to have been achieved by 30 April 2009 pursuant to the mining charter. This provision of MMDR Bill, 2011 is aimed at increasing the inclusiveness of the host population in ensuring the success of the mining project. This could also bring down the rate of illegal mining as locals will benefit without illegal mining.

- Drafting the national sustainable development framework for mining areas: This will encourage scientific mining, enhancement of percentage extraction of natural resources and will also help to improve society as a whole.
- Thrust on exploration on mineral resources by AMD, GSI, CMPDIL and MECL and classification of mineral resources as per the United Nations Framework Classification (UNFC) code;
- Creation of a mining tenement system utilising web-based GIS applications for mineral atlas to be used by central government agencies, state government agencies and applicants for mineral concessions
- Setting up of coal regulatory authority/national mining regulatory authority: It will review sustainability, pricing and supply agreements. This will help in ensuring timely allocation of mineral licenses and checking illegal mining.
- Changes in reconnaissance permit/prospecting License which are expected to incentivise investment and technology flows, facilitating the following:
 - Open sky policy with non-exclusive RPs to be allowed i.e. open to all interested.
 - Assured transition of licences; transfer of RP/PL allowed.
 - New composite license for high technology RL/PL to explore deeper deposits.
- Safety Conference recommendation implementation: This will help in increasing safety in open-cast mines and underground mines in light of mechanisation.

Proposed reforms are positive signals for the future of Mining Sector. The success of these could only be measured in terms of increase in investor confidence to invest in mining projects and addressing the immediate needs of local community and providing for sustainable development of the community over the long run.



Overseas acquisitions and long-term strategies

Securing sustainable supply

As discussed earlier, India is not able to meet its coal demand and import of coal from other countries has become inevitable. With a large number of captive coal blocks stuck in various pre-implementation stages, companies' dependency on coal import has increased. Even some of India's large power producers have shown a greater tendency to rely on imported coal to an extent despite the fact that domestic coal blocks have been allotted to most of their projects.

Presently, India ranks fourth in the coal import demand, being led by Japan. India accounts for about 10% of the world's import coal demand. It is facing stiff competition from other Asian economies like Japan, South Korea and China. Japan has continued to lead the import demand, China is fast catching up and its demand is estimated to rise at a significantly high rate (CAGR 29%) between 2008 and 2013.

Considering above factors, it is necessary to secure sustainable supply of coal. The options available are:

- Long term off-take contracts with coal producers and;
- Acquisition of assets in foreign lands: In 2011, Coal Deals represented 26% of all deals by value globally. Coal targets had the highest average deal value of all resources (\$871 million) as mass consolidation between seniors continued across the Americas, Australia and Russia. Coal miners "stuck to what they know" and very little M&A driven by resource diversification strategies was observed.

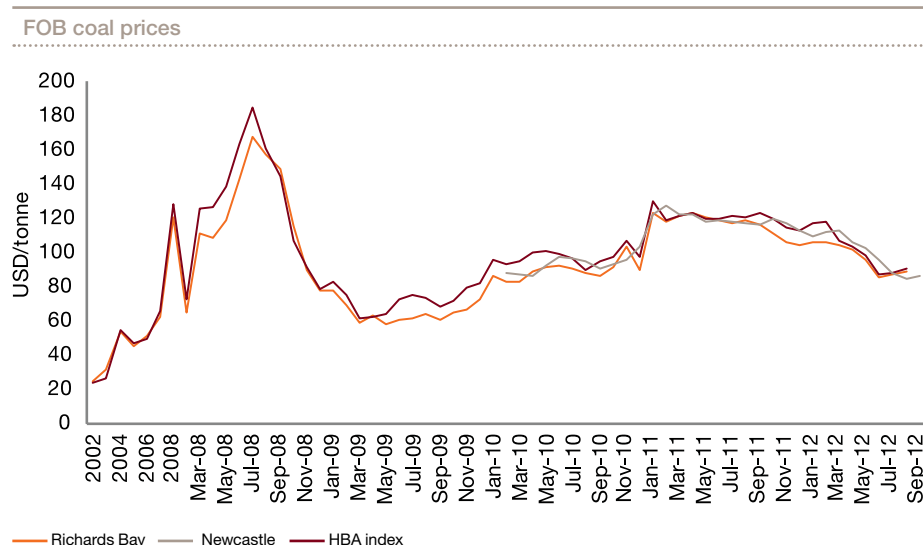
Presently, India is mainly dependent on Indonesia and South Africa for import of thermal coal and on Australia for coking coal. However, the new regulatory scenarios in these countries are reflective of the increasing coal prices. This necessitates the requirement of intensive efforts in identifying new avenues for supply, like Mozambique and others.

