



# leanwind

## Logistic Efficiencies And Naval architecture for Wind Installations with Novel Developments

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## Definitions

WDT	Weather Down Time	JUV	Jack-Up Vessel
WTG	Wind Turbine Generator	HLV	Heavy Lifting Vessel
CoG	Center of Gravity	OP <sub>WF</sub>	Forecasted environment (Hs or wind speed) duration of the operation (including contingency)
VCG	Vertical Center of Gravity	OP <sub>LIM</sub>	Limiting environmental condition for the operation, according to experience or analysis
MP	Monopile	T <sub>POP</sub>	Planned duration from the last weather forecast and until finished operation, where a safe condition is reached (not including contingency)
TP	Transition Piece	AHTS	Anchor Handling Tug Supply

## Executive Summary

The offshore wind industry has developed significantly over the last 20 years, despite having faced numerous challenges and obstacles. The current state of the art reminds us of what the industry has achieved over the last few decades.

As the wind turbines are getting bigger, with larger capacities, and the waterdepths are increasing to provide access to rich wind resources further offshore, the industry needs to adapt accordingly to keep up with this fast growing business. Considering that the offshore industry has mostly been driven by the requirements oil and gas industry, providing solution to these novel challenges requires particular attention to the specifications and requirements of the renewables industry.

In this deliverable, an enumeration of challenges are identified and briefly described. Both current and future challenges during installation and assembly phase are covered. It is not only limited to the turbines but also covers the connection between turbine tower and foundation, as well as the interaction of foundation with the seabed.

The outcome of this report will help guiding some of the remaining tasks of this workpackage. Bearing in mind the challenges to overcome, will create awareness of the barriers when seeking for (novel) solutions.