Confederation of Indian Industry

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Changing rules of Indian power sector: Empowering the economy

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Introduction

The energy sector in India has seen a transformational change with progressive policy-level changes and effective implementation of directives. These changes promise enormous opportunities for various stakeholders and market players. However, deep thinking on various aspects of policy and regulatory interventions and their long-term implications will help in taking informed decisions and contribute in developing the sector.

Energy is one of the key enablers for the country's economic development. With the certainty in policy-level interventions, the economy is bound to propagate and the demand for energy will inevitably surge. Other than economic growth, human developmental aspects like poverty reduction, employment generation, etc. are also considerably dependent on secure energy supply.

The power sector is a major consumer of energy and it has a significant impact on economic developments and social welfare. Per-capita electricity consumption of the country has now crossed 1,000 kilowatt-hour (kWh), but still, it is far below the average global consumption.

As on June 2015, all-India generation capacity stood at 275 gigawatts (GW) with a contribution of 69% from thermal energy, 15% from hydro, 13% from renewable, and 2% from nuclear sources. The eastern region contributes 12% to the total generation capacity. Despite the efforts to generate more electrical energy by using multiple energy sources, the country has recorded a shortage of 3.6% of demand in FY15. As per the Central Electricity Authority's (CEA) Load Generation Balance Report 2015-16, in spite of the expected capacity addition of 20 GW, the country will probably experience energy shortage.

Key energy sources used for generating electricity are coal, lignite, petroleum and natural gas, renewable sources, etc. Nearly 80% of the country's coal reserves are located in the eastern states of Bihar, Chhattisgarh, Jharkhand, Odisha and West Bengal, with the highest reserve of around 81 billion tonne in Jharkhand. India has a total reserve of an estimated 43.24 billion tonne of lignite, of which 99% is located in Tamil Nadu, Rajasthan and Gujarat. As much as 68% of crude oil reserves are in western offshore and Assam, whereas eastern offshore encompasses 7% of the reserves. But it has the maximum reserve of natural gas at 37.24%, which is followed by western offshore at 30.17%. India also has a high potential for energy generation from renewable sources like biomass, cogeneration bagasse, solar, wind and small hydro sources. The eastern region also has a good potential of power generation from wind, small hydro, biomass and solar sources.

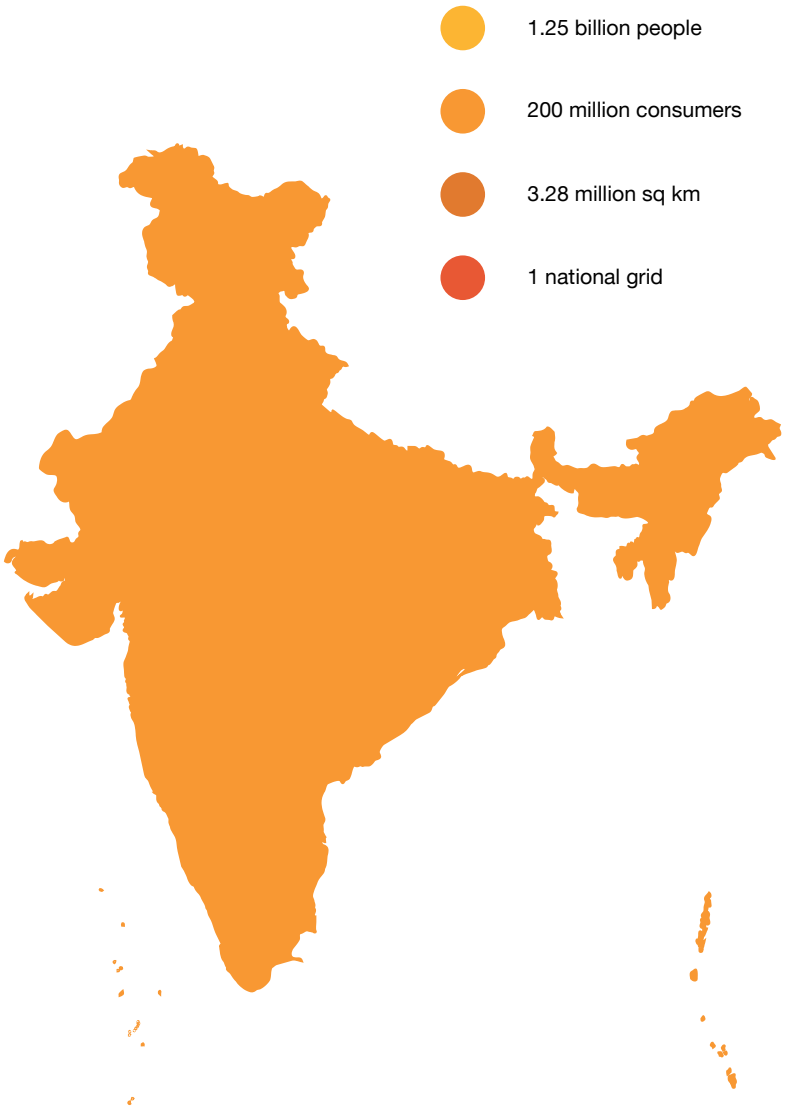
In the recent past, policymakers have initiated multiple steps towards improving the power sector output and benefit consumers. These include the proposed amendment to the Electricity Act, round-the-clock power supply, the Coal Mines Special Provision Ordinance, coal auction and allocation, auction of natural gas, Integrated Power Development Scheme, Deendayal Upadhyaya Gram Jyoti Yojana, aggressive renewable energy generation targets and massive transmission connectivity plans.

