ExCo 92 Newsletter

October 2023

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ExCo 92 Recap

ExCo 92 took place at Koeniglicher Pferdestall in Hannover, Germany, 18-20 October 2023.

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ExCo 92 Recap

Roughly 50 participants attended the in-person meeting, whereas a handful participated online.
The participants included members from Austria, Canada, Denmark, European Commission, Finland, France, Ireland, Japan, Germany, Netherlands, Norway, South Korea, Spain, Sweden, Switzerland, USA, and WindEurope, together with the participation of Operating Agents (OAs) of several tasks.

Key decisions agreed in the meeting:

- A new Task (56) on Offshore Codes and Models (OC7)
- A new Task (57) on Joint Assessment of Models (JAM)
- A new ExCo meeting format for a 2024 trial period with one in-person meeting and two online meetings.

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ExCo 92 Newsletter

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Country Highlights

Austria

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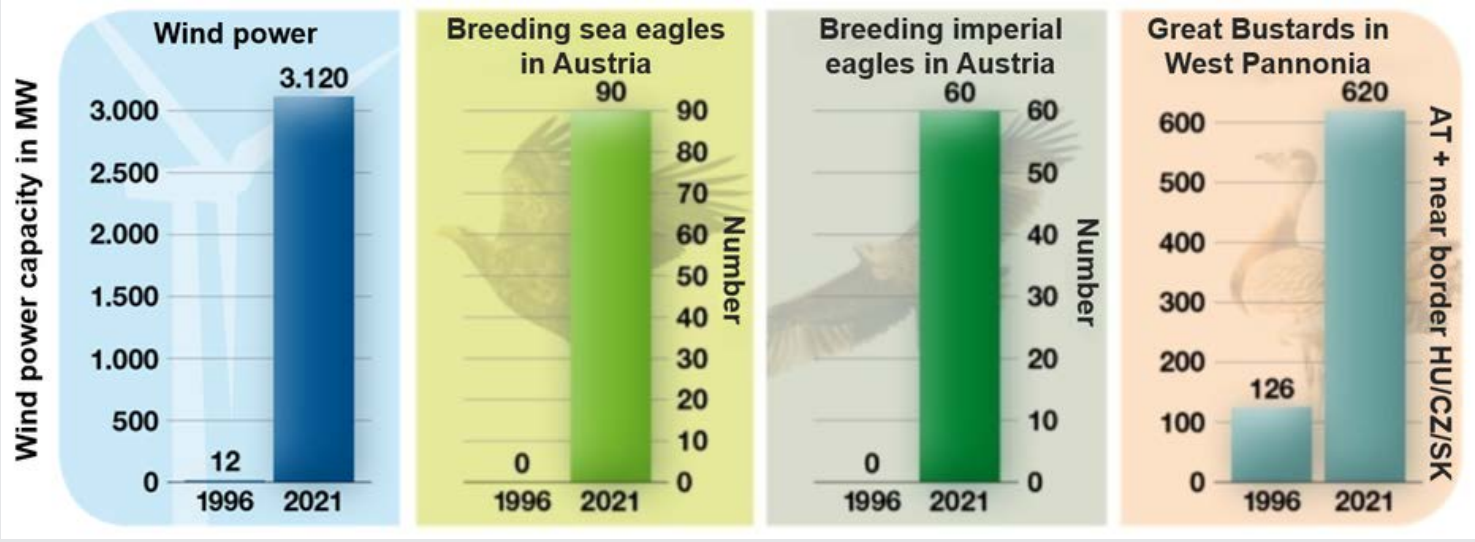
Key highlights

- Wind Power in 2023: Installed capacity reached 3.600 MW corresponding to 11% of electricity consumption (8 TWh/year).
- By using 2% of the overall territory for wind farms, 80TWh can be produced – more than the current Austrian electricity consumption.
- Experience from Eastern Austria shows: If wind farms are planned well, bird protection and wind power are not a contradiction (see chart).

Coexistance of endangered bird species and wind power.



Source:
https://windfakten.at/?xmlval_ID_KEY%5b0%5d=1271

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France

For more information please contact:

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IFP Energies Nouvelles
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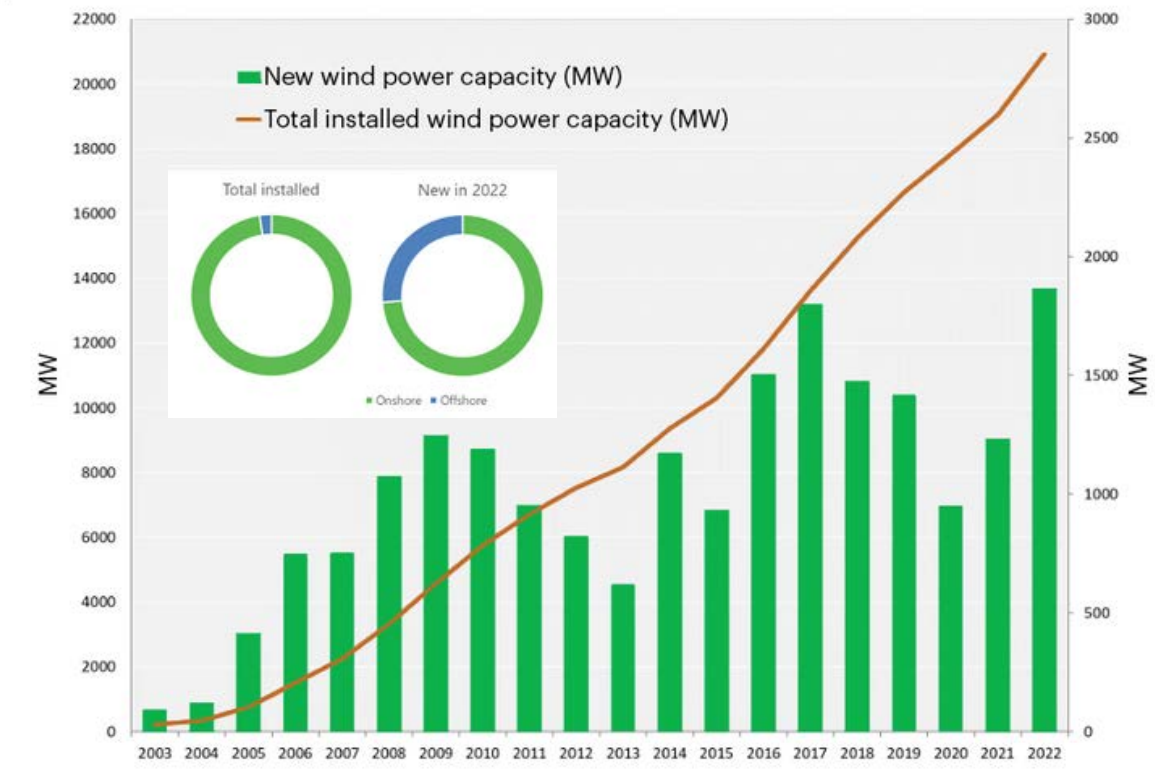
Key highlights

