

# Intermediate Stakeholder Report – Deliverable D7.7

PROMOTioN – Progress on Meshed HVDC Offshore Transmission Networks

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This result is part of a project that has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691714.

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DISTRIBUTION LIST: PUBLIC

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### DOCUMENT HISTORY

Version	Date	Main modification	Author
1.0	31.12.2017		
2.0	31.01.2019	Revision of document, addition of Chapter 4	Andreas Wagner, Sebastian Menze

WP Number	WP Title	Person months	Start month	End month
7	Regulation & Financing		1	48

Deliverable Number	Deliverable Title	Type	Dissemination level	Due Date
7.7	Intermediate Stakeholder Report	Report	Public	M24

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# CONTENT

- Document info sheet..... i**
  - Distribution list: Public ..... i
  - Approvals ..... i
  - Document history ..... i
  
- List of Contributors ..... ii**
  
- 1 Introduction to Stakeholder Interaction and Objective..... 1**
  
- 2 Stakeholders of WP 7 of the PROMOTioN Project ..... 3**
  
- 3 Means of Stakeholder Interaction ..... 4**
  - 3.1 Workshops..... 5
    - 3.1.1 Kick-Off Workshop in Brussels ..... 5
  - 3.2 Side Events ..... 6
    - 3.2.1 Northern Seas Energy Forum Brussels 2017 ..... 6
    - 3.2.2 OWE 2017 London ..... 8
  - 3.3 Reference Group ..... 9
    - 3.3.1 1<sup>st</sup> Meeting in Hamburg, 29 September 2016 ..... 9
    - 3.3.2 2<sup>nd</sup> Meeting in Brussels, 6 December 2017 ..... 10
  - 3.4 Other..... 10
    - 3.4.1 WP 7 Survey..... 10
    - 3.4.2 Cooperation with Initiatives and Working Groups..... 11
    - 3.4.3 Project Relevant Conferences, Events ..... 12
    - 3.4.4 Outlook on Future Stakeholder Activities..... 12
  
- 4 Stakeholder Feedback ..... 14**
  - 4.1 Feedback of TSOs..... 15
  - 4.2 Feedback of HVDC Equipment Suppliers ..... 16
  - 4.3 Feedback of National/ Local Authorities ..... 16
  - 4.4 Feedback of Offshore Wind Project Developer ..... 17
  - 4.5 Feedback of NGOs, Energy Agencies & Industry Associations ..... 18
  - 4.6 Feedback of Consultant..... 18
  
- 5 Conclusion and Evaluation of Measures ..... 20**
  
- 6 Annex..... 21**

# 1 INTRODUCTION TO STAKEHOLDER INTERACTION AND OBJECTIVE

'Stakeholder Interaction' in the context of PROMOTioN is a part of the stakeholder management of the project. It can be described as a supportive process to the overall project dissemination and stakeholder management activities which is covered by work package 13. It defines ways and means to engage with (key-) stakeholders over the whole project duration and allows for direct feedback. While measures like a project newsletter or a project website are both means of stakeholder management, stakeholder interaction goes beyond this and fosters direct and bilateral communication measures. This can be achieved via workshops & bilateral discussions, surveys, face-to-face dialogue and communication with stakeholders.

The scope of this report covers exclusively on stakeholder interaction in work package 7 - Regulation & Financing (in the following: WP 7), while the dedicated work package 13 – Dissemination (in the following: WP 13), led by Stiftung OFFSHORE-WINDENERGIE, the German Offshore Wind Energy Foundation (in the following: SOW), is organising the stakeholder management and dialogue for the overall project. Since both activities, task 7.4 (stakeholder consultation in the scope of WP 7) and WP 13 are led by SOW, synergies can be used for the benefit of the overall project dissemination activities, as well as the visibility of WP 7 within PROMOTioN.

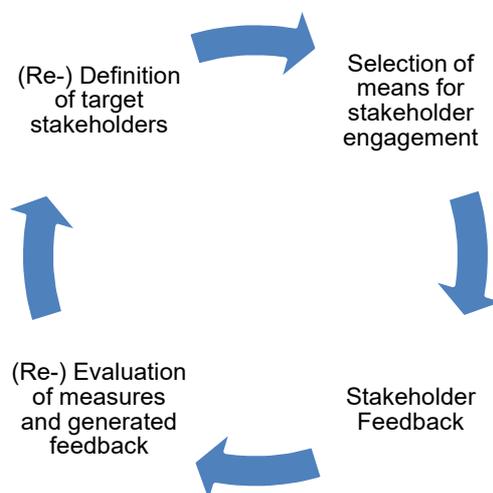


Figure 1: Stakeholder Interaction Process WP 7 (own illustration)

The aforementioned process of stakeholder interaction is illustrated in figure 1 and is divided into different steps. The process can be interpreted as a continuous improvement process, similar to a classical "Plan-Do-Check-Act" cycle<sup>1</sup>. At first, the project has to learn about the stakeholder landscape and (re-)define the respective target group, which is described in *section 2* of this report. Subsequently,

<sup>1</sup> Tague, Nancy R. (2005) [1995]. "Plan-Do-Study-Act cycle". *The quality toolbox (2nd ed.)*. Milwaukee: ASQ Quality Press. pp. 390–392. ISBN 0873896394. OCLC 57251077. Retrieved 2017-11-21.

when the right stakeholders are chosen, the proper ways and means of how to engage with the respective stakeholder group has to be decided on. The different measures that have been chosen are specified in *section 3*. In a third step the chosen measure is conducted and feedback is generated. This has to be evaluated in a fourth step, which might lead to an adaption of the chosen measure and, subsequently, to a re-evaluation and redefinition of the target group respectively. This step and conclusions drawn from the chosen measures are further described in *section 5*. Chapter 4 contains a summary of the feedback received from stakeholders.

In general, stakeholder interaction is a tool to the overarching objective of stakeholder management – which is key for the project's overall success. To accomplish this objective, the project is dependant on stakeholder feedback, in order to reflect the work performed against stakeholder opinions and expectations. In the context of WP 7, the major objective of stakeholder interaction is to share project (intermediate) results with stakeholders and take the feedback into account in order to develop an appropriate European regulatory target framework for the development of integrated offshore electricity transmission infrastructures. Stakeholder interaction therefore strives for close collaboration with the relevant stakeholder groups.

In the context of WP 7, the major objective of stakeholder interaction is to share project (intermediate) results with stakeholders and take the feedback into account in order to develop an appropriate European regulatory framework for the development of integrated offshore electricity transmission infrastructures. Stakeholder interaction therefore strives for close collaboration with the relevant stakeholder groups.

The stakeholder interaction covered in this report includes the period from January 2016 until December 2017, the first part of the project duration. The main objective for this time period was to gain feedback on the research conducted by WP 7 regarding regulation and financing. At the same time, the objective was to convey the importance of the regulatory legal, economic and financing topics for the development of meshed HVDC offshore grids to relevant stakeholders.

The intermediate reports D7.1, D7.3 and D7.5 deal with analyzing the regulatory and financing barriers to create meshed HVDC offshore grids and are therefore the central pieces of work within WP 7 that have been discussed with stakeholders.



## 2 STAKEHOLDERS OF WP 7 OF THE PROMOTION PROJECT

In preparation of project communication activities, a stakeholder list has been developed within the scope of WP 13. The mailing list was categorized and divided in six main categories. These were further sub-divided into 38 sub-categories. The main categories include stakeholders from European institutions, policy institutions, industry, financing bodies, academia & consulting as well as other relevant stakeholders such as industry associations or NGOs. In addition, the contacts are sorted according to their geographical distribution. The data base comprises of a total of 1,372 stakeholder contacts (state: 1 December 2017). In order to target stakeholders of WP 7 more precisely, a separate list was developed on the basis of the aforementioned objectives. While the categories of the main list were adopted, the sub-categories were assessed and sorted out, in order to mirror the key-stakeholders of WP 7. This adapted stakeholder list comprises of around 680 stakeholders from, amongst others

- European Institutions (e.g. European Commission, European Parliament, ENTSO-E, ACER, etc.),
- Policy Institutions (e.g. national ministries, national regulatory agencies, etc.),
- Industry Stakeholders (e.g. national TSOs, offshore wind project developers, etc.),
- Financing Bodies (investment banks, insurances, commercial banks, etc.),
- Academia & consulting (universities, consulting agencies, etc.),
- Others (NGO's, industry associations, energy agencies, etc.).

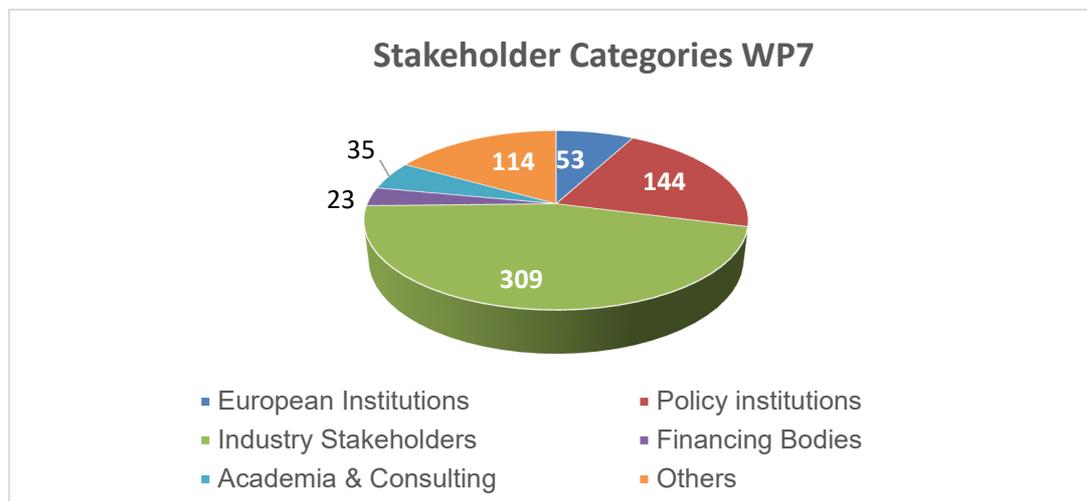


Figure 2: Stakeholders of WP 7 of the PROMOTioN project

The “Northern Seas Energy Cooperation” as well as the “WindEurope Working Group Offshore” were identified as important stakeholder groups to PROMOTioN, further elaborated on in section 3.4.2. The mailing list is a living document, therefore contacts are regularly updated, at least four times per year, while new contacts are added upon request by any project partner or known awareness. Due to privacy and data protection requirements, PROMOTioN cannot give away concrete contact details.

