

Call for Papers

Special Issue of *Journal of Forecasting*

Forecasting carbon prices in an integrated market network

Submission deadline: 30 May 2025

Guest Editors

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Background and Topics

The significance of accurate carbon price forecasts is underscored by the urgency of climate change and the pivotal role carbon markets play in global efforts to mitigate its effects. Accurate forecasting is important for policymakers, investors, and businesses, aiding them in making informed decisions that align with environmental targets and economic objectives. As highlighted in the literature, carbon price volatility and non-linear characteristics, influenced by myriad factors, including policy changes, market dynamics, and external economic indicators, underscore the importance of robust forecasting models. Such models support the strategic allocation of resources towards low-carbon technologies and guide the regulatory adjustments necessary for maintaining market stability and efficiency .

In the area of carbon price forecasting, a significant body of literature has developed, ranging from traditional econometric models to advanced machine learning and hybrid approaches. Early research primarily utilized traditional econometric models such as ARMA-GARCH and regime-switching models (e.g., Benz and Trück, 2009; Chevallier, 2011; Byun and Cho, 2013; Sanin et al., 2015). While these models are effective for linear or stationary data, they often fail to address carbon prices' nonlinear, non-stationary, chaotic, and multifractal characteristics (e.g., Feng et al., 2011; Zhu et al., 2017). Recognizing these limitations, recent studies have increasingly turned to artificial intelligence models such as Artificial Neural Networks (ANN), Support Vector Machines (SVM), and Least Squares Support Vector Machines (LSSVM) for their ability to capture the nonlinear dynamics of carbon prices (e.g., Fan et al., 2015; Zhu et al., 2022; Zhu et al., 2023; Shahzad et al., 2023). Furthermore, hybrid models that combine different forecasting methodologies have shown improved accuracy by leveraging the strengths of each approach to better predict carbon prices (e.g., Zhang et al., 2017; Huang et al., 2021; Zhang and Wu, 2022; Chen et al., 2022).

To further enhance the accuracy of carbon price forecasts, research indicates a promising direction involves addressing the challenges of high nonlinearity and nonstationarity in carbon prices through data decomposition techniques and exploring more complex models that can capture the multi-faceted dynamics of carbon markets. However, there can be several other venues that are under investigation. There is a call for models that better integrate the impact of macroeconomic indicators, energy market dynamics, and policy changes on carbon prices. For example, exploring long-term forecasts and the influence of clean innovation patents on carbon price dynamics could provide valuable insights for policymakers and investors aiming for sustainable, carbon-neutral futures. At the

macro level, reaching net-zero carbon emissions is a complex challenge that requires comprehensive strategies across all sectors of the economy, where carbon pricing is a crucial tool. Therefore, considering the different carbon transition scenarios in framing the carbon pricing mechanisms around the globe can be useful in improving the predictions of carbon risks. Also, the complex and ongoing geopolitical issues can contribute to great uncertainty in the carbon markets through energy insecurity and volatile energy markets. Additionally, considering the launch of new carbon markets, their integration with international carbon markets, and the participation of retail investors in new blockchain-based carbon markets is important for enhancing carbon price forecasts.

This special issue aims to explore the latest developments in forecasting methods' theory and practical applications across all aspects of price risk of carbon allowances. This includes price, volatility, and extreme risk assessments within the framework of carbon market integration, not only within carbon markets but also across commodity, energy, and financial markets. We welcome submissions that either advance methodological approaches or offer novel empirical findings with significant implications for decision-making.

Submission Process

Authors should follow the journal's [guidelines](#) and submit their manuscripts by **30 May 2025**, via the journal's submission site:

<https://submission.wiley.com/journal/for>

All papers will be subject to the journal's standard review.

Other inquiries should be sent directly to the Guest Editors of the special issue: Hung Do (h.do@massey.ac.nz), Linh Nguyen (linh.nguyen2@nottingham.ac.uk), Thomas Walther (t.walther@uu.nl)

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