

A computable general equilibrium (CGE) assessment of technological progress and carbon pricing in India's green energy transition via furthering its renewable capacity

Prof. Basanta K Pradhan^a and Dr. Joydeep Ghosh^b

^aInstitute of Economic Growth, Delhi, India

^bInstitute for Economic Modelling Studies, New Delhi, India

Abstract

In this paper a Computable General Equilibrium (CGE) model was used to assess the coal cess and technological progress in emerging energy technologies to achieve about 40% electric power generation from non-fossil fuel based energy resources by 2030 in India. To our knowledge there is no other study that has analysed the interactions between regulatory policies, such as the coal cess, and technological progress in low carbon technologies, including carbon capture and storage (CCS), for achieving a target. The main conclusions emerging from the analysis are – first, endogenous technological change in renewables under current level of carbon pricing (coal cess) can help to achieve the low carbon target along with economic gains; second, the coal cess can facilitate the shift towards a low carbon economy by decreasing the relative prices of non-fossil fuel energy and being a source of finance for supporting R&D in renewables; and finally, advances in carbon capture and storage (CCS) technology can help to achieve CO₂ emission reduction at a lower economic cost. Thus, besides technology and fund transfers from advanced economies, policy focus on R&D in energy technologies and carbon pricing are required to take Indian economy on a low carbon growth path.

Keywords: Technological progress Carbon pricing Renewables Green energy NDC India

Weblink :

<https://www.sciencedirect.com/science/article/pii/S0140988321006265>