Proposed provisions and interventions will modify the energy sourcing mix, secure fuel for power generation, bring efficiency and competition in the sector, enhance clean energy generation, increase power supply to households, strengthen the grid, generate business and employment opportunities, etc. This will impact electricity tariffs, operations of utility, and environmental conditions, and increase accountability of stakeholders and consumers.

In this context, the Confederation of Indian Industry (CII), along with PricewaterhouseCoopers Private Limited (PwC) as a knowledge partner, is bringing together policymakers, thought leaders, investors, utilities, regulators, funding agencies and private players to discuss and debate the opportunities and implications of these changes and set forth directions for all the stakeholders in the Indian power and energy sectors.

The Indian power sector: Overview

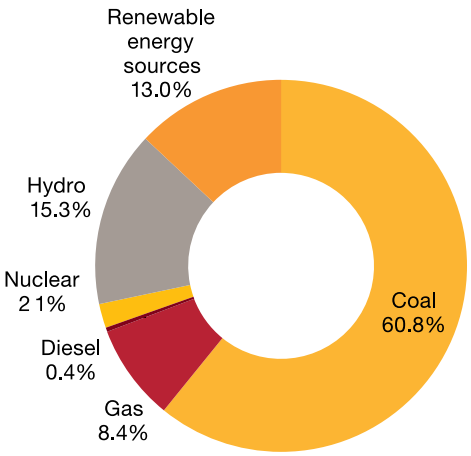
The Indian power system is the fifth largest in the world and among the most complex. With an annual electricity production of 1,031 billion units (BU), it is among the top five power consumers across the globe, and the demand is expected to touch 1,900 BU by 2020. Growth in industrial activities, population, economy, prosperity and urbanisation, along with rising per-capita energy consumption, has widened the gap of energy access in the country.



- Peak handled: 141 GW
- Energy handled: 949 billion units (BU)
- Peak shortage: 4.7%
- AT&C losses: ~26%
- Energy shortage: 3.6%
- Growth: 6-8%
- Per-capita use: ~1,010 kWh

CEA monthly report

Installed capacity 275 GW (June 2015)

