Energistyrelsen

Feedback report on the market dialogue conducted in August-September 2022 concerning Energy Island Bornholm and other future upcoming procurements of offshore wind farms

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Background

In August and September 2022, the Danish Energy Agency (DEA) and the Danish TSO Energinet conducted a market dialogue concerning Energy Island Bornholm and other future upcoming procurements of offshore wind farms.

The first part of the market dialogue was a meeting on 30 August 2022 which was open to all market actors and interest organisations. The meeting was based on the dialogue material "Invitation to dialogue"[1], which was published 1 July 2022.

Afterwards, the market actors had the possibility to request an individual meeting with the DEA and Energinet to discuss some of the topics in further detail. Those meeting were held on 5 September to 9 September 2022.

As part of the market dialogue, market actors were also asked to submit written answers to a questionnaire composed by the DEA and Energinet.

This feedback report contains the answers and other input from the market dialogue in summarised and anonymised form as well as the feedback from DEA and Energinet in order to secure both confidentiality and the appropriate and usable volume of the report. In the same manner, not all inputs and comments are reflected and answered concretely in this report.

However, all input and comments received during the market dialogue are highly appreciated and will be considered when preparing the tender material.

Disclaimer and use of inputs from the dialogue

The information, including the written feedback in this report, provided by the DEA and Energinet during the market dialogue in August-September 2022 is non-binding to the DEA and Energinet. Therefore, the feedback report from the market dialogue is without any legal status during the tender procedure.

The DEA will as far as possible decide on the individual topics when preparing the tender material (contract notice, draft concession agreement, draft construction licences etc.).

[1] The market dialogue material can be found at: https://ens.dk/en/our-responsibilities/wind-power/ongoing-offshore-wind-tenders/energy-island-bornholm-owf

Theme 1 – About Energy Island Bornholm (EIB)

The market is inconclusive as to whether the procurement process should be held as one large 3 GW procurement or as two separate procurements, and one market actor even advocates for three separate procurements. Some find that it must be done on a large scale in order to harvest the benefits and some find that, due to the overall size, two projects are large enough to provide a large scale advance, and that one large procurement would be detrimental to competition because not everyone can bid for a 3 GW project.

There is also the opinion that it should be possible for multiple tenders to be won by one actor in order to secure large scale benefits and they stated that an actor should only be able to win one of the tenders to secure ample competition in Denmark and that a more secure way to establish the needed wind power by 2030 is necessary.

If the overall project should be divided into two or more procurements, the DEA must consider how to divide the possible overplanting capacity. A shared overplanting capacity in two or three areas would provide higher efficiency, but not use for PtX. Whereas keeping the overplanting capacity in one tender would provide for increased interest in PtX production.

A majority finds that the POC should be built as large as possible and fit the capacity of the electricity grid; in this case, it is 3.2 GW. One actor finds that POC should be left as low as possible to ensure more flexibility for exploiting PtX opportunities. The market concludes that the PtX should be handled as flexibly as possible for the concessionaire.

If EIB is divided into two separate procurements, one market actor suggests that the entire overplanting capacity should be kept to one of the two areas, so that the developer can get the large scale advantages of the overplanting capacity.

One market actor suggests that, if EIB is divided into two separate procurements, these two procurements will follow the same timeline. If the timelines were non-simultaneous, the winner of the first area would have a huge advantage in the procurement of the second area.

Additional questions and answers

Q1: More actors have raised their concern towards the new partnership “Baltic Energy Island” between Ørsted and Energinet as well as its possible effect on the coming procurement.

A1: Energinet explained that the Baltic Energy Island is a partnership with several actors with the purpose of supporting the development of Bornholm as a global connecting point for innovation, testing and business expansions for green energy. The partners in Baltic Energy Island will work on several topics, i.e. development of the Baltic Sea’s position as a hub for green transport and a centre for offshore wind or usage of Bornholm as a testing site for green energy.

Energinet only has a strategic role in the partnership and, therefore, has no obligations to invest. Thus, Energinet enters on projects, where they can help the development, but do not provide information, which could give an unfair competition advantage during the establishment of EIB.

