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Wind-solar complementarity and wind-solar storage



Overview

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Resource complementarity carries significant benefit to the power grid due to its smoothing effect on variable renewable resource output. In this paper, we analyse literature data to understand the role of wind-solar complementarity in future energy systems by evaluating its impact on variable.

Existing studies demonstrate insufficient integration and handling of source-load bilateral uncertainties in wind-solar-fossil fuel storage complementary systems, resulting in difficulties in balancing economy and low-carbon performance in their energy storage configuration. To address this.

A study from the Lappeenranta University of Technology states a deeper complementarity between solar and wind generation may favor renewables deployment reducing the need for stronger developments in storage technology. Combining solar with wind more widely could also reduce the need for ramping.

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