- Installed wind power capacity reached 20.9 GW in 2022, representing 8.3% of national electricity production (445.2 TWh).
- France's first offshore wind farm went into production off the coast of Saint Nazaire, with a capacity of 480 MW.
- The deployment of wind power in France is lagging behind the national multiannual energy plan. A new law enacted in March 2023 should speed up wind power projects.

Deployment of wind power with offshore now a part of overall capacity.



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Germany

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– Project Management Juelich (PtJ)
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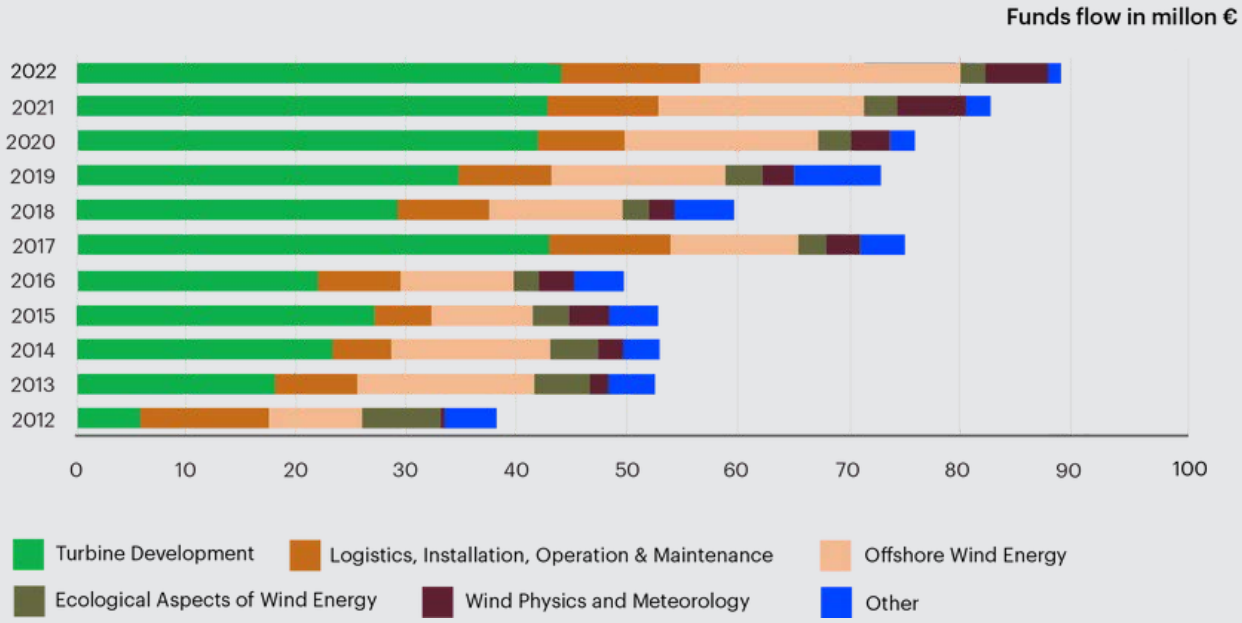
Key highlights

- The Federal Ministry for Economic Affairs and Climate Action (BMWK) has provided 89.19 million EUR (95.70 million USD) to fund 469 active and ongoing research projects in the field of wind energy in 2022.
- Additionally in 2022, BMWK started 107 new research projects with a new funding amount of 63.99 million EUR (68.66 million USD), including a topping-up amount of 4.24 million EUR (4.56 million USD) for ten projects that started in the years before.
- 2023: Manifold inaugurations of Wind Energy Test Facilities in Germany, like WINSENT, WiValdi, GWK+, 115 m+ Rotor Blade Test Rig.

Development of yearly funds flow in Germany.
Source: Federal Government Report on Energy Research (BMWK)



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Norway

Key highlights

- Ground rent tax of 35% to be implemented for onshore wind in 2024.
- New legislation for onshore wind means the end of NVE as a one-stop-shop.
- First action and allocation for offshore wind set to early 2024.

For more information please contact:

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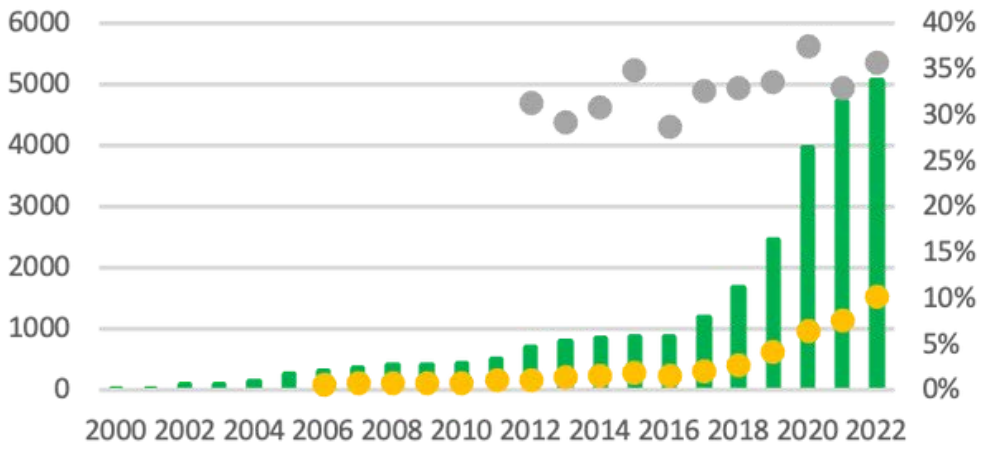
Wind Power Deployment.

Installed capacity (green), capacity factor (gray) and percentage of Norwegian electricity production (yellow).