Q2: Why is the substation for EIB relatively large compared to the plan for the substation for the Energy Island in the North Sea?

A 1: The 70-90 acres reserved for the substation for EIB also includes areas for safety zones, planting and areas needed due to environmental regulations. EIB's substation cannot be directly compared to the substation for the energy island in the North Sea. There is a difference in both the scope and the technical design of the two substations, as much of the transmission equipment at the energy island in the North Sea is expected to be placed on platforms. Besides that, the plans are only a working hypothesis, so substantial changes can occur.

Q 3: Will Kriegers Flak or other OWFs be connected to EIB at some point?

A 3: The DEA informed that there are no current plans about it, but that EIB is designed in a way which makes it possible to make further connections to other countries.

Theme 2A – Timetable EIB

The market sees a timeline of 6 years (POC Q1 2029) as feasible but very tight. Normally, two seasons are needed for 2 GW, so the time frame has been reduced to the maximum extent. One actor challenges the timeline, stating that two years will be needed for 3 GW. One actor finds 5 years from the construction permit as a precise way to describe sufficient time. One market actor notes that delays in the legislations work will have a direct impact on the timeline.

One actor finds that two seasons will possibly be more than enough and maybe even faster due to technical leaps in the industry within 6 years from now.

The big risk is the supply chain in vessels and specialist manpower as well as a possible overheated global market in 2029-2030. Therefore, the DEA should balance their demand on delays and penalties. A hard penalty will force the actors to ensure liquidated damages (LD) which will cost more and effect the price negatively. A more flexible definition of force majeure could be used.

As for the bidding process, one market actor finds that at least 3 months is needed from the publishing of the tender material until they are ready to submit a bid. One market actor finds that there is no need for a prequalification phase, as it does not offer a lot of value for the final bid. While another actor points out that the entry requirement for the procurement should not include references to similar projects, as the EIB is unique.

Additional questions and answers

Q1: Will Germany be connected to the Energy Island at the time when the POC is ready?

A1: The agreement between Energinet and 50Hertz is not finalised. We expect the POC to be ready to receive and send electricity to both Denmark and Germany in Q1 2029.

Theme 2B – Timetables of other OWF

The market actors expressed that a grid connection window of 1.5 season is tight but achievable for the grid connection of a 1 GW offshore wind farm. One actor mentioned that North Sea projects are tighter than Baltic Sea projects due to weather downtime. All but one market actor assessed the timeline for Hesselø as feasible. One replied that it requires no delays for the EIA and supply chain availability. Another mentions the increasing demand of mobilisation and the cost of downtime weather. One actor stated that the timeline for Hesselø is too tight with the current and expected supplier market conditions.

Theme 3A – Preliminary site investigations EIB

Some market actors state that it could be possible to have a radar based shutdown mechanism for the OWF. One market actor pointed out that the technology is still rather immature, and some market actors note that it would be a costly project, which could lead to the necessity of compensation. A few market actors would like further studies conducted on migrating species before deciding on mitigating measures, while other actors points out that a total shutdown of the OWF could result in problems with the stability and capacity of the grid. Environmental studies on migratory birds and other environmental parameters are carried out prior to the tendering phase. Data will be available for the coming concession owner. In connection with the environmental assessments of the plan, the potential impacts on migratory birds will be identified and suggestions for mitigation measures will be given. Specific impacts and mitigation measures depend on the project design etc. and must be handled in connections with the environmental impact assessment of the specific project. As for the time needed for a shutdown, two market actors stated 30 minutes, while another actor stated 10 minutes. One market actor stated 4-6 days. A market actor states that it would be 50 minutes with ramp rates of max 60 MW/min.

There is consensus within the market actors that it is possible to install a system which allow turbine lights to be switched on only when an aircraft is passing the OWF. One market actor points out that such systems are not 100% reliable.

Additional questions and answers

Q 1: Is it possible to mitigate this by improving the habitat areas for the birds in places other than at the OWF?

