Renewable energy and low carbon economy transition in India - DTU Orbit (10/12/2018)

**Renewable energy and low carbon economy transition in India**

Cooperation of large developing countries such as India would be important in achieving a low carbon future, which can help in restricting the global temperature rise to 2°C. Global modeling studies of such low carbon scenarios point to a prominent role for renewable energy. This paper reports scenarios for a low carbon future in India. An integrated modeling framework is used for assessing the alternate development pathways having equal cumulative CO2 emissions. The modeling period ranges from 2005 to 2050. The first pathway assumes a conventional development pattern together with a carbon price that aligns India’s emissions to an optimal 450 ppmv CO2-eq. stabilization global response. The second emissions pathway assumes an underlying sustainable development pattern. A low carbon future will be good for renewable energy under both the development pathways, though the share of renewable energy will be higher under a sustainable pathway. Renewable energy faces competition from low carbon technologies like nuclear and carbon capture and storage in the electricity sector. Solar, wind, biomass, and biofuels emerge as the four competitive renewable energy choices for India. Renewable development however depends critically on the reduction in the costs and in the ability to integrate the intermittent renewables within the existing systems for which technology transfer and capacity building hold the key.

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