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Sweden

For more information please contact:

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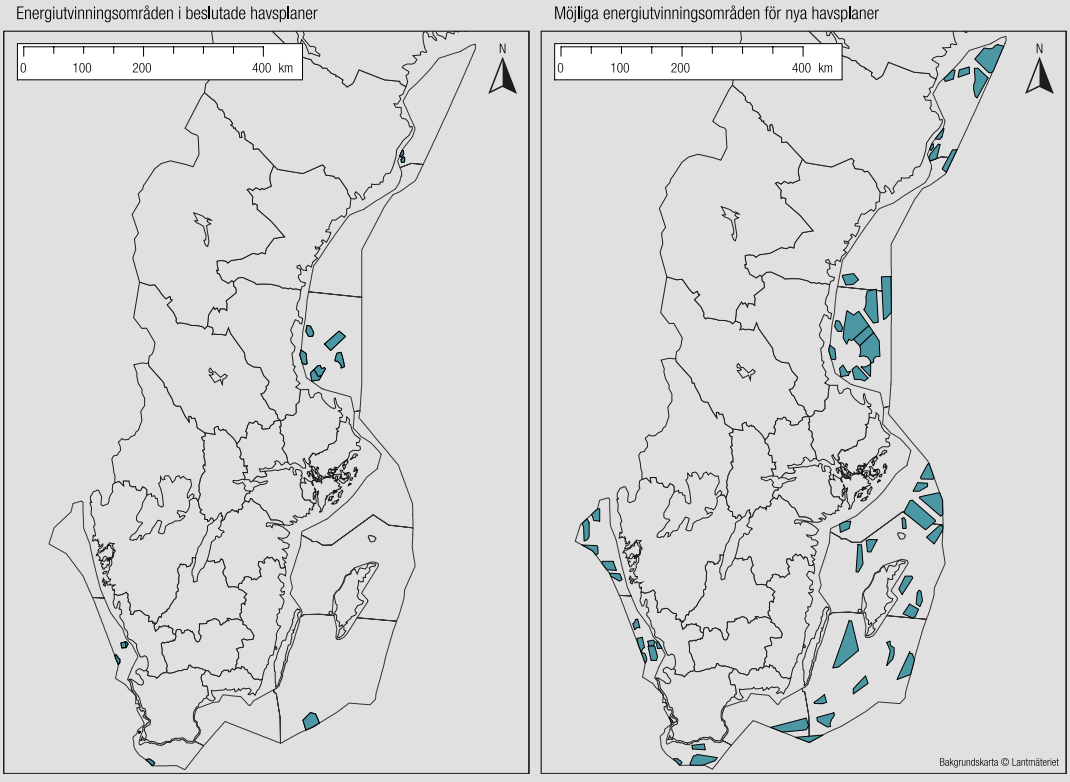
Key highlights

- New marine spatial planning areas for energy extractions enables an additional of 90 TWh of annual electricity production at the North Sea, the Baltic Sea and the Gulf of Bothnia.
- World's tallest commercial wooden wind turbine tower, with a height of 105 m have been installed in Sweden.
- The earlier proposed support scheme of suppression of the grid-connection costs to offshore wind power have been abandon.



Comparison of the decided and new suggested marine plans for energy extractions.

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Switzerland

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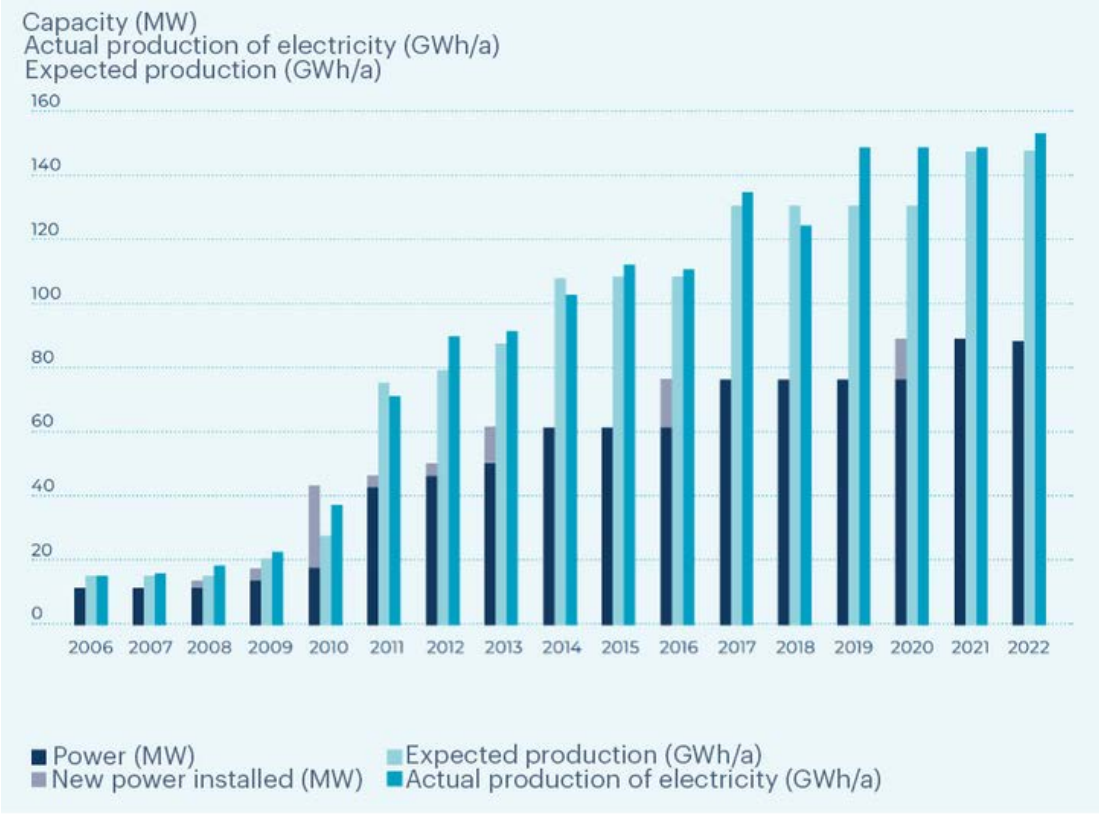
Key highlights

- Windexpress: Decision by parliament to fasten up realization time for wind energy projects with approved land use plan (law enters into force 1.1.2024).

