

## Briefing paper on proposals to block fixed-bottom offshore wind turbines

### Key Points

- Ireland's legally binding emissions targets can only be achieved with an **offshore wind** industry capable of delivering 5 GW of renewable energy – approximately 7-10 wind farms – by 2030.
- Until the early 2030s all **new offshore wind farms in Ireland are expected to use fixed-bottom turbines** in water depths generally less than 60 metres. Today, the deepest fixed bottom turbine is 58.6m, installed in 2023 at a project in Scotland.
- Our industry is working to improve fixed-bottom technology to deploy these at greater depths and to accelerate the commercial viability of floating wind but **we must make decisions on the technology available now**, that can deliver by 2030, rather than waiting for what might be available in the future.
- Even with possible incremental advances in fixed-bottom technology in the coming years, it will **not enable development at** anything close to the level necessary to meet our targets if projects are pushed out beyond 22 km.
- It is **not** the case, as some have claimed, that there is a **ban in Europe on developing wind farms within 22 km** off the coast or that it is 'best practice' to do so. This is simply not true.
- Just recently, in April 2024, **Denmark** – the world's leader in wind energy – identified **six new marine areas for offshore wind development which are all closer than 22 km** at the nearest point to shore and most are 12-15 km.
- **Floating** wind energy, which our members are eager to develop in Ireland, is a relatively **new technology** and it will be **in the mid to late 2030s** before commercial scale floating projects come online in Ireland.
- **No country** in Europe **has proposed effectively blocking fixed-bottom** offshore wind farms.
- Ireland cannot wait, fixed-bottom wind turbines will lead our offshore wind energy revolution. They will **create jobs, attract billions in investment and revitalise our coastal communities**.
- Fixed-bottom turbines will **pave the way for floating wind energy** as they will build the port infrastructure, the supply-chain and the investor confidence needed to develop floating wind energy.
- **Waiting is not an option.** The climate emergency is real. It is happening now.

## Introduction

The global climate crisis, and consequently the urgent need to decarbonise Ireland's energy supply, is the single greatest challenge we face.

The latest assessment from the Intergovernmental Panel for Climate Change confirms that greenhouse gas emissions are destroying our planet and putting billions of people at risk.<sup>1</sup>

A report from the Environmental Protection Agency makes it clear that Ireland is not immune and our country is getting hotter and wetter and in May the organisation called for the acceleration of the delivery of renewable energy.<sup>2,3</sup> A more recent report from Met Éireann confirmed the warmest year on record in 2023 and some of the wettest months.<sup>4</sup>

The climate emergency is real and, to respond, we must cut our CO<sub>2</sub> emissions.

To decarbonise we must develop offshore wind energy in large volumes and as quickly as possible. The original Climate Action Plan set a target for 3.5 GW of offshore wind – roughly 5-7 wind farms – by 2030 with the Programme for Government setting out an enhanced target of 5 GW.

**Delivering offshore wind energy will drastically cut our CO<sub>2</sub> emissions. It will make Ireland more energy independent. It will attract several billion euro in investment into Ireland and create thousands of long-term and sustainable jobs, particularly in our coastal communities.**

This is how we deliver the clean energy, the affordable energy and the secure energy that Irish families, communities and businesses want and which they deserve.

Offshore wind projects are already working with local communities. The response so far has been extremely positive with communities welcoming the enormous economic benefits and the opportunity to contribute to decarbonising our energy supply.

The Irish people want climate action, they want to see their country achieve energy independence and they want to see their electricity bills falling.

However, proposals are being put forward, based on misinformation, to ban offshore wind energy development within 22 km of Ireland's coast.

We have prepared this briefing paper to explain why this is, in effect, a proposal to abandon our renewable electricity targets, to undermine Ireland's efforts to tackle the climate crisis and to prolong our dependency on imported fossil fuels in direct conflict with what polling consistently tells us are the preferences of the Irish people.

Ireland has a responsibility to address the climate emergency. All of us have our own part to play. Banning offshore renewable energy development within 22 km of our coastline frustrates our climate action response and will prolong our continuing dependency on imported fossil fuels

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<sup>1</sup> <https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/>

<sup>2</sup> <https://www.epa.ie/publications/research/climate-change/research-386.php>

<sup>3</sup> <https://www.epa.ie/news-releases/news-releases-2024/ireland-is-projected-to-exceed-its-national-and-eu-climate-targets.php>

<sup>4</sup> <https://www.met.ie/state-of-the-irish-climate-report-2023>

## Why are most of Ireland's proposed wind farms located where they are?

As shown in the image on the next page the answer, simply, is seabed depth.

