

Impact of Cleaner Energy in I-O framework with reference to India

Topic: Energy Policy

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In India, we find various sources of power-generation. Over the years the trend is found to be from conventional energy sources that are non-renewable in nature, to that of non-conventional energy sources which are renewable in nature. And the Planning Commission also recommends the shift towards the renewable energy sources. The Jawaharlal Nehru National "Solar Mission"™ launched by the Ministry of New & Renewable Energy on 11th January 2010 has target of deploying 20,000 MW of grid connected solar power by 2022 and reducing the cost of solar power generation in the country. This can be referred as the change in technology. This paper seeks to find the impact of change in technology in energy sector in India. The data on energy sources with their power-generating capacities and actual generations by various States and Union Territories is provided by the Central Statistical Organization (the Official Authority of Govt. of India for statistics). We have the estimates of demands for energy also. But we don't have the firm information/ data regarding environmental repercussions of energy generation, neither provided by the CSO, nor by any other ministries. Data on pollutants generated by different sectors (as defined in I-O table) are also not readily available. Another database, the World Input Output Database provides the national Input-Output tables, as well as the Environmental Emissions & Pollutants tables from 1995 to 2009. It provides tables for 35*35 industries, while CSO publishes I-O tables for 130*130 dimensions. Therefore, we combine two datasets provided by CSO & WIOD. This paper examines the impact of changes that would occur due to change in technology, viz. shift from conventional energy sources to that of solar. We introduce new inter-industry transaction values with estimated coefficients of "renewable energy technology"™. Initially these are estimated for 130*130 I-O tables. Later we aggregate these to 35*35 sectors for which emissions/ pollutants data are available from WIOD tables. Using these estimates, backward & forward linkages and direct & indirect effects are found. Expected result is the reduction in the pollution coefficient with the shift in favor of cleaner technology.

Keywords: Power generation, Change in technology, Renewable energy technology, Backward-forward linkages, Pollution emission, Input-output analysis.