



Report 2022

Ireland

Photo: Stephen Barnes / Getty Images-Canva.

Authors Connor Malloy and John McCann, The Sustainable Energy Authority of Ireland (SEAI), Ireland.

The rate of construction of wind farms recovered in 2022 after two quiet years, with 197 MW of new capacity added under the new Renewable Electricity Support Scheme (RESS). 63.1 MW were decommissioned, bringing the net addition to 134 MW.

The government passed legislation by putting in place a new consenting regime for offshore renewable energy, and the terms and conditions for the first Offshore Renewable Electricity Support Scheme were published.

The year 2022 was also good for wind energy research, particularly with landmarks on social and environmental research projects. In the Nature+Energy project, a methodology was developed to imple-

ment natural accounting for wind farm projects. The CoWind project completed a public survey to find factors underlying acceptance of wind farms and found that having a Sustainable Energy Community local to the project supported acceptance. This project and an SEAI public survey found that public acceptance of wind farms was high, even where respondents live close to operational or planned projects.

Table 1. Key National Statistics 2022: Ireland

Total (net) installed wind power capacity	4.536 GW
Total offshore capacity	.0252 GW
New wind power capacity installed	.197 GW
Decommissioned capacity (in 2022)	0.631 GW
Total electrical energy output from wind	11.224 TWh
Wind-generated electricity as percent of national electricity demand	34.4%
Average national capacity factor	30%
Target	9 GW onshore, 7 GW offshore by 2030
National wind energy RD&D budget	

Highlight(s)

- The 2030 onshore and offshore wind targets increased to 9GW and 7GW, respectively.
- Work started on developing spatial planning policies for both onshore and offshore wind to support reaching 2030 climate action targets.
- The RESS 2 auction results were published during Q2 2022, with 14 onshore wind farms deemed successful, with a total auction capacity of 414MW.
- Ireland's wind-generated electricity as a percent of national electricity demand increased once again between 2021 and 2022, up to 34.4%, an increase of almost 5% in 2021.

2030 target for offshore wind energy to 7GW, with 2GW for hydrogen production, to contribute to meeting an increased overall 80% renewable electricity target. The target for onshore wind was increased from 8.3GW to 9GW. Work started on a Renewable Electricity Spatial Planning Framework for onshore renewable electricity and an updated Offshore Renewable Energy Development Plan for marine renewable energy resources.

Under the Maritime Area Planning legislation and the National Marine Planning Framework (NMPF), a planned regime called the Designated Marine Area Plan was launched to accelerate the rollout of offshore renewable energy. This rollout will manage the co-existence of future offshore deployment with other maritime activities for a specific marine area while mitigating sea environmental impacts [2].

was constructed in 2022. The majority of this was comprised of the first wind farms that were constructed under the new Renewable Energy Support Scheme. 63 MW of wind power capacity was decommissioned in 2022, bringing the net total of new capacity to 134MW.

- The results of the RESS 2 auction for onshore renewable electricity were announced in June 2022, where 14 onshore wind projects totalling 414MW, were awarded a contract offer for an estimated 1270GWh/A [3].
- The Department of Environment, Climate and Communication has published the terms and conditions of the Offshore Renewable Electricity Support [4] scheme this year. Its first auction is due to be held in Q4 of 2023.
- The Maritime Area Planning Act in December 2021 set out, among other things, the future legislative framework for offshore renewable energy leasing and consenting. Under

Market Development

Targets and Policy

The 2023 update to the Climate Action Plan [1] increased the indicative

Progress and Operational Details

- 197 MW of new onshore capacity

the National Marine Planning Framework, the Designed Marine Area Plan has been launched, accelerating and setting the deployment areas for offshore wind in Ireland [5].

- A suite of policies supporting small and micro-scale renewable electricity were announced or implemented, including:

- *Micro-generation market value compensation and Clean Export Premium;

- *A facilitated connection process for mini-generation connection;

- *Small-scale electricity generation feed-in tariff.