As you move out from shore Ireland's seabed depth increases very quickly, compared to the North Sea, for example, which is relatively shallow and gently sloping.

Identifying the right location for an offshore wind farm requires a careful balance between many technical, environmental and economic factors. But one of the most critical is the seabed depth at any potential location.

Most of Ireland's proposed offshore wind farms will use a technology called 'fixed-bottom wind turbines'. Put simply, the turbine is installed on a foundation which are buried in the seabed.

This proven technology has been used to develop 34.2 GW of offshore wind energy in Europe alone and is used all over the world.<sup>5</sup> Individual offshore turbines are now available that provide 15 MW of power and the price of offshore wind energy has fallen 34 per cent since 2010.<sup>6</sup>

The key challenge with fixed-bottom turbines is that they currently can only be deployed in water depths of 50-60 metres or less and where the seabed conditions are suitable to secure the foundations.

This is why, for example, there is only one fixed-bottom offshore project planned for the west coast of Ireland despite the excellent wind conditions. There simply is not enough seabed available at 60 metres or less, as shown in the map below.



Figure 1: Extent of available seabed at water depth of 60 metres or less in Ireland's maritime area. – Source: Everoze using INFOMAR data.

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<sup>5</sup> Offshore wind in Europe - key trends and statistics 2023. Wind Europe.

<sup>6</sup> RENEWABLE POWER GENERATION COSTS IN 2022. IRENA.

## Is it true that offshore wind farms closer to shore than 22 km are banned in Europe?

No, this is not true.

As of the end of 2023, there are 12 GW of offshore wind capacity installed in Europe located within 22 km of the coastline.<sup>7</sup> This accounts for 35 per cent of today's installed European offshore wind capacity.

There are an additional 20 GW under construction, with permits or in the planning system within the same distance.

## Are there some European countries which have restricted offshore wind farms within 22 km?

There are five countries in Europe – Britain, Denmark, Germany, Belgium and the Netherlands, – in which 97 per cent of the existing offshore wind energy capacity is installed.

**Britain**, which is currently the largest offshore wind energy market in the world, has no distance-to-shore restriction on offshore wind farm development.

**Denmark**, the world's leader in wind energy development, likewise has no such restriction. In April 2024 Denmark announced tenders for six new offshore wind sites – Nordsøen I, Kattegat II and Hesselø, Kriegers Flak II, Energiø Bornholm 1 North and Bornholm 2 – all of which, at their closest point to shore, are within 22 km. Some are as close as 12 – 15 km.

There are some countries that have put in place distance-to-shore restrictions, but it is important to understand that their water depths are much shallower. No country in Europe, or anywhere in the world, has proposed effectively blocking fixed-bottom offshore wind farms.

There is no federal ban on the development of offshore wind energy within 22 km of the coast in **Germany**. Individual states have authority over offshore wind energy planning up to the 12 nautical miles (22 km) limit. Of the three German coastal states only one, Schleswig-Holstein, restricts development within 22 km of the coast.

The Nordergrund and Riffgat wind farms were recently completed and both are approximately 15 km from the coast of Lower Saxony.<sup>8</sup>

Last year the Arcadis Ost wind farm went online 19 km off the state of Mecklenburg-Vorpommern and the 900 MW Gennaker wind farm, located around 15 km from the coast, is under construction and, when completed, will be the largest offshore wind farm in the Baltic Sea.

Only two countries with significant volumes of offshore wind energy, **Belgium** and the **Netherlands**, have 22 km distance-to-shore limits but both of these countries have shallow maritime areas far larger than Ireland's.<sup>9</sup>

The Belgian SeaMade fixed-bottom wind farm, for example, is 55 km from shore but in a water depth of 40 metres.<sup>10</sup> The 600 MW Dutch Gemini fixed-bottom wind farm is located 85 km from the coast but in water depths ranging from 28-36 metres.<sup>11</sup>

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<sup>7</sup> Wind Europe.

<sup>8</sup> <https://www.tennet.eu/projects/riffgat>, <https://www.tennet.eu/projects/nordergrunde>, and Offshore Stiftung.

<sup>9</sup> Overview of national permitting rules and good practices. Wind Europe. 2023

<sup>10</sup> <https://www.power-technology.com/projects/seamade-offshore-wind-farm-north-sea/>

<sup>11</sup> <https://www.power-technology.com/projects/gemini-wind-power-project/>

**Neither of those projects could be developed in Ireland if a 22 km distance-to-shore restriction was in place.**

However, to develop the additional wind energy needed to meet their climate action targets, the Dutch Government recently approved two new wind farms, Hollandse Kust Noord and Hollandse Kust Zuid, **inside their 22 km limit**.<sup>12</sup>

The former is a 759 MW project which became operational in December 2023.<sup>13</sup> The latter is a 1,520 MW project with up to 139 turbines, the closest of which will be 18 km from shore, and is one of the largest offshore wind farms in the world.<sup>14</sup>

As you can see from the graph below fixed-bottom offshore wind farms can be – and are – located some considerable distance from shore but **only in places where the water depth is under 50 metres, and often under 40 metres**. A handful of small floating wind farms have been developed in deeper waters.