A 1: If there is a significant impact on Natura 2000 sites and designated birds, the DEA will look into derogations and possible compensation measures on Danish territory. If compensation measures are to be carried out in other countries, it will become more difficult. A dialogue will be initiated through the Espoo process.

Q 2: Are Metocean measurements being done and, if so, who is responsible for the task?

A 2: Energinet is responsible for all the preliminary investigations and has already contracted a firm; the measurements are currently in progress.

Q 3: Will the Metocean data be available prior to the final bid?

A 3: For EIB, data is already uploaded on a regular basis on our website and will be available prior to the final bid.

Q 4: Is the DEA aware that you have to conduct Appropriate Assessments for the Natura 2000 site between the two wind farm areas, and that this can take at least six months? There is also a risk of complaints due to the presence of Annex IV-species.

A 4: The strategic environmental assessment (SEA) also includes Natura 2000 assessments (screening and appropriate assessments). This timeline for the SEA includes a buffer for the process for Natura 2000 complaints. Natura 2000 assessments also needs to be carried out in connections with the specific project, which need to be done by the concession owner.

Q 5: Have there been any decisions made on how the GWs must be distributed?

A 5: It is up to the concession owner to decide how they will distribute the "GW" within the appointed areas. The plan sets the outer boundaries and, therefore, it is possible to establish 3.2 or 3.8 GW (if the possibility for overplanting is included). The scenarios we are working with in the SEA is an even distribution of 1.5 GW at each site (Bornholm I and Bornholm II).

Theme 3B – Preliminary site investigations of other OWF

Several market actors assess the executing of the Environmental Impact Assessment (EIA) for land-based facilities as an opportunity to optimise the combined project. On the other hand, multiple actors mention that it would increase the consent/permission risk and, therefore, prefers Energinet to execute the EIA for the land based facilities – especially when the timetables are tight.

Some market actors would like a new model for conducting the EIA, which would grant more flexibility in the project. One market actor finds it feasible, while another prefers to keep the current model with Energinet conducting the EIA onshore. Some market actors point out that the new model with the concessionaire making the EIA onshore is not a good idea for EIB or other OWFs with equally tight schedules. Furthermore, one actor elaborated that another EIA-model is only preferred if the overall project is flexible regarding overplanting, for example.

Some market actors mention that dialogue with the local authorities is very important, if the concessionaire is expected to perform the EIA onshore themselves. Help from the DEA would be very appreciated in such a process.

Additional questions and answers

Q 1: Would it be possible to facilitate dialogue between the concessionaire and the military in cases where the OWF is causing radar problems and a new radar system needs to be established?

A 1: The DEA will examine the possibilities. At the moment, the procedure will be that the military estimates the costs of the needed radar modifications and the estimate is put in the tender material.

Theme 4 – Overplanting

All market actors find consumption before the POC attractive and they welcome the possibility of overplanting being allowed. As examples for what the consumption could be used for, energy storage and PtX are generally mentioned. One market actor also mentions e-methanol and e-ammonia as possible ways of utilising the extra capacity. Another one points out that feed-in zones should already be thought of near the substation on Zealand.

It is thought to be difficult for the market actors to assess how attractive the possibility of consumption before POC actually is, as there are many uncertainties regarding that possibility. Uncertain regulation (especially about hydrogen infrastructure and direct lines) and immature market and technology for PtX are listed as the biggest challenges in this matter. One market actor specifically points out that the decision not to include PtX in the SEA/EIA for EIB makes planning more challenging and thus increases both the cost and risk for projects utilising the extra capacity. Another actor finds that a declaration of good faith from the local municipality at Bornholm and the Danish environmental authorities in terms of PtX-production would be desirable before the bid is submitted.

Some market actors assess it as likely that the utilisation of the overplanting capacity will happen after the rest of the OWF is commissioned due to separate permissions for the project needing to be granted. One market actor would be fine with committing in the concession contract to the stepwise utilisation of the area.