- The rapid increase in inflation brought increases in the cost of delivering projects for developers and there were suggestions that some projects would be

difficult to deliver as planned.

- While community-owned renewable electricity projects were provided with a special category in the RESS 1 and 2 auctions, none of the community projects awarded support were constructed in 2022. Despite being given concessions in the auction and grid connection processes, many of the projects awarded support experienced problems with the availability and cost of grid connections. A consultation on the terms and conditions for the RESS 3 auction proposed to exclude the community category in that auction, as the upcoming Small-Scale Generation Support Scheme will provide a simpler route to market for wind projects up to 6 MW and solar PV projects up to 1 MW in size.
- The terms and conditions of the RESS 3 will be published in 2023. The updated terms and condi-

tions are expected to include a change in the Curtailment Compensation Agreement that will de-risk projects and provide developers more certainty on project return on investment.

Matters Affecting Growth and Work to Remove Barriers

- The main factor regarding growth is a deficit in the pipeline of consented projects necessary to meet 2030 targets. Judicial reviews of planning decisions continue to prolong the permitting times for wind farms and grid connection application process is also protracted. Implementing the accelerated permitting timeline limits required by the REPOWER.EU regulation, the second and third Renewable Energy Directive, will redress the protracted permitting and grid connection application times. The government has assigned

Install capacity by year

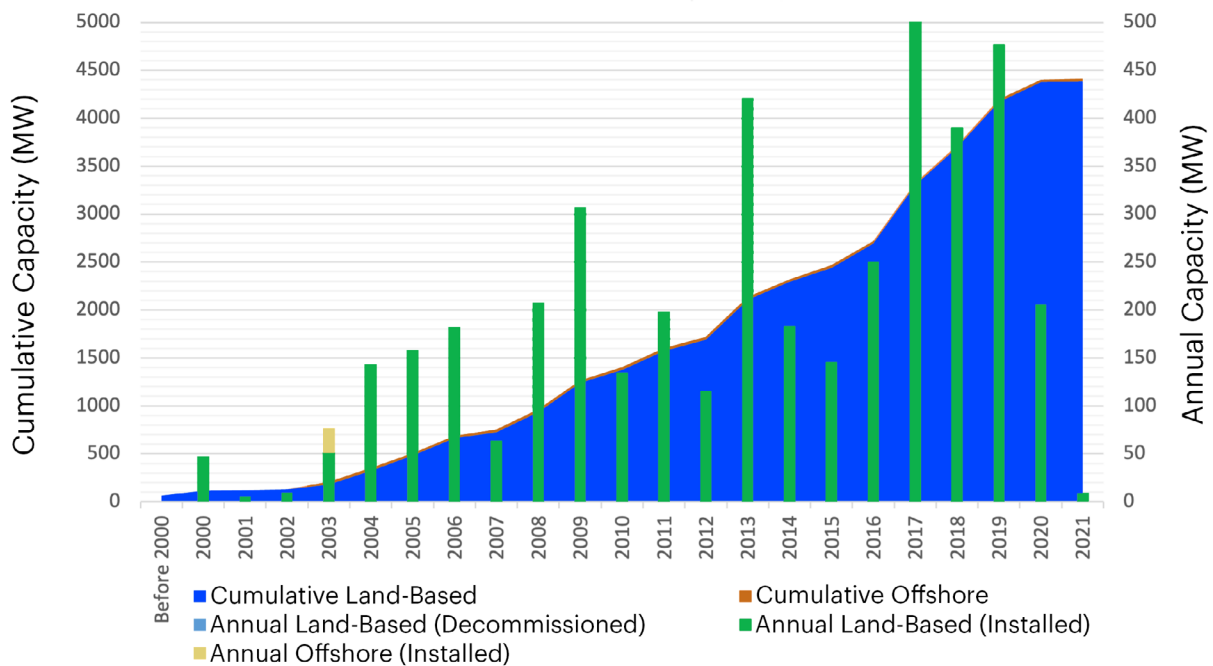


Figure 1: Cumulative and yearly wind installed capacity in Ireland.

