

Development of VAE-biLSTM-based forecasting model for renewable electricity demands : A case study of Korea

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The renewable energy consumption can be of great benefit to the countries in various sectors. In this regard, sampling method and forecasting model based on deep learning have been studied a lot in the energy field. However, few papers have studied case study on a global scale. The VAE-BiLSTM model, the combination of sampling and forecasting model, was developed for renewable energy demands in the case study of Korea in this research. The proposed model was devised using the pre-post-processing to facilitate inevitable fluctuation and strengthen accuracy. The comparison among forecasting models indicates the suggested model has the highest R2 of test data at 0.981. As a result of forecasting renewable energy demand using the model, only two Metropolitan City met the 20% renewable energy generation goal of Korea in 2030, 25% and 39%, respectively. Consequently, this implies the disproportion of the RE demand by region in Korea will be serious in 2030. Therefore, the versatile RE energy source is required to achieve carbon neutral policy. Ultimately, the results of this study could contribute the energy policy relating to '2050 Net-zero'.