# ETIPWind Steering Committee meeting





## Welcome & Introduction



## Objectives of the meeting

- > To agree on a common wind energy R&I vision.
- To discuss the preliminary list of R&I priorities defined by the Working Groups.
- To take stock of this first year and get your expectations for the next ones.



**Election of a new ETIPWind Steering Committee** 

9 additional experts elected



## ETIPWind relaunch event in Brussels

More than 120 attendees, 9 EU and national policymakers





## ETIPWind in the SET Plan Conference

Presentation, booth and meeting with Rosalinde van der Vlies (DG RTD)

## ETIPWIND'S RESPONSE TO THE EU CONSULTATION ON THE HORIZON EUROPE STRATEGIC PLAN 2025-2027

#### FEBRUARY 2023

The European Technology and Innovation Platform on Wind energy (ETIPWind) welcomes the opportunity to input the Horizon Europe Strategic Plan 2025-2027.

<u>ETIPWind</u> provides a public platform to wind energy stakeholders to identify common Research & Innovation (R&I) priorities and to foster breakthrough innovations in the sector. It informs policymakers on how to maintain Europe's global leadership in wind energy technology so that wind delivers on the EU's climate and energy objectives.

ETIPWind recognises that the EU R&I policies have been instrumental in advancing wind energy technology in Europe, clearly envisioning its significant role in todays and future energy system. However, the wind supply chain is currently struggling as a consequence of a various factors stemming from the poly-crises Europe is facing. First from the pandemic, then from the uneven global recovery and the subsequent supply chain bottlenecks, then from the energy prices spike due to the invasion of Ukraine, and finally due to assertive US industrial policies.

This requires an EU-coordinated policy response, including R&I policies to secure Europe's global technology leadership. There has never been a stronger need for a forward-looking EU industrial R&I policy than today. In the next few years, the economic shape of the net zero age will be firmly set, in the own words of the EU's President Ursula von der Leyen. Horizon Europe must be part of this.

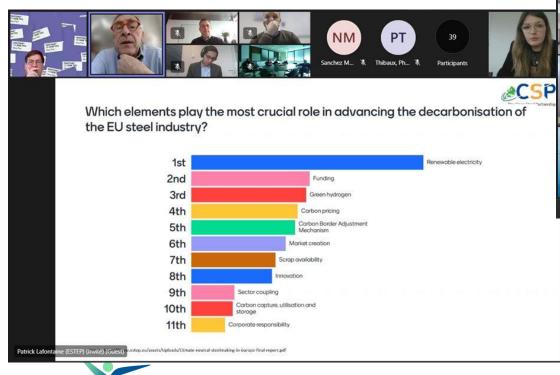
the Horizon Europe strategic plan 2025-2027

