



EU wind energy and R&I policy

EERA Deep Wind conference

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Summary

- Key figures 2022: EU-27
- Recent EU policy and legislative developments
- EU wind energy R&I

Key figures 2022: EU -27

Table 1. Key National Statistics 2022: EU-27	
Total (net) installed wind power capacity	204 GW
Total offshore capacity	15,8 GW
New wind power capacity installed	16.2 GW
Decommissioned capacity (in 2022)	0.5 GW
Total electrical energy output from wind	412 TWh
Wind-generated electricity as percent of national electricity demand	16 %
Average national capacity factor	23% onshore 35% offshore
Target	42.5% RES in final energy demand by 2030
National wind energy RD&D budget	

- TOTAL installed capacity: 204.4 GW in 2022
 - 188.6 GW of onshore wind
 - 15.8 GW of offshore wind

New installed capacity in 2022: 16.2 GW

- 15 GW onshore
- 1.2 GW offshore

47% increase compared to 2021

[Source: JRC CETO Report 2023](#)

Key figures 2023: EU-27

New installed capacity in 2023: 17 GW

- 14 GW onshore
- 3 GW offshore
- 19% of electricity produced in the EU

[Source: Wind Europe, January 2024](#)

Projected wind energy capacities – scenarios

➤ 'Fit for 55' package - 14 July 2021

- **469 GW by 2030**

➤ REPowerEU Plan – 18 May 2022

- With respect to wind energy the REPowerEU Plan proposes an installed capacity of **510 GW by 2030**

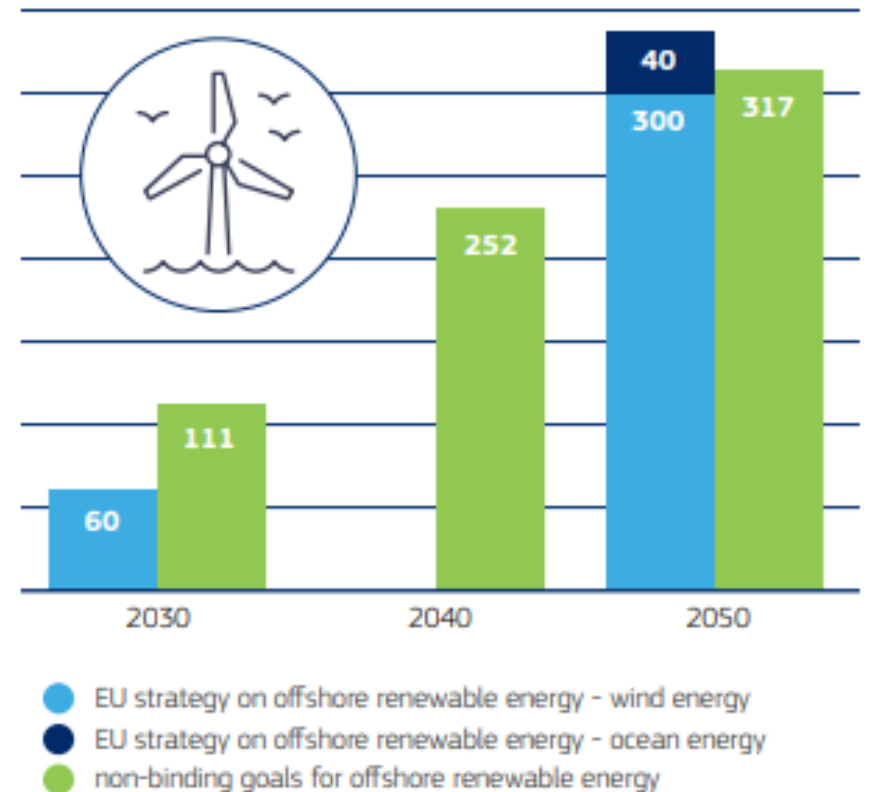
 (~ 37 GW/year over the period 2023-2030)

Projected offshore energy capacities – scenarios

- **EU Offshore Strategy – 19 November 2020**
 - 60 GW by 2030, 300 GW by 2050 (offshore only)
- **Member States non-binding goals** (January 2023)
 - 111 GW by 2030, 317 GW by 2050

➔ (~ 12 GW/year over the period 2023-2030)
10 times more than the new 1.2 GW installed in 2022

EU **offshore** energy installed capacity objectives (in GW)