Theme 4b – Overplanting of other OWF

All market actors find consumption before POC attractive. All consider installing energy storage and PtX-solutions. All find flexibility regarding direct lines and POC as positive for the business case. Most view onshore PtX plants at the end of 2030 as likely, but they doubt that offshore is. There is still a lot of uncertainty about dimension sizes.

Several actors show interest of hydrogen infrastructure and some state that it is a requirement for PtX. One actor mentions that it depends on the supply capabilities. Another actor refers to e-methanol and e-ammonia as possible combinations with the electrolysis of hydrogen. In general, the market actors prefer more flexibility to construct different off-take combinations with both direct lines and POC. One actor states that it is attractive due to smaller tariff payments, and another actor states that overplanting possibilities within the geographic area would be fully used. The attractiveness of PtX is still uncertain due to immature markets and unclarified regulations. Therefore, it depends on the ongoing regulation, available infrastructure, flexibility in the tender, maturity of technology, electricity demand etc.

Most of the actors cannot answer how large of an area is needed for PtX facilities. One actor uses a scale of approx. 35 MW/ha. Several mention the water supply as a conditioning factor. One actor explicitly states that the safety area as a significant factor.

All of the actors except one view it as likely to establish an onshore PtX plant in connection with the OWF before the end of 2030 (if a concession is granted in the second half of 2024). One actor shows interest in the offshore production of hydrogen on windmills. One actor (SP) assesses 4-5 years as adequate, and another actor as 5-6 years.

Most of the market actors *doubt that* PtX will be directly produced offshore by the end of 2030. One actor mentions 2031 or 2032 as the earliest dates for production if infrastructure is set up and there is commitment from all the parties. One actor mentions the need for infrastructure distributing hydrogen onshore and further as paramount. Another actor agrees, and they supplement that with stating offshore pipelines need to be constructed by the Danish state. One actor assumes offshore PtX-production is possible, while another (SP) thinks it is possible but economically inferior.

All of the actors mention flexibility for both PoC and direct line as key for the business case. A PoC/Grid connection is valuable when electricity prices are high (and low for usage in PtX). Several actors mention PoC, and that the direct lines increase the number of full load hours.

No market actor prefers full connection to PoC (1 GW) if PtX-facilities have a direct line even though there would be significantly overplanting possibilities but some prefer a smaller setup. Two are interested in connection from the public grid to PtX for utilising low electricity prices.

Most of the market actors find that direct lines have a positive impact on the overall business case. However, one actor mentions that it can deteriorate the business case. All who deem direct lines as positive would need to know if direct lines are achievable **before** the submission date.

The responding market actors assess that all the coming sites (Nordsøen I, Kattegat II, Kriegers Flak II) are relevant for PtX production. One highlights Nordsøen I as being the most relevant. Another mentions the connection between the grid and PtX to be highly relevant. A third deems a smaller connection to PoC as optimal.

Most of the market actors explicitly want the efficient use of the seabed/area. One actor prefers a tender defined area, where the capacity usage is a criterion. Another suggests a clause on the unused area. A third refers to site-specific tenders. If the site allows for prior consumption, then excessive overplanting is desired, and vice versa for sites with low possibilities of prior consumption.

The market actors are primarily uncertain on the possibility to ensure a concession payment for a PtX plant only (without a grid connection). Only one actor mentions that it is possible but requires the willingness to pay for hydrogen. Another finds it unlikely. A third market actor wants access to the grid no matter what.

Additional questions and answers

Q 1: What are the current possibilities for the concessionaire to use expropriation in connection with possible PtX-projects?

A 1: There are no expropriation rules specifically for PtX-projects. The normal rules of expropriation through the Danish Planning Act can be used if the local municipal council approves the project and the project is assessed to be beneficial for the general public's interests. If the concessionaire should have a possibility to expropriate without the approval of the municipal council, a new legal basis would need to be created.

Q 2: Would it be possible to connect the PVs behind the meter?

A 2: Behind-the-meter is optional and relies on the developer and it must follow the regulations about electricity supply and electricity production.