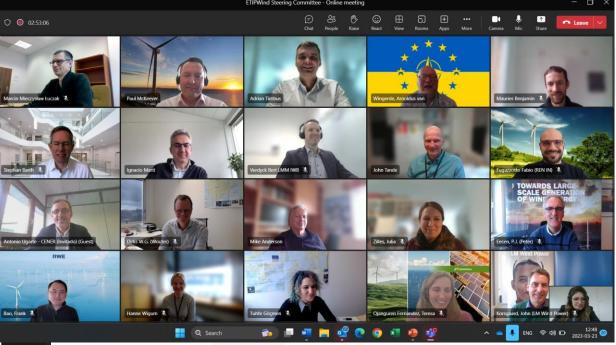


Workshop with the Clean Steel Partnership

PLATFORM ON WIND ENERGY

To discuss green steel production and circularity





## ETIPWind Gap analysis conducted by the Steering Committee

6 Working Groups to compare the Horizon Europe projects and calls with ETIPWind roadmap

etipwind.eu

## Meeting with the CTOs in Copenhagen

11 CTOs to discuss the state of play of innovation in the sector and top R&I priorities

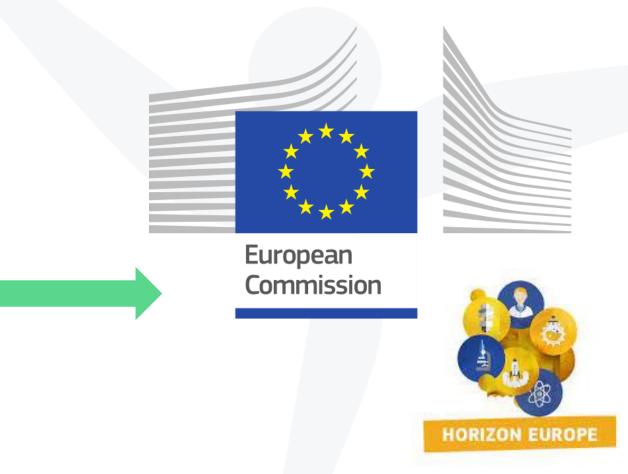


## Public workshop in Brussels to consult on R&I priorities FO attendage so arganised by the Furence

50 attendees, co-organised by the European Commission

## Next milestone: the Strategic R&I Agenda





### Objective: to define R&I priorities for 2025-2027

**ETIPWind** Strategic R&I Agenda

**ETIPWind Technology Roadmap** 













**EERA** IP WIND



2025-2027

2027-2035

2050



## Agenda

15:00-15:10	Welcome & Introduction	Adrian Timbus, ETIPWind Chair
15:10-15:20	Keynote speech from the European Commission	Enrico Degiorgis, DG RTD, European Commission
15:20-16:00	<ul> <li>Wind energy R&amp;I vision</li> <li>Presentation of the key points</li> <li>Open discussion</li> </ul>	Adrian Timbus, ETIPWind Chair
16:00-16:15	Short break	
16:15-17:40	<ul> <li>Update of the Strategic R&amp;I Agenda</li> <li>Introduction</li> <li>Presentation R&amp;I priorities and discussion (15mn/WG)</li> </ul>	ETIPWind Working Group Chair and Co-chairs
17:40-17:55	Overview of Q3-Q4 activities and discussion on upcoming activities  Next deliverables and milestones Open discussion on collaborations and outreach	ETIPWind Secretariat
17:55-18:00	Conclusion and next steps	Adrian Timbus, ETIPWind Chair

## Welcome in the ETIPWind Steering Committee

> Observer: Nicolas Quiévy, Wind Onshore Technology Manager, Engie.



## Keynote speech from the European Commission





## EU wind energy and R&I policy

#### **ETIP Wind Steering Committee meeting**

Amsterdam – 12 September 2023

#### Enrico Degiorgis

DG Research & Innovation Clean Planet Directorate Unit Clean Energy Transition Policy Officer

#### Recent EU policy and legislative developments

#### **Net-Zero Industry Act (NZIA)**

- Commission <u>proposal for a regulation</u> adopted on 16 March 2023
- Onshore wind and offshore renewables identified among the 8 'Strategic Net-Zero Technologies'
- Strategic Net-Zero Technologies:
  - Objective: scale up manufacturing in the EU to provide at least 40% of the EU's annual deployment needs by 2030
  - Particular support measures (simpler and faster permitting, sustainability and resilience criteria in auctions, possibility to become Strategic Net-Zero Technology project)
- Net-Zero Technologies: One-stop shop, online access to info, faster permitting (12-18 months);
   Innovation Regulatory Sandboxes; European Net-Zero Industry Academies
- Legislative process ongoing



#### Recent EU policy and legislative developments

#### Renewable Energy Directive – revision

- Provisional agreement reached between the European Parliament and the Council to reinforce the EU Renewable Energy Directive (30 March 2023)
- Agreement to be formally endorsed by the Parliament and Council EP plenary in autumn 2023
- EU's binding renewable target for 2030: minimum of 42.5% (up from the current 32%). With an additional indicative 2.5%
- Indicative target of 5% of new installed renewable energy capacity to be covered by innovative technologies at Member State level
- Accelerated permitting procedures, acceleration areas, overriding public interest



#### Recent EU policy and legislative developments

#### **Critical Raw Materials Act**

- Commission proposal for a regulation adopted on 16 March 2023
- List of Critical Raw Materials (CRM) and Strategic Raw Materials (SRM) is defined
- Towards more SRM supply security 2030 benchmarks
  - EU's extraction capacity cover at least 10% of the EU's SRM consumption
  - EU's processing capacity cover at least 40% of the EU's SRM consumption
  - EU's recycling capacity cover at least 15% of the EU's SRM consumption
- Towards more SRM diversification of supply 2030 benchmarks
  - Not more than 65% of EU consumption of each SRM should come from a single third country

To incentivise large-scale **recycling of permanent magnets**, the Act sets **requirements on recyclability and recycled** content.

EU countries will take measures to improve the collection of critical raw material-rich waste and ensure its recycling into secondary critical raw materials.

