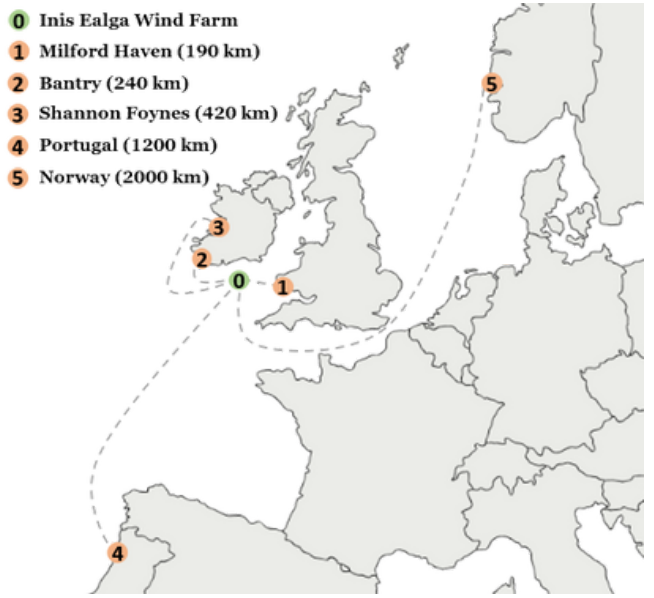
Floating Wind Risk Management series

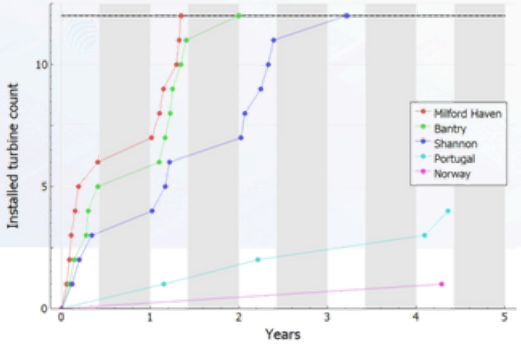
Chapter I – Port distance impact on installation

Welcome to the first chapter of the Floating Wind Risk Management series. This series will illustrate the impact and consequence of key risk areas related to the floating wind industry. Port distance has a significant impact on a floating wind project development. This chapter presents results from analysing distance from port and the impact on installability, utilising evidence-based results produced using commercial software: TEMPEST™

Two scenarios have been selected for the study of port distance impact during installation; (1) a 100 MW (12 turbines) demonstrator pilot farm and (2) the proposed 1GW (67 turbines) Inis Ealga Wind Farm off the south coast of Ireland. The demonstrator project is simulated using a single fleet of vessels for turbine commissioning, only available between May and September inclusive, and the turbine installation operations take 78 hours per device (excluding weather windows). For the full-scale farm, 2 vessel fleets are available all- year round, and a 30% duration decrease has been assumed for offshore tasks during installation. Scan the QR code for additional details on the simulations.



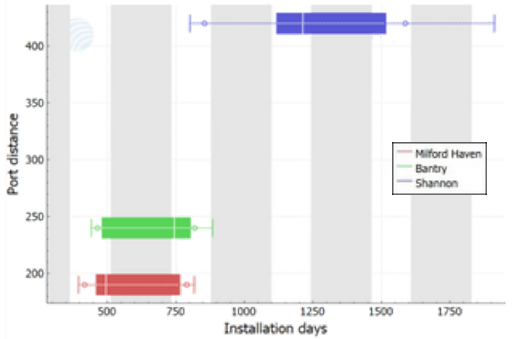
100 MW Demonstrator (12 x 8 MW turbines)



Demonstrator average turbine installation count per port. Vessel non-availability period greyed out (Oct-Apr)

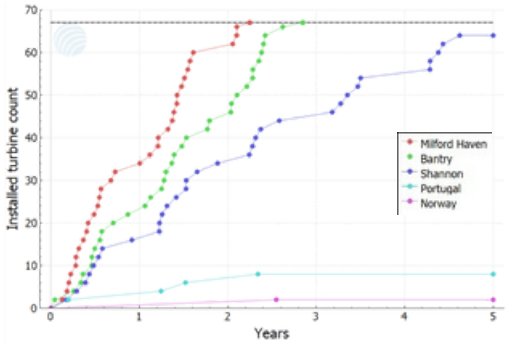
Port distance	Fleets
Milford haven (190 km)	1
Bantry (240 km)	2
Shannon Foynes (420 km)	2
Portugal (1200 km)	>5
Norway (2000 km)	>5

Required amount of vessel fleets for the demonstrator installation under 2 years



Demonstrator installation duration percentiles box plot. Vessel non-availability period greyed out (Oct-Apr)

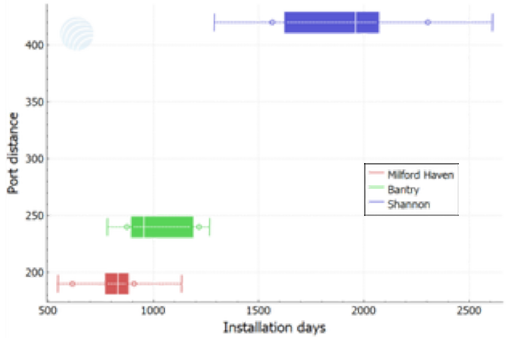
1GW Inis Ealga Wind Farm (67 x 15 MW turbines)



Inis Ealga farm average turbine installation count per port

Port distance	Fleets
Milford haven (190 km)	3
Bantry (240 km)	3
Shannon Foynes (420 km)	3
Portugal (1200 km)	>30
Norway (2000 km)	>30

Required amount of vessel fleets for Inis Ealga farm installation under 2 years



Inis Ealga farm installation duration percentiles box plot.

Commissioning duration is a key metric for the development of any offshore project. Due to restrictions of weather windows, installation times significantly vary for the different distances to port. Closer ports require less vessel fleets for the commissioning of the farms within an acceptable time frame. Ports at further distances might be suitable with larger vessel fleets. With the current availability of vessels, port distance becomes an even more critical parameter. Early-stage simulation provides much needed evidence for development de- risking. Results highlight there is a need to develop Irish ports for the floating wind industry and a need to carry out analysis. This is one of the many inputs that affect a floating wind project, in the next chapter an investigation into port capacity will be carried out.

Find out more

Next chapter: Port Capacity