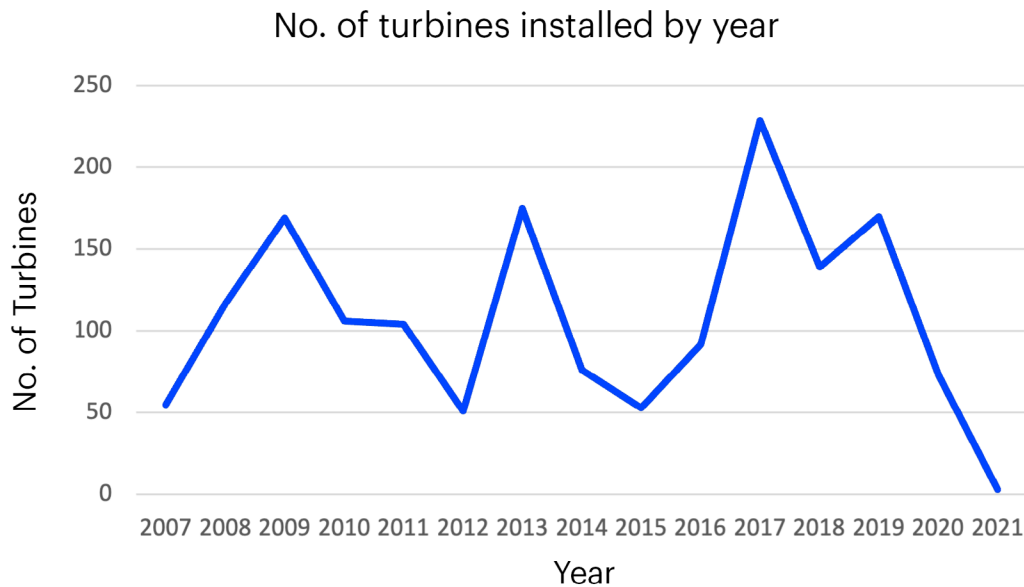


Figure 2: No. of turbines installed by year in Ireland.

SEAI the Single Point of Contact role for all renewable energy permitting processes, as required by the second Renewable Energy Directive. This will facilitate renewable energy project developers by allowing them a central hub for all the necessary permits for a project and providing guidance on the permitting process. The requirement to guide applicants through the processes will, in particular, facilitate small and community projects that may not have good insight into the permitting processes.

- Work also began on a Renewable Electricity Spatial Policy Framework (RESPF) and an updated Offshore Renewable Energy Development Plan. The accompanying strategic environmental assessments will set the onshore and offshore spatial planning context for renewable electricity to meet 2030 and future targets.
- The RESS 3 Auction Design and implementation went to public consultation in October 2022.

- RESS 3 and subsequent auctions will compensate projects at the RESS Strike Price for “availability not converted to generation for reasons of either curtailment or oversupply” through an Unrealised Available Energy Compensation (“UAEC”). Therefore, The government effectively indemnifies renewable electricity generators from excessive curtailment levels.
- The RESS 3 Auction shall propose to remove the community category from the auction. As per the outcomes of a public consultation, the community projects should then be covered by the Small-Scale Generation Scheme, which shall be introduced in 2023.
- RESS Future Auction Schedule: A schedule of auctions was published in 2021 for 2022-24 (indicatively 4-14 TWh/a), including two offshore auctions (22-35 TWh/a).

RD&D Activities

National RD&D Priorities and Budget

The SEAI National Energy Research Development and Demonstration (RD&D) Funding Programme invests in innovative energy RD&D projects, contributing to Ireland’s transition to a clean and secure energy future. A total of €20 million was invested in the programme in 2022 [6]. The key programme objectives include the following:

- Accelerate the development and deployment of competitive energy-related products, processes and systems in the Irish marketplace.
- Support solutions that enable technical and other barriers to market uptake to be overcome.
- Grow Ireland’s national capacity to access, develop and apply international-class RD&D.