Legislative process ongoing: Council position adopted on 30.6.2023, EP committee on Industry, Research and Energy (ITRE) <u>amendments proposed</u>; ITRE adopted draft legislation of Elegislation plenary vote 11-14 September

#### Strategic Energy Technology (SET) Plan revamp

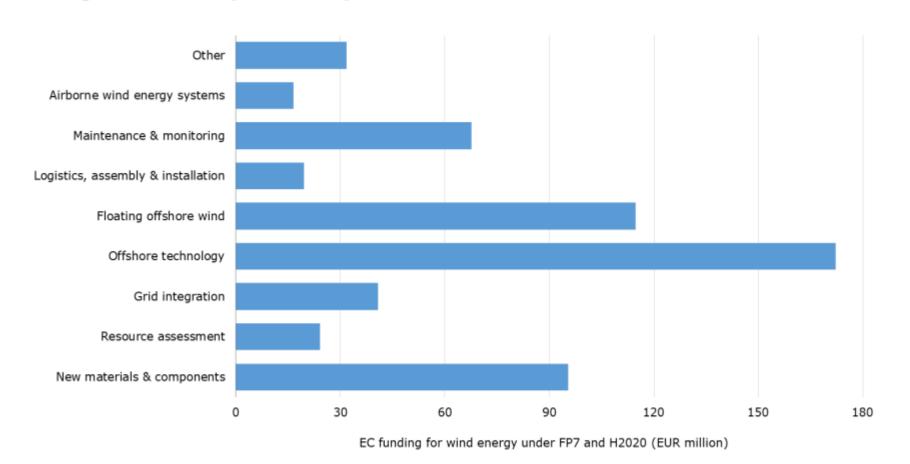
#### Three main **objectives**:

- Support the European Green Deal policies and strategies and make the SET Plan 'fit for 55', as well as embedding the approach of REPowerEU;
- Contribute to the ERA policy agenda and reinforce synergies with and between Member States;
- Increase the participation of all countries in SET Plan activities and increase the political visibility of the activities, in order to maximize their impact.
- Extend the scope of current IWGs technology coverage (e.g. onshore wind, medium and low geothermal, LVDC, etc)
- Systematically embed cross-cutting issues (circularity and materials substitution, digitalisation, R&I for societal needs, skills and industrial capacity)
- Building on the work of the IWG CSP and IWG PV to develop a joint strategic solar energy R&I agenda
- Hydrogen: ERA pilot on green hydrogen evolving into an Implementation Working Group (IWG) on hydrogen - ongoing
- Communication of the Commission on SET Plan revamping is expected in autumn 2023
- SET Plan Presidency Conference (Viladecans Barcellona 13-14 November 2023)



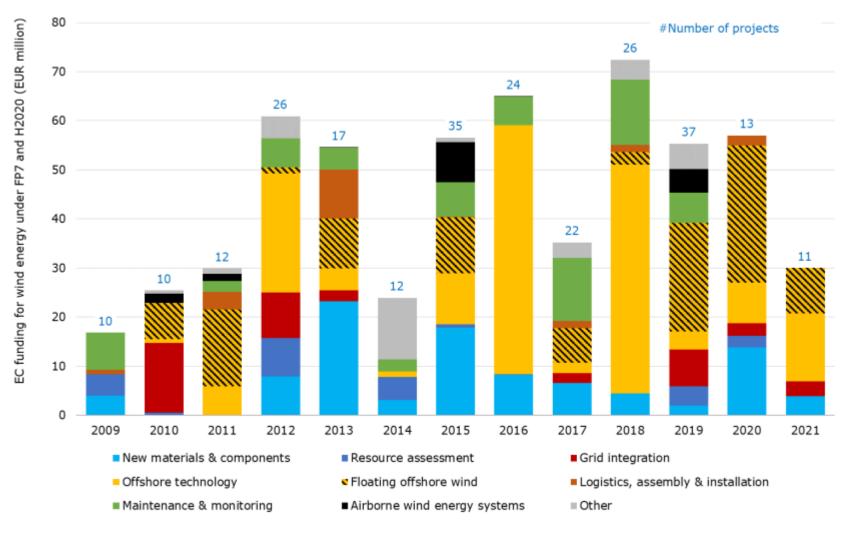
#### EU R&I funding – wind sector – 2009-2021

Figure 53. EC funding on wind energy R&I priorities in the period 2009 -2021 under FP7 and H2020.





### EU R&I funding – wind sector – 2009-2021





Source: JRC, 2022.