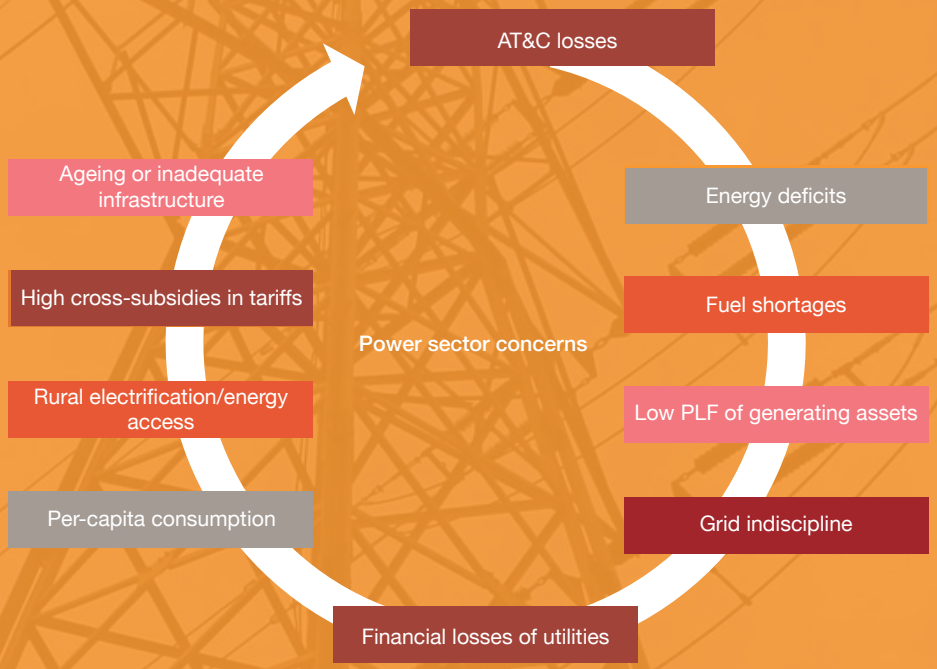


While almost 61% of the power generated is from coal, India is looking to alter the generation mix in the years to come, focusing on a low-carbon growth strategy, although coal production continues to be on the agenda of policymakers. India is dependent to a great extent on imports. It features among the top five largest importers of oil and is also the sixth largest importer of petroleum products and liquefied natural gas (LNG) worldwide. Leveraging its huge and abundant renewable resources in the years to come can help India cut down its requirement of expensive imported fossil fuels. There has been a huge focus on increasing the share of

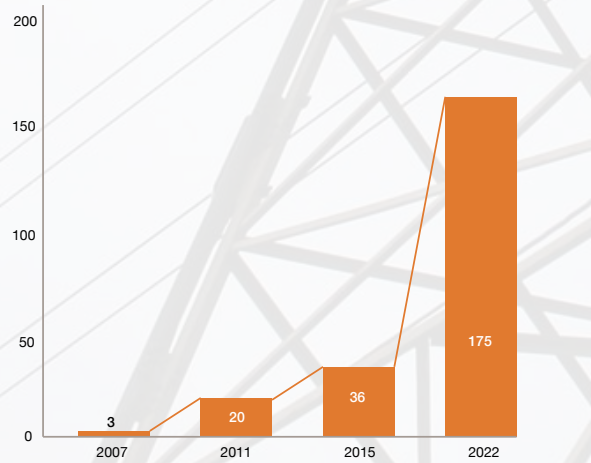
renewable sources-based power generation in the last few years, with the government setting aggressive and ambitious targets. One among the key amendments to the Electricity Act of 2003 is the introduction of renewable energy generation obligation. and removal of cross-subsidy for power procured from renewable sources, which will provide a huge fillip to the Indian renewable energy space.

While the country continues to grapple with power shortages, three states in the eastern region—West Bengal, Odisha and Chhattisgarh—feature among those with surplus power. These states could provide the answer to the ones that are reeling under power shortages, if they are provided the necessartransmission infrastructure and corridor.

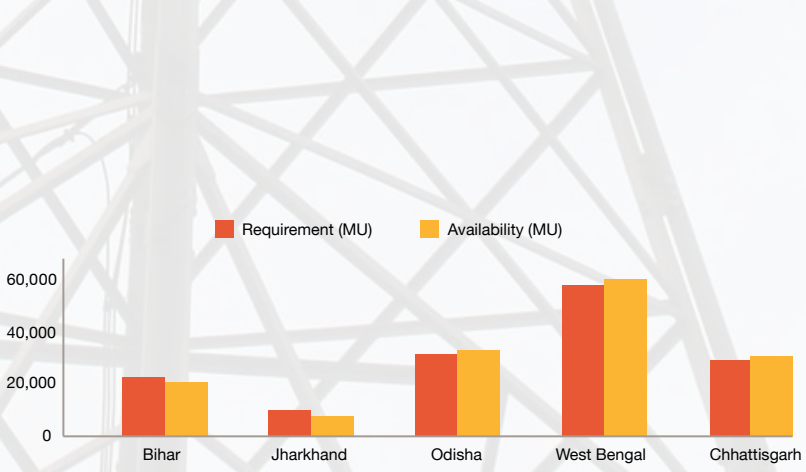
As India's demand grows, steps have to be taken to ensure the concerns that impede the expansion of its power sector. As a result of populist tariff schemes exacerbated by aggregate technical and commercial (AT&C) losses and operational inefficiencies, the finances of the state discoms are becoming unhealthy with huge outstanding debt. India's power sector also grapples with complex regulatory processes, and the high cost of financing new projects results in cost overruns, leading to a high tariff. India is trying to leverage its renewable potential by betting big on solar and wind energy, and the government has set an ambitious target for renewable sources-based power generation.