- The regulatory sandbox makes it possible to test the added value of innovative technologies and business models. The objective is to allow the implementation of projects, so-called sandbox projects, that can partially deviate from the legal framework of the current Electricity Supply Act.

87 MW / 153 GWh in 2022 (0.3% electricity demand)
...increase expected...



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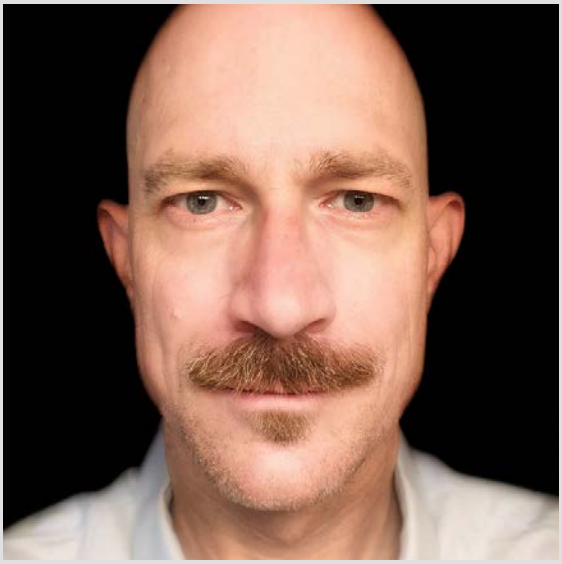
USA



For more information please contact:

Patrick Gilman
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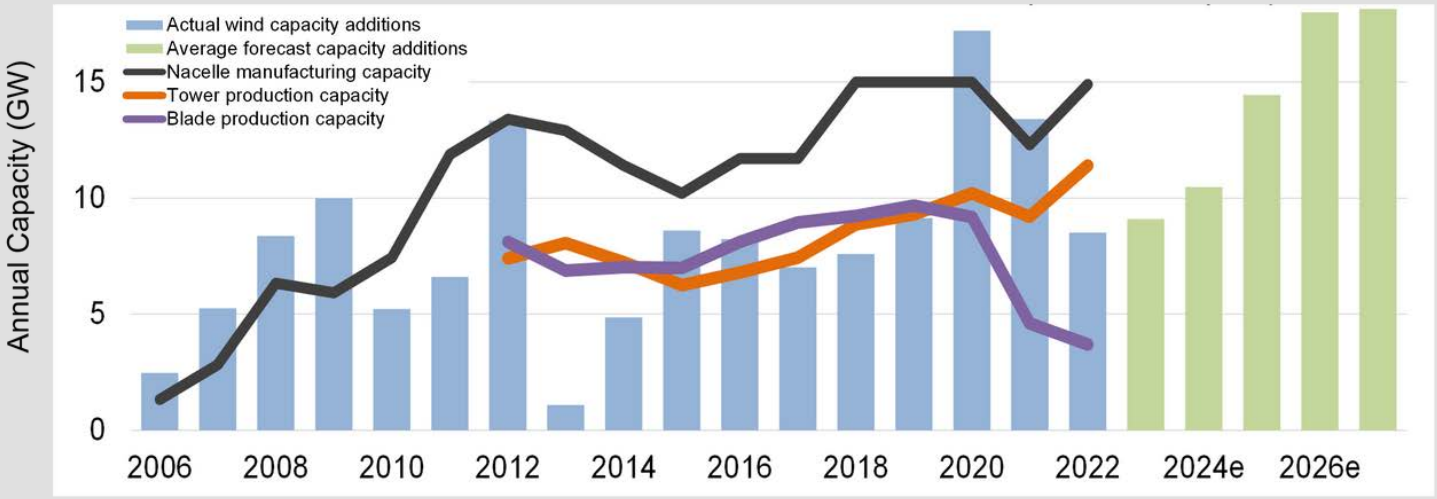
Key highlights

- Inflation Reduction Act (IRA) will boost deployment and supply chain, particularly for land-based wind.
- U.S. wind grid, health and climate benefits outweigh costs 5:1, but siting challenges particularly at local level becoming more acute.
- DOE recently awarded or announced over $120 million to support R&D and overcome deployment challenges.

IRA incentives are projected to reverse recent declines in U.S. wind deployment and supply chain.



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Task Highlights

Task 30

Offshore Code Comparison Collaboration, Continuation, with Correlation and unCertainty

For more information please contact:

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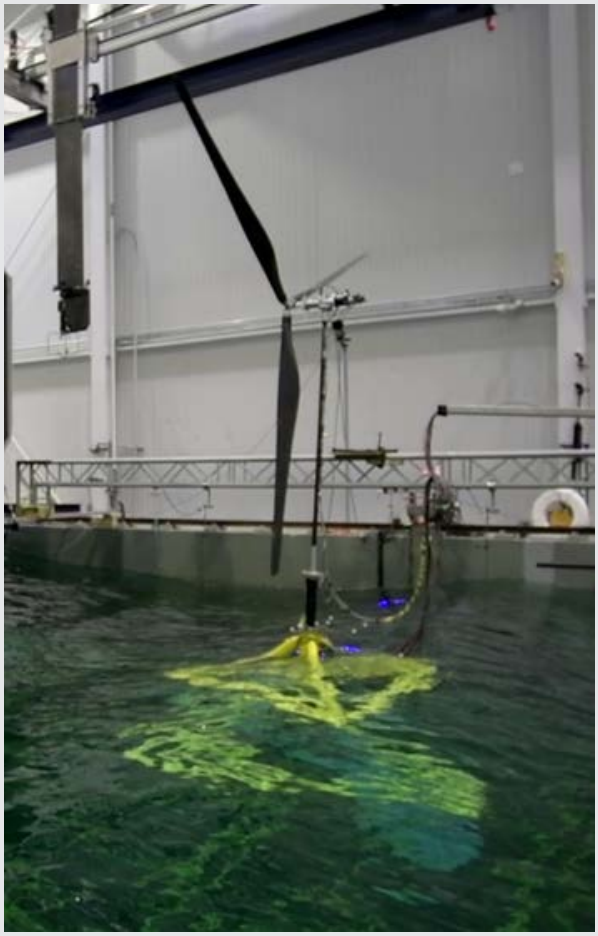

Key highlights

- In Phase IV of the OC6 project, participants employed 16 diverse software tools to assess the accuracy of hydrodynamic modeling approaches for representing the unique Tetrasparfloating wind design (seen in photo on left).
- The findings indicated that various hydrodynamic modeling methods exhibited no significant differences for the TetraSpar design; however, the study underscored the impact of the slender design and measurement umbilical on system motion sensitivity, which posed challenges to the accuracy of scaled testing results.
- Phase IV concludes the OC6 project, but a new OC7 project will be initiated in 2024 focused on outstanding validation needs to continue to advance floating offshore wind innovation and cost effectiveness.