## Horizon Europe – cluster 5 work programme 2021 - 2022 wind-related topics (1)

- HORIZON-CL5-2021-D3-03-04: Physics and aerodynamics of atmospheric flow of wind for power production
  - <u>FLOW</u> Atmospheric Flow, Loads and pOwer for Wind energy
  - AIRE Advanced study of the atmospheric flow Integrating REal climate conditions to enhance wind farm and wind turbine power production and increase components durability
  - MERIDIONAL Multiscale modelling for wind farm design, performance assessment and loading
- HORIZON-CL5-2021-D3-03-05: Wind energy in the natural and social environment
  - <u>WENDY</u> Multicriteria analysis of the technical, environmental and social factors triggering the PIMBY principle for Wind technologies
  - WIMBY Wind In My Backyard: Using holistic modelling tools to advance social awareness and engagement on large wind power installations in the EU
  - <u>JustWind4All</u> Just and effective governance for accelerating wind energy



## Horizon Europe – cluster 5 work programme 2021 - 2022 wind-related topics (2)

- HORIZON-CL5-2021-D3-03-12: Innovation on floating wind energy deployment optimized for deep waters and different sea basins (Mediterranean Sea, Black Sea, Baltic Sea, North-east Atlantic Ocean)
  - BLOW Black sea fLoating Offshore Wind
  - INFINITE INnovative offshore wind technologies in deep waters
  - <u>NEXTFLOAT</u> Next Generation Integrated Floating Wind Optimized for Deep Waters
- HORIZON-CL5-2021-D3-02-03: Market Uptake Measures of renewable energy systems (CSA)
  - <u>MARINEWIND</u>



## Horizon Europe – cluster 5 work programme 2021 - 2022 wind-related topics (3)

- HORIZON-CL5-2022-D3-01-02: Demonstration of innovative materials, supply cycles, recycling technologies to increase the overall circularity of wind energy technology and to reduce the primary use of critical raw materials
  - Blades2Build RECYCLE, REPURPOSE AND REUSE END-OF-LIFE WIND BLADE COMPOSITES A COUPLED PRE- AND CO-PROCESSING DEMONSTRATION PLANT
  - <u>EoLO-HUBs</u> Wind turbine blades End of Life through Open HUBs for circular materials in sustainable business models
- HORIZON-CL5-2022-D3-03-04: Integrated wind farm control
  - Call closed on 10.1.2023; 16 proposal received; Budget 18M€ + leftover budget; 4 projects funded
    - ICONIC, WILLOW, SUDOCO and TWAIN and → presentations at EERA JP Wind Innovation Forum day 2
- HORIZON-CL5-2022-D5-01-03: Exploiting renewable energy for shipping, in particular focusing on the potential of wind energy (ZEWT Partnership)
  - ORCELLE Wind as main propulsion
  - WHISPER Wind Energy Harvesting for Ship Propulsion Assistance and Power



## Horizon Europe – cluster 5 work programme 2023-2024 Wind – related topics (1)

- HORIZON-CL5-2023-D3-01-05 Critical technologies for the offshore wind farm of the Future (18M€ 6M€/project call closed on 30.3.23; 26 proposals received; grant preparation ongoing)
- HORIZON-CL5-2023-D3-02-14: Digital twin for forecasting of power production to wind energy demand (12M€ 6M€/project call opening: 4.5.23; call closed 5.9.23; 24 proposals received; evaluation to start soon)
- HORIZON-CL5-2023-D3-02-15: Critical technologies to improve the lifetime, efficient decommissioning and increase the circularity of offshore and onshore wind energy systems (12M€ 4M€/project call opening: 4.5.23; call closed 5.9.23; 35 proposals received; evaluation to start soon)

Search Funding & Tenders (europa.eu)



## Horizon Europe – cluster 5 work programme 2023-2024 Wind – related topics (2)

- HORIZON-CL5-2024-D3-02-08: Minimisation of environmental, and optimisation of socio-economic impacts in the deployment, operation and decommissioning of offshore wind farms (10M€ 5M€/project call opening: 17.9.24; call closing 21.01.25)
- HORIZON-CL5-2024-D3-02-09: Demonstrations of innovative floating wind concepts (30M€ - 15M€/project – 17.9.24; call closing 21.01.25)



#### Horizon Europe – work programme (WP) 2025 and following

- Adoption of the Strategic Plan 2025 2027: early 2024
- Work programme 2025:
  - Only urgent needs and continuity of some recurrent actions: early 2024
  - Full WP in early 2025 including 'politically sensitive' files
  - Topics drafting: flexibility needed to consider new College's priorities
- New College of Commissioners: end 2024

Exact procedure and timing still to be fully defined



## Thank you



© European Union 2020

Unless otherwise noted the reuse of this presentation is authorised under the <u>CC BY 4.0</u> license. For any use or reproduction of elements that are not owned by the EU, permission may need to be sought directly from the respective right holders.

