

Coal in the Indian energy future – emissions and policy considerations

Dr L L Sloss

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Authors:

Dr L L Sloss

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IEA Clean Coal Centre
14 Northfields
London SW18 1DD
United Kingdom

Telephone: +44(0)20 8877 6280

www.iea-coal.org

Preface

The IEA Clean Coal centre is an Energy Technology Initiative, which is endorsed by the International Energy Agency. It provides a means for international co-operation on clean coal related issues, and provides objective and independent information on the efficient and sustainable use of coal. This focuses on how to use coal more effectively, efficiently and cleanly, to minimise its environmental impact while providing cost-effective energy. This includes the impact of coal related policies and regulations, clean coal technology developments and deployment, emissions control technologies and global coal markets. It is supported by members and sponsors from Australia, Austria, China, the European Commission, Germany, India, Italy, Japan, Poland, Russia, South Africa, Thailand, the UK and the USA.

This report has been produced by the IEA Clean Coal Centre and is based on a survey and analysis of published literature, and on information gathered in discussions with interested organisations and individuals. Their assistance is gratefully acknowledged. It should be understood that the views expressed in this report are our own, and are not necessarily shared by those who supplied the information, nor by our member countries.

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Abstract

India is going through a period of intense growth whilst at the same time proposing to move quickly to tighten environmental standards on the very sources that are being relied upon to support this growth. How can the country achieve its aims of both expansion of electrification and cleaning up of the power sector simultaneously? This brief report, reviewing the challenges faced in India, was presented at a workshop in Chennai, India, on Monday 16th November 2015. Corrections and comments from that meeting have been included in this updated version of the report.

Efficiency improvement is the subject of a separate report by Colin Henderson. This complementary report concentrates on the current emissions in India, the emergence of new policy and possible options for emissions reduction.

Acronyms and abbreviations

APEC	Asia-Pacific Economic Cooperation
APP	Asia-Pacific Partnership
A-USC	advanced ultra-supercritical
BAU	business as usual
BCS	best case scenario
BHEL	Bharat Heavy Electrical Ltd
CCC	Clean Coal Centre
CCS	carbon capture and storage
CEA	Central Energy Authority
CERC	Central Electricity Regulatory Commission
CPCB	Central Pollution Control Board
ESP	electrostatic precipitator
EU	European Union
FGD	flue gas desulphurisation
GRP	Green Rating Project
GW	gigawatts
HELE	high efficiency low emissions
HP	high pressure
IEA	International Energy Agency
IP	intermediate pressure
kWh	kilowatt hour
LHV	lower heating value
LP	low pressure
MCR	maximum continuous rating
MOD	merit order dispatch
NAMP	National Ambient Monitoring Programme
NAPCC	National Action Plan on Climate Change
NASA	National Air and Space Agency, USA
NTPC	National Thermal Power Corporation
O&M	operation and maintenance
OECD	Organisation for Economic Cooperation and Development
PAT	Perform and Achieve Trade Scheme
PIE	Partnership in Excellence
PLF	Plant Load Factor (utilisation or capacity factor)
PM	particulate matter
PPIP	Plant Performance Improvement Plan
PV	photo voltaic
Rs	Indian Rupees
SCR	selective catalytic reduction
SNCR	selective non-catalytic reduction
SWBS	smart wall blowing system
tce	tonnes of coal equivalent
TTPL	Transparent Technologies Private Ltd
UMPP	ultra mega power project
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development

USC	ultra-supercritical
WEC	World Energy Council

Contents

Preface	3
Abstract	4
Acronyms and abbreviations	5
Contents	7
List of Figures	8
List of Tables	9
1 Introduction	10
2 The changing energy mix in India	11
2.1 Renewables	11
2.2 Coal	13
3 Coal production	17
3.1 Expansion in coal production	17
3.2 Coal quality	18
3.3 Coal washing	18
4 Coal combustion	20
4.1 Plant efficiency	20
4.2 Emissions of pollutants	21
4.3 Energy policy and emission standards	24
4.4 Pollution control technologies	26
4.5 Monitoring and compliance	29
4.6 Coal ash	30
5 Moving forward	31
5.1 The future coal fleet in India	31
5.2 Feedback from the Chennai workshop	34
6 Comments	37
7 References	39

List of Figures

Figure 1	Electricity used for lighting: % of households in different regions of India (Geocurrents, 2013)	10
Figure 2	An electrical linesman repairs cables in Allahabad, India. Illegal subsidiary wires are tangled into main cables (WSI, 2009)	11
Figure 3	Forecast levelised cost of electricity in India (Shrimali and others, 2015)	12
Figure 4	India's energy sources and consumption, 2012-13, official government statistics (Bhushan and others, 2015)	13
Figure 5	State-wise coal-based power plants: existing and upcoming capacities (Bhushan and others, 2015)	14
Figure 6	Indian coal-fired power plant by age and steam cycle (Barnes, 2014)	15
Figure 7	Breakdown of coal-fired capacity in India (IEA, 2011)	16
Figure 8	Change in regional distribution of anthropogenic land based SO ₂ emissions between 2005 and 2010 (Klimont and others, 2013)	21
Figure 9	Scenarios of electricity generation from coal based thermal power plants in India (Mittal, 2012)	22
Figure 10	Scenarios of SO ₂ emissions from coal based thermal power plants in India (Mittal, 2012)	23
Figure 11	Scenarios of NO emissions from coal based thermal power plants in India (Mittal, 2012)	23
Figure 12	Indian base case scenario 2015-2040 (Barnes, 2014)	32
Figure 13	Indian 50-year retirement scenario 2015-2040 (Barnes, 2014)	32
Figure 14	Indian 25-year retirement scenario 2015-2040 (Barnes, 2014)	33
Figure 15	HELE roadmap (IEA, 2011)	34

预览已结束，完整报告链接和二维码如下：

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