Renewables installed (capacity over the years in GW)



Anticipated power supply position in FY16 (in million units) or (MU)



Smartinvestor:http://smartinvestor.business-standard.com/market/ipoNews-235942-Indias_Power_Sector_Five_key_challenges_and_solutions.htm

Amendment to the Electricity Act

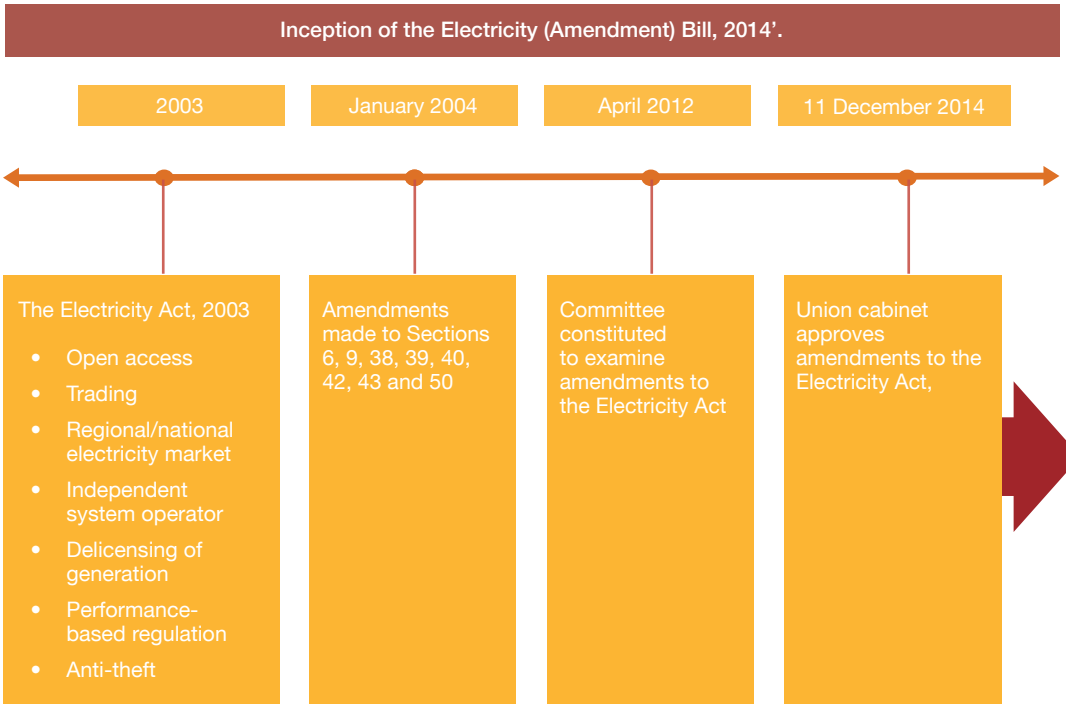
The Indian power sector has come a long way since the laying down of the basic framework in 1910 right up to the Electricity Act of 2003, which brought about necessary changes to an evolving sector. The Act introduced and brought provision on open access, power trading, regional/national electricity market, independent system operator, delicensing of generation, performance-based regulation, anti-theft etc. To govern the sector better and handle its requirement, the Electricity Amendment Bill, 2014, is under consideration.

The union cabinet approved amendments to the overarching Electricity Act, 2003, through the Electricity Amendment Bill, 2014, on 11 December 2014. The proposed amendment will have a profound impact on the Indian power sector. It touches upon different aspects of the sector, right from segregation of carriage and content to renewable energy and open access to tariff rationalisation and so on. It has seen a mixed response: being hailed as historic by some and, at the same time, inviting the ire of a few state governments. The bill is the segregation of distribution and supply areas, which will provide the consumer with more choices. The Bill also aims to infuse healthy competition in each distribution area, and deals with aspects pertaining to promotion of renewable energy, open access, smart grid, ancillary services and so on. Some of the amendments are seen as much-needed and address the major caveats and limitations of the Act. These proposed amendments necessitate significant reorganisation of the distribution and supply businesses of existing licensees, propose significant measures for renewable energy promotion, including obligations for thermal power developers to establish renewable generation capacity and provide measures for tariff rationalisation and enhancement in grid safety and security. The key intent behind the amendments is to allow competition and better customer service without significantly increasing tariff.