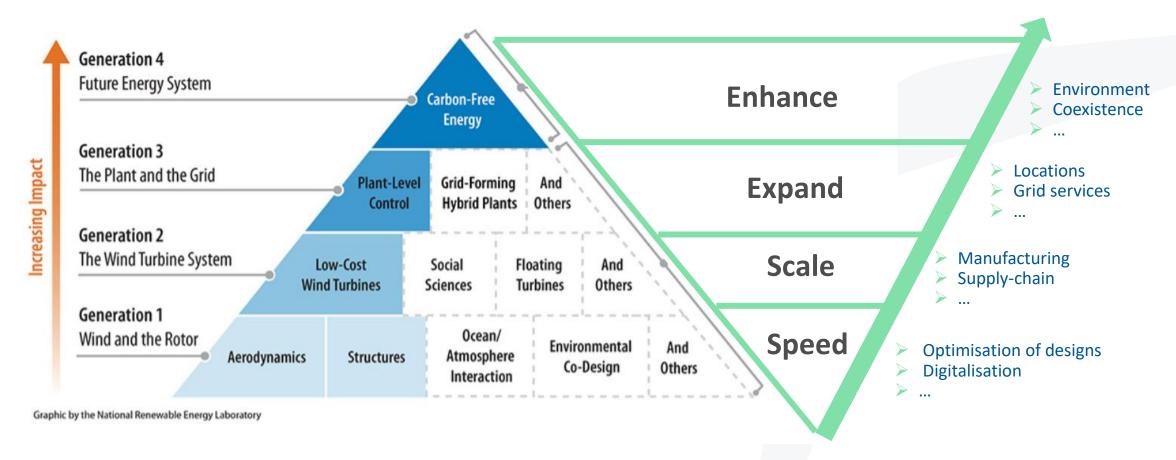


## Wind energy R&I vision



etipwind.eu

## Wind energy R&I vision





## Speed

- Speed-up optimisation of integrated designs
- Speed-up digitalisation
- Speed-up transport & logistics
- Speed-up installation techniques
- Speed-up hybridisation
- Speed-up permitting



#### Scale

- Scale-up manufacturing of large components
- Scale-up the supply-chain (from material sourcing to the decommissioning)
- Scale-up standards
- Scale-up workforce



### Expand

- > Expand locations (land, seas, airborne)
- Expand wind speed and weather conditions for O&M
- Expand grid services
- > Expand uses of wind energy (fuels, Power-to-X, etc.)
- Expand lifetime of assets



#### Enhance

- > Enhance performance
- > Enhance environment
- Enhance coexistence (other economic sectors)
- Enhance resource efficiency (materials)
- Enhance security (physical and cyber)
- Enhance communities
- Enhance working conditions



## We want to hear from you!

Join at slido.com #ETIPWind





## Short break 16:00-16:15 (and group picture!)



etipwind.eu

## Update of the Strategic R&I Agenda



## New Working Groups created to update the SRIA

Working Group 1
Wind energy system
integration

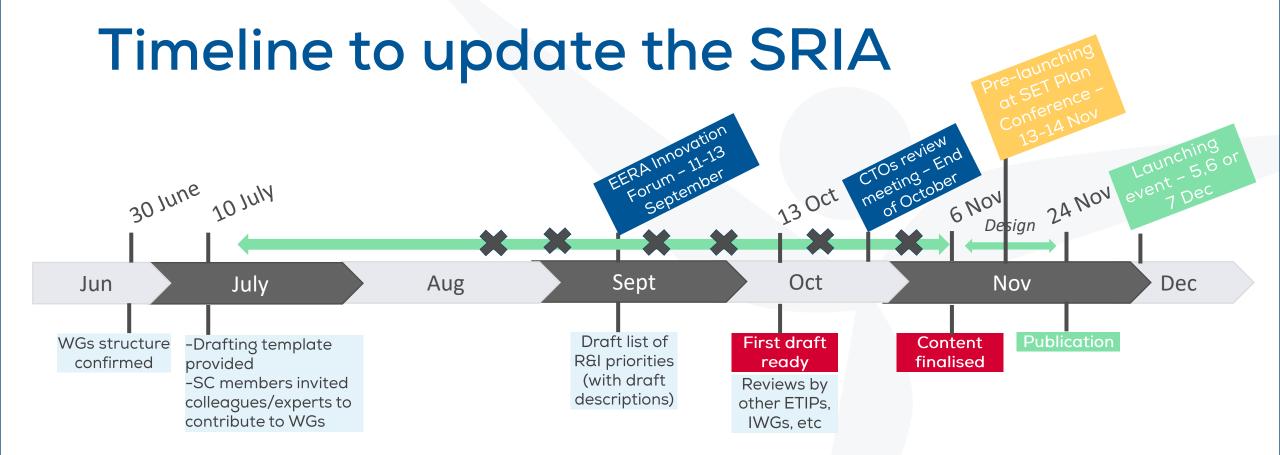
Working Group 2
Industrialisation, scaleup and competitiveness