### 3 MEANS OF STAKEHOLDER INTERACTION

In the context of PROMOTioN, different measures of stakeholder interaction have been undertaken. There are three different kinds of PROMOTioN events, which can be distinguished and defined as follows:

- Workshops (see section 3.1): are conducted as stand-alone events, i.e., that it is not linked to any other related event. These can be dedicated to a special work package or the overall project;
- Side events (see section 3.2): are a project event, workshop or exhibition that is linked to a bigger, external event such as conferences or exhibitions;
- Reference Group meeting (see section 3.3): it is a closed assembly, similar to an advisory group, which meets on an annual basis. The meetings in 2016 and 2017 are organised on behalf of WP 13, as part of task 13.7. The Reference Group consists of key industry players and of national/European policy-makers and regulators, thus making it specifically attractive for WP 7 partners to elaborate on WP 7 content and reflect interim findings against the expert opinions. Chatham house rule applies to these meetings.

In addition to workshops, side events at industry conferences, reference group meetings, as well as other means and ways of direct stakeholder interaction have been applied (see section 3.4).

WP 7 partners engaged with stakeholders via a survey on legal, economic and financial regulatory barriers. The survey was performed from Mid-September to Mid-October 2017. In addition, the events and meetings of the Northern Seas Energy Cooperation, Support Group 2 on offshore grids, as well as the WindEurope Working Group have been attended for the purpose of close collaboration and visibility of PROMOTioN and WP 7 among these groups.

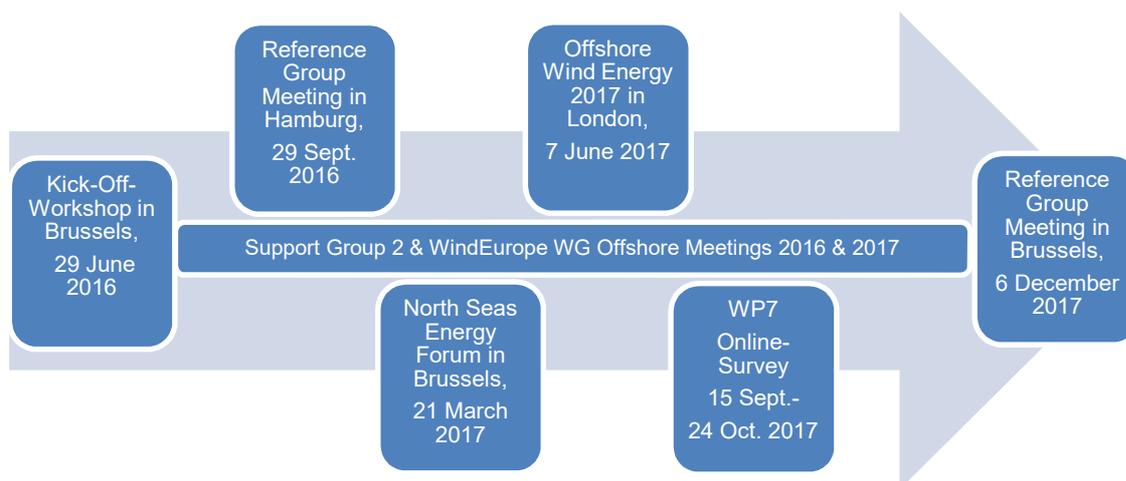


Figure 3: WP 7 Stakeholder Interaction Overview

The topics and content of the respective measures is elaborated on in the following. In addition, the annex includes the respective agenda of events and meetings, as far as these are publicly available as well as the results from the online survey which was conducted after the finalisation of the intermediate deliverables D7.1, D7.3 and D7.5.

## 3.1 WORKSHOPS

### 3.1.1 KICK-OFF WORKSHOP IN BRUSSELS

On 29 June 2016, the first PROMOTiON Workshop took place at the Stanhope Hotel in Brussels. This first public event attracted around 50 stakeholders, including representatives from the European Commission and European Parliament, industry, policy, academia & consulting as well as NGOs from various member states.

Setting the political scene for offshore HVDC grids, Claude Turmes, Member of European Parliament, clarified that offshore wind is a very important part of the vision to achieve 100% renewable energy in Europe by 2050. He called for binding national RE targets for the year 2030. After the UK's decision to leave the EU, this goal would help promoting regional cooperation. Marie Donnelly of the European Commission added that there is great potential in the North Seas in terms of energy transition and shaping the future with renewables in Europe. Further cost reduction remains one of the EU's major objectives. This aim should be achieved through closer collaboration among governments and industry.

Andrew Ho, Senior Analyst for Offshore Wind at WindEurope, provided a comprehensive overview of the achievements, including possible scenarios on future developments of the offshore wind sector in the European Seas.

The following panel and stakeholder discussion on energy policy aspects of meshed HVDC offshore



Figure 4: Alan Croes from TenneT TSO B.V. gives details on the brought landscape of regulatory challenges involved with meshed HVDC offshore grids

grids started with presentations by Alan Croes, TenneT TSO B.V., and Dr. Antje Orths, ENTSO-E Covenor of the Regional Group North Seas (Energinet.dk). Together with Jan Hensmans, Chairman NSCOGI and Senior Policy Advisor Direction Energy for the Belgian Government, the panel entered an intensive dialogue and answered questions from the audience. There was widespread consensus on the need for progress towards regional cooperation to help make meshed HVDC offshore grids a reality in the 2020s and beyond.

In addition to the regulatory aspects of the project, the afternoon panel on technological aspects provided an opportunity for stakeholders to discuss questions concerning feasibility and availability of suitable technologies for meshed HVDC offshore grids with representatives of the following technology

providers: ABB AB, Siemens AG, Prysmian Powerlink, Mitsubishi Electric Europe and GE Grid Solutions

Further information on the event can be obtained from the PROMOTioN website: [https://www.promotion-offshore.net/news\\_events/news/detail/promotion-stakeholder-kick-off-workshop/](https://www.promotion-offshore.net/news_events/news/detail/promotion-stakeholder-kick-off-workshop/)

## 3.2 SIDE EVENTS

### 3.2.1 NORTHERN SEAS ENERGY FORUM BRUSSELS 2017

The first stakeholder event of the Northern Seas Energy Cooperation was organised by the European Commission and took place on 21 March 2017 in Brussels. In his introduction to the event, the Director-General of the Directorate-General for Energy in the European Commission, Dominique Ristori, highlighted the importance of regional cooperation in the Northern Seas region and the development of cross-border grid connections.



Figure 5: PROMOTioN displays at the Northern Seas Energy Forum in Brussels on 21 March 2017

The subsequent presentation by Michiel Müller from Ecofys underlined the importance of offshore wind energy for the goal of total decarbonisation by 2050. According to an Ecofys study, offshore wind energy will be able to deliver 90% of the energy demand of countries bordering the North Seas with 250 GW installed capacity by 2050. This would require an annual installation of 7 GW in Europe.

In the afternoon, the initiative's individual work programmes were presented in parallel break-out sessions. In the sessions Maritime spatial planning (Support Group 1 – SG1), Development and regulation of offshore grids and other offshore infrastructure (Support Group 2 – SG2), Support framework and finance for offshore wind projects (Support Group 3 – SG3) and Standards, technical rules and regulations in the offshore wind sector (Support Group 4 – SG4), stakeholders took the opportunity to discuss details with experts from industry, policy, academia and associations, who enriched the individual sessions with their professional views on the different subjects.

After an introduction to the SG2 session by Sue Harrison (UK Department for Business, Energy and Industrial Strategy) and Nicole Versijp (European Commission), the PROMOTioN project was

represented by Cornelis Plet from the project coordinator (DNV GL). In addition, Dr. Pradyumna Bhagwat (Florence School of Regulation), responsible task lead in WP 7 for the “Economic Regulatory Framework”, presented first findings and challenges to economic regulatory matters involved with a meshed HVDC offshore grid. Alongside a general overview of the PROMOTioN project and the challenges involved in the development of a meshed offshore grid (MOG), barriers within the economic framework and the cost-benefit analysis for an MOG were introduced in detail. The presentation was a noticeable inspiration to the audience to think about the presented findings. WP 7 partners took the tacit consent as a request to further develop the presented concepts.

