



Challenge 1.2

Installing large volumes offshore

Cabling and connections	 Medium-term	 High priority
<p><u>Description and scope</u></p> <p>Cables are the most pivotal and weakest link in transferring offshore wind power to the grid. If the cable fails, power production drops and this affects the economic value of offshore wind. Most cable failures are due to one of the following 5 major causes: fatigue due to erosion of the support sand; failure of cable structure; damage from incorrect installation; manufacturing problems; and damage from ship anchors. There is a need for a new generation of high tensile light cables for floating offshore units. There is also a need to develop lead-free High Voltage Direct Current (HVDC) and High Voltage Alternating Current (HVAC) cables using new sealant technologies.</p> <p><u>Recommended research actions</u></p> <ul style="list-style-type: none">• Develop cables resistant to strain when support sand is washed away. Sensorise cables to warn of this in advance.• Optimise materials and structure of cables to make them fit for purpose and reduce the high price.• Develop automated repair systems for large array and export cables.• Develop a new cable suitable for floating wind farm connection.• Develop audio/optical-based ship monitoring and damage system to pre-warn and prevent damage and/or identify culprit of damage.• Develop lead free HVDC and HVAC cables using non-metallic seals.	<p><u>Milestones</u></p> <ul style="list-style-type: none">• Develop new cable technology to reduce failures by 90 % by 2024.• Develop new floating-ready cable technologies by 2024.• Develop lead-free cables by 2024.	