

## Expert group: Identification of connection requirements for offshore systems (EG CROS) – phase 1

Final Draft for approval

**Chair:** Mario Ndreko, ENTSO-E

**Vice-Chair:** TBD

### Problem Statement

The European Green Deal defines the ambitions for the EU to become climate-neutral by 2050. To reach that goal, offshore technologies are of key importance including the integration of such technologies at sea basin level in the North, Baltic, Mediterranean and Black seas, the Atlantic Ocean and the EU's outermost regions and overseas territories. To ensure the effective integration of offshore renewables, a number of technical challenges still need to be considered and solved. These challenges include but may not be limited to planning standards for offshore HVDC grids, standardisation of assets and equipment, specification of HVDC transmission lines, operation rules and connection requirements applying to offshore power generation modules and HVDC transmission systems connecting to onshore transmission networks.

Whereas onshore networks have seen an incremental development/improvement over the last decades, the offshore experience is much lower and at the same time we are aiming at a significant growth of offshore generated power. This requires offshore transmission systems and relevant products which are even more reliable as the accessibility of offshore sites is limited and there is a very demanding environment with often harsh weather conditions. In general, all different environmental requirements and site conditions should be considered accordingly.

### Target

The objective of phase 1 of EG CROS is to identify the topics that are relevant in the domain of connection network codes and consequently within the competence of the GC ESC. The EG shall structure the identified issues and corresponding objectives for work on substance in a subsequent phase (phase 2) with more detailed discussions on how those issues could be supported by relevant EU Connection Network Code (s), either by amending existing codes (e.g. NC HVDC), or drafting (a) new dedicated NC(s), or both. When identifying the issues, a first assessment and guidance may already be given, whether amendments or new code(s) are deemed favourable for each issue.

Phase 1, complemented by the work of phase 2 should also identify overlaps and shortcomings with the relevant standards.

The phase 1 work also includes identifying any relevant expert stakeholders, either as members or consulting parties for further engagement in the subsequent phase 2.

### Deliverables

1. Provide the ToR for the subsequent phase 2 of the follow up work to be done under the GC ESC.
2. Provide a short paper with main points and observations from phase 1 (Annex to the ToR of EG Offshore – phase 2)

3. Provide a mapping of currently existing transmission topologies for the integration of offshore technologies
4. Provide a list of standards, including adoptable for offshore purpose (list to be completed in phase 2)
5. Identify relevant stakeholders for the identified issues

### Timing

- Estimated 3-4 months from December 2021.

### Team (update XX.XX.2021)

The following nominations to participate in EG Offshore – phase 1 have been received (name and association):

<i>Name</i>	<i>Organisation</i>	<i>Representation at GC ESC</i>
<i>Mario Ndreko</i>	TenneT DE	ENTSO-E
<i>Ioannis Theologitis/Adrian Gonzalez</i>	ENTSO-E	ENTSO-E
<i>Flemming Brinch Nielsen</i>	Energinet	ENTSO-E
<i>Pascal Winter</i>	Amprion	ENTSO-E
<i>Ranjan Sharma</i>	Siemens Gamesa	WindEurope
<i>Kamran Sharifabadi</i>	Equinor	WindEurope
<i>Tusitha Abeyasekera</i>	Vestas	WindEurope
<i>Vasiliki Klonari</i>	WindEurope	WindEurope
<i>Jörn Runge</i>	RWE	VGBE
<i>Eric Dekinderen</i>	VGBE	VGBE
<i>Tarik Donlagic</i>	Siemens AG	Orgalim
<i>María López Gómez- Calcerrada</i>	Iberdrola	EASE
<i>Gunnar KAESTLE</i>	B.KWK	CENELEC
<i>Frank Schettler</i>	Siemens Energy	CENELEC
<i>Karstein Brekke</i>	Hydro Energi AS	FEBELIEC

### Estimated workload

- biweekly webinars;
- commitment of 8-10 days per member.

### Target audience

- GC ESC
- Relevant and/or interested stakeholders on the Connection Network Codes