# A Bottom-up Modelling Analysis of Indian Coal Sector

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India is a developing economy with an accelerated pace of growth that has resulted in fast increasing energy demand. In the developed countries, energy and technology choices are being determined with respect to the capabilities of mitigating greenhouse gases (GHG) emissions, whereas, in India the major focus is still on fulfilling energy demand while addressing the local pollution concerns. In view of international concerns about the increasing GHG emissions from India, priority will have to be given to carbon mitigation in future.

Government reports and independent studies have indicated that coal will remain the mainstay of energy supply in India for decades to come. Thus, there is a need to find options that allow continued use of coal while considering the need for carbon mitigation. In this paper, to ascertain the policy choices for coal sector, simulations for three scenarios namely – Business as Usual (BAU), Constraint on Carbon (COC) and Carbon Capture and Sequestration (CCS) have been carried out using AIM/Enduse model.

The simulation analysis reveals that in the year 2050 advanced technologies and carbon capture options can help in reducing carbon emission in comparison to BAU. In COC scenario nearly 15% carbon emission reduction can be achieved through advanced technology penetration and the CCS scenario provides focused mitigation potential of about 45% $CO_2$ reduction from BAU emissions. Thus, it becomes clear that even in a carbon constrained world, coal would continue to be a dominant player in India and CCS is offering promising solutions in this direction. However, it needs to be highlighted that the concerns for energy supply, security and increasing cost need to be addressed before looking for any substantial amount of emission reduction.

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