

ExCo 94 Newsletter

June 2024



ExCo 94 Recap

ExCo 94 took place in Bari, Italy, from 22-24 May 2024.



ExCo 94 Recap

The meeting was hosted by Consiglio Nazionale delle Ricerche (CNR) and Ricerca sul Sistema Energetico (RSE) and held at Politecnico di Bari (POLIBA) Via Edoardo Orabona, 4, 70126 Bari, Italy.

Roughly 70 participants attended in total from around the world and each of the now 25 Tasks in the IEA Wind TCP was represented at the meeting.

The next ExCo (95) meeting will take place online in the fall of 2024. No date has been scheduled yet.



ExCo 94 Recap

Key decisions from the meeting include:

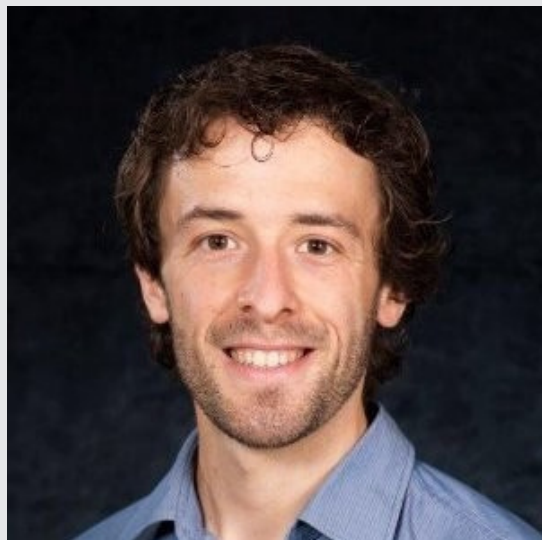
- **Approval of two new Topical Expert Meetings (TEMs).**
 - Navigating the Winds of Change (Communication).
 - Cybersecurity for Wind Energy Systems.
- **Approval of four new Tasks**
 - Harmonised LCA for Wind Power (CYCLEWIND).
 - Wind Research and Engagement Network (WREN).
 - Participation and Social Science of Wind Energy.
 - Variable Renewable Energy Hydrogen Integration.
- **Approval of two Task extensions**
 - Task 45. Recycling of Wind Turbine Blades Phase II.
 - Task 46. Erosion of Wind Turbine Blades Phase II.
- **Election of new Chair and Vice Chair.**
 - Patrick Gilman (Department of Energy, United States) was elected as Chair for a two-year term.
 - Stephan Barth (ForWind, Germany) was elected as Vice Chair for a two-year term.



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Task
Highlights

Task 11 Wind SCOUT



For more information please contact:

Lionel Perret

Planair SA

lionel.perret@planair.ch

Key highlights

- 8 Topical Expert Meetings (TEMs) organized in 2023-24 with more than 400 participants from industry, academia and public authorities.
- TEMs connect disciplines like economy-technology-planning-system modelling and brought together different communities like meteorology and wind energy.
- The most recent TEMs focused on LCA, reanalysis, Net Zero system modelling, RES based H2.



TEM111 Renalysis group picture at DTU. Photo by Simon Rubin.



