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| Comments to the Public Consultation for the Revision of the Guidelines on State aid for Environmental protection and Energy 2014-2020 (EEAG) |

The Ørsted vision is a world that runs entirely on green energy. Ørsted develops, constructs and operates offshore wind farms, associated infrastructure and innovative waste-to-energy solutions and provides smart energy products to its customers; we are also entering the market for renewable hydrogen production. Headquartered in Denmark, Ørsted employs 5,600 people across its locations in Europe and overseas.

Ørsted welcomes the opportunity to contribute to the consultation on the upcoming revision of the Guidelines on State Aid for Environmental Protection and Energy.

We agree that the guidelines need to be revised and brought in line with the EU’s climate and energy objectives. Our comments to the inception impact assessment are structured around the following headlines:

1. Overall objective of state aid guidelines
2. Incentivising investments in renewable energy
   1. The need to see State aid in the context of the EU Green Deal
   2. The role of risk-sharing in keeping electricity affordable
   3. The role of transparency and negative prices
3. Role of tendering scope in unlocking private investments
4. Cross border support schemes
5. Broadening of support schemes
6. Role of state aid in fostering clean hydrogen production
7. **Overall objective of state aid guidelines**

Since the adoption of the current guidelines, the policy objectives of the European Union in terms of environmental protection and energy have changed substantially.

While the EU in 2013-14 only had a 2020 target framework for climate and energy, there is now a political agreement on economy wide climate neutrality in 2050. This agreement is furthermore expected to become legally binding with the adoption of EUs Climate Law in 2021.

The 2050 climate neutrality objective has furthermore been a driving force in the likely adoption of an increased 2030 GHG reduction target of 55%. In other words, there is a clear coherence between the long-term climate neutrality target and the short to medium term policy direction in the EU as pertains to climate and energy policies.

This coherence should be applied also in the revision of the state aid guidelines. Concretely, the impact assessment should therefore assess potential criteria for state aid, not only against their compliance with policy objectives for the duration of the state aid guidelines themselves, but also aligning them with the compliance with EUs long term climate objectives.

In this context, we find it surprising that, in the inception impact assessment and the questionnaire, no or little distinction is made between renewable and low carbon energy. In the case of “Renewable and low carbon hydrogen production”, two very different technological pathways are merged into one category.

Renewable hydrogen is produced from renewable electricity and has lifecycle emissions close to zero while low carbon hydrogen includes a technology (hydrogen from reformation of natural gas with CCS) that is both technologically very different and unlikely to be competitive beyond 2030[[1]](#footnote-1). To align the state aid guidelines with long term climate ambitions a clearer distinction between the two is in our view required.

The Revision of the EEAG must have the GHG-reduction targets and the 2050 carbon neutrality targets in mind. Neglecting these important milestones could result in activities being deemed eligible for state aid, which are not compatible with the long-term policy objectives of the Union. This could lead to support for investments in what would - as a consequence of the EU’s long term climate and energy objectives - become stranded assets, thus resulting in increased costs for consumers that could have been avoided.

1. **Role of risk sharing in incentivising investments in renewable energy**

Across most EU Member States, at least one form of renewable electricity generation (onshore wind, offshore wind or solar PV) is already cheaper than conventional (nuclear or fossil) generation. The need for investment or operating aid is much lower than at the time when the current rules have been drafted.

In the coming decade, levelized cost of electricity (LCoE) from new wind or solar PV assets are projected to go below fossil-based generation across Europe. For the Revision of the EEAG, two things should move into focus.

One is the capacity to build out the required renewable energy capacity at the speed required to meet the targets of the EU Green Deal.

The other is a new notion of “aid” for competitive renewable technologies that may turn from receivers of subsidy, to actors that stabilize power prices and make electrification affordable. Both issues are interlinked.

* 1. *The need to see State aid in the context of the EU Green Deal*

To make sure investments are happening at the speed necessary to reach politically agreed climate objectives, ambitious build-out targets, supported by regular, competitive auctions are essential.

In these auctions, risk sharing between investors and the state/consumers becomes key for variable renewables. Risks should be placed with the actor most capable of addressing the risk. For investments in new electricity generation in Europe today, a significant part of the risk is the speed of the implementation of the European Green deal. The scenarios developed by the European Commission for the 2030 Target Plan suggest more than a doubling of electricity demand by 2050, which should give reasons for investments.

