

Design of nationwide renewable energy networks considering climate data: A deep-learning approach

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Renewable energy generation relies on weather conditions, which are hardly predictable; therefore, it is of importance to take into account both energy data and climate information. This study aims to 1) develop a forecasting model to estimate future patterns in energy demand/supply and various climate-related parameters using deep-learning and 2) suggest a promising renewable energy strategy. The main steps of this model are as follows: first, a great amount of data related to energy and climate is set to implement data pipeline. Second, the long short-term memory algorithm (i.e., it is well-suited to forecasting based on time series data) is employed. Third, forecast data and correlations thereof are analyzed to present the feasible strategy of nationwide renewable energy networks. The suggested model is applied for a case study of Korea to contribute to the current Korean renewable energy policy and then it is expected that the results from this research explicitly corresponds to the carbon-free world.