Task 25

Design and Operation of Energy Systems
with Large Amounts of Variable Generation

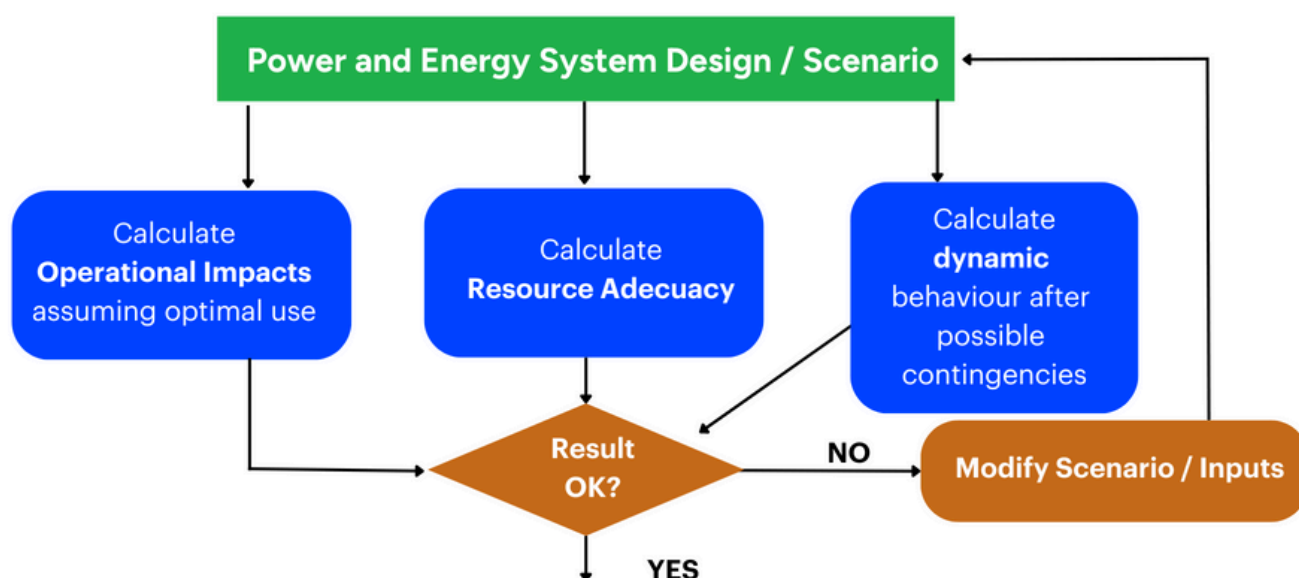


Key highlights

- Grand Challenge Grid - Meeting the needs of the Grid was revised, available at https://www.wind-energy-science.net/articles_and_preprints/grand-challenges.html
- Spring-24 meeting in Dublin with Net Zero Systems TEM and Task 53 Economics.

For more information please contact:

Hannele Holttinen
Recognis Oy
hannele.holttinen@recognis.fi



Analysing and presenting results

Recommended Practices for Wind/PV integration studies, RP16 Ed3
is currently in ExCo review and will be published soon.

Task 28

Social Science of Wind Energy Acceptance



For more information please contact:

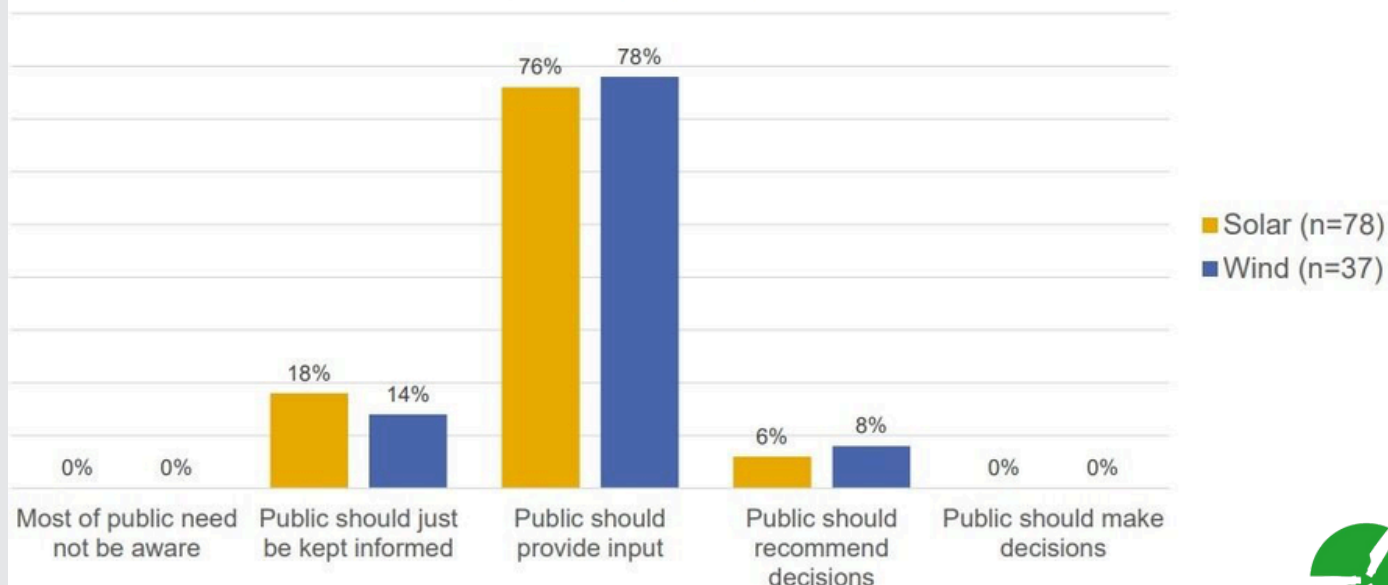
Suzanne Tegen
Center for the New Energy
Economy, Colorado State University
suzanne.tegen@colostate.edu

Key highlights

- A survey of wind developers shows “Community Opposition” is the leading cause of project cancelations. Yet developers still don’t believe community members should be able to make recommendations about their projects.
- IEA Wind ExCo has approved a new social science Task focused on proactive planning and community participation for wind energy projects.

How developers believe they should engage the public in wind energy planning?

Which is the most appropriate way to engage members of the public in decisions about utility-scale projects proposed in their community?



