IEA Wind Task 51 Forecasting for the Weather Driven Energy System

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The energy system needs a range of forecast types for its operation in addition to the narrow wind power forecast. Therefore, the group behind the former IEA Wind Task 36 Forecasting for Wind Energy (running 6 years, from 2016-2021) has broadened its perspective on forecasting issues in part by reaching out to other IEA Technology Collaboration Programmes such as the ones for PV, hydropower, system integration, hydrogen etc. The three existing Work Packages (WPs) on NWP Improvements (WP1), Power and Uncertainty Forecasting (WP2) and optimal use of Forecasting Solutions (WP3), are complemented by thirteen work streams in a matrix structure.

The three work packages span three distinct areas of challenge in forecasting for the weather driven energy system. The first area is the continuing effort to improve the representation of physical processes in weather forecast models through both new high performance initializations and tailored parameterizations. The second area is the heterogeneity of the forecasters and end users, the full understanding of the uncertainties throughout the modelling chain and the incorporation of novel data into power forecasting algorithms. A third area is representation, communication, and use of these uncertainties to industry in forms that readily support decision-making in plant operations and electricity markets.
Task 51 will focus on facilitating communication and collaborations among international research groups engaged in the improvement of the accuracy and applicability of forecast models and their utility for the stakeholders in the wind industry, in the power sector and in the energy system.

The first two activities of Task 51 were (1) a workshop in Dublin on the State of the Art and Research Gaps for Forecasting. The results of the workshop will be compiled into a journal article, and (2) the publication of the IEA Recommended Practice for the Implementation of Renewable Energy Forecasting Solutions as an open access book by Elsevier. Other planned activities include further workshops on seasonal forecasting with emphasis on Dunkelflaute, storage and hydro in May 2023, a workshop on minute-scale forecasting (2024), and a workshop on extreme power system events (2025). The results of these interactive workshops will be compiled into a journal articles. Additionally, the Recommended Practice on Forecast Solution Selection will be updated to reflect the broader perspective.

1. Corinna Möhrlen, John Zack, Gregor Giebel (eds): IEA Wind Recommended Practice for the Implementation of Renewable Energy Forecasting Solutions. Elsevier, 348 pages, Nov. 2022. ISBN: 9780443186813. Download the individual chapters from https://www.sciencedirect.com/book/9780443186813/iea-wind-recommended-practice-for-the-implementation-of-renewable-energy-forecasting-solutions.