Recent EU policy and legislative developments

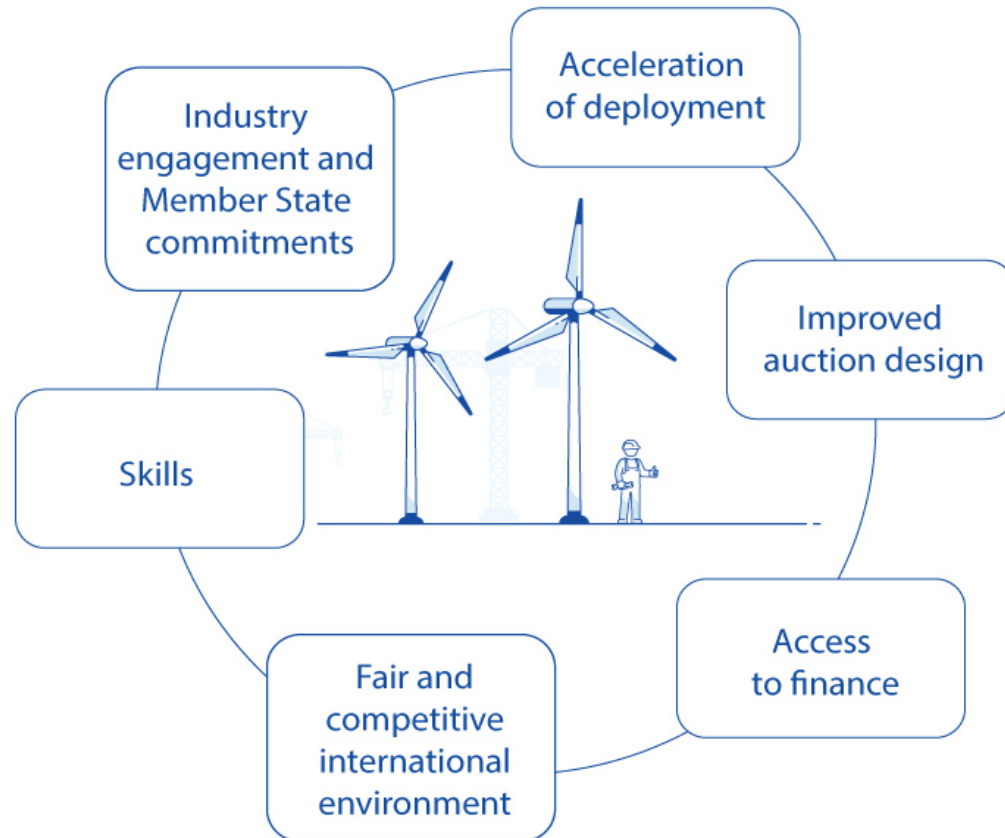
- **Renewable Energy Directive – revision** (Published on 31 October 2023, entry into force on 20 November 2023)
 - **EU’s binding renewable target for 2030: minimum of 42.5% (up from the current 32%).** With an additional indicative 2.5%
 - Indicative target of 5% of new installed renewable energy capacity to be covered by **innovative technologies** at Member State level
 - Accelerated permitting procedures, acceleration areas, overriding public interest
- **Net-Zero Industry Act (NZIA)** (Commission [proposal for a regulation](#) on 16 March 2023, legislative process ongoing, adoption in spring 2024)
 - secure the supply of technologies to accelerate the energy transition
 - scale up manufacturing in the EU to provide at least 40% of the EU’s annual deployment needs by 2030
- **Critical Raw Materials Act** (Commission [proposal for a regulation](#) on 16 March 2023; [provisional agreement](#) between Council and European Parliament reached on 13 November 2023)
 - ensure EU access to a secure and sustainable supply of critical raw materials

Recent EU policy and legislative developments

European Wind Power Action Plan

Adopted on 24 October 2023

- ensure that the clean energy transition goes hand in hand with industrial competitiveness and that wind power continues to be a European success story. 15 urgent actions identified.



- [European Wind Charter](#) signed by 26 MS

Recent EU policy and legislative developments

Communication on “Delivering on the EU offshore renewable energy ambition”

Adopted on 24 October 2023

- Strengthen grid infrastructure and regional cooperation
- Accelerate permitting
- Ensure integrated Maritime Spatial Planning
- Strengthen resilience of infrastructure
- Sustain research and innovation
 - Implementation of the SET Plan: **manufacturing, circularity, materials, skills and societal needs** ...including offshore renewables
 - Focus on **circularity as a priority**
 - Projects on **advanced materials for magnets**
 - Reduce the **environmental impacts** and optimize the **socio economic impacts**
 - Improve **industrial productivity and efficiency** across the value chain
- Develop supply chains and skills