Source: <https://emp.lbl.gov/publications/survey-utility-scale-wind-and-solar>



Task 34

WREN-Working Together to Resolve Environmental Effects of Wind



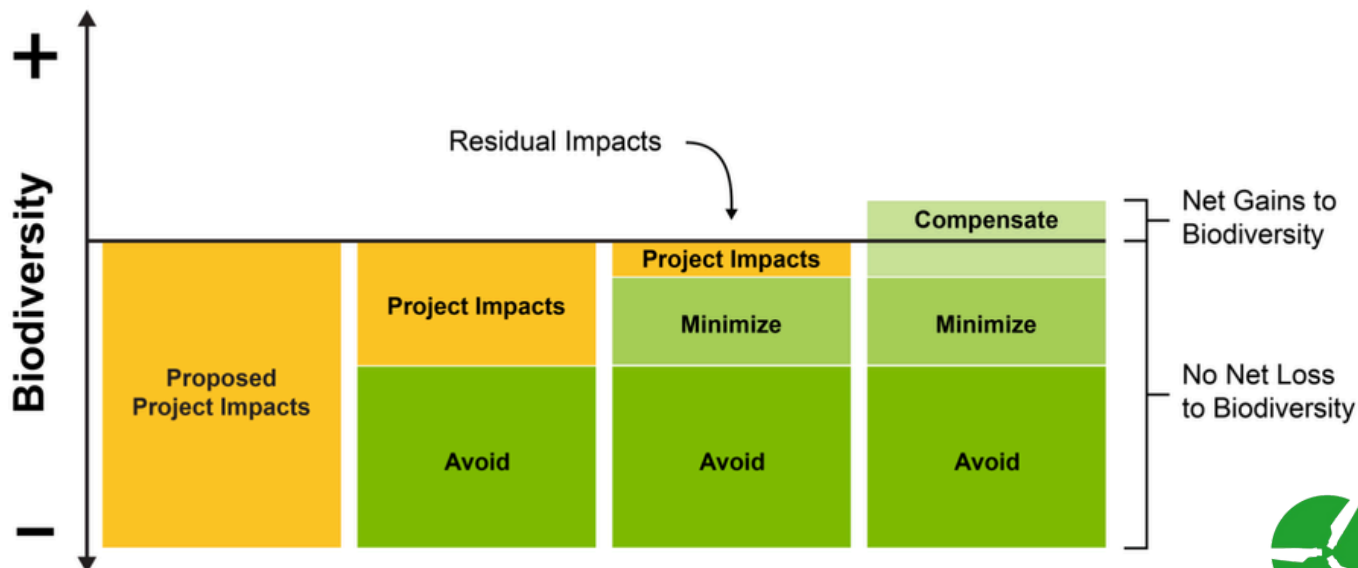
For more information please contact:

Cris Hein
National Renewable Energy Laboratory
cris.hein@nrel.gov

Key highlights

- A review of the mitigation hierarchy to help clarify the various terminology used for avoiding, minimizing, and compensating impacts to maintain or increase biodiversity.
- 81 technologies on the Wind Energy Monitoring and Minimization Technologies Tool for assessing the research status of existing and emerging technologies.
- Increased engagement with Latin America through translating several documents into Spanish and hosting the first Spanish webinar.

How each stage of the mitigation hierarchy can reduce biodiversity impacts from development. Adapted from Rio Tinto and Biodiversity 2008.



Task 39

Quiet Wind Turbine Technology



For more information please contact:

Eoin King

University of Galway

eoin.king@universityofgalway.ie

Franck Bertagnolio

DTU Wind and Energy Systems

frba@dtu.dk

Key highlights

- The Open Source Foundation (OSF) website on wind turbine noise regulation has been launched. It aims at mapping existing noise regulations internationally.
- The Wind Turbine Noise Code benchmark is concluded by a presentation at the WTN 2023 conference in Dublin. Predictions converge within 2dB, but discrepancies should be investigated further, e.g. with uncertainty quantification.
- Task 39 officially ends in June 2024. A new work programme for a new Task on wind turbine noise issues will be drafted in the next few months.

Front page of the OSF website

The screenshot shows the front page of the OSFHOME website for the project 'Wind Turbine Noise Regulations'. The page includes a navigation bar with 'OSFHOME' and a dropdown menu, and search, support, and donate options. The main content area displays the project title, contributors (Eugene McKeown), creation and update dates, and a description: 'A repository of information on the regulation of wind turbine noise in different jurisdictions'. There are sections for 'Wiki' (with a link to the project's website), 'Citation', 'Tags' (including 'Amplitude Modulation', 'Legislation Wind Turbine Noise', 'Regulating Wind Turbine Noise', 'Tonal Noise', and 'Wind Turbine Noise'), 'Files' (with a search filter), and 'Recent Activity' (showing Eugene McKeown adding a bibliography file).