TetraSpar 1:43 scaled model during testing at the University of Maine.

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Task 43
Wind Energy Digitalization

For more information please contact:

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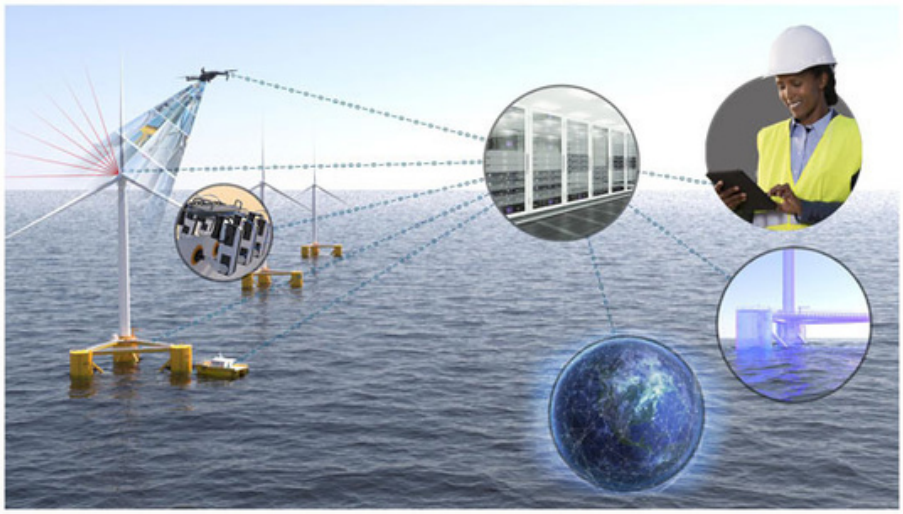
Key highlights

- In a paper recently published in the Wind Energy Science Journal, the "Grand challenges in the digitalisation of wind energy" were found to be (1) creating FAIR data frameworks; (2) connecting people and data to foster innovation; (3) enabling collaboration and competition between organisations.

- In a presentation at the WindEurope Annual Event 2023, a use-case-driven approach for demonstrating the added value of digitalisation in wind energy was developed, and priorities for digitalisation efforts were recommended.

- Task 43 has just been extended for another three years, with the goal of acting as a digital transformation catalyst by driving open collaboration within and beyond the wind community to deliver insights, recommendations, standards and tools in the key areas of data, culture, and competition.



Digitalisation in action. In this future floating wind energy plant, digitalisation enables a plant manager to take data-based decisions in real-time, increasing safety and reducing the cost of energy.

Image credit: NREL graphics team.

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Task 44
Wind Farm Flow Control

For more information please contact:

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Key highlights

- Generation and successful use of the wiki, where Task participants and external users can be an active author effortlessly. It is shown to be a useful tool for dissemination of research results and as a knowledge hub in the field of Wind Farm Flow Control (WFFC).

- Collaborated with over 19 authors from six member countries to write two journal article drafts which reviews existing work and establishes best practices for field assessment and forward uncertainty quantification (UQ) of WFFC.

- Hosted a series of collaborative WFFC workshops and invited presentations to promote outreach and collaboration with other ongoing WFC R&D activities.

Participants at the May 2023 Task 44 General Meeting.

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Task 47

TURBulent INflow Innovative Aerodynamics (TURBINIA)

For more information please contact:

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Netherlands Organisation for Applied Scientific Research (TNO)
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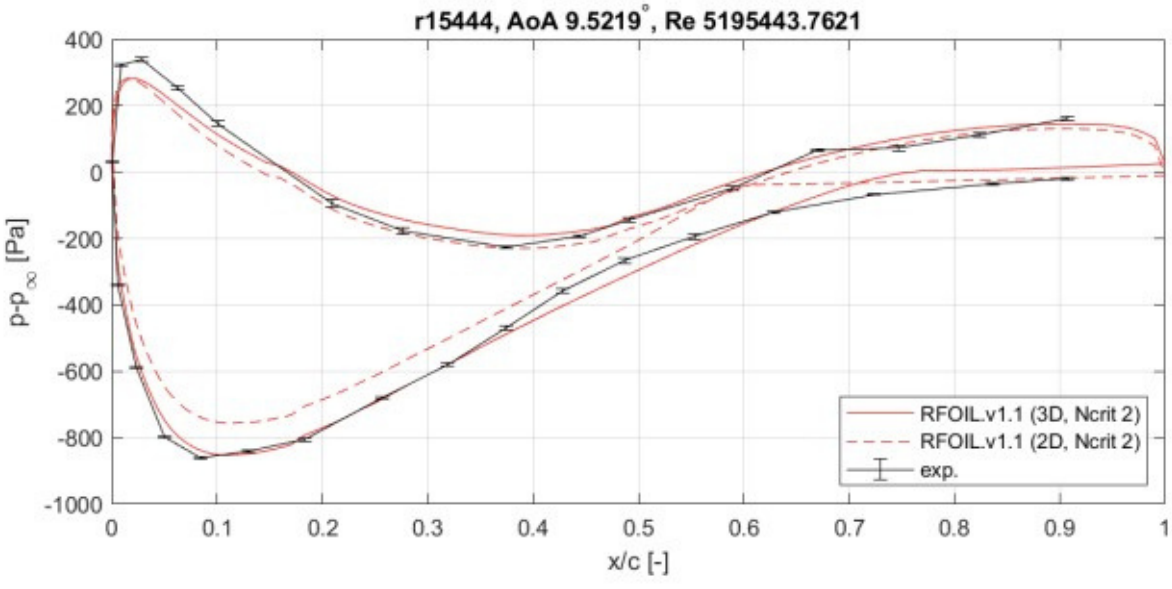
Key highlights

- Detailed aerodynamic measurements have been taken on a variety of turbines. The figure shows a measured pressure distribution on a 3.8MW turbine and the way how this measurement helped to improve the quality from an airfoil design code.
- Experiences on how to do detailed aerodynamic measurements are shared and documented.
- It is found that all industrial design methods systematically overestimate the load fluctuations (and so the fatigueloads) from wind shear. This problem is mainly relevant for large rotors with associated larger shear.