Recent EU policy and legislative developments

EU Action Plan for Grids

Adopted on 28 November 2023

- 14-point action plan to make Europe's electricity grids stronger, more interconnected, more digitalised and cyber-resilient

Among the actions identified:

- Action 2 - ENTSO-E to enhance top-down planning towards 2050 by integrating the identification of offshore and onshore system needs and further considering hydrogen
- Action 4: Commission to propose guiding principles identifying conditions under which anticipatory investments in grid projects should be granted (Q1 2025)
- Action 5: Commission to issue guidance on cross-border cost sharing for offshore projects (mid-2024)

Recent EU policy and legislative developments

Strategic Energy Technology (SET) Plan - revision

Adopted on 20 October 2023

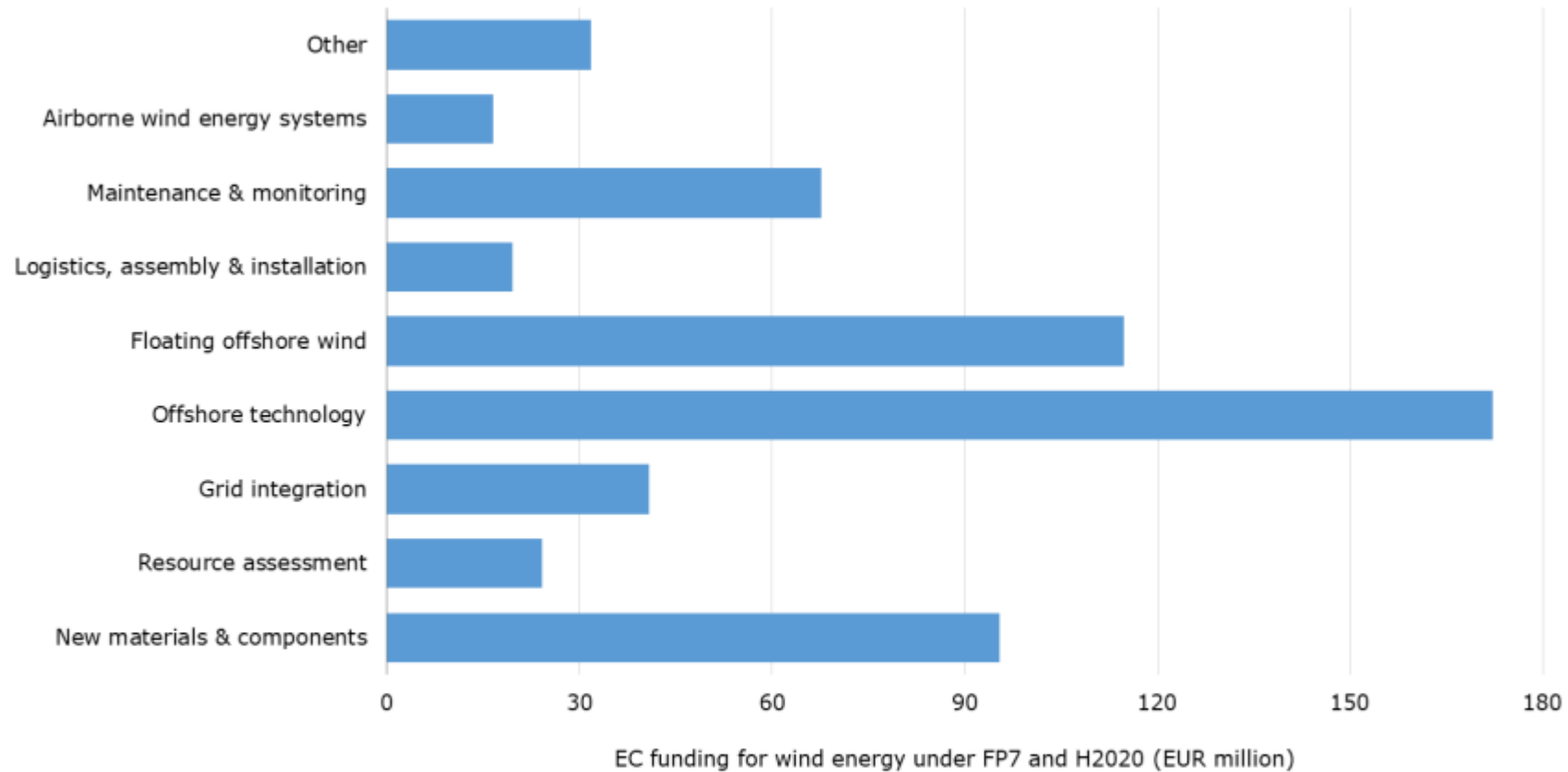
- Objective: **support the development of** clean, efficient and cost-competitive **energy technologies** through **coordination and collaboration** in clean energy research and innovation (R&I), bringing together European **industry, academia and governments** of the SET Plan countries.
- Initially established in 2007
- R&I cooperation through Implementation Working Groups (IWGs) and European Technology Innovation Platforms (ETIPs)