Working Group 3
Operations &
Maintenance and
Digitalisation

Working Group 4
Sustainability and
Circularity

Working Group 5
Skills & Coexistence







#### Where do we stand?

- ➤ Kick-off WG meetings (end of August): to start brainstorming on challenges, vision and a preliminary list of R&I priorities
- > Second WG meetings (last week): to elaborate short description for each priority.
- ➤ Next step:





# Presentation of the preliminary list of R&I priorities



### Preliminary list of R&I priorities

WG1 – Wind Energy System integration

- **1**. Definition and modelling of future system needs
- **2.** Advanced grid capabilities
- 3. Interoperability
- **4.** Solutions to avoid curtailment
- **5.** Hybrid projects
- **6.** DC grid projects

WG2 – Indust, scaleup, compet.

- **1.** Design for large volume manufacturing
- **2.** Design for reliable products
- **3.** Mass-production / Automation
- **4.** Development of components and materials
- **5.** Construction and installation methods

WG3 – O&M and Digitalisation

- **1.** New installation methods and decommissioning tools
- **2.** Digital tools for lifecycle opt., park level control, etc.
- **3.** Autonomous O&M
- **4.** Business cases for Hybrid projects
- **5.** Digital ecosystem
- **6.** Replacement and transport of large components

WG4 – Sustainability & Circularity

- **1.** Development and demonstration of new materials and components
- **2.** Recycling and reusing existing materials
- **3.** Biodiversity solutions
- **4.** Lifetime extension via re-using and refurbishing

WG5 – Skills & Coexistence

- **1.** World class education for wind
- **2.** Skilling, re-skilling and upskilling activities
- **3.** Increase public engagement of citizens
- **4.** Tools to map stakeholder concerns
- **5.** Interdisciplinary / transdisciplinary relations with coexistence

# We want to hear from you!

Join at slido.com #ETIPWind





Gustavo Quiñonez Acciona WG1 Co-Chair

#### Vision by 2050:

- > Efficient use of existing infrastructures and adoption of novel grid planning and operation tools
  - > Specific focus on methods to preserve the stability of power systems
- Advancing HVDC, flexible AC Transmission system, energy storage technologies with grid forming capabilities.
- ➤ Harmonisation and standardisation (e.g. hardware components, software-based control and protection functions).
- > Large-scale demonstration of hybrid projects, virtual power plants and coupling of multi-energy vectors.
- Communication between stakeholders (inc. cybersecurity, data management)



#### **Priority 1: Definition and modelling of future system needs**

- > Redefinition of the system services/markets to reflect specific characteristics of inverter-based providers.
- New grid planning and operational tools/methods to assess new capabilities of inverter-based generator and stability issues.
- > Advanced solutions for monitoring and control of the grid and new technologies for flexibility.

#### **Priority 2:** Advanced capabilities for wind power generated units

- Considering all aspects of power system from planning to real-time operations.
- > Demonstration projects to identify ancillary services (specifications, costs, etc).



#### **Priority 3:** Interoperability (data structure, communication and standardisation)

- > Interoperability and robustness of the infrastructure.
  - High fidelity and interoperable models from different vendors (wind power plants, multi-terminal HVDC, FACTS,..).
- Digital twin technologies of wind power plants.
- Technologies to speed up the EMT simulation for large-scale systems, inc. real time simulation and testing environment.

#### **Priority 4:** Solutions to avoid curtailment

- > Analysis of interdependencies between share of wind generation and curtailment.
- ➤ New tools/methods for assessing the impact of grid developments to resolve curtailments.
- > Large-scale deployment of technologies for grid optimisation as congestion management services.

#### **Priority 5:** Hybrid projects

- Modelling and optimisation of hybrid projects.
- > Development of hydrogen and energy storage technologies.
- > Demonstration of hybrid project solutions involving repurposed and new infrastructure.

#### **Priority 6: DC-Grid projects**

- Demonstration of DC-Grid solutions.
- ➤ R&I actions such as grid topology options, large-scale demonstration of the network solutions in operation, e.g. energy islands.



# We want to hear from you!

Join at slido.com #ETIPWind





Bert Verdyck ZF Wind Power WG2 Chair

#### Vision by 2050:

- > Support further innovations for cost competitive and reliable products that can be delivered in the needed volumes
- ➤ **Product level**: new cost-competitive technologies, reliable designs and design tools, efficient validation processes, new materials, etc.
- Industrialization: Scale-up / automate production facilities for big volume mass production.