Task 43

Wind Energy Digitalization



For more information please contact:

Sarah Barber

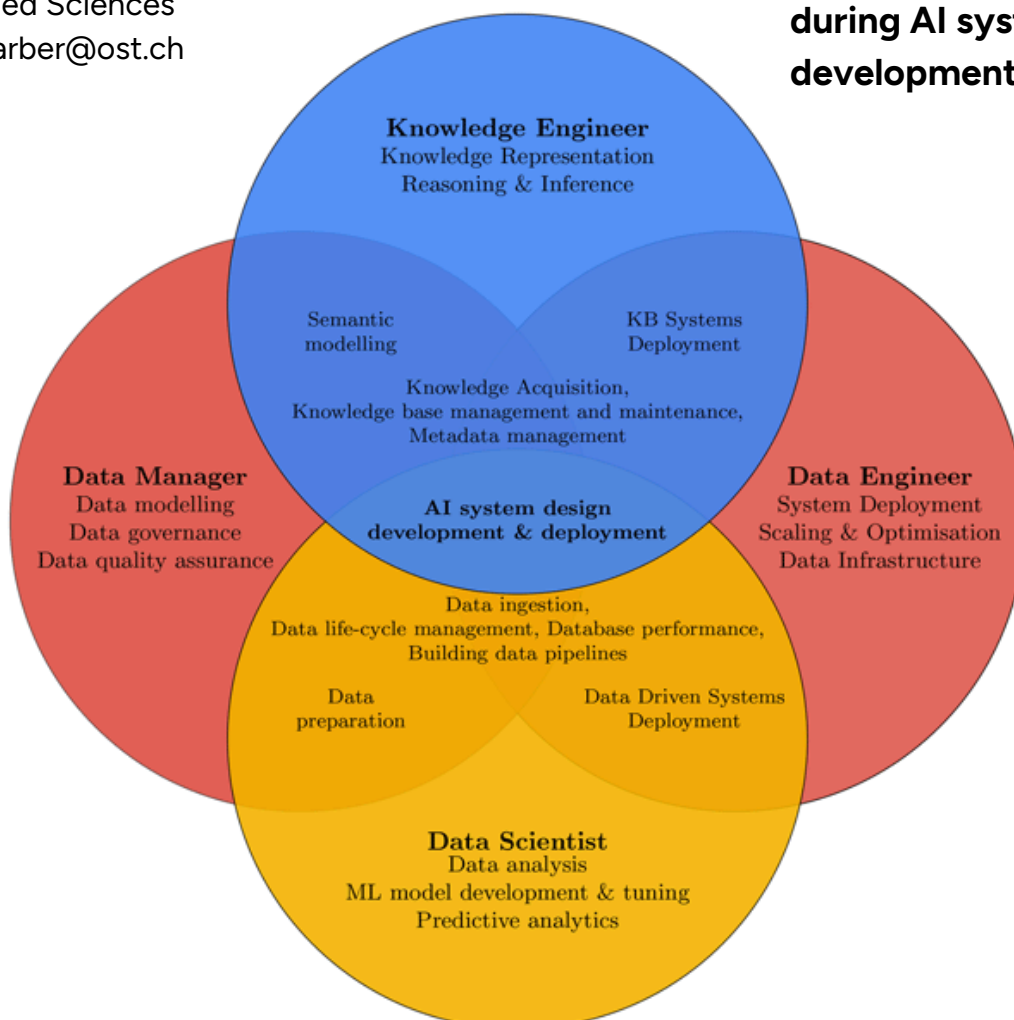
Eastern Switzerland University
of Applied Sciences

sarah.barber@ost.ch

Key highlights

- Phase 2 of the Task started in October 2023. Our focus is on the areas of data, culture, and cooperation.
- Review paper "Knowledge engineering in wind energy" published in the Wind Energy Science Journal.
- The IEA Wind Task 43 Culture Questionnaire is currently running, aiming to understand organisational culture and digitalisation in the wind energy sector.

Roles and activities overlap during AI system design, development, and deployment



