

Estimating economic impacts of introducing domestic content requirement in Indian solar policy using Input output analysis

Topic: Energy Policy II

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Potential usefulness and legality of local content requirements (LCRs) have been regularly contested on the premise of their trade distorting impacts and lower allocative efficiencies. However, recent renewable energy policies of many countries actively endorse Local/Domestic Content Requirements (LCR/DCR), mandating use of domestically produced renewable energy goods and services thereby providing protection to nascent manufacturing industry along with nurturing an opportunity for creation of permanent green jobs. Current Indian solar policy provides differentiated incentives for solar power projects utilizing domestically produced solar panels (DCR) and those using imported solar panels (non DCR). This paper estimates direct and indirect impacts of attaching domestic content requirement (DCR) criteria in Indian solar policy using Input output analysis. The research approaches the issue from local sustainability perspective analyzing changes in value structure and factor content of solar production chain. The methodology introduces solar generation as a new production activity into Indian economy through construction of a new final demand vector. Independent solar I-O blocks for both DCR and non DCR projects are constructed and integrated as a new sector in 35x35 national input output table (2011) obtained from world input output databases (WIOD). The analysis involves tracking Inter industry transactions involved in installing a unit of grid connected ground mounted photovoltaic solar power capacity in India.

Both solar blocks compile data at purchasers price for PV module, mounting structure, power conditioning unit, construction and preoperative costs of the power plant. Followed by adjustments for existing fiscal elements like applicable subsidies, VAT, excise duty and incurred transportation costs. The DCR block is differentiated by dissociation of solar panel manufacturing Industry into inputs for manufacturing module, wafer and cells within the economy while in case of non DCR solar blocks, solar panels feature in the imports column. The results of this analysis indicate that although DCR based projects have higher initial installation costs, they have significantly higher net positive impacts on Indian economy in terms of output, income and employment provisioning justifying a need for inclusiveness in terms of local concerns and feasibility while formulating renewable energy policies in developing countries. The study also provides an insight into the impacts of vertical integration of global solar production chain from local sustainability perspective. This study derives its significance from the fact that ensuring sustainable supply of energy is a unique challenge for emerging economy like India posed with conditions of energy poverty, greater climate change vulnerabilities and high population growth rates. Thus policies formulated for renewable energy scale up and deployment have to be scrutinized for their efficiency to meet multiple goals focusing towards sustainable economic growth and domestic employment.

Key Words: Local sustainability, Domestic content requirement, Renewable energy, value structures, Input-output analysis