#### **Priority 1: Design for large volume manufacturing / deployment**

- Automation of manufacturing processes
- Innovative design methods to design for manufacturing
- ➤ Modularisation, local assembly and in situ repair solutions (speed & OPEX)

#### **Priority 2: Design reliable products**

- > Innovative methods for analysing/predicting reliability (design phase)
- > New methods to condition/health monitoring for critical components



**Priority 3: Mass production / Automation** 

- Development of automated or semi-automated/mechanised fabrication solutions (blades, welding, connections solutions for foundations, etc.)
- Automated quality assurance techniques (like non-destructive testing)
- > Use of robots/cobots, operator assistance tools, Additive Manufacturing

**Priority 4: Development of components and materials to address bottlenecks** 

- Alternative solutions in terms of substitutes or improved lifecycle management
- > Available, reliable, cost competitive and sustainable



**Priority 5**: Construction and installation methods (inc. Ports infrastructure)

- Offshore: piling technology, floaters, noise mitigation, robotics and motion control.
- Optimisation of assembly and loading processes in ports.
- Onshore: Methods to optimise logistical areas and minimise the environmental impact.



# We want to hear from you!

Join at slido.com #ETIPWind





Stephan Barth ForWind WG3 member

etipwind.eu

#### Vision by 2050:

- > Optimising the value of assets throughout their entire lifecycle
- > Smartly controlled wind turbine parks with autonomous optimisation
- ➤ **Digitalised environment**: connecting, aggregating and analysing data into actionable insights and/or triggers for action.



#### **Priority 1: New installation methods and decommissioning tools**

- > Installation and decommissioning for offshore
- > Technological improvements and new installation methods for onshore (like self-erecting towers) and processes for installation and logistics.
- > Improvement of decommissioning processes for reuse and recycling

### <u>Priority 2:</u> Digital tools for lifecycle optimisation, park level control and operating domain

- > Interconnected digital tools that constantly talk to each other and share information
- Advanced AI algorithms that support decision making.

#### **Priority 3: Autonomous Operations & Maintenance**

- Wind farms that build and maintain themselves
- Use of robots and AI-based systems that control and operate them
- Autonomous operation: market-aware selling of electricity, scheduling of maintenance, overall monitoring of performance

#### **Priority 4: Business cases for hybrid projects**

Research combining technical, economic and regulatory aspects to clarify and de-risk business cases.



#### **Priority 5:** Enable digital ecosystems

- Data sharing, standardisation, cybersecurity
- >Advanced sensor technologies
- ➤ Industrial IoT, cloud analytics and communication technologies
- Optimisation add Decision-making support

#### **Priority 6:** Replacement and transport of large components

Simplifying, speeding up and relaxing weather windows limitations for these operations



# We want to hear from you!

Join at slido.com #ETIPWind





# WG4 – Sustainability & Circularity

Edvin Lindgren Hitachi Energy WG4 Co-Chair

### WG4 - Sustainability and Circularity

#### **Vision by 2050:**

- Wind energy net zero and integrated in circular economy
- > Solutions for wind farms to be constructed from circular materials
- Decarbonised operations
- > Harmony with the natural environment, contributing to biodiversity.



### WG4 - Sustainability and Circularity

### <u>Priority 1</u>: Development and demonstration of new materials and components, and manufacturing methods

- > Testing and validation of new materials and components
- ➤ Alternatives for critical materials and manufacturing processes (resource consumption, footprint)
- Reduce LCOE and CO2 footprint, improving circular capabilities and physical properties of turbine.

#### **Priority 2: Recycling and re-using existing materials**

- Optimised design of wind turbine blades based on recycled materials
- Development of certification and validation procedures related to recycling of wind turbine blades, grid equipment
- > Development of processes to re-use materials and components in a wind farm.

### WG4 - Sustainability and Circularity

#### **Priority 3: Biodiversity solutions**

- > Analyses of impact from wind energy installation and operation on biodiversity
- Development of models that can be used in the assessment (mitigation technologies).

#### Priority 4: Lifetime extension via re-using, refurbishing

- > Further develop the operating lifetime of wind turbine components
- Environmental assessments of lifetime extension strategies achieved by reuse or refurbishment. And comparison with alternative methodologies.



# We want to hear from you!

Join at slido.com #ETIPWind





Helena Solman Wageningen University WG5 Chair

#### **Vision by 2050:**

- > Highly skilled and educated workforce
- European-wide systems for reskilling the existing workforce and lifelong learning available.
- Coexistence through evidence-based wind energy policy and stakeholder collaboration
- Coexistence through Holistic Research



#### **Priority 1:** Ensure a world-class education and expand it

- Highly qualified workforce and planned education and training process, in cooperation with industry.
- > Transdisciplinary programmes and digital skills
- > New educational tools for teachers.

