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A review of challenges from increasing renewable generation in the Indian Power System

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In this paper, we review the current challenges in the Indian Power System due to accelerated renewable (RE) generation in post-2015 nationally determined contributions towards climate change mitigation. We systematically evaluate the challenges across economic, technological and social dimensions of the energy transition. Flexibility of operation of ageing thermal plants is the biggest challenges that intensifies the economic burden of running these plants. Optimal retirement date of such brownfield plants without causing large-scale social disruption is another deep-rooted challenge that needs robust regulatory and policy reforms. Disruption of coal-driven economy will result in millions of jobs being lost at costly political-economic ramifications. It will also trigger structural changes in the cross-subsidy mechanism of the Indian Railways at high political costs. We organise such cause and effects in the form of a systematic review of primary and secondary literature from institutions like Ministry of Power, Central Electricity Regulatory Authority and Load Dispatch Centres. Concluding remarks were made in the form of a policy roadmap for Electricity (Amendment) Act, 2020.

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