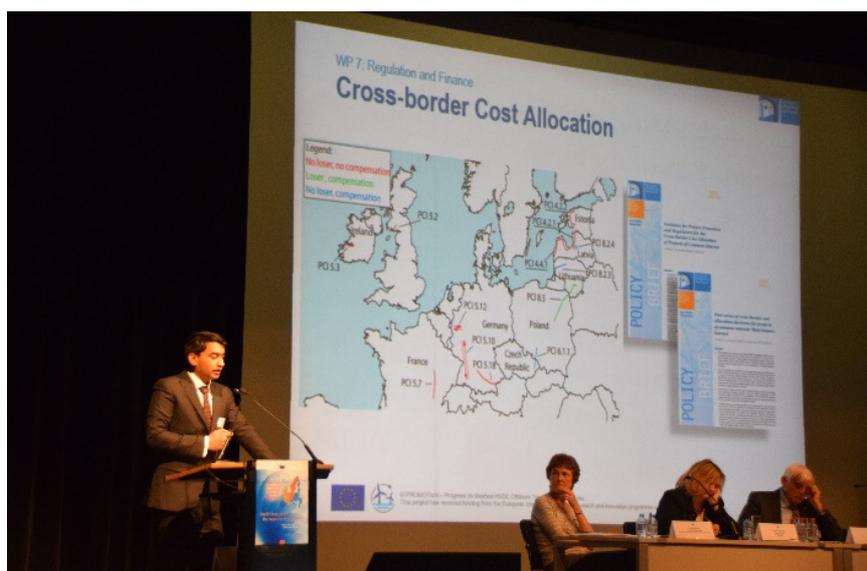


Figure 6: Dr. Pradyumna Bhagwat (EUI) elaborates on the economic regulatory barriers involved in meshed HVDC offshore grids

Further Information about the event can be obtained from the PROMOTioN website following this link: [https://www.promotion-offshore.net/news\\_events/news/detail/north-sea-energy-forum-meeting-in-brussels/](https://www.promotion-offshore.net/news_events/news/detail/north-sea-energy-forum-meeting-in-brussels/)

### 3.2.2 OWE 2017 LONDON

In June 2017, the PROMOTioN project hosted a side event alongside the Offshore Wind Energy 2017 in London, UK. This is the major industry event organised by WindEurope every two years. During this half day event, project partners presented findings from different work packages to expert attendees.

Sue Harrison, from the UK Department for Business, Energy and Industrial Strategy (BEIS), chair of Support Group 2 of the Northern Seas Energy Cooperation, set the scene with a keynote speech. She highlighted the importance of developing offshore grid infrastructure and welcomed that the PROMOTioN project was helping to identify possible technology and regulatory solutions. Furthermore, she called for strong political backing in order to realize the grid infrastructure required, overcome regulatory hurdles, and thus reduce investor risks.



Figure 7: Ceciel Nieuwenhout, Groningen Center of Energy Law, gives insights on identified legal barriers

Within the scope of WP 7, the presentation on regulatory affairs, given by Ceciel Nieuwenhout (RUG) was an explanation of preliminary results and analysis of the main legal/regulatory problems. As the stakeholders present in the room were not experts on legal/regulatory affairs, the interaction with the stakeholders was based on further explanation of the findings, i.e. what is the status of jurisdiction for various types of cables, how can issues of jurisdiction be solved? This stakeholder interaction thus helped to inform and to raise awareness among stakeholders about the nature of the legal/regulatory challenges and possible ways to address them. As the regulatory challenges are sometimes overlooked or do not receive as much attention as necessary, this was valuable stakeholder interaction. WP 7 learned from the stakeholders that there are still many open questions, especially about the legal classification of (hybrid) assets and cables as well as support schemes, which need to be sorted out. The feedback of the stakeholders therefore reassured WP 7 in following up on these topics in the upcoming work with regard to legal and regulatory affairs for the offshore grid.

Further information on the event can be obtained from the PROMOTiON website following this link: [https://www.promotion-offshore.net/news\\_events/news/detail/event-recap-promotion-event-offshore-wind-energy-2017-in-london/](https://www.promotion-offshore.net/news_events/news/detail/event-recap-promotion-event-offshore-wind-energy-2017-in-london/)

### 3.3 REFERENCE GROUP

#### 3.3.1 1<sup>ST</sup> MEETING IN HAMBURG, 29 SEPTEMBER 2016

The first meeting provided a good overview and introduction to the socio-economic environment, presented by Edwin Haesen from Ecofys, and technical benefits of meshed HVDC grids, highlighted by Prof. Tim Green from the Imperial College London. In addition, a number of work-in-progress methods and considerations of project partners related to functional requirements and a roadmap for meshed HVDC grids were presented.



Figure 8: Tim Schittekatte (EUI) presents on the cost-benefit-analysis methodology for MOGs

In the scope of WP 7, Tim Schittekatte from the Florence School of Regulation, presented his research on requirements for the cost-benefit analysis which lead to valuable and intensive discussions among the Reference Group attendees. There were four main questions around the presentation on “CBA in the offshore context” that have been raised during the meeting, namely:

- Some PCI projects receive generous public support (up to 75% funding in exceptional cases), shouldn't these CBA documents be easier accessible and more transparent?
- How high is the cost for a “pure” interconnector project to make anticipatory investment in order to facilitate its inclusion in a meshed network later? Is this strongly technology dependent?
- How do you (project promoters) deal with interactions among offshore projects? Especially relevant in the case of merchant interconnectors.

- Would it be a good idea to ask for a 'light' CBA to access funding for studies and a 'full' CBA for funding for construction works?

WP 7 managed to receive a formal feedback on these questions from a consultancy company (attached to this report) after the questions have been sent to the Reference Group members as a follow-up to the meeting.

In general, there was a broad consensus of the participants on the presented findings, which encouraged the Florence School of Regulation to continue with the scope of work. The presentation can be found in the appendix of this report.

Further information on the event can be obtained from the PROMOTioN website following this link: [https://www.promotion-offshore.net/news\\_events/news/detail/promotion-reference-group-first-convention-on-29-september-2016/](https://www.promotion-offshore.net/news_events/news/detail/promotion-reference-group-first-convention-on-29-september-2016/)

### 3.3.2 2<sup>ND</sup> MEETING IN BRUSSELS, 6 DECEMBER 2017

Daimy Abdoelkariem from TenneT TSO B.V. gave a presentation during the Reference Group meeting on 6 December in Brussels on the main results from the survey (compare chapter 3.4.1) in order to mirror them against the expertise of the present stakeholders.

The representatives of Support Group 2 (SG2) of the Northern Seas Energy Cooperation (compare chapter 3.4.2) announced the commissioning of a "Cluster Study" by the consultancy company 'Roland Berger'. The study will explore the benefits of "hybrid projects" and outline the regulatory hurdles in different clusters in the North Sea. The SG2 representatives asked for a close collaboration with PROMOTioNs' WP 7, in order to align the work between the project partners and the consultant in order to utilise synergies and avoid any overlap. Concluding this statement, the ultimate objective should be to "de-risk and incentivise the development of hybrid projects". WindEurope representatives asked for further clarification of the potential investors in a meshed offshore grid and for respective incentives for both investors and operators of such a grid. The comments from stakeholders are taken into account by the WP 7 task leaders and will result in further scoping of the (sub-) tasks 7.1, 7.2 and 7.3.

## 3.4 OTHER

### 3.4.1 WP 7 SURVEY

In September 2017, a dedicated WP 7 survey was issued on **legal matters** (e.g. barriers on National & EU level), **economic** (e.g. cost-benefit-analysis & support schemes) and **financial elements** (e.g. investments & risks), covered in the intermediary reports D7.1 (regarding the legal framework and legal barriers to an offshore HVDC electricity grid in the North Sea), D7.3 (regarding the economic framework for offshore grid planning) and D7.5 (regarding the financing framework for meshed offshore grid investments)<sup>2</sup>. The objective of the survey was to gather input from stakeholder groups on the findings of the reports, in order to take them into account for a further scoping of the different (sub-) tasks of WP 7.

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<sup>2</sup> Reports are downloadable from: [https://www.promotion-offshore.net/news\\_events/news/detail/the-development-of-meshed-offshore-grids-establishing-the-rules-of-the-game/](https://www.promotion-offshore.net/news_events/news/detail/the-development-of-meshed-offshore-grids-establishing-the-rules-of-the-game/)

The different questionnaires were created by each responsible task leader, while SOW transferred them into an online-survey tool called “Survey Monkey”. It was distributed to the stakeholder mailing list of WP 7 via email on 15 September 2017 and lasted until 24 October 2017. In addition, the survey was announced via the PROMOTioN website. A total of 680 stakeholders from 6 main categories (see chapter 2) received the survey. 42 stakeholders initially clicked on the survey-links provided in the email (~ 6%), of which 22 fully replied. This clearly indicates that representative statements cannot be drawn. Feedback was provided anonymously, however, the respondees had to name a stakeholder category that best describes their professional background. Although the survey provides certain tendencies in the opinion of an individual stakeholder (group), representative opinions of a whole branch, e.g. all TSOs, cannot be drawn from this.

The following stakeholder groups were among the respondees:

- TSOs,
- HVDC Equipment Supplier,
- National/ Local Authorities,
- Offshore Wind Park developers
- NGOs & Energy Agencies,
- Consultants.

The results of the survey are part of the summarised feedback in chapter 4, while the detailed feedback can be revisited in the appendix of this report.

### 3.4.2 COOPERATION WITH INITIATIVES AND WORKING GROUPS

#### Northern Seas Energy Cooperation, Support Group 2<sup>3</sup>

In June 2016, the ten energy ministers of the Netherlands, Germany, Denmark, Sweden, Norway, Ireland, France, Luxembourg, Belgium and the United Kingdom signed a political declaration emphasising their commitment to developing offshore renewable energy and the necessary infrastructure in the Northern Seas region. The main objectives are the cost-efficient development of offshore wind energy and the acceleration of the interconnection of the states bordering the North Seas<sup>4</sup>. The initiative's first stakeholder event took place on 23 March 2017 in Brussels. The “North Seas Energy Forum”, organised by the European Commission, hosted over 200 representatives from public, private and non-governmental sectors throughout Europe (see also section 3.2.1).

The initiative identified four different work areas and founded respective support groups (in the following: SG), in order to carry out the aligned work programmes<sup>5</sup>:

- Maritime spatial planning (SG 1)
- Development and regulation of offshore grids and other offshore infrastructure (SG 2)
- Support framework and finance for offshore wind projects (SG 3)
- Standards, technical rules and regulations in the offshore wind sector (SG 4).

All of the SGs and their objectives cover, at least to some extent, PROMOTioN objectives. WP 7 project partners identified SG 2 as a key target group, with the biggest overlap in joint objectives where both the SG and the project can mutually benefit to the largest extent.