Theme 5 – Bidding zones and market design

Many market actors point out that the creation of an offshore bidding zone will affect the price in general as well as increase the risk about the volume. One market actor is worried about not being able to sell the produced power due to a bottleneck effect in Germany. Two market actors mention a CFD-model as the appropriate compensation scheme to mitigate those risks, while another mentions the possibility of producing PtX as a mitigation measure. In general, the market actors state that the TSO should carry the financial risk for the interconnector availability.

Additional questions and answers

Q 1: Will there be a guarantee for availability at EIB?

A 1: EIB will follow the general European regulation and, therefore, a minimum of 70% of the capacity will be available.

Q 2: Have you considered that the TSOs will generate additional congestion income with a new bidding zone and whether this income might be redistributed to the electricity producers on the energy island?

A 2: We are aware of the potential effects on congestion income. Currently, the EU electricity market regulation limits the use of congestion income, and we are expecting a proposal by the European Commission on whether and how this should be changed. We should at the same time be aware of not redistributing congestion income twice, as it might also become part of the cost transfer mechanism.

Q 3: Do you foresee the same market model for the North Sea Energy Island?

A 3: The same considerations will most likely also be valid for the North Sea.

Theme 6 – Support mechanism and transfer of cost of transmission EIB

The market agrees about subsides not being needed for OWFs as a general rule which could also be seen in the latest tender decision regarding Thor OWF. The market has been transformed into a subsidy free market due to technological development and greater demand for green energy. However, some projects will still need subsidies due to some specific conditions that result in high costs or high risk for the site. EIB has such conditions with the creation of a separate bidding zone, the concept of energy islands in general and the transfer of cost of transmission to the project developer. Especially the size of transfer of cost of transmission will have a huge impact on the business case for EIB. Besides that, the wind and geological conditions are less favourable than at Thor OWF. Due to those reasons, the market concluded that a support mechanism is most likely needed.

Other findings:

- A two sided CFD with different variations is still the favoured support mechanism for the market. Most actors find that it reduces the risk connected with the project as a whole, thereby lowering the financing costs for capital investments.
- One market actor finds it necessary to have a soft/hard cap on the concession payment, if the project should be of most benefit for the consumers and the state.
- One market actor points out that a CFD does not mitigate the volume risk and suggests an FTR to mitigate that risk.
- One market actor is concerned about high inflation and proposes to look into inflation indexation with a 75/25 split of the risk.
- One market actor wants an opt-out clause without elaborating on the further details of the clause.
- One market actor finds that the project would be much less complex if the costs of transmission were financed otherwise than through the concessionaire. The concessionaire now has to get subsidies to cover the cost due to the large cost of transmission.
- Some market actors find that the transfer of costs, besides creating the need for subsidies, also creates more uncertainty about the project. This will be reflected in an additional risk premium leading to higher prices. This can be mitigated if the model and tariff are thoroughly described and designed before the final tender bid.
- The support mechanism should appropriate risk sharing and be designed as simple as possible and not end up as a barrier to obtain PPA to receive green certificates.

Energinet informed that the proposed model for transferring the cost of the transmission will be submitted as soon as possible to the Danish Utility Regulator who will have the final decision about whether to approve the model. The model and tariff regarding the transfer of cost will be known during the tender procedure at the latest.

Additional questions and answers

Q 1: Furthermore, the market would, for example, like to understand whether the possibility of covering all or some of the costs through different European support schemes, e.g. Connecting Europe Facility (CEF) for cross boarder infrastructure, has been investigated.

A 1: Energinet is investigating the possibility of covering some of the costs through European Support Schemes, including CEF. Energinet is in the process of submitting an application for elevating the project to Project of Common Interest (PCI) status.

Q 2: Some market actors questioned the fee for the cost of transmission.

A2: The DEA explained that the fee is not known yet, but the working hypothesis is approx. DKK 1 billion per year. The model for the transfer of the transmission costs is under development and the tariff regarding the transfer of cost will be known during the tender procedure at the latest.

