A study of LSTM-GAN-based forecasting model of renewable energy networks: A case study of Korea

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Net-Zero 2050 has been recently addressed in Korea to take part in the global energy trend. The objective of this research is to provide a better strategy of renewable energy system construction using the combination of LSTM and GAN, each of which is s suitable for forecasting time-series data and is regarded as a from of generative model fit-for-purpose to harness versatile samples. The primary algorithm in this study can be stated as follows. First, LSTM network using a set of power demand/supply is modeled in an attempt to facilitate problems of the fluctuation in renewable energy production systems. Demographic data of a case study will be coupled with training dataset to take into account characteristics of population-related factors. Second, scenario-based renewable energy networks considering synthetic samples generated from GAN are suggested to reduce the inevitable uncertainty corresponding to the aforementioned fluctuation. The proposed model is applied for a case study of Korea in order to contribute to the Korean Green New Deal policy.