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<sup>3</sup> <https://ec.europa.eu/energy/en/topics/infrastructure/north-seas-energy-cooperation>

<sup>4</sup>

<https://ec.europa.eu/energy/sites/ener/files/documents/Political%20Declaration%20on%20Energy%20Cooperation%20between%20the%20North%20Seas%20Countries%20FINAL.pdf>

<sup>5</sup> <https://ec.europa.eu/energy/en/topics/infrastructure/north-seas-energy-cooperation>



PROMOTioN was specifically mentioned in the overview of relevant studies and projects in the description of the SG's work plan, which also defines the specific objectives of SG 2, which are:

- To remove regulatory barriers to the development of interconnectors and hybrid assets
- Development of project plans for concrete hybrid projects
- To enable a regionally optimised North Sea offshore grid and to reduce the risk of stranded or redundant grid assets
- To optimise useful linkages with the oil/gas industry<sup>6</sup>.

WP 7 strives for even closer cooperation in the future and thus strengthening the link between the stakeholder community and the project.

### WindEurope Working Group Offshore Wind

WindEurope is hosting several working groups in order to draft policy recommendations based on the input of their members. As member of both PROMOTioN and of WindEurope, SOW is specifically active in the WG Offshore Wind. The working group “promotes European offshore wind energy as a vital and strategic energy resource by, among other priorities, investigating barriers to drive down costs and advocating for investments in offshore electricity networks.”<sup>7</sup> So far, SOW participated in eight physical and one online meeting between January 2016 and December 2017. SOW presented PROMOTioN and WP 7 to the WG Offshore members (11<sup>th</sup> May 2016) and established the cooperation with the WindEurope experts on grid-related topics. WindEurope founded also a tasks force on offshore grids, as a mirror group to Support Group 2, in which SOW is one of the members. In this scope, SOW will help to align the work of WP 7 with the efforts of this tasks force, to avoid overlap and reflect project interim results against industry opinions. A presentation of interim results is foreseen during 2018.

### 3.4.3 PROJECT RELEVANT CONFERENCES, EVENTS

In order to stay in touch with relevant WP 7 stakeholders and increase the visibility of WP 7 and PROMOTioN, the following conferences and events have been identified as relevant for WP 7. They also allow for general PROMOTioN stakeholder interaction.

- WindEurope Conference & Exhibition 2016 / 2017 & WG Offshore Meetings
- Northern Seas Energy Forum & Cluster Meetings
- ENTSO-E annual conference 2016/2017
- Clean Energy Financing Conference 2017
- InnoGrid2020+ 2017
- Wind Energy Science Conference, Denmark, June 2017

### 3.4.4 OUTLOOK ON FUTURE STAKEHOLDER ACTIVITIES

WP7 partners will continue the strong cooperation with stakeholders. In addition to the presentation of (intermediary) results during workshops and events, WP 7 partners strive for an even closer cooperation with Support Group 2 of the Northern Seas Energy Cooperation. In addition to the regular

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<sup>6</sup> [https://ec.europa.eu/energy/sites/ener/files/documents/20161219\\_support\\_group\\_2\\_drog\\_web\\_version\\_final.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/20161219_support_group_2_drog_web_version_final.pdf)

<sup>7</sup> <https://windeurope.org/membership/benefits/>



meetings with the Support Group 2 and the WindEurope working group offshore, the following events are already confirmed or have to be confirmed in the upcoming weeks.

- Pending is a WP 7 contribution at the “Grid Meets Renewables” conference in Brussels on 20 February 2018;
- The intermediate project conference will clearly see a WP 7 contribution. The event has been scheduled for the 7 June 2018 in Amsterdam;
- Pending is a WP 7 workshop in the second half of 2018;
- Further expert meetings, e.g. with SG 2 and WindEurope WG Offshore, are foreseen throughout the year 2018 but have not been scheduled yet.

### Update January 2019:

The meetings mentioned above in the outlook have all taken place as envisaged at the time. The specific content and outcomes will be subject to *Deliverable 7.11: Final Stakeholder report*, which is due by December 2019.



## 4 STAKEHOLDER FEEDBACK

This chapter summarises the feedback received from stakeholders on the legal, economic and financing barriers that have been identified by the respective PROMOTioN task leaders and are stated as interim conclusions in the intermediate reports **D7.1**, **D7.3** and **D7.5**. The reports represent the basis for the stakeholder dialogue. Based on PROMOTioNs' description of work, it is the main objective of stakeholder interaction to generate feedback on interim conclusions and actively discuss draft reports with stakeholders, such as the mentioned deliverables D7.1, D7.3 and D7.5. These reports have been finalized on time by June 2017. The time period for feedback on the interim conclusions to include in this report was therefore limited to the period between June 2017 and December 2017. Three main stakeholder interactions happened during this time which provided feedback and discussed the outcomes of the reports:

- Presentation on D7.1 during the OWE London 2017 (see chapter 3.2.2)
- Survey on D7.1, D7.3 and D7.5 results (see chapter 3.4.1)
- Reference Group meeting on 6 December 2017 (see chapter 3.3.2)

The results received from this stakeholder interaction have been analysed and are used to further refine the different sub-tasks in WP 7.

In the following, the feedback is split by stakeholder categories, i.e.

- TSOs,
- HVDC Equipment Supplier,
- National/ Local Authorities,
- Offshore Wind Project developers
- NGOs, Energy Agencies & Industry Associations
- Consultants.

Despite the efforts described above, some of the key stakeholders, such as member states, ENTSO-E, ACER, as well as the European Commission did not provide feedback on the interim reports yet. As a reaction to that, WP 7 strives to gather the views and opinions of these stakeholders during the second phase of PROMOTioN through the identified expert groups, e.g. Support Group 2 of the NSEC, and closely align the future work with this entity, as it resembles a large part of the key-stakeholder community. In addition, several expert interviews and workshops, e.g. with private sector investors are planned during 2018 and beyond. The 'Final Stakeholder Report' (D7.10), due in December 2019, will cover the time period from January 2018 until December 2019 and will therefore cover the respective results of all stakeholder consultation conducted in this period.

In general, the feedback of stakeholders varies substantially, depending on the entity (e.g. TSO, National Regulatory Authority, Offshore Wind Farm Developer) and the national regimes that stakeholders are familiar with and originate from.



## 4.1 FEEDBACK OF TSOS

TSOs have been very active in PROMOTioN and provided their opinions on the results of all interim reports. When confronted with the findings in D7.1, TSOs reacted with a mixed feedback. While, for example, one TSO deems European Network Codes (in the following: ENC) as “*very important*” for an offshore grid, another TSO attributes only a slight importance to this topic. The variety regarding the feedback continue also with other topics, such as commonly experienced legal barriers and their importance to the development of hybrid assets.

The discussion of topics with regard to D7.3 and the respective statements on ‘Economic barriers’ raised questions on the CBA methodology, the coordination of onshore-offshore grid planning as well as cooperation mechanisms and transmission tariffs. From the feedback received on the intermediate deliverable the TSO agrees to a full monetisation of the value of Projects of Common Interest (PCI), while being hesitant towards the idea of ENTSO-E and Regional Groups taking over the task to improve the clustering of projects and the respective baseline definition, in order to cope with the interaction between PCI.

Public participation and coordination between offshore- and onshore grid planning have been of high relevance to TSOs, in order to successfully develop offshore infrastructure. There was also a clear understanding of the factors that influence the public perception of offshore wind infrastructure in general and it seemed, that at least for TSOs, the most important factors were the visual impact itself but also corresponding offshore-activities, such as sand-extraction, or interaction with natural habitats. The TSO have given cooperation mechanisms for renewable energy support a high relevance. Nevertheless, “*there is a need to have a joint international (political) objective regarding large scale offshore development, and accordingly legislation and regulatory context*”, which needs to be dealt with accordingly.

With regards to D7.5, we see mixed opinions on several of the discussed topics. As stated in the report, there is a rather high investment necessary for the development of a meshed offshore grid; and discussions related to this included the questions on “Who is going to pay for it?”. Some TSOs doubt whether ‘Private investors’ would be able raise the funds required for such investment. ‘Corporate investors’ as well as ‘Infrastructure funds’ were the most common answers to this question, while a supportive regulatory framework would have to be in place to de-risk the long pay back times, which also presents one of the main barriers for investing in a meshed offshore grid according to one TSO. In case that the injection of equity capital by government is not sufficient, some TSOs have favoured the development of a dedicated TSO-substructure, i.e. a Special Purpose Vehicle (SPV) with minority ownership rights as the most appropriate solution to allow for additional equity capital injection by private investors. Some TSOs voted in favour of the development of a separate regulatory framework for offshore transmission assets, while the higher risk should be reflected in the equity mark-up.

One of the suggestions was to consider the cap and floor framework (UK) as a suitable framework for the development of interconnectors. Merchant interconnectors, however, are not regarded as a feasible financial model for meshed offshore grids, as this would not result in proper long-term planning. One TSO formulated the concern that, in the case of merchant interconnectors, individual projects might be given too much focus and the necessary coordination between different projects might be neglected.

The ‘Connecting Europe Facility’ (CEF) was discussed as a potential instrument to facilitate investment in meshed offshore grids. However, one TSO suggested that a dedicated “*DC-Grid-Fund*”, especially for the early investment stages, would be more suitable. Quoting that TSO: “*If the DC grid ambition is serious, DC grid investments shall not have to compete with other investments.*”



TSOs provided very good recommendations for further thoughts and concepts regarding different topics that will be subject to follow-up interviews which will improve the scoping of the WP7 sub-tasks in the second phase of the project.