While the alternate sources for coal import beyond Indonesia, South Africa and Australia are identified, the challenges in these countries (like Mozambique, Colombia) are numerous ranging from lack of infrastructure to export coal out of country, concerns over stability of political and fiscal regime, unavailability of skilled manpower, etc. Beyond acquiring mineral assets, huge investment in developing surrounding infrastructure and government support to secure stable fiscal regime would be necessary to ensure long term sustainable coal imports from Mozambique and Colombia.

International coal price movements

Following figure provides a quick glimpse of how the international coal prices have moved:

It can be seen that the international coal prices are currently trending downwards and soon expected to bottom out and will further improve.



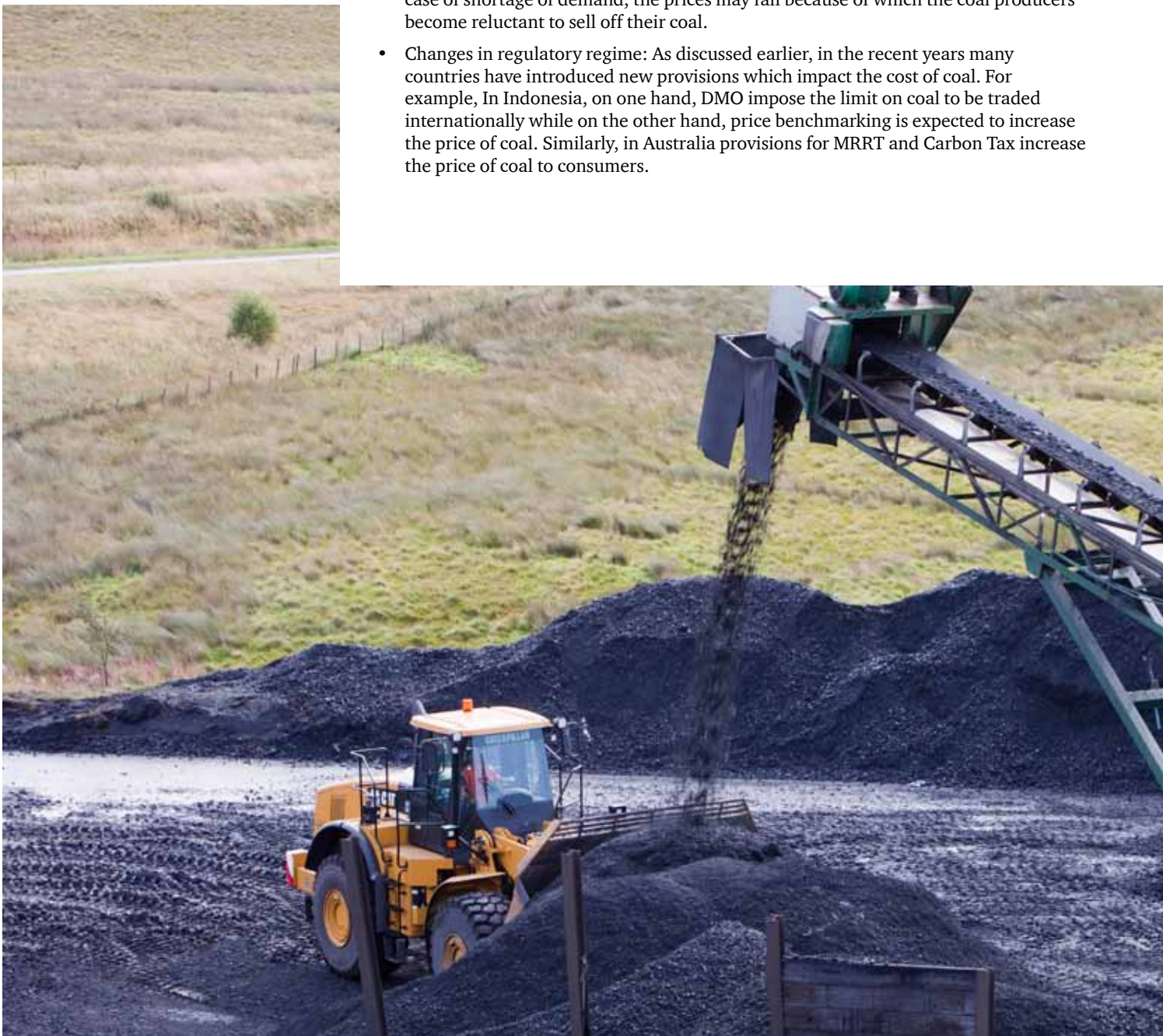
Source: AME, Thermal Coal Outlook, July 2012 and Bloomberg.com

