

## Challenge 2.1

### Floating wind farms

Mooring and anchors	 Short-term	 High priority
<p><u>Description and scope</u></p> <p>Mooring and anchors are challenging and costly for floating offshore wind. A specific challenge is to meet the lifetime expectations of 25 years. Faults in mooring lines are often caused during installation or due to corrosion. Improved assessment of stress and fatigue levels in mooring and anchoring lines is essential to the success of floating offshore wind.</p> <p>The development and qualification of new innovative equipment, suited for specific floating wind applications, will further help optimise mooring and anchoring lines. The environment concepts have to be easy to handle and install, and should connect easily with devices.</p> <p><u>Recommended research actions</u></p> <ul style="list-style-type: none"><li>• Development of new materials with required strength and stiffness (e.g. qualification of “new” fibre rope types, such as nylon).</li><li>• Dynamic interaction taut leg systems and floating wind structure.</li><li>• Development of cost-effective mooring system components, e.g. tensioners and new mooring systems (such as floater-to-floater mooring).</li><li>• Wind controller assisted mooring (thrust &amp; motion).</li><li>• Models for dynamic behaviour of fibre ropes, and adaption of simulation tools for global analysis of fibre ropes.</li><li>• Anchors for multi-axial loading.</li><li>• Design tools for installation of innovative anchors (Torpedo, Deepla...) for improved installation (faster and cheaper).</li><li>• Experimental validation for innovation anchors.</li><li>• Assessment of the impact of extreme weather events (earthquakes and storms) on anchor design.</li></ul>	<p><u>Milestones</u></p> <ul style="list-style-type: none"><li>• Novel mooring system enabling floating concepts at 50-100m water depth.</li><li>• Demonstrate control system to assist mooring system.</li></ul>	