Task 46

Erosion of Wind Turbine Blades



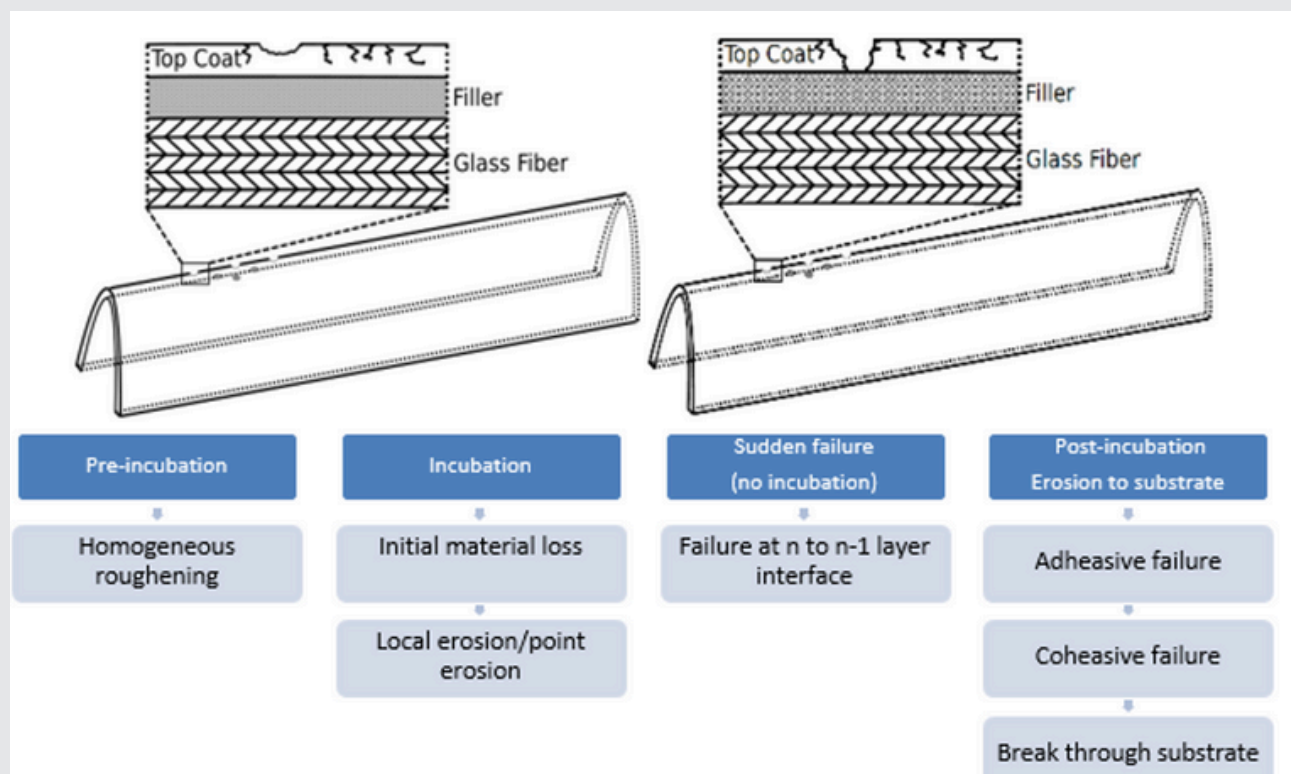
For more information please contact:

Charlotte Hasager
DTU Wind and Energy Systems
cbha@dtu.dk

Key highlights

- Erosion failure modes in leading edge systems is presented in several categories.
- Relations between erosion of blades and aerodynamic performance are investigated.
- Work towards an atlas for leading edge erosion risk is in progress.

Categorization of erosion failure modes in leading edge systems.



Task 47

TURBINIA, TURBulent Inflow
Innovative Aerodynamics



For more information please contact:

Gerard Schepers,
TNO Energy Transition
gerard.schepers@tno.nl

Key highlights

- Detailed aerodynamic measurements have been taken on a variety of turbines. The figure #1 shows measurement with a wake rake mounted on a Siemens Gamesa 4.3 MW turbine carried out within the Danish VIAs. Measurement with a wake rake can provide information on the viscous drag. They have never been performed yet on wind turbines.
- 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 fatigue loads) from wind shear. This problem is mainly relevant for large rotors with associated larger shear.

Figure #1:



Task 48

Airborne Wind Energy



For more information please contact:

Kristian Petrick
Airborne Wind Europe
kristian.petrick@airbornewindeurope.org

Key highlights

- The inclusion of AWE in Germany's Renewable Energy Act (EEG) is a major political breakthrough. The world's first AWE-specific remuneration scheme shows that the technology's relevance is finally being recognized by policy makers. This will help increasing visibility world-wide, reduce market risks for investors and trigger AWE-specific regulation.
- The first validated power curve marks a technological turning point for the energy sector. Together with the various Life Cycle Analyses (LCAs) carried out under Task 48 –which proof AWE's low material input life-cycle emissions – this achievement marks one of most important technological leaps in the energy sector in the last decades.
- Initial steps towards standardisation according to IEC 61400 have been initiated together with TC88 and stakeholders from Task 48. It is planned to work first on an AWE-specific standard for power performance measurement. Later, a new IEC 61400-80 series on AWE will be developed.

SkySails kite flying over its main test site in Klixbüll, Germany.