Risks involved in coal imports

There are certain factors which can significantly affect the project economics. Some of the key risks involved are discussed below:

- In case of acquisition, profile of the asset and timing of acquisition is important. Acquisition of wrong asset (where profile mismatch may be in terms of size, quality, developmental time required etc.) may result in heavy costs as huge sum of money is to be paid upfront.
- Due Diligence of asset: While due diligence of source is necessary for reliability of coal supply, it becomes more important in case of asset acquisition. If detailed technical, financial, tax and other due diligence are not carried out, correct price may not be assessed resulting in heavy losses.
- Commercial Contract: For reliability of long term supply, it is necessary that detailed contract is drafted to ensure that roles and responsibilities of the parties are clearly identified. This should also detail obligations and provisions for non performance. Contract should have enough enforcing provisions and deterrent for ensuring performance by each party.
- Coal Prices: FOB price of coal forms more about 60-80% of landed cost of coal. Coal Prices in Global coal market has seen significant variation. Over past five years, coal prices has seen about 300% increase and standard deviation of coal prices has been about 30% for various coal indices. (RB Index, NEWC Index, ICI Index)
- Charter Cost: It forms about 50-60% of total transportation cost and about 10-15% of total landed cost of coal. Over past 4-5 years, Charter rates has seen significant variation. In past years, charter rates has seen fluctuation of over 1000%. Even standard deviation reported for charter rates of Panamax and Capesize vessels has been about 21,000 during volatile periods.

- **Bunker Price:** Variation in bunker cost will have significant impact on transportation cost as it cost about 40-50% of transportation cost. During 2004 and 2009, Bunker cost has seen significant variation with difference between maximum and minimum monthly average bunker cost has been about 25% with standard deviation of 19%. This signifies significant variation in bunker fuel prices.
- **Exchange rate:** For a consumer in India, the net cost will also depend on the prevailing exchange rate. If we consider the present scenario, INR has fallen about 24% against USD in the last one year. The variation in exchange rate will increase the coal price volatility to consumers in India. However, this risk can be minimized by hedging the exchange rate.
- **Demand from buyers:** For majority of coal moving into one territory, the role play of the buyers from such territories also dominate the price movement. In cases of sudden demand rise, the prices of sea-borne coal may tend to increase, while in case of shortage of demand, the prices may fall because of which the coal producers become reluctant to sell off their coal.
- **Changes in regulatory regime:** As discussed earlier, in the recent years many countries have introduced new provisions which impact the cost of coal. For example, In Indonesia, on one hand, DMO impose the limit on coal to be traded internationally while on the other hand, price benchmarking is expected to increase the price of coal. Similarly, in Australia provisions for MRRT and Carbon Tax increase the price of coal to consumers.



