

Climate change is urging fundamental transformations in almost all sectors of the economy. To reach the EU target of climate neutrality by 2050, the electricity system needs huge investments in new storage capacities, renewable energy generation and grid infrastructure. However, such investments require a rigorous quantification of the uncertain future, especially of electricity prices for horizons ranging from months to years. Due to sector coupling, e.g., via electric vehicles and power-to-heat systems, the role of mid- and long-term probabilistic – or distributional – electricity price forecasting (EPF) will become even more important in the coming decades. Yet, the relevant literature is very scarce. Only 8% of EPF studies concern horizons beyond the day-ahead and less than 1% provide the so much needed mid- and long-term distributional forecasts.

It is exactly the aim of the **PRIORITY** project to address this challenge and provide methods and computational tools for ***PRobabilistic mid- and long-term prIce fORecasting In electriciTY markets***. We will develop deep neural networks, gradient boosting machines, regularization techniques and regime-switching models. Furthermore, we will provide forecasting approaches based on supply and demand curves, and insights from fundamental power market models under uncertainty. Finally, we will develop novel distributional combination and aggregation methods. All this for horizons ranging from months to years.

The project is interdisciplinary in nature. From the perspective of basic research it will contribute to a number of disciplines ranging from Computer Science, Computational Statistics and Economics & Finance to Electrical Engineering. From the utilitarian point of view, the project will contribute to more efficient risk management and mid- and long-term decision support in the context of energy transition. The latter is at the heart of the *European Green Deal* and in line with the EU's commitment to global climate action under the Paris Agreement. Reaching climate neutrality is our **PRIORITY**.