- Provide guidance and support to policymakers and public bodies through results, outcomes and learning from supported energy projects [7].

National Research Initiatives and Results

SEAI funded 5 wind energy related R&D projects in 2022, with a total value of €3.45M. The projects consisted of two onshore wind projects:

- HAWK: Hibernian Airborne Wind Energy Kites, led by CTL Tástáil Teo.
- RE:HARRIER – Adaptive or risk-based management of wind farm interactions with hen harriers, led by MKO Planning and Environmental Consultants.

Three offshore wind projects were also funded:

- De-risking Scour and Anchor Installation for Floating Offshore Wind through Numerical and Experimental Modelling (SCALE) led by University College Dublin.
- IDEA-IRL (Integrated Design of floating wind Arrays Ireland), led by University College Cork.
- MEGA4Wind – Maximising offshore wind Energy Generation capabilities and Application for megawatt-scale floating vertical axis WIND turbines, led by Marine Materials Ireland.

Nature+Energy project

MaREI, the Science Foundation Ireland Research Centre for Energy, Climate and Marine, a consortium of Irish renewable energy companies and Wind Energy Ireland fund the Nature+Energy Project. It aims to develop a methodology to implement natural accounting for onshore wind farm projects by designing a state-of-the-art environmental monitoring system, which will revolutionise how biodiversity on wind farms is meas-

ured and monitored.

By developing sector-specific Natural Capital Accounts, Land-Management Decision Support Tools and Biodiversity Action Plans, the project aims to enhance biodiversity and help mitigate the effects of wind farms on key species.

Co-Wind project

The Co-Wind project (Community Engagement in Wind Energy: Innovative approaches to achieving a social license) is a University College Cork project funded by the Sustainable Energy Authority of Ireland. The project aims to understand better how community engagement in wind energy can be improved through combined measures focused on 1) public participation in decision-making, 2) direct investment and co-ownership in projects by the public and 3) enhancing current practice by developers in establishing community benefits schemes.

The project began in 2019 and is due to end in 2023. The results will provide a framework for engagement in Ireland to promote the ‘social license’ to build, own and operate wind energy projects from the communities in which they are located.

Test Facilities and Demonstration Projects

Atlantic Marine Renewable Energy Test Site (AMETS)

SEAI is developing the Atlantic Marine Energy Test site in Belmullet Co. Mayo to test full-scale pre-commercial offshore energy technologies with TRL ranging from 7 to 9. The development of the AMETS has progressed steadily over the last decade.

SEAI has expanded the scope of the test site to include floating offshore wind technology testing where the test site is currently consented to test wave energy converters [8]. The geographical location with deep waters

and a harsh metocean environment makes AMETS suitable for testing floating offshore wind technologies. SEAI will make a consent application to include a range of floating offshore wind technologies that could be installed and tested at the site.

Recent work of the test site includes:

- Site development.
- Onshore civil works for substation build.
- Grid reinforcements.
- Offshore works for electricity export cable deployment.

The current focus is on building the onshore substation, which will be completed in 2025.

Collaborative Research

Ireland has increased the number of IEA Wind Tasks it participates in to 17, with 32 members involved. Ireland has recently joined Tasks 42, 50, 51 and 53. Ireland now participates in IEA Wind Tasks 11, 25, 28, 30, 34, 39, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51 and 53.

Impact of Wind Energy

Environmental Impact

Carbon emissions from electricity generation reached 10.1MtCO₂ in 2022, a decrease of 2% compared to 2021. Ireland’s energy mix contains more renewable energy than ever before. 2022 marks the first year the country’s indigenous production of renewable energy (such as wind, hydro, solar, biomass, ambient heat from heat pumps, etc.) exceeded indigenous production of fossil fuels (such as natural gas, peat, etc.) The overall share of energy from renewable sources reached 13.1% (provisional), avoiding 6.8MtCO₂ in emissions [9].

It is estimated that four MtCO₂ was avoided by wind energy in 2021 [10]. Estimated avoided emissions for 2022 are not available yet.

