

Two paths to emission reductions: Energy efficiency and Renewables

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Abstract

As India moves towards meeting its Intended Nationally Determined Contributions (INDCs) to emissions, policy makers have to choose among alternative policy options. The investment in renewable energy continues to be the primary choice. Energy efficiency is relegated to the second place as savings are not visible and its economy wide impacts are difficult to estimate. The debate on choice between energy efficiency and renewable energy is far from settled and decisions continue to be made void of empirical evidence.

This paper estimates the reduction in energy consumption, emissions and economy wide impacts on employment and income over time due to promotion of efficient household appliances in the Indian context. We then estimate the investment (and associated emissions) required to meet the equivalent energy demand through conventional and renewable sources if the energy efficiency measures were not deployed.

This method helps to quantify the monetary and environmental benefits of efficiency improvements programs in relation to other popular choices. The impacts of these alternative policy scenarios are estimated based on their economy wide impacts using a coupled input-output econometric framework of the newly developed E3-India model. The model captures the relationship between Economy, Energy and Emissions, covering 20 economic sectors and five income quintiles for India's 27 states