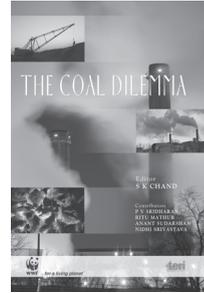


## The Coal Dilemma

S K Chand (ed.)

Reviewed by Rangan Banerjee  
Professor and Head  
Department of Energy Science and Engineering  
Indian Institute of Technology Bombay



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Coal accounts for more than 50% of India's primary energy mix. Will coal continue to be the mainstay of our energy sector in the future? Do we have sufficient coal resources for this? Is coal the key to energy security? Can we afford to continue on a coal-based-energy future in the context of GHG (greenhouse gas) emissions and climate change? Clearly, these are questions that are important for anyone interested in India's energy sector. The focus of the book, 'The Coal Dilemma', edited by S K Chand, is to address these questions.

The book is a source of useful information regarding coal supply and coal demand, along with insights and perceptions of the authors' decades of work experience in the coal sector. The authors question the assumption that India has vast reserves of coal is covered in the chapter 'Coal supply: the fallacy of abundance'. The authors make a case for urgent adoption of the UNFC (United Nations Framework Classification) system for characterizing India's coal reserve. The book highlights the confusion about the precise figures of extractable coal. However, it does not provide an actual estimate of reserves or quantify feasible coal extraction rates.

The UNFC system is in the process of being adopted by all countries of the world. The Geological Survey of India plans to move to the UNFC scheme for all resources, including coal.<sup>1</sup> It

<sup>1</sup> Details available at < [www.portal.gsi.gov.in/gsiImages/information/Approved\\_44\\_CGPB\\_minutes\\_180309.pdf](http://www.portal.gsi.gov.in/gsiImages/information/Approved_44_CGPB_minutes_180309.pdf)>

seems that the government will soon migrate to this system. The authors' claim that 'the country's own resources are disturbingly limited' is not adequately supported by the data presented.

Chapter 4 deals with the dilemma of coal beneficiation. The authors discuss the history of coal beneficiation, the associated problems, and the externalities. However, the authors do not attempt to resolve the dilemma. An explicit cost-benefit assessment of coal beneficiation is missing and would have been a useful addition to the book.

*The Coal Dilemma* provides an overview of aggregate future energy scenarios for India and includes an analysis based on TERI's integrated energy assessment using the MARKAL (MARKet ALlocation) energy modelling framework. The TERI model estimates a limit of 600 MT (million tonnes) of domestic coal production annually in 2011/12 (p. 27). The authors argue that the government decided to augment production by over-exploiting 16 open cast mines of CIL. The issue of overexploitation of coal mines and sustainable domestic coal production limits raised by the authors is important and needs more quantitative analysis.

Chapter 5 provides a status and future of potential clean coal technologies in India. The options considered are supercritical and ultra-supercritical pulverized coal plants, coal gasification, and coal-based combined systems and underground coal gasification, coal bed methane, and coal mine methane technologies. The barriers to the adoption of these technologies have been enumerated. A solution proposed by the authors is lowering the barriers through international partnerships. In the context of the barriers identified, there seems to be a strategic need for a greater emphasis on indigenous R&D for clean coal technologies for Indian coals. The authors, however, prefer to emphasize the adoption of internationally available commercial or near commercial options.

The concluding chapter states that there is the 'last window of opportunity' – about 30 years – to change the coal-centric energy use pattern. In summary, the book is an extremely useful source of data and perspectives on the coal industry in India and raises many important questions.

The dilemma of coal remains unresolved. However, the energy debate or mix between coal, nuclear, and renewables in the next 30 to 50 years still remains an open question. Coal accounts for 25% of the global energy consumption today. A 2007 review of

the future of coal in the world<sup>2</sup> concluded that coal is likely to remain a major source of energy in the future with the development of carbon capture and storage technologies.

Even if one does not agree with all the conclusions drawn in '*The Coal Dilemma*', it provides interesting food for thought and can help in an improved understanding of a critically important energy supply option for India.

<sup>2</sup> Details available at <<http://web.mit.edu/coal>>