Although the amendments bring about measures aimed at infusing healthy competition in the power supply and provide a boost to renewable energy-based generation, some are still wary of the legal ramifications of separating carriage from content and its impact on the average consumer.

- The legislative framework dates back to the Indian Electricity Act, 1910, which provided the basic framework for electric supply industry in India and the legal framework for laying down of wires and other works, envisaging growt h of the sector through private licensees.
- The Act of 1910 was followed by the Electricity (Supply) Act, 1948, which mandated creation of vertically integrated state electricity boards and required that states extend electrification all across. Subsequent amendments were made to this Act in 1975, 1985, 1991 and 1998.
- The Indian Electricity Rules, introduced in 1956, strengthened the Act of 1910.
- The Electricity Regulatory Commissions (ERCs) Act of 1998 saw the setting up of Central and State ERCs, and distancing of the state government from the tariff determination process.
- The Electricity Act, 2003, consolidated the laws relating to the generation, transmission, distribution, trade and use of electricity. This Act repealed all earlier electricity laws except the Indian Electricity Rules, 1956.
- The Act of 2003 saw the constitution of the CEA, ERCs and APTEL.

The Electricity (Amendment) Bill, 2014



The Parliamentary Standing Committee reviews the Amendment Bill and provides recommendations in May 2015

Expected to come up on the Lok Sabha agenda soon

Key implications of amendments to the Act:

- Separation of carriage from content
- Boost for renewable power generation-renewable generation obligation (RGO)
- More powers to ERCs
- Provision for open access, removal of cross-subsidy if procured from renewable energy sources
- Tariff rationalisation

Key features of the proposed amendment

Separating carriage and content

- Initiative for creation of separate distribution licensees and multiple supply licensees to encourage competition in the retail segment
- Protection of interests of the consumers by keeping one of the supply licensees as a government-controlled company
- Existing distribution licensees to continue till expiry of their term as specified in their licensee's conditions

Promoting renewable energy

- Initiative for creation of renewable energy capacity by mandating thermal power developers to establish capacity
- Cross-subsidy not to be levied for open access based on renewable energy sources
- Central government to formulate National Renewable Energy Policy

Enhancing grid safety and security

- Enhanced penalties for violations of directions given by load dispatch centres
- Maintenance of spinning reserves by the generation company
- Promotion of efficiency in operations of the national grid

Encourage efficiency and competition in the retail segment

Promote renewable energy

Improve quality and reliability of electricity supply

Ramifications of the proposed amendments

The proposed amendments will require a well-thought-out and strategic response by power supply companies as well as generation companies alike to meet the emerging regulatory and power market provisions and sector structure framework to maximise benefits and mitigate business risks.

Separation of carriage and content: The Electricity Amendment Bill, 2014, proposes significant reorganisation of the distribution and supply framework. For a long time, distribution companies have been responsible for power distribution as well as power supply to the end consumer. The proposed amendment envisages separation of power distribution from supply. This will, in a way, provide the consumer with more options in terms of choosing a supplier, as more than one supply licensee can share space within a particular distribution area. The clause for separation of carriage and content in distribution segments will result in a separate distribution licensee and multiple supply licensees in an area. The amendment states that an appropriate commission may grant supply licences to two or more entities in the same area of supply where one of the supply licensees must be a government-controlled company. An intermediary company is to be formed for taking over the existing power purchase agreements and procurement arrangements of the relevant distribution licensees on reorganisation. To execute this, a transfer scheme is to be made by state governments for segregation of content and carriage businesses. However, this needs to ***effectively address hand-picking of consumers by the supply licensee, clearly defining the area of a supply licensee, define the new entities' functions and responsibilities, ownership, treatment of existing power procurement commitments, tariffs and subsidies, transfer of resources, technical and financial loss allocation, etc.***

Provide a fillip to generation from renewable energy sources: The Electricity (Amendment) Bill, 2014, to a great extent, focuses on the changes concerning regulatory provisions and the promotion of renewable energy. It proposes to define 'renewable energy source' along with 'obligated entities'. The bill envisages that obligated entities can source electricity from renewable energy source or any renewable energy instrument. One of the major perceived caveats of the Electricity Act, 2003, was that there was no mandate for meeting of renewable purchase obligation

