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India’s Energy System Transition, Survival of the Greenest

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Abstract : The transition to a clean and green energy system is an economic and social transformation that is exciting as well as challenging. The world today faces a formidable challenge in transforming its economy from being driven primarily by fossil fuels, which are non-renewable and a major source of global pollution, to becoming an economy that can function effectively using renewable energy sources and by achieving high energy efficiency levels. In the present study, a green economy scenario is developed for India using a bottom-up approach. The results show that the penetration rate of renewable energy resources will reduce the total primary energy demand by 23% under GE. Improvements in energy efficiency (e.g. households, industrial and commercial sectors) will result in reduced demand to the tune of 318 MTOE. The volume of energy-related CO2 emissions decline to 2,218 Mt in 2030 from 3,440 under the BAU scenario and the per capita emissions will reduce by about 35% (from 2.22 to 1.45) under the GE scenario. The reduction in fossil fuel demand and focus on clean energy will reduce the energy intensity to 0.21 (TOE/US$ of GDP) and carbon intensity to 0.42 (ton/US$ of GDP) under the GE scenario. total import bill (coal and oil) will amount to US$ 334 billion by 2030 (at 2010/11 prices), but as per the GE scenario, it would be US$ 194.2 billion, a saving of about US$ 140 billion. The building of a green energy economy can also serve another purpose: to develop new ‘pathways out of poverty’ by creating more than 10 million jobs and thus raise the standard of living of low-income people. The differences between the baseline and green energy scenarios are not so much the consequence of the diffusion of various technologies. It is the result of the active roles of different actors and the drivers that become dominant.

Keywords : emissions, green energy, fossil fuels, green jobs, renewables, scenario
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