Task 52

Large-Scale Deployment
of Wind Lidar



For more information please contact:

Julia Gottschall

Fraunhofer IWES

julia.gottschall@iwes.fraunhofer.de

Key highlights

- With Spain the 14th participant joined Task 52 in March 2024; for all participating countries, [see our website](#).
- Results of the first datathon initiated as part of working group #6 on offshore scanning lidar applications shared; the results of in total four planned datathons will build the basis for the Report on Recommended Practices which is the deliverable of this group.
- Deliverable of working group #7 (Lidar Ontology) published; [see here for more details](#).

Group picture from General Meeting 2024 at Fraunhofer ENIQ premises in Berlin.



iea wind

Task 53

Wind Energy Economics



For more information please contact:

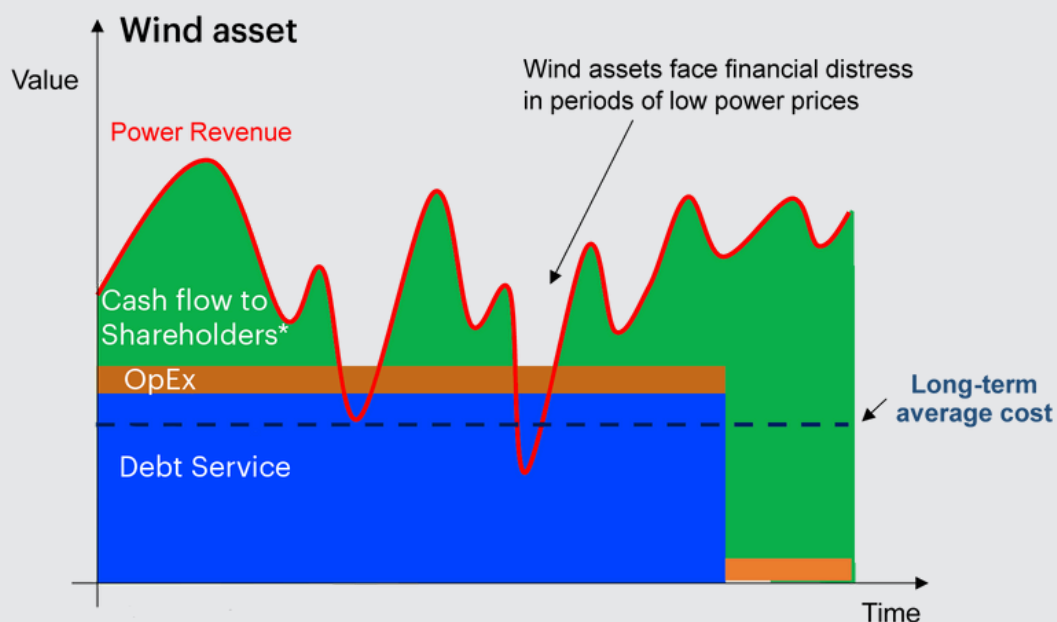
Tyler Stehly
National Renewable Energy Laboratory
tyler.stehly@nrel.gov

Philipp Beiter
National Renewable Energy Laboratory
philipp.beiter@nrel.gov

Key highlights

- Published a Nature Energy perspective piece on the role of contracts for differences for wind energy.
- Orchestrated external partner collaboration among the wind energy investment community and industry organizations including IRENA, Ørsted, DNV, and Eneco.
- Conducted first of a kind expert elicitation obtaining data on wind energy finance from investment professionals.

Wind Energy Cost and Revenue Profile:



