Lion's Den ING Risk Modelling Challenge 2021
Pre-selection assignment

The politicians of the Lion`s Republic decided to improve a natural environment of the country. They invited data analysts and asked them to identify and estimate the impact of various indicators on climate change.

To facilitate the analysis the National Statistic Office collected the historical data about the hard coal consumption data – monthly series per capita from July 1994 to December 2020.

Imagine, that you are invited as a data analysis expert. Your task is to perform a preliminary analysis specified in points 1-4, which will help you to understand the data and detect patterns. Here are few hints:

a. Choose the format of your analysis – Word, PowerPoint, PDF, Jupiter Notebook etc.
b. Please, attach codes and outputs. Your method of obtaining results is equally important to the results itself.
c. You can use any software you like.
d. It is not obligatory to address all questions. Try to answer as much, as you can.

Your task

0. Please find the set of data you have received (file: *LionsDen_data.xlsx*) attached to the email with pre-selection assignment.
1. Analyze the time series and provide (if necessary):
    a. decomposition into trend and seasonality.
    b. outliers,
    c. autocorrelation analysis – check autocorrelation and stationarity of the time series, please attach test results,
    d. transform time series into stationary form,
    e. perform an additional tests, if they add value to your solution.
2. Predict the level of hard coal consumption per capita for year 2021. You can use any prediction method but remember to put arguments for your choice.
3. Evaluate your model. Which metrics can you use to do that?
4. Which additional variables could you include to improve your model performance? Which modelling techniques would you use in this situation?

Remember to send the results of your task to the e-mail address: lionsdening@ing.com, preferably in response to the e-mail with the pre-selection task.

Good luck!