Economic Benefits and Industry Development

- Ireland imports approximately 3% of its energy needs from Russia, so has a low direct exposure.
- Ireland is still impacted by rapid gas price inflation and may have indirect security exposures.
- In April 2022, the Government published an Energy Security Framework responding to the Energy crisis. Responses relevant to wind energy were:

***Response 25:** Align all elements of the planning system to support accelerated renewable energy development fully.

***Response 26:** Review grid connection arrangements for renewable electricity projects and the development of system services.

***Response 27:** Accelerate investment in the electricity grid and the development of storage technologies.

***Response 28:** Expand the rollout of renewable microgeneration, including the implementation plan for the Clean Export Premium.

***Response 30:** Prioritise the development of a hydrogen strategy.

- In September 2022, the Government published a consultation on the review of the security of energy supply for Ireland's gas and electricity systems:
- Wind energy did not feature in the nine listed mitigation options.

Next Term

2022 marked a relatively slow growth rate in Irish onshore wind energy deployment. A limited pipeline of consented wind energy projects and a reduced amount of wind farm planning applications clearing the planning authority board were the

main contributors to slow growth. The introduction of the Renewable Electricity Spatial Planning Framework for onshore renewable electricity in early 2024 shall accelerate planning decisions and increase deployment. The RESS 3 Auctions expected moves to shore up the incentives for developers, as well as the introduction of the Small-Scale Generation Support Scheme, should also begin to have an impact. Among the research expected in 2023 will be an evaluation of the RESS scheme, community benefit funds, and the social acceptance of onshore wind and solar in Ireland.

References

- [1] Department of the Environment, Climate and Communications, Department of the Taoiseach (2022), Climate Action Plan 2023. <https://www.gov.ie/en/publication/7bd8c-climate-action-plan-2023/>
- [2] Department of the Environment, Climate and Communications. <https://www.gov.ie/en/publication/36d9a-designated-maritime-area-plan-dmap-proposal-for-off-shore-renewable-energy/#:~:text=DMAPs%20will%20determine%20the%20broad,specific%20activities%2C%20including%20off-shore%20renewables>
- [3] Eirgrid Group (2022). [https://www.eirgridgroup.com/site-files/library/EirGrid/RESS-2-Final-Auction-Results-\(R2FAR\).pdf](https://www.eirgridgroup.com/site-files/library/EirGrid/RESS-2-Final-Auction-Results-(R2FAR).pdf)
- [4] Department of the Environment, Climate and Communications (2022). <https://assets.gov.ie/239377/556f7efc-b401-40d8-b1d8-bc8785527286.pdf>
- [5] Department of Housing, Local Government and Heritage (2021) <https://assets.gov.ie/139100/f0984c45-5d63-4378-ab65-d7e8c3c34016.pdf>

[6] Sustainable Energy Authority of Ireland, Research, Development and Demonstration Programme (2022), <https://www.seai.ie/news-and-media/seai-announces-call-for-e/>

[7] Sustainable Energy Authority of Ireland, Research, Development and Demonstration Programme, <https://www.seai.ie/grants/research-funding/research-development-and-demonstration-fund/>

[8] Sustainable Energy Authority of Ireland, Atlantic Marine Energy Test Site booklet. <https://www.seai.ie/publications/SEAI-AMETS-Booklet.pdf>

[9] Sustainable Energy Authority of Ireland, National Energy Balance (2022). [https://www.seai.ie/data-and-insights/seai-statistics/key-publications/national-energy-balance/#:~:text=The%20provisional%20RES%20values1,RES%2DT\)%20was%205.5%25](https://www.seai.ie/data-and-insights/seai-statistics/key-publications/national-energy-balance/#:~:text=The%20provisional%20RES%20values1,RES%2DT)%20was%205.5%25)

[10] Sustainable Energy Authority of Ireland, Energy in Ireland (2022). <https://www.seai.ie/publications/Energy-in-Ireland-2022.pdf>