Task 56

OC7 Project



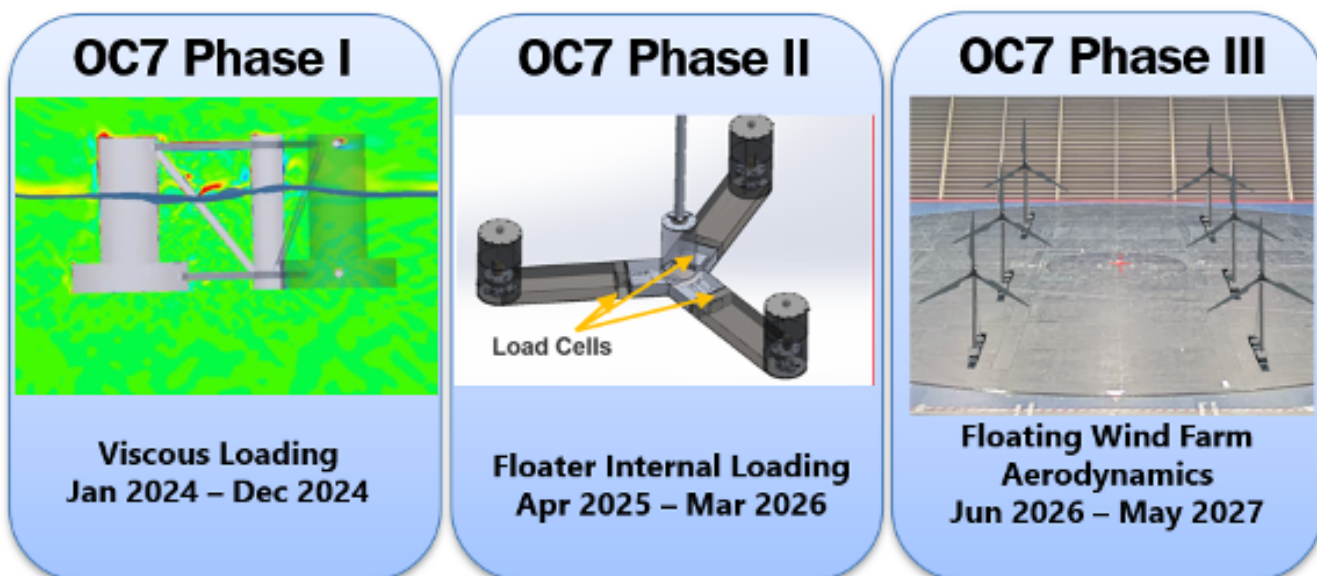
For more information please contact:

Amy Robertson
National Renewable Energy Laboratory
amy.robertson@nrel.gov

Key highlights

- The OC7 project was kicked off in 2024, building off successes of previous OC projects (OC3-OC6) with the continued goal of Verification and Validation of offshore design tools.
- The specific focus of OC7 is to ensure that these tools can adequately model the hydrodynamics of novel floating wind support structures, as well as their flexibility, and accurately predict loads in a floating wind farm at any location (addressing the impacts of wakes).
- Validation of one of three datasets in Phase I of the project has been completed, with the goal of developing recommendations on the best approaches to modeling hydrodynamics of complex offshore wind geometries.

The Three Phases of the OC7 Project



Task 57

JAM - Joint Assessment of Models



For more information please contact:

Paula Doubrawa

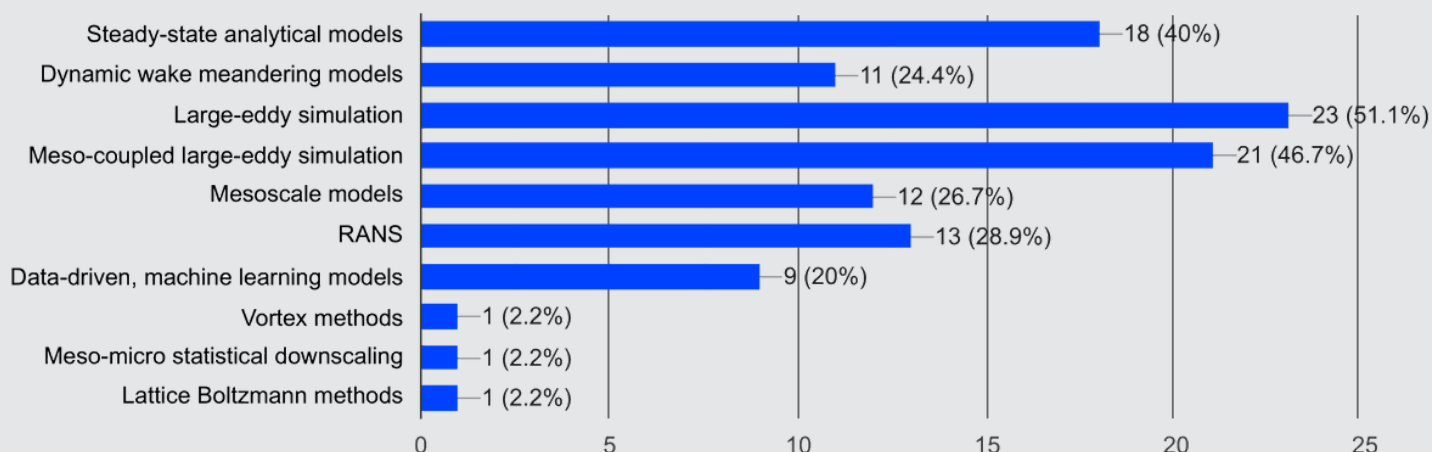
National Renewable Energy Laboratory

paula.doubrawa@nrel.gov

Key highlights

- JAM was launched in February 2024. The first model validation exercise was launched in May 2024: the AWAKEN wind plant wake benchmark.
- Survey results indicate that a wide variety of codes will be validated with JAM activities (Figure #1).

