Coal-fired power plant efficiency improvement in India

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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.

Abstract

This document formed an input to the one-day workshop in Chennai on 16 November 2015, organised by the IEA Clean Coal Centre (IEA CCC) and the United Nations Environment Programme (UNEP) Global Mercury Coal Partnership. The workshop aims were to identify and define the most effective technical approaches to adopt for controlling emissions of mercury and other pollutants from India's coal combustion sector. An important part of this is maximising the thermal efficiency of the fleet, as the specific fuel burn per kWh is reduced and so specific emissions of all pollutants decrease. This document summarised the main influences on efficiency and means available to increase it, with suggestions for future actions. It was used to provide a starting point for discussions at the workshop on how to promote continuing improvements.

Acronyms and abbreviations

APEC	Asia-Pacific Economic Cooperation
APP	Asia-Pacific Partnership
A-USC	advanced ultra-supercritical
BHEL	Bharat Heavy Electrical Ltd
CCC	Clean Coal Centre
CEA	Central Energy Authority
CenPEEP	Centre for Power Efficiency and Environmental Protection
ESP	electrostatic precipitator
FGD	flue gas desulphurisation
HP	high pressure
IP	intermediate pressure
kWh	kilowatt hour
LHV	lower heating value
LP	low pressure
MCR	maximum continuous rating
NASL	NTPC ALSTOM Power Services Private Limited
NTPC	National Thermal Power Corporation
O&M	operation and maintenance
PIE	Partnership in Excellence
PLF	Plant Load Factor (utilisation or capacity factor)
PPIP	Plant Performance Improvement Plan
SWBS	smart wall blowing system
USAID	United States Agency for International Development
USC	ultra-supercritical

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