

Role on Coal in Energy Transition: A Blue Print for Coal Sector

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The Indian Coal Sector should be legitimately proud of having achieved a coal production level of one billion tonne during the just concluded financial year 2023 - 24. It includes about 165 million tonnes from captive and commercial mining. It is also expected that during the year 2025-26, Coal India Limited itself will achieve the production level of one billion tonne, may be hopefully during the year 2024-25 itself. Obviously, the achievement of this level of production and supply also led to reduction in the import of coal. This process will continue with increasing domestic production and declining import. We need to recognize that while the performance of the coal India limited and Singareni Coal Company have improved significantly, the growth of coal sector as a whole is also attributable to opening of the sector for Captive coal block and also for commercial mining. In view of the cancellation of as many as 240 Coal Blocks in 2014-2015, in accordance with the judgment of Supreme Court, a large number of producing coal mines, and those almost ready to produce got stopped. This did create a major setback affecting significantly not only the coal production growth but also power generation capacity addition and generation of power, in fact, economy as whole. It continued to impact for several years, had adverse consequence on power generation and also requiring increasing import of coal to meet the power generation programmes. The ordinance on coal during early 2015, followed by the legislation, was to address the challenges resulting from the massive cancellation of coal blocks. However, implementation of the Act took more time than expected. What has been achieved during the last financial year could have been the outcome a few years ago, from the commercial mining and captive coal sector. It is also relevant to mention that the full impact and benefits of the historic legislation namely Electricity Act 2003 could have been achieved if the Coal Bill, which was introduced during 2001-2002, would have been legislated. Unfortunately, this Bill lapsed and coal sector reforms based on the new legislation waited for almost 15 years hampering the several positive outcomes which could have been possible on account of far-reaching provisions of Electricity Act 2003. Gratifyingly, the new Government in 2014 could bring this coal reform legislation which is showing its positive impact.

The renewed thrust provided by the NDA Government, which came to power in 2014, on unprecedented expansion of renewable power, mainly solar power, was a welcome initiative with potential of not only providing less expensive power but also for addressing the climate change concerns by providing to the power consumers carbon free electricity. Even though the challenging target of solar power and other renewables do have the resultant impact on managing the problems of the power transmission grids, the achievements of installing over 80,000 MW of solar have been very positive and satisfying. The ambitious agenda of India on renewable in general and solar in particular did create a degree of uncertainty about the future of coal. Similar perception grew all over the world. However, when large scale developments on renewable front have happened in India and abroad, the accompanying challenges of having to manage grid because of variable loads in

the system, a scenario of rethink on future of coal has also emerged. Solar Power not being available during nights, when it is scaled up, in terms several thousands of Gega Watt, does pose a challenging situation. Various options to provide backup are being explored, many of them are work-in-progress. Under the circumstances, these have led to a near consensus in India and abroad that large scale expansion of power from renewable sources would not necessarily mean substantial dilution in power profile supported by coal sector, at least during the initial ten to fifteen years of the transition. Different countries have identified different paths for energy transition. India has targeted net zero over a 50-year time frame till 2070.

It appears that in case of India, in the next few years, the growth of coal sector may be at par, or even better, compared to the growth in the immediate past. Subsequently, during the transition period, even though rate might decline, the absolute quantum of power generation based on coal might keep increasing during the period the proportion of profile of non-fossil fuel based power—solar—wind—nuclear might witness a quantum jump. This is obviously a positive signal for coal sector professionals. In so far as absolute level of production is concerned. But, progressively declining rate of growth provides a good opportunity for the sector to focus attentions on areas which have remained not in their priority lists. A blue print for the next about 50 years, which may have to be reviewed from time to time, keeping in view the emerging scenario of transition management globally as also several forms of technological changes and disruptions, appears relevant to be presented. Some of the important issues that should receive top most attention during energy transition, to manage the coal sector, would include the following:

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- a) During last fifty years, coal sector growth witnessed a rapid rise in open cast mining and ever declining proportion of underground mining, to the incredibly low level of coal being produced through this route to almost zero. This resulted in corresponding decline in level of quality of coal. Obviously, poor quality has highly adverse impact on performance of the consuming sectors besides severely affecting the environment and devastation of forests. During the next fifty years of transition, this trend should be attempted to be reversed toward progressively rising proportion of coal production through underground mining. Obviously, the technological advances achieved all over the world should facilitate more efficient coal mining processes to be adopted.
 - b) India is endowed with huge coal reserves, estimated at 370 billion tonnes, and this is the most dominant and important source of energy for the country. However, it is known that the ash content in the Indian coal is very high, of the order of 40 to 45 percent. This has adverse implications on operations of power plants, besides increasing cost of transportation and serious adverse impact on environment. Several attempts were made in the past, through Administrative Notifications placing obligations on power generating companies to use washed coal with reduced ash content. These policy directions had little effect and use of washed coal was more by exception than by the rules. Subsequently, another serious attempt was made by the Ministry of Environment and Forest. On the basis of dialogue with the stakeholders and studies through an Expert Committee, a revised notification was issued with the obligations cast on both- coal producers and power

generating companies - to use washed coal in power plants which were 500 KM or more away from the coal sources. This amended Notification also remained, by and large, unimplemented. Subsequently, the Notification itself has been withdrawn. It is important that coal washeries are brought back on the agenda, since it is one of the important Clean Coal Technologies, and, in fact, more relevant in the Indian context.

- c) National Coal Distribution Policy was amended a few years ago to respond to the huge shortages in the demand and supplies of coal, post cancellation of coal blocks. The coal linkages used to be provided by Ministry of coal unrelated to Power Purchase Agreement. This facilitated faster development of power projects and capacity additions. This was changed by way of providing required priority to those power generating projects which had PPA since there was a huge gap in supply of coal. Now that coal production has substantially improved and Thermal Power capacity addition is also on a lower growth profile, the condition of Power Purchase Agreement may not be relevant. Linkages could be provided as in the past and fuel supply agreements could be left to the power generating companies and coal producing companies.
- d) With the opening of the coal sector, facilitating, commercial coal mining, the advantage of the new legislation and policy are already visible. Captive coal blocks and commercial coal mining made substantial contribution to the coal production and supply during the last financial year, of the order of 165 million tonnes (about 17% of total coal production). The share of captive and commercial coal mining will progressively rise and a number of new coal producing companies would be participating in the expansion of coal industry. The need and relevance of Coal Regulator has been emphasised in the past. In the context of the emerging scenario of coal sector, the institution of Coal Regulator is essential. This would ensure growth of coal industry, enhancement in the quality of coal, appropriate pricing structure, and an equitable sharing of risks and gains among all the stakeholders.
- e) Transportation logistics has been another important area since due to the challenge of coal stocks being transported to the consumption centres, power plants and others have been experiencing serious constraints. The need for the main transportation through rail is being attended to by the Railway Board, and that requires substantial augmentation, has an obvious gap between demand and supply in terms of not only rakes but also inadequacies of railway lines. Equally important are the local links from the coal mines to the main railway system. Serious mismatches, which have remained unattended over the years, have led to massive road transportation of coal resulting in not only inefficient transportation requiring imported diesel consumption but also serious environmental implications. The issues have to be attended at the Railway Board level for the main railway systems and at the local level by organisations like Coal India and other coal producers who should be setting up local logistics which should include rapid loading systems and rail links up to the main railway lines.

- f) Coal Gasification has been discussed over decades. Major technology interventions – Gasification, Coal Bed Methane, production of Ammonia, and Coal to Hydrogen, Carbon Capture and Utilisation (CCU) need to receive active attentions and interventions in the wake of emerging transition. Efforts have to be coordinated among a number of public and private sector companies. Several missions have already been set up, a number of large public and private sector companies have announced launching of their initiatives. It is hoped that the changing mix of energy, and the challenges the emerging scenario is creating, would compel all stakeholders for the required actions.

New Delhi
1st May 2024