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Task 48
Airborne Wind Energy

For more information please contact:

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Airborne Wind Europe
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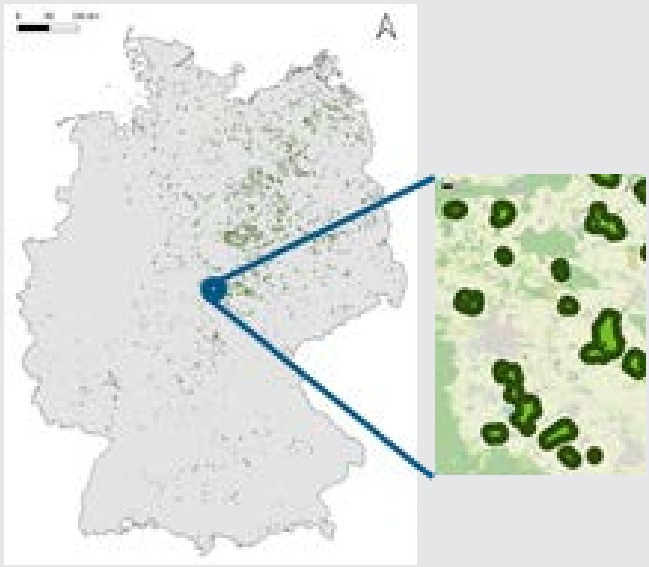
Key highlights

- A recent study shows that AWE has the potential to significantly reduce energy system costs.
- GIS based AWE site assessment finds about 100 GW additional RE potential in Germany.
- A White Paper on Airspace Integration has been published.



A recent GIS-based study conducted by BlueWiseMarine on sites and potentials finds that Germany has an AWE potential of several dozen Gigawatts – there are thousands of suitable sites.

Source: Site Identification Analysis for AWE Devices, Blue Wise Marine, IRL.

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Task 51

Forecasting for Weather Driven Energy System

For more information please contact:

Corinna Möhrlen
WEPROG
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Key highlights

- Workshop on sub-seasonal and seasonal forecasting for the Weather Driven Energy System. 1.5 days with 40 people. Entire workshop on YouTube.
- Over 200 participants in the probabilistic forecast game experiment. Experiment showed that there is need for improved understanding.
- Implementing the error measures of the IEA Recommended Practice as an IEC standard with IEC SC8A WG2. Official liaison between IEA Task 51 and IEC SC8A underway.

Participants of the Workshop on Seasonal Forecasting, University of Reading, 17/18 May 2023.

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Task 52

Large-Scale Deployment of Wind Lidar

For more information please contact:

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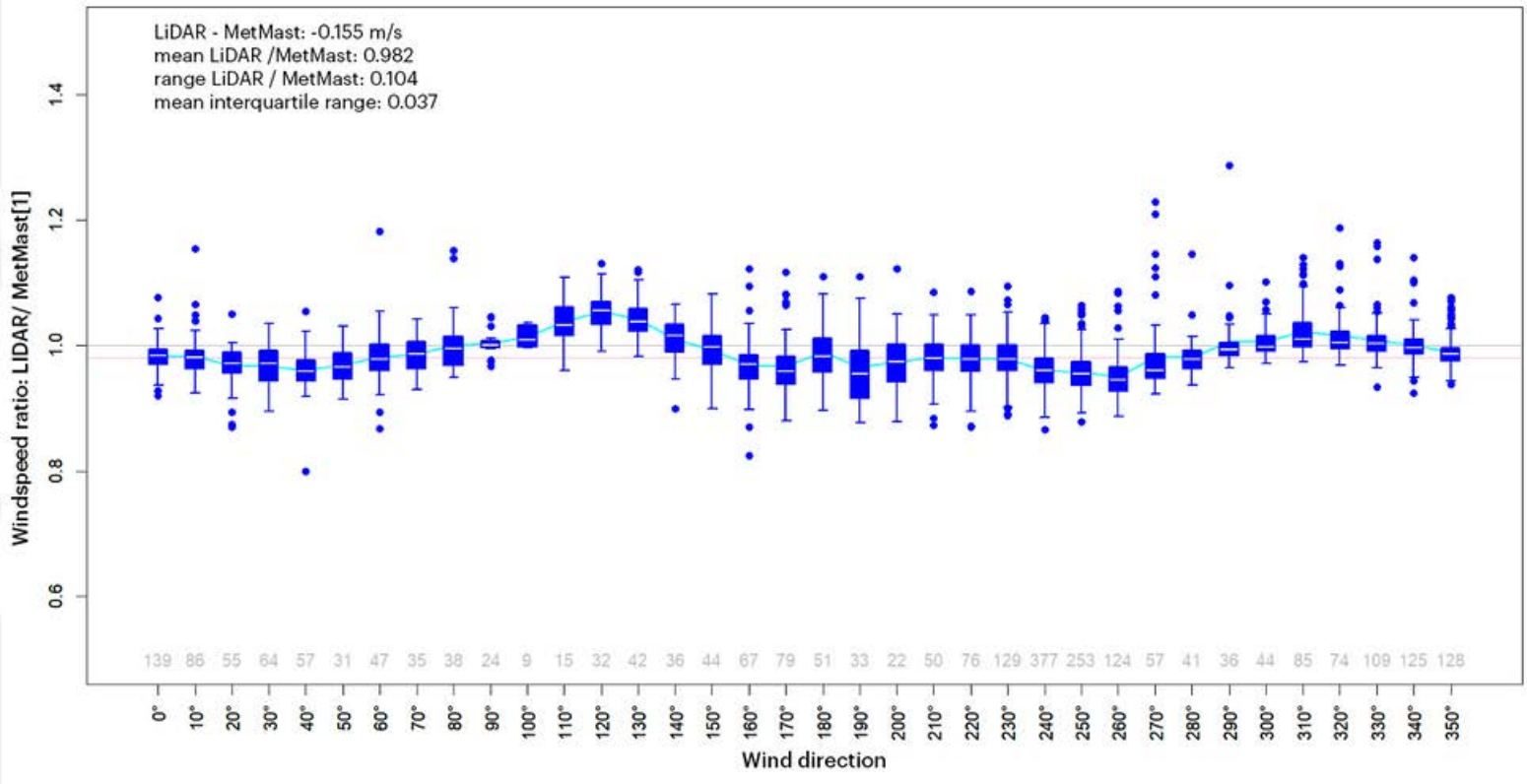
Key highlights

- Second year of Task 52 started with General Meeting 2023 (online) with invited presentations from Task 43 and 48 and plans for future collaboration.
- Lunch Seminar Series initiated with talks on four of our focus topics: Lidar Assisted Control, Complex Terrain, Scanning Lidar Offshore, Floating Lidar.
- Wind Lidar Ontology was published with dedicated GitHub Tool, and a manuscript describing the methodology prepared.



