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VARIABILITY OF LONG TERM ESTIMATES OF HYDRO POWER GENERATION ON A EUROPEAN SCALE

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• Hydropower is the world’s most dominant (86%) source of renewable electrical energy.
• It strictly depends on the geography and weather peculiarity of locations where power plants are settled.
• We use machine learning techniques for producing long term estimates of hydro power capacity factors for all European countries based on future climate scenarios.

Estimated capacity factor of run-of-river hydro power generation over 2030.

RESULTS
Annual mean of HP generation obtained by considering the five climate models over the year 2050.

Anomalies in the run-of-river HP generation for the year 2050 (winter period DJF).

Variability of capacity factor over 20 years around 2050 for Portugal.

METHODOLOGY

Training

Prediction

Forecasted Climate data:

Regional Climate Models:

Global Climate Models:

Preprocessing data

Supervised learning (regression methods)

Model

Forecasted Capacity factor

Historical Climate data:

Anomaly CRU-NCEP REAL

Historical Energy data:

Capacity factor from EB70-E