### 4.2 FEEDBACK OF HVDC EQUIPMENT SUPPLIERS

On the interim conclusions presented in D7.1, one equipment supplier stated that there are several legal barriers towards the development of hybrid assets in Europe. However, some do not seem to inflict with the daily business as much as others. In this regard, differences in connection responsibilities among the Member States (i.e. TSO, OWF developer, OFTO) were regarded most often as a barrier, specifically *“almost always”*. At the same time, differences in legal systems of different countries, as well as different permitting and licensing regimes were also mentioned as a legal barrier. ENC are fairly important for the development of offshore grids, while there was no concluding answer on whether or not the different implementation of non-exhaustive requirements in the ENC would suggest a legal barrier.

The feedback on D7.3 indicates a broad agreement with the interim conclusions drawn regarding the CBA methodology. Part of this agreement is directed towards the full monetisation of the value of PCI and the related increase in transparency of the process. In the opinion of the supplier, the coordination between onshore- and offshore grid planning is extremely important due to the fact that *“without a proper integration into the onshore grid, any offshore volume is reduced value”*. The visual impact of offshore wind infrastructure was concluded as the most pressing factor that influences the public perception. The supplier stated: *“What people don’t see, most people don’t care about.”*

With no further elaboration, the feedback also included a call for harmonised transmission fees across the countries surrounding the North Seas and the need for cooperation mechanisms for renewable energy support.

The feedback provided gives a good indication on the most pressing legal issues for suppliers of HVDC equipment. In addition, there was a clear call from the equipment supplier for more transparency and the need for coordination mechanisms and harmonised transmission tariffs.

### 4.3 FEEDBACK OF NATIONAL/ LOCAL AUTHORITIES

National/Local Authorities in the broader sense include regulatory agencies, such as authorities for maritime spatial planning or grid regulation agencies. This stakeholder group provided limited though very valuable feedback, especially on D7.1 and D7.3.

One of the authorities put forward some critical remarks on the current regime for electricity interconnectors, and questioned how this would function for meshed/hybrid offshore grids:

*“In the context of electricity interconnectors, the Electricity Regulation (Reg 714/2009), that forms part of the Third Energy Package, was designed to apply to the “classic”, i.e. market to market interconnection. It is not entirely clear how the European Commission would approach interconnectors that are currently exempted under Art 17 of this Electricity Regulation if an offshore wind farm was added / connected to it.”*

This comment was taken up very seriously and followed up by the task leader on legal barriers. The feedback made clear that “Asset Classification” is a very important issue to stakeholders, as also indicated during the workshop on 7 June 2017 in London (see chapter 3.2.2). Therefore, this topic was subject to a dedicated sub-deliverable written in the last quarter of 2017 and will be followed up closely with the Dutch National Regulatory Authority ACM, TenneT TSO and the Dutch Government in early



2018. In agreement with the chair and co-chair of Support Group 2, this sub-deliverable will be presented during a Support Group 2 meeting in January 2018.

In addition, there was a comment of a national authority regarding support schemes of hybrid assets: *“Different countries have different support regimes, which are often underpinned by national laws on top on policy (and cleared off falling into unlawful state aid category). It might be that national laws introducing support schemes will not be able to capture hybrid projects as they were not designed for them and therefore will have to be amended. Current offshore wind farms might be also reluctant to become hybrid projects, facing the risk of losing the support they were granted.”* Similarly, this comment reassured the task leader for legal barriers that indeed, the support schemes for hybrid assets are a pressing topic among stakeholders. Therefore, this subject will be dealt with in more detail in the scope of a sub-deliverable and during Support Group 2 meetings. Both of the mentioned sub-deliverables will eventually be part of the final WP 7 deliverable “D7.2 - Report establishing EU legal framework”, which is due in June 2019.

The interim conclusions of D7.3 were also commented on by a national authority. The stakeholder argued strongly in favour of *“harmonised and disaggregated cost and benefit reporting”* in order to gain trust and public acceptance for offshore electricity grid infrastructure. It was deemed necessary to *“lead a public discussion about costs and benefits of renewables/ offshore wind/ offshore grids to a more factbased and unagitated approach.”* The coordination of the onshore and offshore grid planning plays a significant role in the opinion of this authority. The development of the grid will *“at least to a certain extent, determine the success of renewable energies.”*

The stakeholder was unsure whether cooperation mechanisms would play a significant role for renewable energy support in the coming years. On the one hand, the *“cooperation may be a decisive factor, if it offers offshore wind parks the possibility to market the power in different countries according to the electricity production and national demand side at a time.”* On the other hand, *“(international) cooperation may be overrated.”* The national authority gave another good hint to follow up regarding the harmonisation of transmission tariffs: *“Harmonisation may reduce complexity and bring lower costs. Beyond that, it seems to depend on strategies and business models of all involved corporations.”* All comments provided by national authorities had been very much appreciated and taken up for further consideration by the task leaders. They will be taken on for further discussions, e.g. with key stakeholders in Support Group 2, and to make the existing concepts and thoughts regarding the future legal and economic framework for meshed offshore grids more concrete.

#### 4.4 FEEDBACK OF OFFSHORE WIND PROJECT DEVELOPER

One Offshore Wind Project Developer provided feedback in the scope of the survey that was issued by WP 7. The comments were given on D7.1 as well as D7.5. With regards to the legal barriers to hybrid assets, the developer regarded almost half of the potential barriers mentioned as relevant ones. The most crucial ones identified by the developer are ‘jurisdiction under international law regarding different grid assets’, ‘different implementation of EU law in national law in different countries’, as well as ‘permitting and licensing in different countries’. Permitting and licensing issues arise e.g. with the “differences between UK and the rest of Europe in regard with export cables (OFTO)”.

In addition, the developer highlighted the fact of the regulatory challenges that arise with the direct export of electricity to another country than the one where the offshore wind farm is located. ENC are not seen as harmonized by the developer, though noting the importance of ENC for a meshed offshore grid. There was strong agreement that the different implementation of non-exhaustive requirements in the ENC can potentially be a barrier for the development of offshore grids.



Concerning the intermediate conclusions regarding financing barriers, the developer remained optimistic that the equity capital required from private investors can be made available, with ‘corporate investors’ identified as the most likely background of potential investors. The *“insecurity in CAPEX related to various TSO requirements in regard with export cables”* poses the main barrier for investing in offshore transmission grids, as *“the CAPEX may vary by up to 30% based on the technical requirements”*.

Interestingly, the developer was the only stakeholder who suggested an alternative way for financing. Instead of injecting equity capital in state-owned TSOs, it was recommended to implement a *“Tender system for construction of individual transmission assets open to private investors”*. This suggestion seems to build upon the positive experience this offshore wind project developer made with tenders for offshore wind farms.

The feedback from the stakeholder group of ‘Offshore Wind Project Developers’ will be professionally reflected and provides good input for further thoughts and suggestions concerning regulatory issues.

#### 4.5 FEEDBACK OF NGOS, ENERGY AGENCIES & INDUSTRY ASSOCIATIONS

Energy agencies and NGOs have both been similarly brief concerning feedback on the interim conclusions regarding legal and economic barriers presented in D7.1, 7.3 and 7.5. The main take-away of the discussions on legal barriers is that apparently all the legal barriers identified by WP 7 of PROMOTioN are well known to energy agencies and *“often”* perceived as real barriers for developing meshed offshore grids, too.

When it comes to interim conclusions on economic barriers, one NGO agreed to parts of the research conducted on the CBA for offshore electricity grid infrastructure. An energy agency named the most important factors for understanding the public perception towards offshore wind infrastructure development as being *“involvement in planning and participation”* as well as *“disconnect in understanding the risks and benefits from a global vis-à-vis and local perspective”*.

Both, the NGO and the energy agency suggested ‘infrastructure funds’ as a potential investor for offshore grids, while opinions varied on the question if there would be enough equity available for such an investment or not. Both stakeholders argued for private shareholders/ investors to inject equity capital into state-owned TSOs, in case the equity injection from the government would not be sufficient. During a Reference Group Meeting in December 2017 (see chapter 3.3.2) representatives of an European wind industry association doubted if current and suggested incentives for investors and operators of a meshed offshore grid structure would be sufficiently attractive, asking for further clarification on the nature of the potential investors.

The questions and statements of the stakeholders had been picked up by the task leader for the financing framework. Eventually, this will result in the development of different ownership and operation models for meshed offshore grids that will be discussed with stakeholders during the course of 2018.

#### 4.6 FEEDBACK OF CONSULTANT

A consultant expressed in his feedback on the interim conclusions stated in D7.5, that he was confident sufficient equity from private investors would be made available to finance the investments in meshed offshore grids, provided proper incentives are in place. The consultant raised *“National / European Energy Security Plans”* as the background of potential investors, however, did not elaborate this thought further. He was rather specific concerning the main barrier for investing in a meshed offshore



electricity transmission grid. With regards to regulatory framework for permitting and incentives, the stakeholder criticized the involved *“regulatory overkill”*, including the long timeframe for planning, execution and return of big investments. In addition, the consultant stressed the *“lack of off/onshore transmission capacities”*. When discussing alternative approaches towards equity injection in state-owned TSOs, the consultant suggested the “Energy Union” as the most favourable tool to do so. According to his view, *“TSOs should have the obligation to build”* and *“be non profit, but tax based”* entities. This feedback and suggestions are taken into account by the respective task leader when developing an appropriate financing framework for meshed offshore grids and are, in that scope, investigated and analysed further.



## 5 CONCLUSION AND EVALUATION OF MEASURES

Stakeholder interaction during 2016 and 2017 was manifold. The consultation with various stakeholders of WP 7 ranged from presentations during workshops and Reference Group meetings to the cooperation in working groups, initiation of a survey as well as face-to-face contact and discussions during project relevant conferences and events.

