

Implications of clean energy targets for the Indian Economy based on the E3 Model

Topic: Energy and emissions

Author: Kakali MUKHOPADHYAY

Co-Authors: Partha Pratim Ghosh

Session Title: E3-India: Integrating Energy and Environmental linkages within macroeconomic framework for regional energy policy analysis

Session Chair: Kakali Mukhopadyay, GIPE, India and McGill University, Montreal, CANADA
kakali.mukhopadhyay@mcgill.ca

Session Co-Chair: Surabhi Joshi, E3-India Initiative, Regulatory Assistance Project,
joshisurabhi23@gmail.com

Implications of clean energy targets for the Indian Economy based on the E3 Model

Kakali Mukhopadhyay, Gokhale Institute of Politics & Science, Pune, India and Mc Gill University, Montreal Canada ; kakali.mukhopadhyay@mcgill.ca

and

Partha Pratim Ghosh, Associate Professor, St. Xavier College, Kolkata, India;
rana_prof2001@rediffmail.com

The government of India through Ministry of New and Renewable Energy (MNRE) is playing a proactive role in promoting the adoption of renewable energy resources by offering various incentives such as generation-based incentives, capital and interest subsidies, viability gap funding, concessional finance, fiscal incentives etc.

The renewable energy's contribution to total energy source in India accounts for 17.5% as of April

2017. India's overall installed capacity has reached 329.4 GW, with renewables accounting for 57.472 GW. A nationwide campaign has been launched to achieve five times more renewable capacity by 2022 and 40% by 2030. The mission also aims to achieve grid parity and parity with coal-based thermal power by 2030 and feed 100 GW of solar power by 2022.

The government has enhanced its aspiration by amending the targets from 40 GW to 60 GW for wind power, 10 GW of biomass and 5 GW of small-scale hydropower by March 2022. Additionally, hydro power and biomass power mandates are set by the government resulting into 175GW of Renewable Energy in 2022. In terms of meeting its ambitious 2022 targets, as of 31 March 2017, wind power was more than halfway towards its goal, whilst solar power was below 13% of its highly ambitious target, although expansion is expected to be dramatic in the near future. Bio energy was at just above 80% mark whilst small hydro power was already 85% of the way to meet its target.

Overall India is at 33% towards meeting its 2022 renewable installed power capacity target of 175 GW. Even though the nation is trying to expand its renewable use, however, country's coal-fired fleet remains strong with a 59 percent share in the total energy mix which is a major source of carbon emission. In this effort, India has voluntarily pledged to the UNFCCC to reduce emission intensity of Gross Domestic Product by 33-35% below 2005 levels in 2030.

Given this backdrop, the current study attempts to evaluate the economic and environmental impacts of the Renewable Energy (RE) by forecasting the likely outcomes at 2035 at national and regional levels in India using E3 model. For this, several scenarios based on the targets are

developed and further compared with the Business As Usual conditions. The results indicate as per the validation exercises, the increases in industrial output and employment as well as reductions in prices of other sectors and carbon dioxide and other GHG emissions. The impacts on fiscal and external balance are also evaluated in order to ascertain the viability of such a growth strategy.