(RPO) targets and, as a result, only a handful of obligated entities purchased renewable energy certificates (RECs) or renewable power. This resulted in an increased supply of RECs with very few takers. The proposed penalties for non-compliance can force utilities to procure power from renewable energy sources, thereby providing a fillip to renewable energy generation. From a renewable energy standpoint, provision for a separate National Renewable Energy Policy and a proposed RGO on coal-and lignite-based thermal power plants are worth noting. This generation obligation mandates to establish a renewable energy generation capacity and exempt open access consumers procuring renewable energy from paying wheeling and cross-subsidy surcharge. RGO envisaged for all coal and lignite based power generation stations, wherein all companies establishing coal or lignite-based generation capacities, are also required to generate power from renewable energy sources with at least more than 10% of thermal power installed capacity.

Open access: The provision for open access allows power consumers with a load of 1 MW and above to enter into bilateral agreements with a power supplier of their choice, leaving them with more options to procure power. Despite the open access clause in the Electricity Act, 2003, the major stakeholder remained sceptical while most states were wary of it and managed to dissuade consumers from entering into them. The amendment also focuses on improving open access to power producers and consumers for easier access to transmission and distribution systems, thereby allowing for transmission of power across regions. Although the provision for open access was around, earlier, access to T&D infrastructure was more complex and the high tariffs for industrial consumers were a deterrent. With the bill proposing to do away with cross-subsidy, there is ambiguity with respect to its implementation and mechanism. Provisions of timeframe and the mechanism for state regulators to eliminate cross-subsidy can help in effective implementation.

Tariff rationalisation and regulatory commissions: The distribution sector is grappling with a financial crisis and tariffs are not reflective of the cost. This has led the government to focus on provisions pertaining to tariff policy. Tariff policy provisions are to be made mandatory for tariff determination, along with timely filing of tariff petitions by utilities and disposal by the respective state commissions. The amendment envisages enhanced powers to regulatory commissions to initiate suo-motu proceedings for tariff determination. Retail tariff set by ERCs will be seen as the maximum tariff, with the suppliers being given an option offer lower than the prescribed tariff. The proposed amendments seek to empower the load dispatch centre with the rights to penalise for any non-compliance of its directives on power supply.

Conclusion

Separation of distribution and supply business to promote competition in supply segment

Some of the perceived issues in the carriage and content separation as proposed in the amendment are:

- Transfer of supply or distribution functions to a new entity and ambiguity in provisions on ownership of the transferee can lead to state government's discretion during the transfer
- To execute this change, a transfer scheme is to be made by the state governments for segregation of content and carriage businesses. However, it needs to effectively address hand-picking of consumers by the supply licensee, clearly defining the area of a supply licensee, defining the entities' functions and responsibilities, ownership, treatment of existing power procurement commitments, tariff and subsidies, transfer of resources, technical and financial loss allocation, etc.
- No clear provision by state governments for consultation with existing licensee in preparation and notification of transfer scheme
- Ambiguity over 'incumbent' supply licensee
- Cherry-picking of high-value consumers by supply licensee
- Uncertainty related to business continuity of existing distribution licensees and recovery of their investments
- Impact on the financial health of state-owned utilities; it is perceived that infusing more supply licensees may exacerbate the already ailing state utilities
- Proposed amendment silent on detailed methodology and the process to be followed to determine ceiling tariff

Measures for renewable energy promotion including obligations for thermal power developers to establish renewable generation capacity

- Implementation remains a concern for imposing penalty for not adhering to RPO or RGO

Cross-subsidy will not be levied for open access based on renewable energy sources

- As renewable energy targets get more ambitious what remains to be seen is if RE power procured via open access match up to cost of conventional power

Coal sector developments

Regulatory developments

Following the deallocation of all but four coal blocks allocated for captive and commercial mining, a number of changes have been made in the regulatory scenario governing the coal sector in India. The Government of India enacted provisions enabling auction of coal mines for captive and commercial mining. The objective is to award coal assets in a transparent manner and to get assets developed in timely manner. To meet these objectives, key legislative changes include the Coal Mines (Special Provisions) Act, 2015 (earlier Ordinance), followed by Rules and various orders and administrative guidelines. Given the focus and intent with which government has been following auctions and coordinating with the states, the push is clearly for timely and effective developments of coal assets. The key changes brought in are summarised below:

