

Solar Energy Generation Based Urban Development: A Case of Jodhpur City

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Abstract : India has the most year-round favorable sunny conditions along with the second-highest solar irradiation in the world, the country holds the potential to become the global solar hub. The solar and wind-based generation capacity has skyrocketed in India with the successful effort of the Ministry of Renewable Energy, whereas the potential of rooftop based solar power generation has yet to be explored for proposed solar cities in India. The research aims to analyze the gap in the energy scenario in Jodhpur City and proposes interventions of solar energy generation systems as a catalyst for urban development. The research is based on the system concept which deals with simulation between the city system as a whole and its interactions between different subsystems. A system-dynamics based mathematical model is developed by identifying the control parameters using regression and correlation analysis to assess the gap in energy sector. The base model validation is done using the past 10 years timeline data collected from secondary sources. Further, energy consumption and solar energy generation-based projection are made for testing different scenarios to conclude the feasibility for maintaining the city level energy independence till 2031.

Keywords : city, consumption, energy, generation

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