Revised SET Plan and Wind

- IWG on offshore wind expands its scope to also cover onshore
- Task forces to address cross-cutting issues: digitalization, circularity, materials, societal needs, upskilling and reskilling

EU R&I funding – wind sector – 2009-2022

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

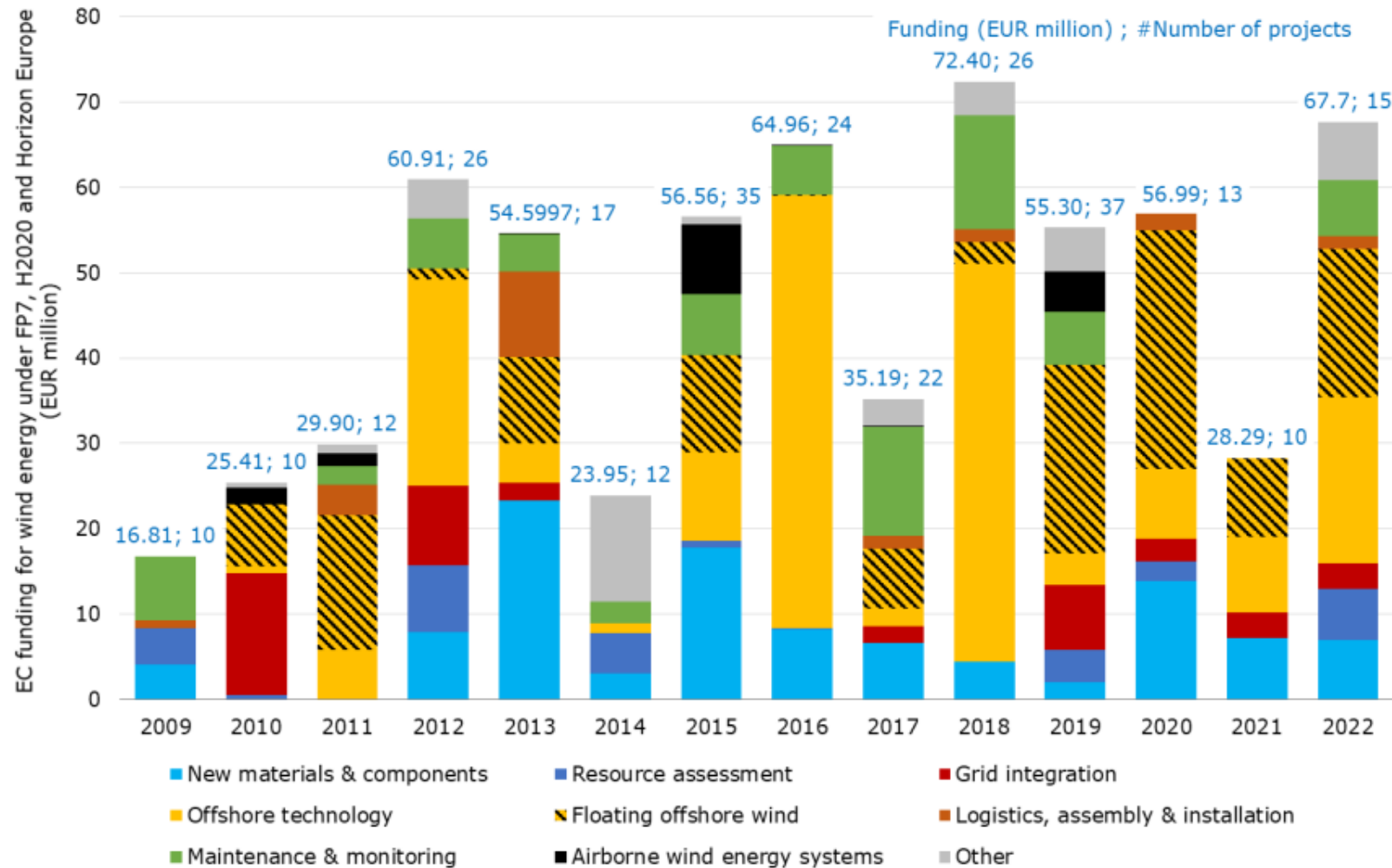


Total since 2009: 648.96 M€

- 187 M€ offshore wind technologies
- 132 M€ floating offshore wind
- 105 M€ for new materials and components

Source: JRC, 2022.