#### **Priority 2**: Skilling, re-skilling and upskilling activities

- Interdisciplicary programmes for (re-/up) skilling covering the entire value chain, including digital competences
- Easy-to-access lifelong learning activities



#### Priority 3: Increase public engagement of citizens with wind energy

- > Profound interdisciplinary research inc. co-design, SSH.
- Fair, inclusive and innovative tools of public engagement in offline as well as digital formats.

### **Priority 4:** Developing tools and platforms to map stakeholder concerns

Models and tools inc. data sets for interaction between stakeholders in the planning phase.



**Priority 5**: Inter-disciplinary and trans-disciplinary relations with coexistence

- Research projects that have a balanced representation of different disciplines inc. SSH
- > Citizen science projects to answer questions from the society.



# We want to hear from you!

Join at slido.com #ETIPWind

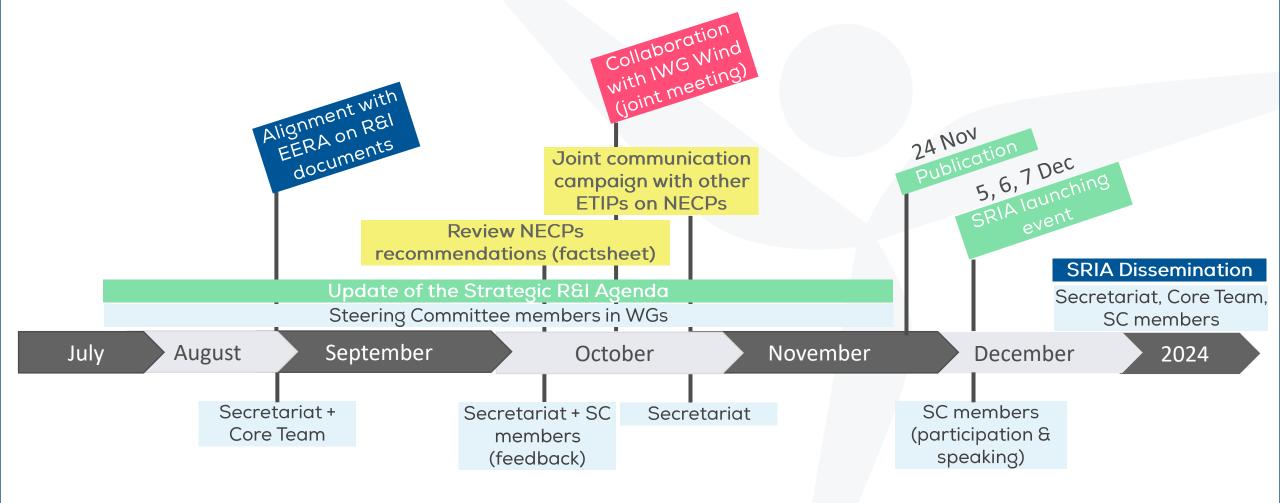




# Discussion on upcoming activities



#### Overview of Q3-Q4 activities





#### Collaborations and outreach

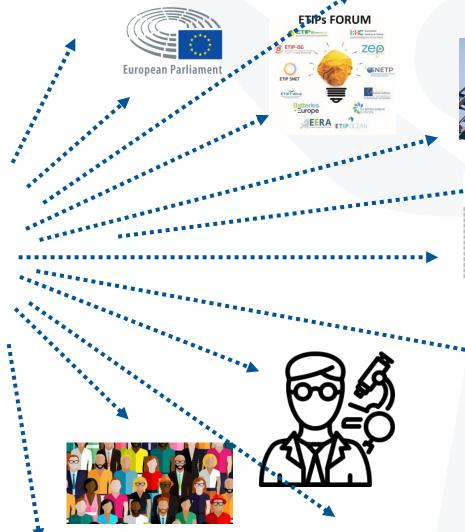
Updated
Strategic R&I
Agenda



STRATEGIC RESEARCH AND INNOVATION AGENDA

2023















#### Collaborations and outreach

- EU policy-makers
- National governments
- National funding agencies
- Research & Innovation initiatives

•





# Conclusion and next steps



### Conclusion and next steps

- > The Strategic R&I Agenda is one of the main ETIPWind's milestone.
- Steering Committee members will still have possibilities to provide **feedback on the content** (WG meetings, CTOs meeting, reviews via email).
- The expected publication date is **24 November.**
- > SRIA's launching event on the 1st week of December.
- > We'll need your support to disseminate the SRIA priorities.



# THANKYOU

Contact: secretariat@etipwind.eu



etipwind.eu