But, as shown in the graphic on page three, seabed depths off the Irish coast are such that there simply are very few locations big enough for a modern offshore wind farm at 50-60 metres or less outside the 22 km mark.

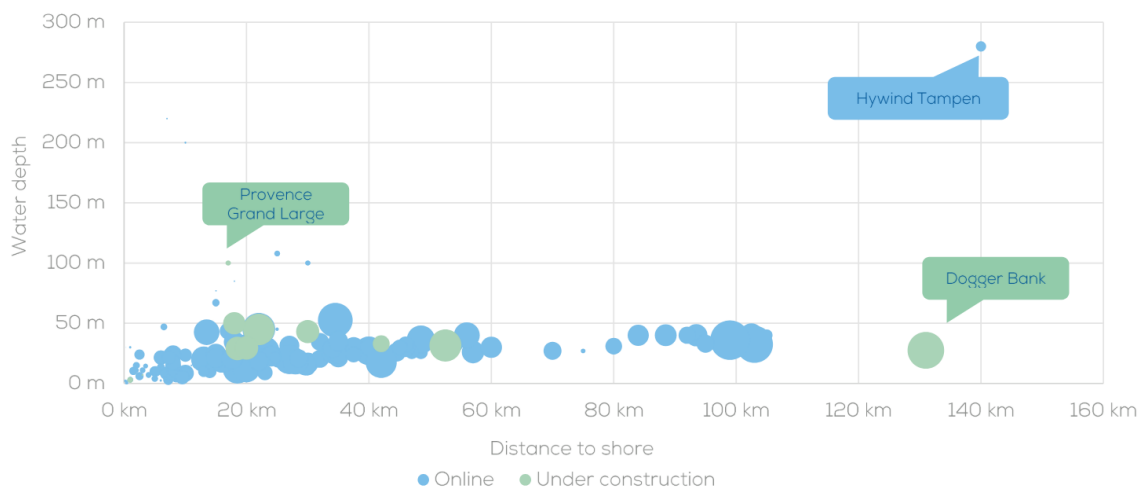


Figure 2: Existing offshore wind farms in Europe, showing the significant number within 22 km and the relevant seabed depths. – Source: Wind Europe.

### Could we use floating wind farms instead?

It must be remembered that floating wind energy is a relatively new technology. As of the end of Q1 2024 there were only 39 floating wind energy turbines installed globally compared to 6,340 fixed-bottom turbines in Europe alone.<sup>15</sup>

Many of these floating energy installations are pilot projects on a much smaller scale than fixed-bottom offshore wind farms and there is not a single commercial floating wind farm operating anywhere in the world though we hope and expect this to change shortly.

<sup>12</sup> <https://www.government.nl/topics/renewable-energy/offshore-wind-energys>

<sup>13</sup> <https://www.crosswindhkn.nl/nl/>

<sup>14</sup> <https://hollandsekust.vattenfall.nl/windpark/>

<sup>15</sup> Data from TGS/4cOffshore and Offshore wind in Europe - key trends and statistics 2023. Wind Europe.

A floating offshore wind turbine is not fixed to the seabed like a fixed-bottom wind turbine. Instead, it is mounted on a floating platform which is secured to the seabed by mooring cables and anchors.

One of the big advantages of floating wind turbine technology is that it can be deployed in much greater depths (see below).