Figure #1



Task 60

CYCLEWIND - Harmonised Life
Cycle Assessment for Wind Power



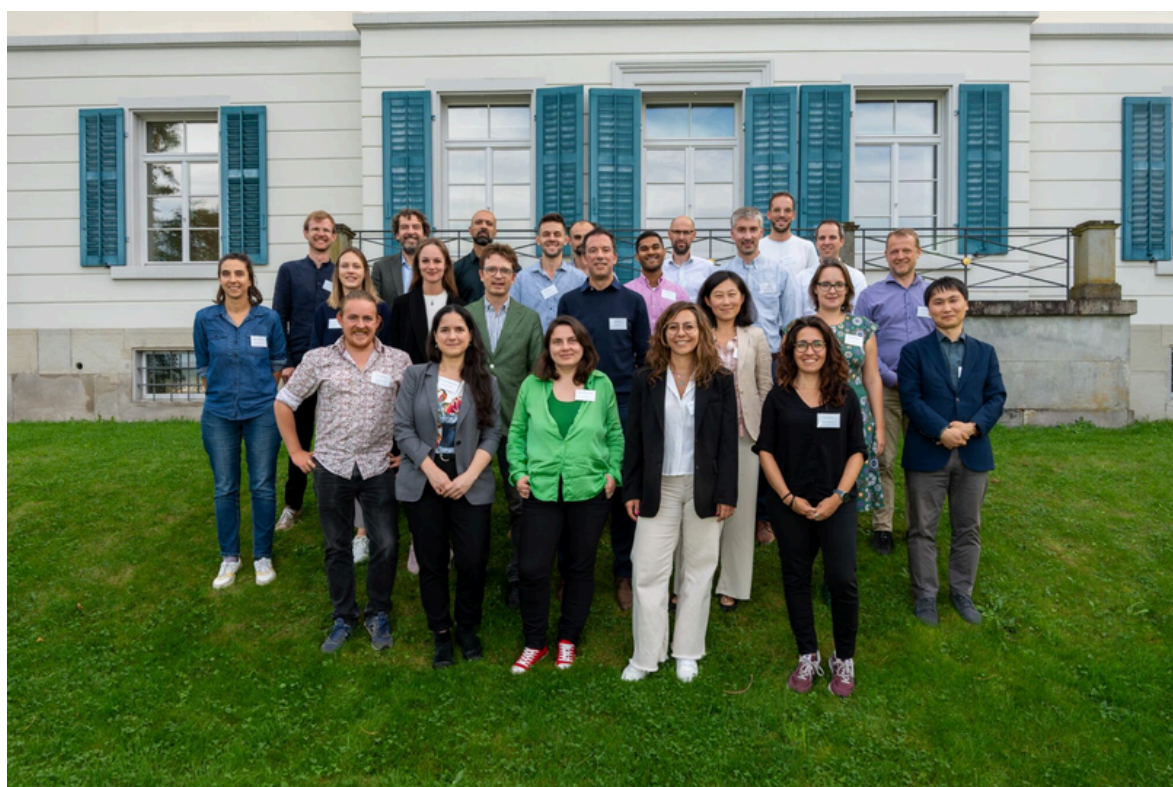
For more information please contact:

Cristina-Maria Iordan
SINTEF OCEAN
cristina-maria.iordan@sintef.no

Key highlights

- During the IEA Wind Task 11 TEM#105 in September 2023, global wind experts concluded that “There is a need for international collaboration in order to work towards harmonisation of environmental life cycle assessment of wind power. This collaboration shall include different stakeholder groups such as industry, academia and regulators.”
- The new proposed task, CYCLEWIND, aims to strengthen the competitiveness of wind power by enhancing the comparability of life-cycle assessment (LCA) studies and facilitating wind energy deployment through a harmonized framework for environmental assessment, recommended practices, and promoting data availability.
- The proposed term is for 4 years, starting with the 1st of January 2025, with Zurich University of Applied Sciences in Switzerland and SINTEF Ocean in Norway as the co-chairing institutions and countries for this Task.

IEA WIND Task 11 TEM#105 Meeting September 2023, Switzerland



Task 61

VRE-H2 Integration



For more information please contact:

Genevieve Starke
National Renewable Energy Laboratory
genevieve.starke@nrel.gov

Key highlights

- From the results of TEM 106: Hydrogen in a 100% Renewable Energy System - Presented a novel joint-TCP Task proposal between the Wind, PVPS and Hydrogen TCPs on clean hydrogen.
- This collaboration involves each TCP supporting its own task contributing to common outcomes from the joint effort. The goal is to establish a baseline for system integration considerations across wind, solar and hydrogen technologies.
- The proposal was approved to move ahead as an IEA Wind Task, joining the PVPS and H2 Tasks that were already approved. The Task is now actively recruiting participants.

In-person participants to TEM 106: Hydrogen in a 100% Renewable Energy System.





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<https://iea-wind.org>