Excerpt from expert report on ground-based lidar in complex terrain.

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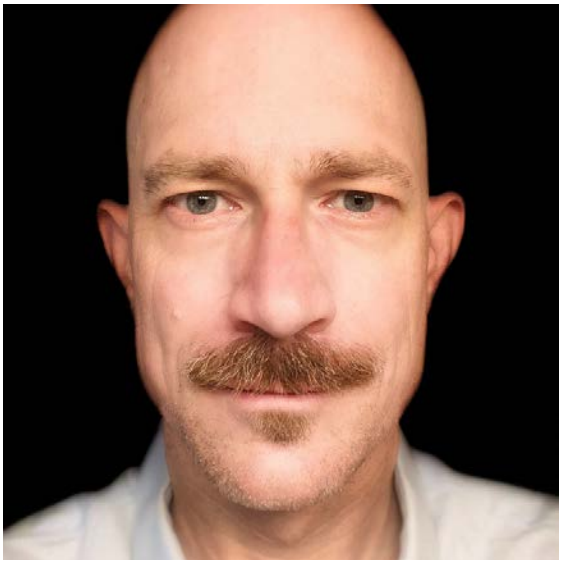
Task 53
Wind Energy Economics



For more information please contact:

Patrick Gilman
U.S. Department of Energy
patrick.gilman@ee.doe.gov

Key highlights

- Work ramping up on all six work packages.
- Three major 2023 publications: articles in high-impact journals focusing on the use of Contracts for Difference, offshore wind energy financing challenges, and with IRENA a collaborative international benchmark for wind energy finance costs.
- Potential for joint 2024 meetings with Task 25 and Hydrogen TCP.

Task 53 publications in 2023.

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Task 54
Cold Climate Wind

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Key highlights

- Development of test program for ice growth in icing wind tunnels. Goal is to create a standard test progam to improve comparability of results from different sites.
- Data gathering from real-world icing conditions, development of models and field validation procedure of blade heating systems. These will be used to provide better tooling for the industry to fit blade heating systems to real-world operting conditions, ultimately reducing operating losses in icing conditions.
- Industry workshops at winterwind 2023 conference collected 60 participants for 55 different organizations. Topics discussed were Performance envelopes for blade heating systems, cold climate offshore and icing impacts on markets, the input of these discussions is used to shape Task 54 work plan.

Workshop at Winterwind 2023 conference, discussing the blade heating systems.

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Task 57
JAM

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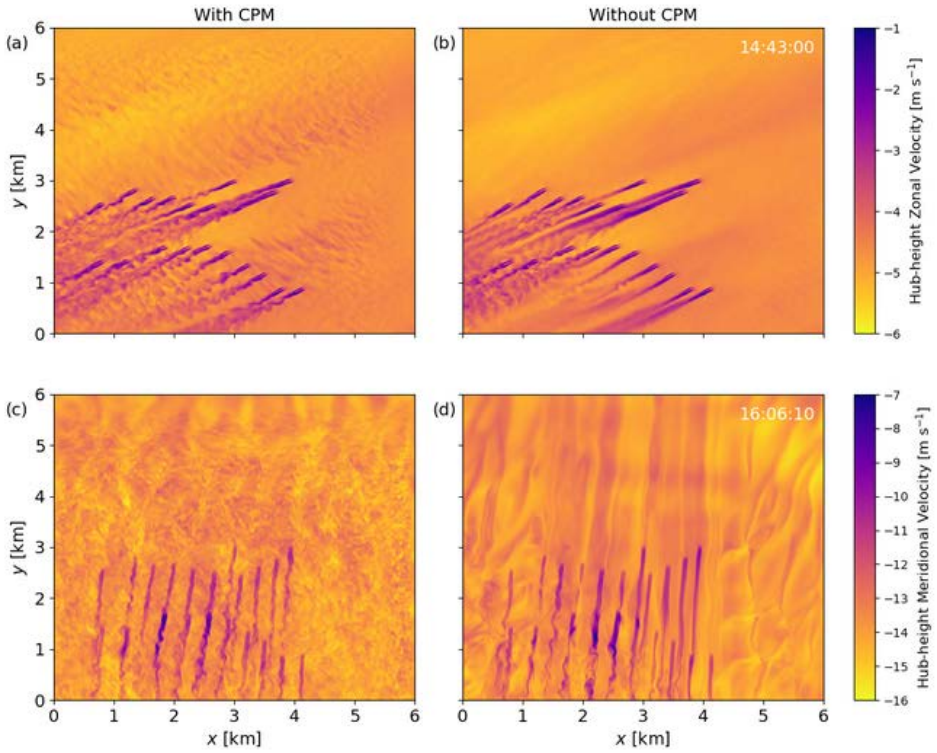
Key highlights

- JAM (Joint Assessment of Models) is a new Task that focuses on the assessment of inflow, wind turbine and plant models using utility-scale datasets.
- Benchmarks will be standardized based on stakeholder input and will conclude with model assessment deep dives to identify critical model development needs.



The first benchmark will be based on the AWAKEN dataset and will cater to models of any fidelity: from steady-state to computational fluid dynamics, as exemplified to the left.

Image credit: Robert Arthur (LLNL).

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Misc.