Overall, the WP 7 intermediate reports on legal, economic and financing barriers and the respective interim conclusions and proposals were well received and acknowledged by stakeholders. The engagement of project partners with stakeholders during physical meetings, such as the workshops, side events or the Reference Group meeting were very valuable, as they revealed other ways of thinking and provided an indication on what issues to pursue from different points of view. In addition, project partners received a lot of reassurance through this to proceed with the work conducted so far. Establishing the link between PROMOTioNs' WP 7 and the Northern Seas Energy Cooperation, specifically 'Support Group 2', and WindEurope Working Group Offshore offers a great opportunity for future close cooperation with these key-stakeholder groups. The cooperation allows for hands-on support regarding the objectives of Support Group 2 and was specifically sought by the chair and co-chair of this initiative. The cooperation will also benefit WP 7, as details of the work will be discussed in detail, thus generating stakeholder feedback on crucial issues of the current work.

The survey conducted in September 2017 generated a variety of feedback from different stakeholders on the interim conclusions stated in the Deliverables 7.1, 7.3, 7.5. The responses offered great insights and provided views and opinions of different stakeholder groups on the presented issues. As some stakeholder groups have not provided any feedback yet, project partners will follow-up with them more intensively in the upcoming period. The overall feedback highlighted several topics that will be followed up after 2017, e.g. legal asset classification, support schemes, transmission tariffs, risk assessment as well as potential ownership and operation models for meshed offshore grids.

Feedback received by the end of 2017 has been very helpful for project partners. It allowed them to reflect more on intermediate results and to further develop existing concepts and ideas. Hence, the feedback will help to improve the work and will be incorporated in the final deliverables of WP 7.



## 6 ANNEX

- Agenda Stakeholder Kick-Off-Workshop, 29 June 2016, Brussels
- Agenda Reference Group Meeting, 29 September 2016, Hamburg
- Formal Feedback by Consultant, Received after RG Meeting September 2016 in Hamburg
- Agenda from North Seas Energy Forum, 21 March 2017, Brussels
- Agenda OWE London 2017, 7 June 2017, London
- Agenda Reference Group Meeting, 6 December 2017, Brussels
- Results of the Survey
  - Table on D 7.1
  - Table on D 7.3
  - Table on D 7.5



Stakeholder Kick-Off Workshop

# Project Presentation and Stakeholder Discussion on meshed HVDC Offshore Grids

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WEDNESDAY 29 JUNE 2016

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10:00–10:30	Registration and Coffee
10:30–10:45	Opening and Welcome – PROMOTioN – Meshed Offshore HVDC Grids as a Pathway to a Sustainable European Electricity System Paul Raats – DNV GL
10:45–11:00	Offshore-Windenergy – Present status and prospects Tbd. – WindEurope
11:00–11:30	The Vision of meshed HVDC Offshore Grids – What it means for Europe Marie Donnelly – European Commission
11:30–12:00	Regulatory and Financial Aspects of meshed HVDC Offshore Grids Alan Croes – TenneT
12:00–13:15	Panel and Stakeholder Discussion: Energy Policy Aspects of meshed HVDC Offshore Grids Claude Turmes – EUFORES President, MEP Jan Hensmanns – NSCOGI Tbd. – ENTSO-E Lineke den Ouden – The presidency of the Council of the EU (requested) Moderation: Andreas Wagner – Stiftung OFFSHORE-WINDENERGIE
13:15–14:30	Joint Lunch

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PROMOTioN – Progress on Meshed HVDC Offshore Transmission Networks

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691714.

# PROMOTioN Reference Group Meeting - 29 September 2016

CCH – Congress Centre Hamburg

Level: Floor 1

Room name: C4.1

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## THURSDAY 29 SEPTEMBER 2016

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09:00–09:15	Registration and Coffee
09:15–09:30	PROMOTioN – Project Background and Purpose of the Reference Group Paul Raats – DNV GL
09:30–10:15	Introduction and Expectations of the Members of the Reference Group Moderation: Andreas Wagner, Stiftung OFFSHORE-WINDENERGIE
10:15–10:45	Socio-economic perspective on benefits of a meshed HVDC grid Edwin Haesen – Ecofys
10:45–11:00	Technical perspective on benefits of a meshed HVDC grid Prof. Tim Green – Imperial College London
11:00–11:30	Coffee Break
11:30–12:15	Functional requirements from AC and DC grids for DC grid protection development Dirk van Herterem – KU Leuven
12:15–13:00	Drafting a roadmap for the evacuation of offshore renewable generation in the context of the PROMOTioN project Pierre Henneaux – Tractebel
13:00–14:00	Joint Lunch
14:00–14:45	Cost Benefit Analysis (CBA) for trans-European Offshore Infrastructure Investments (WP7) Tim Schittekatte – EUI
14:45–15:00	Final statements Reference Group Moderation: Andreas Wagner, Stiftung OFFSHORE-WINDENERGIE

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Please note: **Chatham House rule** applies for the meeting!

## Request for Feedback

### CBA in the offshore context - Presentation by Mr. Tim Schittekatte, Florence School of Regulation

1. Some PCI projects receive generous public support (up to 75% funding in exceptional cases), shouldn't these CBA documents be easier accessible and more transparent?

Answer / Comment:

Do we believe PCI funding for works applies for North Sea region projects? Experience and political views show this is more for regions with financeability issues. EU support in the North Sea may be relevant to cope with anticipatory investments. This would in any case require a different type of CBA as this will have to include multiple design alternatives, risks, etc...

As a matter of principle all CBA arguments of regulated investments should be transparent and easy to understand. I am not sure if this question implies that ACER or NRAs are not providing the right level of scrutiny in their opinions and decisions?

2. How high is the cost for a "pure" interconnector project to make anticipatory investment in order to facilitate it's inclusion in a meshed network later? Is this strongly technology dependent?

Answer / Comment:

(no comment on the cost implication)

Is the relevant question not how to deal with uncertainty on future development and how to allocate costs (which part goes to the OWF developers)?

3. How do you (project promoters) deal with interactions among offshore projects? Especially relevant in the case of merchant interconnectors.

Answer / Comment:

I do not fully understand the question? If the question is how interactions between interconnector projects are handled, this is clarified in the ENTSO-E CBA method and TYNDP; a reference capacity is applied which takes into account mature/non-mature projects as well as competition before applying TOOT/PINT steps.

4. Would it be a good idea to ask for a 'light' CBA to access funding for studies and a 'full' CBA for funding for construction works?

Answer / Comment:

A different process may be relevant, also for PCIs which only wish to use the efficient permitting process of the TEN-E regulation.

Not sure if it is the CBA approach which needs to be reviewed, or the criteria for PCI selection (which can be NPV based, weighing of priorities, or others.)

# Workshops

## WORKSHOP 1

### MARITIME SPATIAL PLANNING

📍 Room Maeterlinck

Support group 1 co-chaired by *Haitze Siemers*, European Commission, and *Leo de Vrees*, Dutch Ministry of Infrastructure and the Environment & RWS Sea and Delta

The aim is to present our work and our work plan to the stakeholders. At present, we are working on the development of scenarios which we would like to present to the stakeholder community. The aim is to involve a wide range of stakeholders, in particular to check the scenarios with industry and environmental NGOs as to discuss the feasibilities of the scenario from a maritime spatial planning and environmental perspective. Targeted questions will be discussed with the group. The outcome aims at achieving common ground and necessary action to reach implementation of the work plan.

#### 12:00 – Introduction: Work programme of the Support Group 1

Leo de Vrees, Dutch Ministry of Infrastructure and the Environment & RWS Sea and Delta

#### 12:15 – Presentation of the work plan and the state of affairs

Leo de Vrees, Dutch Ministry of Infrastructure and the Environment & RWS Sea and Delta

#### 12:30 – Open discussion addressing the main key questions

Moderated by Haitze Siemers, European Commission

## WORKSHOP 2

### DEVELOPMENT AND REGULATION OF OFFSHORE GRIDS AND OTHER OFFSHORE INFRASTRUCTURE

📍 Auditorium 44

Support Group 2 co-chaired by *Nicole Versijp*, European Commission, and *Sue Harrison*, UK Department for Energy & Climate Change

The aim is to present the grid-related objectives and the four elements of the work plan to the stakeholders. The outcome should be to achieve common ground with the stakeholders on the priorities and on the ways to engage stakeholders in the different work streams under this group.

#### 12:00 – Introduction: Work programme of the Support Group 2

Sue Harrison, UK Department for Energy & Climate Change

#### 12:10 – Presentation: A cluster-based approach for the development of innovative projects

Nicole Versijp, European Commission

#### 12:20 – Presentation: The PROMOTiON project

Cornelis Plet, DNV-GL, and Pradyumna Bhagwat, Florence School of Regulation

#### 12:40 – Presentation: a concept for the development and management of an offshore grid

Wim Dik, EU Powernet

#### 12:50 – The most relevant points for the industry regarding offshore grid development

Andreas Wagner, German Offshore Wind Energy Foundation

#### 13:00 – Discussion

Moderated by Sue Harrison, UK Department for Energy & Climate Change



PROMOTioN Event

# Tackling the challenges for meshed HVDC offshore grids

07 June 2017, 13:30 – 16:40

ICC Capital Suite, Room 16, ExCel

Offshore Wind Energy 2017, London

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12:30–13:15	<b>Press briefing</b> Moderator: Sebastian Boie – STIFTUNG OFFSHORE-WINDENERGIE
13:15–13:30	<b>Registration, Coffee &amp; Snacks</b>
13:30–13:40	<b>Introduction to the PROMOTioN project</b> Sebastian Menze – Stiftung OFFSHORE-WINDENERGIE
13:40–14:00	<b>Meshed offshore grids in the political context</b> Sue Harrison – UK Department for Energy & Climate Change, Chair Support Group 2 – North Seas Energy Cooperation
14:00–14:20	<b>White Paper on “North Sea Meshed Grids”</b> Izabela Kielichowska - Ecofys
14:20–14:40	<b>Establishing a draft roadmap for meshed HVDC offshore grids</b> Pierre Henneaux – Tractebel
14:40–15:00	<b>Overcoming legal barriers to an offshore electricity grid</b> Ceciel Nieuwenhout – University of Groningen
15:00–15:20	<b>Discussion Round</b> Moderator: Cornelis Plet – DNV GL
15:20–15:40	<b>Coffee Break</b>
15:40–16:00	<b>Design of test circuit for HVDC circuit breaker based on AC supply</b> Cornelis Plet – DNV GL
16:00–16:20	<b>DC Circuit Breaker Protection</b> Dirk van Hertem – KU Leuven
16:20–16:40	<b>Wrap-Up and final statements</b> Moderator: Cornelis Plet – DNV GL

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PROMOTioN – Progress on Meshed HVDC Offshore Transmission Networks

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691714.