Q 3: Will the payment for the cost of transmission lead to the concessionaire co-owning the transmission infrastructure?

A 3: No. According to Danish legislation[2], only Energinet can own the transmission infrastructure.

Q 4: If subsidies are given for the production at EIB, can the hydrogen produced at EIB still be seen as "green"?

A 4: The DEA will examine this further.

Q 5: Can the costs of transmission be covered by bottleneck revenues and regular tariffs?

A 5: The cost cannot be covered by the bottleneck revenues or the regular tariffs paid by the energy producers, and this construction is designed due to the political desire of not wanting the energy consumers paying the bill as well as so that the cost of green energy is visible in the Danish Finance act.

Theme 6B – Support mechanism of other OWF

The market actors generally agree that subsides are not needed for OWFs as a general rule, unless some specific conditions make the particular project more difficult to realise. One market actor points out that this might be different for some projects with a bigger degree of innovation.

Theme 7 – Grid connection EIB

Please note that this theme is written by Energinet. Therefore, the theme has a slightly different structure than the rest of the report which is written by the DEA.

Grid-code requirements:

The market stakeholders desire that Energinet investigates how the existing grid code requirements can be updated for Energy Island application. Energinet will take the input into account when designing the grid-connection requirements to the Energy Island and is already looking into which requirements can be redesigned.

Energinet expects a grid connection requirement to provide mFRR capacity bids. The OWF wind developers conclude that it is too early to answer the question, but in principle the whole range - from maximum to zero - could be provided.

Tariff:

There will be a publication of the tariff method itself, where it will be possible for the relevant parties to submit consultation responses. It is added that hard work is being done to get the final method in place,

[2] The Danish Act Electricity Supply Act and the Danish Act on Energinet.

which will result in the tariff, but it is not in place yet. The tariff method is expected to be submitted for consultation in December.

Model requirements:

Energinet recognises that all the new model requirements must be known by the beginning of the tender of the wind concession in order to enable the developer to push the requirements to the WTG OEMs. Energinet will work to make all model and simulation requirements clear from the grid-connection requirements outlined in the public tender. Energinet will take the inputs from the developers into consideration when designing the requirements.

Design and operation of the wind power plant:

Energinet agrees that grid-forming capabilities from wind power plants is still an immature technology, and Energinet will primarily consider grid-forming control by the HVDC plant as the default operating mode.

Key Interfaces between Energinet and EPC:

- Grid studies, exchange of data and models, design interfaces such as short circuit power rating, interfaces related to protection and control system settings (SCADA and Communication), connection points, physical interfaces, e.g. cable entries, connection of export system to the GIS bays at TSO substation, termination and connectors.
- Planning interfaces such as energisation date, test and commissioning activities, trial operation etc.
- Operational interfaces, such as the provision of safety from the system, interoperability considering potentially multiple developers and OEMs being involved.

The planning of commissioning normally will target the time when grid is ready to receive and export power and, therefore, also AUX power being available. The OWF wind developers conclude that it would probably be useful if Energinet arranges for an auxiliary power supply system that can be used by all developers.

The OWF wind developer supports the idea of a joint working group since this is an efficient way of identifying interfaces and assign the correct responsibilities for all the involved parties. It is also the best way to ensure a good and smooth collaboration regarding the grid connection.

A preliminary RACI chart is key during the tendering of OWF and HVDC. The OWF wind developers emphasised that, if the RACI matrix is not fully clarified, this will complicate entering contracts, thus also the pricing which will be reflected in the bidding price.

There is a common understanding that the design stage is key to mitigating the complexities coming from the interfaces between the contractors and parties. All must be well defined before the contract is awarded so that the coordination required for testing and commissioning will be focussing on the above-mentioned interfaces.

Time schedules:

Expected timeline for the grid connection of the OWF is expected to be two seasons or up to 2 full years.

During the tender negotiations, a draft programme will be delivered. This will mature throughout the project phase and in collaboration with the relevant parties. The detailed and final commissioning schedule

will usually be ready once all the relevant contracts have been closed, which depending on the supply chain situation will be approximately 3-4 years before the offshore installation start.

