

India's Renewable Energy target at 2030 : An Integrated CGE and I-O exercise

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India's energy demand, which was nearly 700 mtoe in 2010, is expected to cross 1500 mtoe by 2030. Thereby, India's dependency on imports is expected to increase from 30% to over 50%, suggesting the need for a new way forward. Compounding this problem is widespread energy poverty in India, with almost 22% of the population still without access to electricity. There is an urgent need to explore innovative ways to generate power in a socially, economically, and environmentally sustainable manner.

The renewable energy's contribution to power generation is still at a fairly nascent stage of ~7% (35GW) as of March 2015. A nationwide campaign has been launched to achieve five times more capacity (175GW) by 2022 and source 40% of installed capacity from renewable energy by 2030 (equivalent to 30% of generation). The government has further enhanced its aspiration by amending the targets from 20GW to 100GW for solar power and 40GW to 60GW for wind power by 2022. Additionally, it has made a commitment of 10GW of biomass and 5GW of small-scale hydro power capacity by 2022.

These ambitious goals and targets are set in light of tripling of projected electricity demand in 2030 from 2012 and rapid urbanization alongside population growth to 1.5 billion in 2030. Moreover, India has voluntarily pledged to the United Nations Framework Convention on Climate Change (UNFCCC) to reduce emission intensity of GDP by 33-35% below 2005 levels in 2030. Providing access to renewable sources of energy will essentially lead to energy security, climate change mitigation, and the achievement of the Millennium Development Goals in the region.

In this backdrop, the current study makes an innovative effort to evaluate the economic and environmental impacts of the targeted Renewable Energy production in India. The study develops an integrated framework including Input-output and Global Computable general equilibrium (CGE) model.

Preliminary results show that an increase in gross domestic product (GDP), industrial output, and employment as a result of the additional production of renewable energy. It also reduces carbon dioxide and other GHG emissions. Further, the advanced knowledge on decentralized renewable, solar and wind, in particular, will bring electric power to millions of Indians who still lack access to electricity today. It will enhance the well-being of the nation.

Further, the result allows us to understand better the risks associated with the implementation of Renewable fuels in the economy. It evaluates the extent to which renewables contribute to the achievement of GHG emission reduction targets compared to traditional fuels.

Input Output Transaction Table published by Central Statistical Organization (CSO 2012), Government of India and the GTAP version 9 will be used to undertake the analysis. The commodities and sectors will be aggregated on the basis of energy intensiveness.