**New power partnership to improve energy sector weather forecasting by 10 percent
ENFOR, Ørsted, DMI, and several other partners aim to enhance energy sector forecasts for solar and wind energy. The goal is to reduce imbalances and costs for system services that ensure the production and consumption of green electricity in Denmark.**

The weather forecast on TV or a mobile app is handy for deciding between shorts or rain gear. The same logic applies to energy traders and operators who use weather forecasts and associated energy forecasts to prepare Denmark's energy system for the conditions.

Mikkel Westenholz, Managing Director of the Danish company ENFOR, which currently provides about 15 percent of all energy forecasts to the global energy sector, explains:

"In the innovation project Weather2X, we aim to improve the models that convert weather into energy. By enhancing the accuracy of energy forecasts by up to ten percent, we can similarly optimize energy production from renewable sources and the services that support production when there is no sun or wind," says Mikkel Westenholz. He continues:

"We expect the new collaboration to save time and money for our key customers, who include both system operators and those trading electricity. This includes asset owners like Ørsted or Vattenfall – or electricity traders who do not own the production themselves. For all of them, inaccurate energy forecasts can cause gaps in the grid they buy and deliver power to, and these gaps need to be filled with electricity that becomes more expensive to purchase in the short term," says Mikkel Westenholz.

**Maintaining balance**
Weather2X is supported by the Energy Technology Development and Demonstration Program (EUDP) and includes partners like ENFOR, DTU Compute, DTU Wind & Energy Systems, DMI, Vattenfall, and Ørsted. Denmark's national energy cluster, Energy Cluster Denmark, facilitates the innovation project, which builds on experiences from a previous collaboration, the innovation project Eurogrid. In Eurogrid, Ørsted, ENFOR, DTU, and several other partners worked together on a digital forecasting platform that saved the energy sector a significant amount of money.

In the new project partnership, Weather2X, the participating companies and researchers will optimize energy forecasts based on experiences from Eurogrid, with an increased focus on open datasets among partners.

Jan Hvidberg, Lead Analyst at Ørsted, elaborates:

"Instead of extending the world with planks from a single point, you can do it with many planks from many regions. This can yield a good return in a short timeframe. I also hope we end up with very good energy forecasts at the end of the innovation project. For example, this past weekend, we stopped our power plants and delivered all the electricity from wind and our boiler plants. This requires having accurate weather forecasts to do, and we expect to get even better at this through Weather2X," says Jan Hvidberg.

**Measurements at the turbine top**DMI has supplied selected weather data to the energy sector for many years – a product they have long wanted to improve, explains Henrik Vedel, senior scientist at DMI:

"We lack the right type of measurements to compare with, so we can fine-tune our models. Normal meteorological observations of wind are made at 10 meters height, and temperature is observed at two meters height. Wind turbine blades spin at heights from approximately 50-250 meters. Up there, it blows more than near the ground, and the difference depends on the weather. DMI has virtually no observations from these heights, neither of the wind nor of the energy the turbines produce, which makes effective verification of our forecasts impossible," says Henrik Vedel, who as a partner in Weather2X now gains access to the energy sector's observations, including through measuring equipment on the turbines.

"This is one of the main reasons why DMI is part of the innovation project. Here we expect, together with our competent partners, to become better at predicting the wind up where the wind turbines operate. The same goes for forecasts of solar radiation across the Danish area. We expect that closer cooperation with the major players in the renewable energy sector will lead to improvements that benefit both the sector itself and DMI’s models," says Henrik Vedel.

Natural variations in electricity production from wind and solar lead to significant costs for balancing the Danish power grid, according to figures from Energinet. Society's costs for system services and reserve power, which ensure a stable power system, amounted to DKK 2.7 billion in 2022. According to partners in Weather2X, better forecasts will reduce these costs, and even small improvements will lead to significant savings, reducing expenses in a full transition to a renewable energy-based system.

**Facts about Weather2X**
The innovation project Weather2X is supported by the Energy Technology Development and Demonstration Program (EUDP). The project began in January 2024 and will end in December 2026.

The total budget is 14.4 million kroner, and the partner group consists of: ENFOR, DTU Compute, DTU Wind & Energy Systems, the Danish Meteorological Institute, Vattenfall, Ørsted, and Energy Cluster Denmark.