# PROMOTioN Reference Group Meeting - 6 December 2017

Hotel Le Plaza – Boulevard Adolphe Max 118-126, 1000 Bruxelles, Belgium

Room: Paola

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## WEDNESDAY 6 DECEMBER 2017

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13:15–13:30	Registration; Coffee & Lunchtime Snacks
13:30–13:45	PROMOTioN – Project status and Reference Group Introduction Round Paul Raats – DNV GL
13:45–14:15	Northern Seas Energy Cooperation – Recent developments and outlook on Support Group 2 activities Nicole Versijp – European Commission / Sue Harrison – BEIS UK
14:15–14:30	Reaction from the European Parliament Claude Turmes – MEP, to be confirmed
14:30–15:00	Concepts for a meshed HVDC offshore grid & offshore wind scenarios up to 2050 Pierre Henneaux – Tractebel, Michiel de Schepper – TenneT
15:00–15:30	Performance Verification of HVDC circuit breakers Nadew Adisu Belda – DNV GL
15:30–15:45	Coffee Break
15:45–16:15	High-level discussion of policy recommendations on legal, economic and financial regulatory barriers (incl. outcomes of the survey) Daimy Abdoelkariem – TenneT
16:15–16:45	Wind turbine controls for novel offshore HVDC concepts and Interoperability between Converters Ömer Göksu – DTU, Cora Petino – RWTH Aachen
16:45–17:00	Wrap-Up & Outlook on future activities Paul Raats – DNV GL

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The meeting will be moderated by Andreas Wagner (Stiftung OFFSHORE-WINDENERGIE)

**Please note: Chatham House rule applies for the meeting! All presentations will be followed by Q&A sessions and discussion rounds with the participants.**

Stakeholder Category	Supplier of HV equipment	Energy Agency	Industry Association	Local / Regional Authority	TSO	TSO	Offshore Wind Project Developer	International Organisation	National Authority	National Authority	
Question 1: To what extent do you see legal barriers for the development of hybrid assets (interconnectors combined with OWF connection) in the following themes?	Jurisdiction under international law regarding different grid assets?	Sometimes	Often	Never	Sometimes	Almost always	Sometimes	Almost always	Seldom	-	Never
	Comment	Different law between UK and Germany	-	-	-	-	-	The OWF normally receive renewable founding the actual country. When the energy is directly exported to another country, there will be regulatory issues.	-	-	Never = not applicable as not considered / worked on
	The applicability of EU law?	Seldom	Often	Never	Sometimes	Almost always	Seldom	Often	Sometimes	-	-
	Comment	-	-	-	-	-	-	-	-	-	In the context of electricity interconnectors, the Electricity Regulation (Reg 714/2009), that forms part of the Third Energy Package, was designed to apply to the "classic", i.e. market to market interconnection. It is not entirely clear how the European Commission would approach interconnectors that are currently exempted under Art 17 of this Electricity Regulation if an offshore wind farm was added / connected to it.
	Legislative changes in EU law (Winter Package)?	Sometimes	Often	Never	Sometimes	-	Never	Sometimes	Often	-	-
	Comment	-	-	-	-	-	-	-	-	-	As per above answer.
	The different implementation of EU law in national law of different countries?	Sometimes	Often	Never	Sometimes	Almost always	Seldom	Often	Seldom	-	-
	Comment	-	-	-	-	-	-	Local adjustments of EU regulations cause problems	-	-	Various EU states took various approaches to implementation of EU law and in some states it resulted in regimes that are not very supportive of private investment, e.g. on the transmission level. This may affect private sector contribution to the development and construction of various elements of the offshore grid. One of the important types of the investors are pension funds and infrastructure funds that see regulated infrastructure asset as a relatively attractive asset class to invest in. They are active in the secondary market transactions (i.e. when the asset, like a transmission line, is constructed and can then be acquired and then owned and managed for the regulated revenue stream in return).
	Differences in the legal systems of different countries?	Often	Often	Never	Sometimes	Sometimes	Seldom	Almost always	Often	Often	-
	Comment	-	-	-	-	-	-	-	-	-	eg support schemes
Maritime Spatial Planning of different countries?	Sometimes	Often	Never	Sometimes	Almost always	Seldom	Sometimes	Sometimes	-	-	
Permitting and licensing in different countries?	Often	Often	Never	Sometimes	Almost always	Seldom	Often	Sometimes	-	-	
Comment	-	-	-	-	-	-	e.g. differences between UK and rest of Europe in regard with export cables (OFTO)	-	-	EU / EEA states have various approaches to licencing. Probably, predominantly these licencing regimes were not designed with hybrid / multi-purpose infrastructure projects in mind. This can mean difficulty (without changes to the licencing regimes and potentially relevant national laws) for licencing projects that are combinations of offshore wind farms and interconnectors and this can also bring additional difficulties if a project combines assets operating in different jurisdictions.	

Stakeholder Category		Supplier of HV equipment	Energy Agency	Industry Association	Local / Regional Authority	TSO	TSO	Offshore Wind Project Developer	International Organisation	National Authority	National Authority
Question 1: To what extent do you see legal barriers for the development of hybrid assets (interconnectors combined with OWF connection) in the following themes?	Support schemes for offshore wind of different countries?	Sometimes	Often	Never	Seldom	Almost always	Seldom	Often	Often	Often	-
	Comment	-	-	-	-	-	-	-	-	the support scheme does not permit connection to other countries	Different countries have different support regimes, which are often underpinned by national laws on top on policy (and cleared off falling into unlawful state aid category). It might be that national laws introducing support schemes will not be able to capture hybrid projects as they were not designed for them and therefore will have to be amended. Current offshore wind farms might be also reluctant to become hybrid projects, facing the risk of losing the support they were granted.
	Differences in connection responsibilities (i.e. TSO, OWF developer, OFTO)?	Almost always	Often	Never	Sometimes	Almost always	Sometimes	Almost always	Sometimes	-	-
	Comment	-	-	-	-	-	-	-	-	-	Interfaces between these different actors need to be addressed not only under national regimes / national public law but also under private contract law, including costs allocation, insurance etc.
	Possibility of clustering OWFs?	Seldom	Often	Never	Sometimes	-	Seldom	Almost always	Sometimes	-	-
	Comment	-	-	-	-	-	-	-	-	-	Clustering windfarms within a single jurisdiction and bringing the electricity produced via offshore transmission to onshore networks, is probably not a problem in various EU states. Problems may start where electricity produced by clustered offshore windfarms under one jurisdiction is then proposed to be brought by an interconnector / HDVC cable to another jurisdiction. Problems may also arise in a situation when offshore windfarms that were built and operate under different jurisdictions are later clustered and additional HVDC transmission cables then connect this cluster to yet another EU member state / another jurisdiction. This is simply because some EU / EEA states might not have currently in place national laws and / or regulatory regimes allowing for such solutions. Equally, some national authorities / economic regulators might prefer not spending time on coming up with a theoretical detailed regime for hybrid projects but engage with project developers / sponsors when they bring some concrete and feasible project plans to them. The reality is that often public bodies / regulators have limited human and financial resources at their disposals and have to prioritise work that has to be done over theoretical studies and potential regulatory regime, which while very interesting and useful, are not a priority.
Decommissioning of OWFs and of grid infrastructure?	Seldom	Often	Never	Sometimes	-	Never	Almost always	Sometimes	-	-	
Comment	-	-	-	-	-	-	-	-	-	-	Decommissioning is covered in detail under national laws and these laws will have to be reviewed and possibly amended to accommodate hybrid projects and the later offshore grid.
Question 2	Do you see the current European Network Codes as important for an offshore grid?	Fairly important	Fairly important	Important	Important	Very important	Slightly important	Fairly important	Important	Important	Important
	Comment	-	-	-	-	-	-	Local adjustments cause serious troubles. Grid codes can not be seen as harmonized	-	European Network Codes could set a common standard for interconnections	There are certain ENCs which apply to interconnectors and offshore transmission. These are regulations that have direct effect and therefore have priority over any conflicting national laws. They cannot be ignored. They have to be applied. The question is the degree of ability of ENCs to accommodate hybrid project and the offshore grid. It might very well be than they would need to be reviewed and amended. I am not an expert in this field.
Question 3	Do you see different implementation of non-exhaustive requirements in the European Network Codes as a potential barrier for the development of an offshore grid?	Undecided	-	Agree	-	Undecided	Disagree	Strongly Agree	Undecided	Undecided	Undecided
	Comment	-	-	-	-	-	-	-	-	-	-