Regulatory changes

On 21 October 2014, the central government promulgated the Coal Mines (Special Provisions) Ordinance, 2014, now the Coal Mines (Special Provisions) Act, 2015, and the Coal Mines (Special Provisions) Rules, 2014, were framed under it to implement the Supreme Court order and manage the coal mining sector. The government has notified deallocated mines in three schedules:

- Schedule I, naming all 204 coal blocks, deallocated.
- Schedule II contained 42 of the 204 coal blocks which are operating or ready to operate.
- Schedule III contained 32 of the 204 coal blocks which have made progress towards development. Later, 36 blocks were added in the list of Schedule III blocks.

Further, the Ministry of Coal approved a reverse bidding process for the power sector, according to which bidders are required to quote a bid price which is at a discount to the ceiling price and the bidder with the lowest bid price shall be the winner. Additionally, based on the guidelines issued by the nominated authority, in case the quoted bid price remains zero, then bidding will be based on forward auction on the additional premium payable.

Auction progress

Between December 2014 and April 2015, the government conducted two rounds of coal auction for Schedule II and Schedule III blocks, while third round of auctions is going on. The government has auctioned/allotted below mention blocks for the power sector:

Out of the total of 204 blocks to be auctioned or allotted, 51 are meant for power as end-use, in the eastern regions that includes Jharkhand (23 blocks), West Bengal (10 blocks) and Odisha (18 blocks). With the conclusion of two rounds of auction, the following blocks were auctioned in these states, categorised under Schedule II and Schedule III, for the power sector.

Schedule	Auctioned	Allotted	Subtotal
Schedule II	7	17	24
Schedule III	5	7	12
Added later in Schedule III	-	12	12
Subtotal	12	36	48

Location	Category	Name of coal block	Auction/allocation	Award price (forward auction)	PRC (metric tonnes per annum or MTPA	New allottee
Jharkhand	Sch-III	Jitpur	Auction	302	2.5	Adani Power Ltd
Jharkhand	Sch-III	Ganeshpur	Auction	704	4.00W	GMR Chhattisgarh Energy Ltd
Jharkhand	Sch-II	Tokisud North	Auction	1110	2.32	Essar Power
Odisha	Sch-III	Mandakini	Auction	650	7.5W	Mandakini Exploration and Mining Ltd
Odisha	Sch-III	Utkal-C	Auction	770	3.37	Monnet Power Company Ltd
Odisha	Sch-II	Talabira-I	Auction	474	3.00	GMR Chhattisgarh
West Bengal	Sch-II	Sarisatolli	Auction	460	3.5	CESC
West Bengal	Sch-II	Trans-Damodar	Auction	940	1.00	Durgapur Projects

The after-effects

The price of coal from the auctioned coal block has no correlation to the actual cost of production. Also, coal blocks earmarked for the power sector were put up for reverse auction, and awarded on the basis of the lowest transfer price quoted by the bidder. The new provisions provide for the replacement of coal price in the existing Power Purchase Agreement (PPA) by the price quoted, in case it results in fuel cost reduction, and therefore, the entire process is expected to lower the final power tariff.

Utilities perspective

Considering the entire scenario of 204 blocks to be auctioned, projects located closer to the mines will be particularly able to offer better cost competitiveness. Therefore, projects located in Jharkhand, West Bengal and Odisha (constituting 72% of the coal mine reserves to be put up for allocation or auction to the power sector) are expected to benefit considerably from the new reform.

The impact of coal auction on tariffs will, however, be localised as the capacity auctioned represents only 6% of the existing thermal generation capacity across the country. On the contrary, combining the peak capacities of the coal blocks allocated in the three states, an additional quantity of 25 million tonne of thermal coal will be added to the existing production from the two rounds of auction. A state-wise break-up shows an addition of 15.2%, 11.8% and 16.7% coal output for Jharkhand, Odisha and West Bengal, respectively, to the existing production, which is quite substantial in terms of improving the plant load factor (PLF) of the existing plants. Having said so, the gains from these mines will definitely depend on how efficiently these can be developed.

On comparing the bid prices against the cost of replaced fuel (including shortfall imported or bought on e-auction) and the additional development cost to be incurred, the internal rates of return of many winning bids translate to below the risk-free rate. This is understandable for existing assets, but cannot attract new investment.