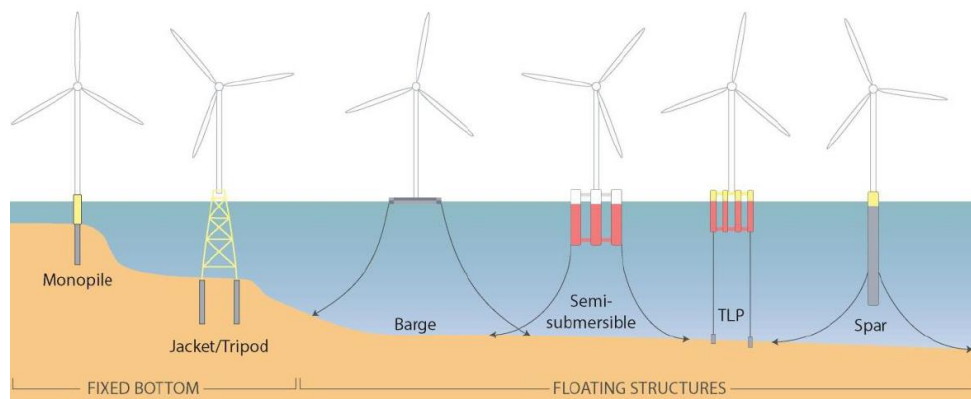


Figure 3: The four basic types of FLOW technology are the Barge, Semi-submersible platform, Tension Leg Platform (TLP), and the Spar Buoy, which between them can be deployed in circa 60- 1000m water depths – Source: EirWind.

Floating offshore wind can add to the benefits of traditional fixed-bottom wind by helping to make Ireland a world leader in producing renewable energy and responding to the climate emergency. It can help to make us truly energy independent.

We are proud to represent floating wind energy and in 2021 published *Revolution: A vision for floating wind energy*, which was the first comprehensive analysis of the potential for floating wind energy to drive Ireland’s Green Economy and to decarbonise our energy supply.<sup>16</sup>

As commercial-scale projects begin to come online globally lessons learned from this will significantly assist the development of floating wind projects in Ireland.

We are ambitious for floating wind energy and for driving the development of this exciting new technology. Our members are eager to work with the Government to identify areas suitable for the developing of Irish floating wind energy as quickly as possible.

**However, while we are confident that we can make Ireland a leader in floating wind energy, we cannot develop floating wind projects before 2030 and so we cannot build floating wind farms that can contribute to our Climate Action Plan targets.**

Fixed-bottom offshore wind is essential if Ireland is to meet this ambitious objective. It has the **scale and deployment capacity** to meet these objectives **in full** right now.

Any proposed introduction of exclusion zones for fixed-bottom wind turbines means we will fail to reach our 2030 targets. We will fail to decarbonise Ireland’s energy supply.

We will also fail to seize the long-term opportunity represented by floating wind energy because we will undermine investor confidence in Ireland as a place where projects can be delivered and floating wind energy needs fixed-bottom wind projects to kickstart our offshore supply chain.

**In the coming years we will position Ireland as a leader in floating wind energy. As well as the 5 GW target for 2030, the Programme for Government has committed to a longer-**

<sup>16</sup> <https://windenergyireland.com/images/files/revolution-final-report-july-2021-revised.pdf>

## **term plan to develop 37 GW of offshore wind power and we believe the majority of this will be floating.**

It is also correct that, as a relatively new technology which is located further out from shore, floating wind energy is currently significantly more expensive than fixed-bottom turbines. We expect that the price will fall rapidly as the technology matures and it could become cost-competitive with fixed-bottom offshore wind in the 2030s.

But achieving our 2030 targets, delivering 5 GW of offshore wind energy at the best possible price for the Irish electricity consumer, can only be done using fixed-bottom offshore wind.

## **Conclusion**

Over the next 20 years our members will work to develop the offshore wind farms Ireland needs to decarbonise our electricity supply. These projects must be developed in a way that is sensitive to our marine space and to those with whom we hope to share it.

When looking for a suitable location for an offshore wind farm a balance must be struck. A location must have:

- The right water depths;
- Seabed sediments;
- Wind speeds;
- Wave heights;
- Visual impacts;
- Environmentally sensitive areas, key fishing grounds and shipping routes must be carefully considered.

Ensuring proposals take account of the impact on landscape and seascape is critical to sustainable development. All offshore wind projects must demonstrate how they avoid, minimise or mitigate significant negative impacts through an Environmental Impact Assessment Report.

The wind energy industry will develop offshore wind farms in a way that is sensitive to our marine space and all those who use it. Seabed surveys are underway. Bird, mammal and fish movements will be identified and tracked. We are already listening to, and working with, our fishing communities and other stakeholders. This is key to ensuring development is carried out sensitively.

Fixed-bottom wind turbine technology is used successfully all over the world and will lead Ireland's offshore wind energy revolution. It will create jobs, attract billions of euro in investment and revitalise our coastal communities. It will pave the way for the deployment of floating wind energy.

Choosing to introduce exclusion zones, to block new offshore wind farms, means more carbon emissions, increases our dependency on expensive imported fossil fuels and undermines Ireland's contribution to dealing with the global climate crisis.

We must choose instead to develop the offshore wind energy we need, to be a leader in the response to the global climate emergency and the development of newer technologies like floating wind energy, to help shut down the fossil fuel industry and to make this a better country in which to grow old and in which to raise our families.

**ENDS**

**June 2024**