It is practically feasible to deliver a high-level timeline, but it will depend on the supply chain availability, project business case and efficient cooperation with Energinet. It should be noted that if the 2-3 GW scope is split between several projects, the overall capacity can be delivered faster.

Test:

Each party must test all their own systems and then all the common and interdependent systems must be tested together in all the allowed configurations. Adaptation of the already developed German practice for coordinating between the parties in good time and in a structured process is recommended.

Ideally the preparation for the commissioning and testing phase should be kicked-off in due time - at least 1.5 years before the grid connection date (first power of WTGs), as an unspecified test phase with unknown levels of unavailability will add significantly to the developer's risk and, therefore, the risk premium.

Master time schedule, energisation date, O&M agreement during warranty of HVDC links, including agreement for strategic spare stock and response time for fault finding and repair, scheduled maintenance (during low wind periods in order to minimise energy losses), performance warranties, including target availability are also important elements to coordinate.

It's important for the OWF developer that it's predictable as to how the trial operation and testing of other parties' systems including HVDC systems can affect the test, trial and operation of the OWF assets. It needs to be predictable because it affects the developer's revenue.

The OWF developers emphasised that there must be transparency about the conditions, and there must be an incentive for Energinet to conduct and complete the trials at a time and in a manner that minimises the impacts on other parties.

Theme 8 – Cyber security

One market actor pointed towards the ISO 27000-certificate, while another towards the German IT-Sicherheitskatalog certification as appropriate measures to ensure a sufficient level of cyber security.

As for the NIS2-directive, one market actor pointed out that it will be sufficient in terms of compliance, while another market actor points out that it will depend on the implementation in national legislature whether the directive will ensure a sufficient level of cyber security.

Theme 9 – Tender submission

There is a strong consensus that preliminary investigations de-risk uncertainties thus affecting the bid prices if they are finalised after submission. In addition, all the actors agree that the specific significance of each investigation is site-specific.

Some actors explicitly mention that Nordsøen 1 is likely to be the least complicated. Another actor does not consider any of the sites more relevant than the others as a result of having no data available. A third prefers the full retrieval of preliminary investigations for Hesselø.

All view the geophysical and geotechnical data as key information. Many also mention environmental investigations as important but there is no registered consensus of a hierarchy of preliminary investigations. Some prefer Metocean, geotechnical and geophysical, and others prefer detail rich

investigations of both the site and environment, while another prefers the bundling and continuous retrieval of site investigations for overlapping areas. One prefers an earlier tender submission but states the site-specific risks must be uncovered as early as possible.

There is no consensus on which sites are more important for having preliminary investigation results. One mentions that, environmentally, Nordsøen I is less risky than the Baltic Sea and inner waters. Another ranks Kriegers Flak II as the least risky.

One suggests a site-specific uncovering of risk aversion from the market, exemplified in Nordsøen I with considerations of the completion of geotechnical investigations.

No one could provide a range of the price effect if the deadline for tender submissions is prior to the preliminary investigation results. One mentions the Hesselø findings as a case example of why submission should not be prior to the investigation results.

Theme 10 – General observations and other issues

All market actors foresee challenged supply chains at the end of the decade. Some see an earlier award as a mitigating factor, while others suggest more flexible tender material (project designs, force majeure conditions, installation windows etc.). There is a consensus that a sustainable OWF can be operationalised with LCA or parameters such as recycled materials, carbon footprint and supply chain requirements. If these should be evaluation criteria or minimum requirements varied between actors.

There is no consensus between the market actors on the integration of innovation in the tender. Several market actors welcome innovation throughout the project. However, many also mention the difficulties of quantifying innovation in the evaluation criteria. One suggests minimum requirements such as certain innovation budgets and programmes.