## Results of Stakeholder Survey - Deliverable 7.3, September 2017

Stakeholder Category		TSO	Industry Association	National Authority	NGO	Energy Agency	Equipment Supplier
Part 1 - Cost-benefit analysis (CBA) for offshore electricity grid infrastructure	<p><b>Q1:</b> What is your opinion on the following statement based on the recommendations of chapter 2: "Cost-benefit analysis (CBA) for offshore electricity grid infrastructure"? "To deal with the interactions between Projects of Common Interest (PCIs), we recommend additional improvements to the clustering of projects and the baseline definition in the common CBA method; and we also recognise that individual project promoters might lack the information and resources to do this, which is why we suggest that this could become a task for the ENTSOs or Regional Groups instead of the promoters."</p>	Disagree	Disagree	Agree	Agree	Neutral	Agree
	Comment	-	-	More and better coordination of projects might add value.	-	-	-
	<p><b>Q2:</b> What is your opinion on the following statement based on the recommendations of chapter 2: "Cost-benefit analysis for offshore electricity grid infrastructure"? "To gain trust and public acceptance, we recommend harmonised and disaggregated cost and benefit reporting, noting that we still have a long way to go, and noting that this is not even enough because the ambition should be an open source CBA model rather than a common method."</p>	Agree	Disagree	Strongly agree	Agree	Neutral	Neutral
	Comment	-	-	It seems necessary to lead public discussions about costs and benefits of renewables/ offshore wind/ offshore grid to a more factbased and unagitated approach.	-	-	-
	<p><b>Q3:</b> What is your opinion on the following statement based on the recommendations of chapter 2: "Cost-benefit analysis for offshore electricity grid infrastructure"? "To reduce the politics, we emphasise the importance of a full monetisation of the value of PCIs and note that we could ask the Regional Groups to express their policy priorities at the start of the process via the eligibility criteria, which would also increase the transparency of the process."</p>	Agree	Disagree	Neutral	Agree	Neutral	Agree
	Comment	-	-	-	-	-	-

Results of Stakeholder Survey - Deliverable 7.3, September 2017

Stakeholder Category		TSO	Industry Association	National Authority	NGO	Energy Agency	Equipment Supplier
Part 2 - Coordinating onshore-offshore grid planning	Q4: In the context of Q3 - how relevant is in your opinion the coordination of onshore-offshore grid planning, for the successful development of the offshore infrastructure?	Very Relevant	-	Very Relevant	-	Moderately Relevant	Very Relevant
	Comment	-	-	Onshore grid planning is essential for offshore grid/offshore wind. Grid development will, at least to a certain extent, determine the success of renewable energies.	-	-	Without a proper integration into the onshore grid any offshore volume is of reduced value.
	Q5: In your opinion, how important is public participation for successful development of the offshore infrastructure?	Very Relevant	-	Slightly Relevant	-	Moderately Relevant	Relevant
	Comment	-	-	It seems most relevant for the onshore grid planning for offshore electricity transport.	-	-	-
	Q6: Please rank the following factors in the order of their importance (in your opinion) for understanding the public perception towards offshore wind infrastructure development:	-	-	-	-	-	-
	Visual Impact	1	-	3	-	4	1
	Local context and place attachment	2	-	1	-	5	2
	Disconnect in understanding the risks and benefits from a global vis-a-vis and local perspective	3	-	4	-	2	3
	Relationship with outsiders	4	-	5	-	3	5
	Involvement in planning and participation	5	-	2	-	1	4
	Comment	-	-	-	-	-	-
	Q7: Please elaborate on the reasoning for your ranking in question 6	most important factors seem to be visual impact as well as limiting factors on other offshore activities due to offshore wind (eg: sand extraction,...) & natural habitats Key is to develop win-win synergies	-	-	Local context, place attachment, involvement in planning, participation and visual impact seem to be all part of the same aspect - local consternation. They shouldn't be divided and seem (as group) to be the most important part of public perception.	-	-

## Results of Stakeholder Survey - Deliverable 7.3, September 2017

Stakeholder Category		TSO	Industry Association	National Authority	NGO	Energy Agency	Equipment Supplier
Part 3 - Cooperation mechanisms and transmission tariffs	<b>Q8:</b> In your opinion, what is the relevance of cooperation mechanisms for renewable support (statistical transfers, joint projects and joint support schemes) for enabling more effective and cost-efficient exploitation of renewable resources especially offshore wind in the coming years?	Relevant	-	Moderately Relevant	-	-	Relevant
	Comment	however there is a need to have a joint international (political) objective regarding large scale offshore development, and accordingly legislation and regulatory context should be dealt with accordingly.	-	Not easy to predict; cooperation may be a decisive factor, if it offers offshore wind parks the possibility to market the power in different countries according to the electricity production and national demand side at a time. Furthermore the relevance of (international) cooperation may be overrated.	-	-	-
	<b>Q9:</b> In your opinion, how relevant is the harmonisation of transmission tariffs across countries surrounding the North Seas for the development of a meshed offshore grid in the North Sea?	Moderately Relevant	-	Moderately Relevant	-	-	Very Relevant
	Comment	-	-	Harmonisation may reduce complexity and bring lower costs. Beyond that, it seems to depend on strategies and business models of all involved corporations.	-	-	-

Results of Stakeholder Survey - Deliverable 7.5, September 2017

Stakeholder Category		TSO	Offshore Wind Project Developer	TSO	TSO	TSO	NGO	Consultant	Energy Agency
Part 1 - Investment volumes	Q1: Will sufficient equity from private investors be available for the large investment volumes?	Yes	Yes	Yes	No	No	No	Yes	Yes
	Please elaborate:	There is an abundance of investors willing to invest in regulated assets.	-	-	-	I believe it will be necessary with a high degree of public economic support at least in the early stage of DC grid development.	-	-	-
	Q2: What is the most likely sector background of potential investors? (please note: one or more answers possible)	Corporate investors; Infrastructure funds; Pension funds	Corporate investors	Infrastructure funds	Corporate investors	Pension funds; Infrastructure funds	Corporate investors; Infrastructure funds	Pension funds; Infrastructure funds; Corporate investors; Others (please specify): National / European Energy Security Plans	Infrastructure funds
	Comment	-	-	-	-	-	-	-	-
Part 2 - Equity injection from investors	Q3: From your perspective, what are the main barriers to invest in offshore electricity transmission grids? Please elaborate.	Supportive long term regulatory frameworks; Permitting hurdles (mainly with respect to the onshore network)	insecurity in CAPEX related to various TSO requirements in regard with the export cables. The CAPEX may vary by up to 30% based on the technical requirements.	Security, Guaranty	-	Long pay back time and high risk.	-	Regulatory overkill. Long project planning, execution times. Return on big investments. Lack of Off/Onshore transmission capacity Lack of Onshore power conversion (Pumped Hydro, PTG, what have you..)	-
	Q4: What would be the most appropriate solution to enable equity injection in state-owned TSOs, when the equity injection from the Government is not sufficient?	Development of TSO substructure (e.g. SPVs for grid connection of OWFs) with minority ownership rights of private investors	Tender system for construction of individual transmission assets open to private investors	Development of TSO substructure (e.g. SPVs for grid connection of OWFs) with minority ownership rights of private investors	Alternative approaches such as allowance of private shareholders of state-owned TSOs	Development of TSO substructure (e.g. SPVs for grid connection of OWFs) with minority ownership rights of private investors	Development of TSO substructure (e.g. SPVs for grid connection of OWFs) with minority ownership rights of private investors	Energy Union	Alternative approaches such as allowance of private shareholders of state-owned TSOs
Part 3 - Return on Equity (RoE)	Q5: What adaption mechanism should be developed to ensure that the TSO revenue can cope with the market changes?	-	Adjustment of RoE directly when interest rates change above or below a set level, within a certain/defined time frame	Fixed RoE for a certain regulatory period and change in the next period	Fixed RoE for a certain regulatory period and change in the next period	Fixed RoE for a certain regulatory period and change in the next period	Fixed RoE for a certain regulatory period and change in the next period	EnergyUnion - Obligation to build. TSOs should be non profit, but tax based. Not paid for according to interest rates mechanisms, what have you.	Fixed RoE for a certain regulatory period and change in the next period
	Other (please specify):	A periodic review in function of evolution of key parameters and thresholds is the most straightforward. However sometime the short term interest rates are not reflective of the longer term market return expectations; e.g. corrections might be required for the current quantitative easement effects.	-	-	-	-	-	-	-

Results of Stakeholder Survey - Deliverable 7.5, September 2017

Stakeholder Category	TSO	Offshore Wind Project Developer	TSO	TSO	TSO	NGO	Consultant	Energy Agency	
Part 4 - Regulatory Framework	Q6: Should a separate regulatory framework for offshore transmission investments, which will take into account the higher risks involved, be developed?	Yes	No	Yes	No	Yes	Yes	No	No
	If yes - which regulatory factors should be changed/adjusted?	Higher equity mark-up to reflect the additional risks + additional costs for potentially raising additional capital in the market. For interconnectors a cap and floor framework (UK) could be considered.	-	-	-	When establishing a new DC grid: Risk reduction by public (government or even EU/EC) support. For further investments in an existing DC grid: Higher transmission cost/fee when the grid is higher loaded and also higher transmission cost/fee for some particular bottle necks. Particular bottle neck fee can be dedicated for investments in increased capacity in associated bottle necks.	-	-	-
Part 5 - Revenue of the merchant interconnectors	Q7: Are merchant interconnectors a feasible financial model for meshed offshore grid investments?	No	Yes	No	No	No	No	No	No
	Please elaborate, what should be an appropriate remuneration model of merchant interconnectors or how an appropriate model can look like	A cap and floor model or pure regulated model is more suitable in order to be able to finance this kind of investments.	-	-	-	I don't believe this will give a good long term planing. All focus will probably fall on each individual project and coordintaion in between will be neglected. Developers of merchant interconnectors are mainly interested in projects with the prospect of high pay within relatively short time. When establishing DC grid long term planing is essential and acceptance for low short term pay back is descsive.	-	see before.	-
Part 6 - Connecting Europe Facility (CEF) budget	Q8: Is CEF an effective instrument to facilitate investments in a MOG?	Yes	Other	Yes	-	Other	-	Yes	-
	If yes - should the CEF's budget increase? If no - should another financial tool be developed?	CEF funds have a leverage effect; unable to determine currently if the current budget is sufficient or not.	-	-	-	A dedicated DC grid "fund" would probably be needed in an early stage. If the DC grid ambition is serious DC grid investments shall not have to compete with other investments.	-	No	-