Grand Challenges Videos

In-depth interview with Andy Clifton on the Grand Challenges of the Digitalisation of Wind Energy.
Watch here

Scientific challenges to characterizing the wind resource in the marine atmospheric boundary layer

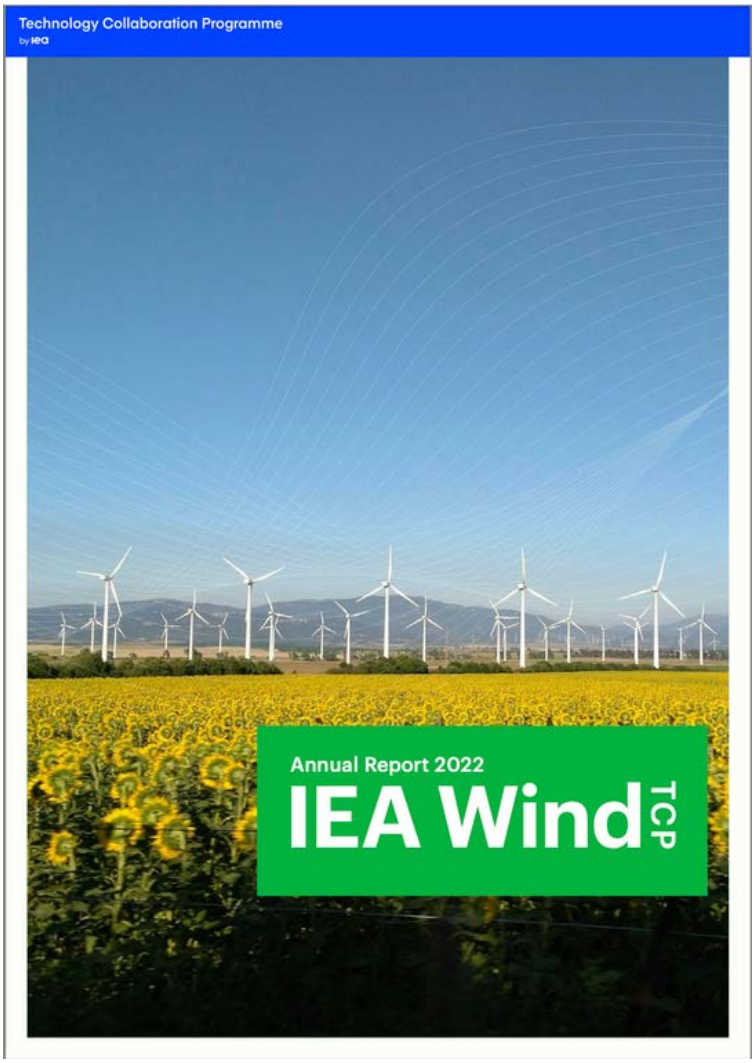
Interview with William J. Shaw
Watch here

Interview with Charlotte Hasager
Watch here

Executive Summary 2022

In case you missed it, the Executive Summary of the IEA Wind Annual Report 2022 is ready! Get the big picture of wind energy developments in just one read.

Download here



Video: Wind Energy Insights from the IEA Wind Annual Report 2022 - presented by Hannele Holttinen.

Watch here

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IEA Annual Report 2022

We are publishing the chapters of the IEA WIND TCP Annual Report 2022 on our Linkedin profile.

Quick tutorial: How to download and read it in full resolution.

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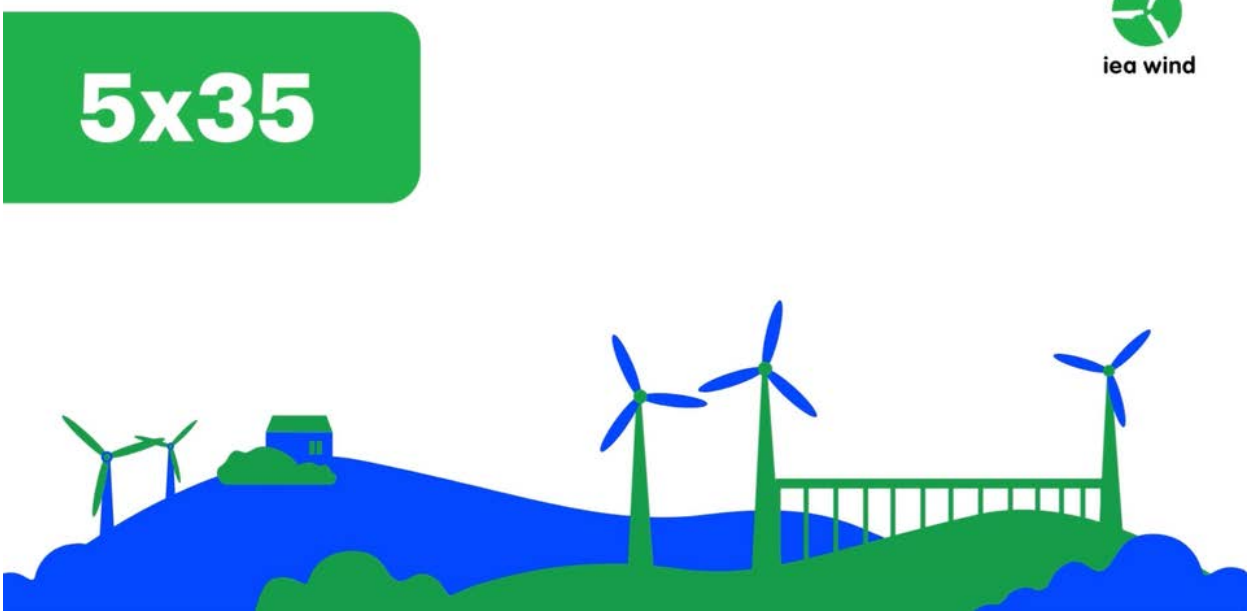
Song:5x35

This song was created during the isolation period of COVID-19 by a wind energy duo in the USA.
"Five times by thirty-five" was a rallying call for the challenge of how much wind energy would need to be deployed in just over a decade, to reach the President's 2035 clean energy goals.
White House fact sheet - President Biden has set an ambitious U.S. goal of achieving a carbon pollution-free power sector by 2035 and net zero emissions economy by no later than 2050.

Credits:
Raphael Tisch: Original Music, Production, Vocals.
Jim Ahlgrimm: Vocals and Lyrics.

Hear the song on our Youtube Channel



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ExCo 93 Meeting

Next ExCo meeting will take place in Italy, 21-24 May 2024

ExCo 93 will be held as a physical meeting at Bari, Italy; hosted by Politecnico. The secretariat will send detailed agenda and invitations in due course.

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https://iea-wind.org