For instance, coal blocks for the power sector that have gone into forward bidding will incur about 5 paise per kWh for every 100 INR per tonne of additional premium quoted, which as per the rules cannot be recovered in energy charges and comes out of their equity returns. Additionally, the winning bidders will face a risk of under-recovery in fuel on a levelised basis over a 25-year period, ranging from 0.50 INR/kWh to 1 INR/kWh in the coal blocks allocated in the eastern region.

Quite obviously, benefits from the decrease in power tariffs will be passed on to the consumers, with utilities not charging for fuel cost. Proposed reverse auction for the regulated sector actually lead to a forward bidding above

the reserve price payable, showing aggressive biddings. In the first round, the successful bids were in the range of 470 INR per million tonne (MT) to 1,110 INR per MT in the forward bidding, with the highest winning bid price of 1,110 INR per MT quoted by Essar Power MP Ltd for Tokisud North coal mine. Similarly, in the second round, the successful bids were in the range of 302 INR per MT to 704 INR per MT in the forward bidding, with the highest winning bid price of 704 INR per MT quoted by GMR Chhattisgarh Energy Ltd for Ganeshpur coal mine.

However, the recent auction has still left some questions unanswered. One needs to critically assess in case of auctioned blocks the quantum of actual benefits that will be passed on to the consumer, considering that while the coal extraction cost need not be paid, the cost of handling and logistics all the way up to the power plant will be built into the tariff. Therefore, regulators are required to create some benchmark or formulae to cap this cost. Further, in case of allocations of coal blocks meant for power generation, the methodology needs to be determined to capture fuel prices.

What's next?

With definite challenges of keeping the cost of fuel, i.e. coal produced from the auctioned blocks, at minimum levels by the new allottees, apart from project preparedness, the need of the hour is to look again into the existing mining practices prevailing in the country. Certainly, major reforms need to be brought in, with improvements in processes and technology as major focus areas and workplace safety on the prime agenda. A stringent project-level monitoring system needs to be put in place to capture variances between the budgeted and actual progress made and standard operating procedures (SOPs) need to be designed for taking immediate actions whenever needed.

Cost control measures such as optimisation, improvement in productivity, utilisation of existing resources, stringent and accurate data monitoring system, which we have been debating for long, need to take the front seat to keep the operating cost at the lowest levels, as these costs are not passed through to the utilities.

Besides these measures, project preparedness will also play an important role. Preparing a detailed checklist for the various approvals or clearances to be obtained after the vesting order, re-validating the transferred approvals or clearances through the vesting order, selecting qualified and suitable mining contractors through a competitive bid process, distributing appropriate roles and responsibilities, employing key and statutory manpower, etc. are some of the crucial elements that the new allottees will need to adopt for successful outcomes. As part of project preparedness itself, carrying out a 'fatal flaw' analysis at an early stage may be advisable to capture the mitigating measures.

The role of the state in expediting approval and clearance work for development and operation of the allocated coal blocks will also be vital. Assistance in fast-track processes will certainly be important for new allottees, and primarily serve two purposes–follow the timelines for project development, and commence production to start generating cash flows for the project.

In conclusion, a scientific and collaborative approach will be required for successful follow-up post the auction. With two rounds already concluded, questions still remain on economic viability, speedy processes and the passing on of actual benefits to consumers.

About CII

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, government, and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry-managed organisation, playing a proactive role in India's development process. Founded in 1895, India's premier business association has over 7,400 members, from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 1,00,000 enterprises from around 250 national and regional sectoral industry bodies.

CII charts change by working closely with the government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialised services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes. Partnerships with civil society organizations carry forward corporate initiatives for integrated and inclusive development across diverse domains including affirmative action, healthcare, education, livelihood, diversity management, skill development, empowerment of women, and water, to name a few.

In its 120th year of service to the nation, the CII theme of 'Build India: Invest in development, a shared responsibility, A Shared Responsibility,' reiterates Industry's role and responsibility as a partner in national development. The focus is on four key enablers: facilitating growth and competitiveness, promoting infrastructure investments, developing human capital, and encouraging social development.

With 64 offices, including nine Centres of Excellence in India, and seven overseas offices in Australia, China, Egypt, France, Singapore, the UK and the US, as well as institutional partnerships with 300 counterpart organisations in 106 countries, CII serves as a reference point for Indian industry and the international business community.

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