Summary

In the backdrop of increasing coal demand and reliance on coal for power generation, collective effort of the government, power producers, coal miners and service providers are necessary to ensure modern and sufficient infrastructure.

Further, to reduce reliance on imported coal and boost the domestic supply, development and expansion of coal mines in the country is necessary. To ensure timely and smooth development of coal mines and for meeting coal demand, following steps should be taken:

- Establishing a single window clearance process for coal mines.
- Support in land acquisition and R&R related issues to ensure timely and smooth completion. Offering projects with secured clearances will boost timely development as well as increase the industry participation.
- Currently, commercial sale of coal is allowed for government companies only. To meet the growing coal demand, it is prudent to consider commercial sales of coal by Private Developers though suitable framework may need to be developed for coal pricing, balance profits to private developers etc.
- Measures to be imposed to improve productivity of the coal mines and improve recovery from the coal mines.
- The government may consider creating funds to support overseas acquisition to supplement domestic resources. This is required since mining is a capital intensive industry. Further, mining projects often require investment in supporting infrastructure which is more capital intensive than mining.
- Steps need to be taken to promote research and exploration activities and modern underground mass production technologies which will also help in dealing with land acquisition related issues as land requirements for UG mining will be lesser.
- Indian Railways, port authority and the industry need to work in close collaboration to plan development of infrastructural facilities as per requirements.



About ICC

Founded in 1925, Indian Chamber of Commerce (ICC) is the leading and only National Chamber of Commerce operating from Kolkata, and one of the most pro-active and forward-looking Chambers in the country today. Its membership spans some of the most prominent and major industrial groups in India. ICC is the founder member of FICCI, the apex body of business and industry in India. ICC's forte is its ability to anticipate the needs of the future, respond to challenges, and prepare the stakeholders in the economy to benefit from these changes and opportunities. Set up by a group of pioneering industrialists led by Mr G D Birla, the Indian Chamber of Commerce was closely associated with the Indian Freedom Movement, as the first organised voice of indigenous Indian Industry. Several of the distinguished industry leaders in India, such as Mr B M Birla, Sir Ardeshir Dalal, Sir Badridas Goenka, Mr S P Jain, Lala Karam Chand Thapar, Mr Russi Mody, Mr Ashok Jain, Mr. Sanjiv Goenka, have led the ICC as its President. Currently, Mr Rajiv Mundhra is leading the Chamber as its President.

ICC is the only Chamber from India to win the first prize in World Chambers Competition in Quebec, Canada.

ICC's North-East Initiative has gained a new momentum and dynamism over the last few years, and the Chamber has been hugely successful in spreading awareness about the great economic potential of the North-East at national and international levels. Trade & Investment shows on North-East in countries like Singapore, Thailand and Vietnam have created new vistas of economic co-operation between the North-East of India and South-East Asia. ICC has a special focus upon India's trade & commerce relations with South & South-East Asian nations, in sync with India's 'Look East' Policy, and has played a key role in building synergies between India and her Asian neighbours like Singapore, Indonesia, Bangladesh, and Bhutan through Trade & Business Delegation Exchanges, and large Investment Summits.

ICC also has a very strong focus upon Economic Research & Policy issues - it regularly undertakes Macro-economic Surveys/Studies, prepares State Investment Climate Reports and Sector Reports, provides necessary Policy Inputs & Budget Recommendations to Governments at State & Central levels.

The Indian Chamber of Commerce headquartered in Kolkata, over the last few years has truly emerged as a national Chamber of repute, with full-fledged offices in New Delhi, Guwahati, Bhubaneswar and Patna functioning efficiently, and building meaningful synergies among Industry and Government by addressing strategic issues of national significance.

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About PwC India

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