Energy Communities from Municipality Level to Province Level: A Comparison Using Autoregressive Integrated Moving Average Model

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Abstract : Considering the energetic crisis that is hitting Europe, it becomes more and more necessary to change the energy policies to depend less on fossil fuels and replace them with energy from renewable sources. This has triggered the urge to use clean energy not only to satisfy energy needs and fulfill the required consumption but also to decrease the danger of climatic changes due to harmful emissions. Many countries have already started creating energetic communities based on renewable energy sources. The first step to understanding energy needs in any place is to perfectly know the consumption. In this work, we aim to estimate electricity consumption for a municipality that makes up part of a rural area located in southern Italy using forecast models that allow for the estimation of electricity consumption for the next ten years, and we then apply the same model to the province where the municipality is located and estimate the future consumption for the same period to examine whether it is possible to start from the municipality level to reach the province level when creating energy communities.

Keywords : ARIMA, electricity consumption, forecasting models, time series
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