The market actors do not have a common rule of thumb for optimal size of projects with 1 GW PoC. Three actors find it project dependent, whereas over-dimensioning is more suitable for sites with the possibility of consumption prior the PoC and vice versa. One actor finds 1200 MW OWF to be the optimal size. Several actors do not have an input regarding the optimal size for 1 GW PoC.

Several actors do not provide an input regarding the structuring of concession payments. Two mention that concession payments should fall with the OWFs generation of income. One actor elaborates that fixed upfront payments always lead to a discrepancy due to the uncertain future market value of the product. One actor sees two-sided CFD as the primary solution with a capped ceiling combined with qualitative criteria.

There is a general consensus that a sustainable OWF can be operationalised with LCA or parameters such as recycled materials, carbon footprint and supply chain requirements, but there is a strong need for standardised formulas. Several actors suggest sustainability criteria to be implemented as minimum requirements. Some mention the difficulties with the effective monitoring of the late-staged proclaimed commitments being used as evaluation criteria.

There is no general consensus from the market actors regarding system integration as an evaluation criterion. One actor views system integration as well suited as both minimum requirements and evaluation criteria. Two refer to the Dutch model with an external committee as a way for innovation and flexibility even though it lowers transparency. Several agrees on implementation through minimum requirements. Several actors do not provide input regarding system integration as a criterion.

Only two actors have answered if any preliminary investigations are redundant. One thinks it is difficult to generalise about redundancy due to site specific needs, and the another actor views 3D-UHR as not being too critical in the early stage, where the 2DUHRS and geotechnical builds the ground model.

Other findings:

- One market actor finds that compatibility must take place for multi-vendor HVDC.
- One prefers tenders based on more than price, and they suggest differentiation for the coming tenders. Some of the tenders could be with minimum requirements and price-only evaluation and others with innovation, sustainability and system integration criteria assessed by expert committees.
- All of the market actors foresee challenged supply chains at the end of the decade.
- Several mention an earlier award as a mitigating factor.
- Most of the actors describe some sort of flexibility in the tender material as potential mitigating factor for the challenged supply chains. One actor seeks grid connection windows of 2-3 years. Another proposes the flexibility of the finalised project design if the lead times need to be reduced. There was a suggestion for better coordination between the EU tender timelines. A fourth welcomes more flexible force majeure definitions and compensatory measures.
- Some market actors find that a “beauty contest” is not a good idea, as a procurement decided on price criteria is more objective and saves time for both the DEA and the bidders. If innovation or environmental issues are of the essence, then they should be implemented as minimum requirements. Another market actor states that choosing minimum requirements as a way to regulate such issues, will lead to a more expensive OWF being build.
- Some others are of the opposite opinion and are in favour of criteria other than just the price. System integration, innovation sustainability area utilisation and grid capacity were the other possible criteria mentioned.
- A market actor pointed out that it is important that the criteria should be set so that the general public benefits as much as possible from the OWF.
- Another possibility is to have some procurements decided purely on the price, while others also have other criteria.
- One market actor stated that in addition to the CFD price component (including an opt-out option), the government can incentivise developers to offer solutions that provide additional societal value creation - e.g. enhanced sustainability, biodiversity, system integration, socio-economic development - by incorporating the minimum requirements and/or supplementary evaluation criteria in the tender beyond just the price component. If competitive differentiation on additional societal value elements should be desired, the market actor believes the best solutions are obtained when bidders are allowed to submit descriptive proposals on how they wish to contribute to additional value creation, and the quality and complex interface of the proposals are qualitatively assessed by an expert committee (similar to the Netherlands, Japan, etc.). The main benefit of evaluating non-price commitments by qualitative assessments is that developers have a high degree of flexibility to independently develop innovative proposals that the authorities can assess more holistically despite its differences.

Additional questions and answers

Q 1: Could the financial prequalification criteria be adjusted so that they are not limited only to the size of the annual turnover? Some corporate structures might be financially very solid, despite not having a large turnover.

A 1: The DEA will examine whether criteria other than turnover can be used for the financial prequalification.

Q 2: Are there considerations about using qualitative criteria in the procurement for offshore wind?

A 2: It is not decided yet.