EU R&I funding – wind sector – 2009-2022



Annual average: 46.3 M€

Source: JRC based on Cordis, 2023.

Horizon Europe – work programme (WP)

- Amendment of 2023-2024 WP for some urgent needs and continuity of recurrent actions: early 2024
- Adoption of the Strategic Plan 2025 – 2027: early 2024
- Horizon Europe Work programme 2025:
 - Co-creation process and consultations with programme committee in 2024
 - Full WP 2025 in early 2025
 - Topics drafting: flexibility needed to consider new College's priorities
- New College of Commissioners: end 2024

IWG wind and ETIP wind priorities



IWG Wind – Implementation Working Group on Wind energy



New R&I priorities:

1. Industrialisation, scale-up and competitiveness
2. Skills and Coexistence
3. Sustainability & Circularity
4. Operations & Maintenance and Digitalisation
5. Wind energy system integration

New targets:

1. At least **3%** increase of national R&I funding dedicated to wind.
2. At least **0.5** percentage points increase per year of wind energy penetration in electricity needs at European level thanks to R&I actions.
3. At least **2 GW** of wind manufacturing capacity added per year at European level enabled by the implementation of R&I actions.
4. Each Member State dedicates R&D budget to **materials recovery** technologies including recycling and **critical raw materials**.
5. At least **100,000** workers trained by 2025 at the EU level supported by national funding dedicated to wind energy research centres, universities, training centres, etc.
6. One research project on average per year enabling faster **permitting** for wind energy projects.

- ETIP Wind Strategic Research and Innovation Agenda (2025 – 2027) published in December 2023
- Will be complemented by European Energy Research Alliance (EERA) Joint Programme on Wind long-term priorities (early 2024)

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
 - [FLOW](#) - 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
 - [WENDY](#) - 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
 - [JustWind4All](#) - 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 wnd techNologies In deep waTErs
 - [NEXTFLOAT](#) - Next Generation Integrated Floating Wind Optimized for Deep Waters
- HORIZON-CL5-2021-D3-02-03: Market Uptake Measures of renewable energy systems (CSA)
 - [MARINEWIND](#)

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
 - [EoLO-HUBs](#) - Wind turbine blades End of Life through Open HUBs for circular materials in sustainable business models
 - [REFRESH](#) - Smart dismantling, sorting and REcycling of glass Fibre REinforced composite from wind power Sector through Holistic approach
- 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](#)
- 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; 4 projects funded)
 - [MADE4WIND](#) - Innovative circular materials and design methods for the development of Floating Wind Turbine components for offshore Wind Farms of the future
 - [FLOATFARM](#) - Developing the Next Generation of Environmentally-Friendly Floating Wind Farms with Innovative Technologies and Sustainable Solutions
 - [INF4INiTY](#) - Integrated Designs for Future Floating Offshore Wind Farm Technology
 - TAILWIND - Sustainable station-keeping systems for floating wind

Horizon Europe – cluster 5 work programme 2023-2024

Wind – related topics ⁽²⁾

- 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; grant agreement preparation ongoing)
- 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; grant agreement preparation ongoing)

[Search Funding & Tenders \(europa.eu\)](https://europea.eu)

+ HORIZON-CL4-2023-RESILIENCE-01-37: Advanced materials for magnets in applications for the New Energies Market (31 M€ - 6-8M€/project; call closed 5.10.23)

Horizon Europe – cluster 5 work programme 2023-2024

Wind – related topics ⁽³⁾

- 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)

EU funding for offshore renewables

+ Horizon Europe Cluster 5
+ EU Innovation Council
+ LIFE – Clean Energy Transition sub-programme
+ European Maritime Fisheries and Aquaculture Fund
+ BlueInvest
+ Innovation Fund
+ Cohesion policy funds
+ Connecting Europe Facility - Transport
+ Connecting Europe Facility - Energy
+ InvestEU Fund
+ Modernisation Fund
+ Renewable Energy Financing Mechanism

- Overview of EU funding programmes relevant to finance offshore renewable energy projects
- Information about eligible investments
- Previously funded offshore projects
- How different EU programmes can be combined

Thank you



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