However, there is significant political and regulatory uncertainty associated with these scenarios, as the projected electricity demand increase is mainly driven by the need to decarbonise. As decarbonisation (and thus electrification) is to a large extent policy driven it is to outside the control of investors in renewable energy.

Although an increasing number of investments in renewables are based on private, bilateral PPAs, it is highly uncertain whether PPAs alone can keep the EU on the required renewable build-out track while maintaining power prices at an affordable level.

As the speed of decarbonisation is to a high degree policy driven, it seems reasonable to allow for a sharing of market risk between the state and the investors.

Sharing of market risk does not constitute a typical subsidy, as there are symmetrical upsides and downsides if designed correctly (see following sub-chapter on risk sharing). With a given strike price, a renewable electricity generation asset benefits from subsidies if market prices are low and pays consumers/ the government if market prices are high.

Hence, by taking part in a risk-sharing instrument, the project can literally be subsidy-free. [[2]](#footnote-2)

* 1. The role of risk-sharing in keeping electricity affordable

A two-way contract for difference (CfD) set through competitive tendering is a superior risk-sharing mechanism. Two-way CfDs can be regarded as fixed price PPAs between the state/consumers and the renewable generators. They are crucial for four reasons:

* The two-way CfD ensures minimal LCOE, as the cost of capital is reduced though removing risk premiums attached to fully merchant or other support schemes.
* Competitive tendering of the two-way CfD ensures that society is not paying too much, and electricity is contracted at the lowest possible price level. Any accumulated surplus above the contracted strike-price is transferred to the state/ consumers, again limiting compensation and making sure the aid (if any) is proportionate.
* The two-way CfD enables more investments into renewable generation than would be the case on merchant terms, which puts a downward pressure on electricity prices. Low electricity prices have the advantage of enabling faster decarbonisation at lower costs for consumers.
* Given the significant amounts of renewable electricity needed to decarbonize the energy mix, i.e. given the massive shift of energy demand to the power sector, incentives to continue the build-out of renewables must stay in place. Private, bilateral PPAs are becoming more important, but are not able to keep the EU on the required RE build-out track while maintaining power prices on an affordable level.

Incentives to build-out renewable electricity generation outside CfD regimes (based on bilateral PPAs between RE generator and a corporate or utility off-taker) are likely to stay in place.

In fact, bilateral PPAs can work in the same way as a two-way CfD. The volume of PPAs would increase if the government could act as the “off-taker of last resort”. This would remove the counterparty risk and allow for long-term contracts in bilateral PPAs, which both improves the cost of capital and thus, the LCoE of the renewable electricity generation.

CCfDs (Carbon Contracts for Difference) can be an effective tool to foster decarbonisation. However, the abatement cost of a specific technology is heavily dependent on assumptions and calculation methodology, and therefore guidance on it may be appropriate

* 1. The role of transparency and negative prices

In the context of the previously consulted inception impact assessment, it would be relevant to analyse how risk sharing mechanisms and government-backed PPAs can contribute cost-efficiently to ensuring a positive investment momentum for renewables.

To enhance the transparency of existing support mechanisms, we propose a well-structured framework for analysing bids in competitive tenders to understand the costs for renewable energy provided by a two-way CfD scheme compared to other measures.

Specifically, we see a need for monitoring the cost of capital for renewable electricity generation to fully understand the benefit of state-backed versus merchant investments. Cost of capital is the key risk indicator for renewables. As we can assume a certain technological maturity for wind and solar PV across the EU in the coming decade, the power market context and RES development framework will move into focus. Providing transparency on cost of capital will make the gap between investments under market conditions versus investment under support regimes clear and helps understand what is required for a fully merchant electricity market, like the EC envisions.

The current EEAG guidelines has introduced regulation to keep operators of RES-assets from generating electricity in periods of negative market prices. This is a positive step towards market integration of renewable electricity, but the regulation falls short of acknowledging the whole complexity of the issue.

In our view, the lack of flexibility on the demand side is key to counteract negative prices.[[3]](#footnote-3) It is important to understand that stringent negative price rules in Member States can lead to significantly higher cost (LCoE) for renewables as operators cannot reasonably forecast the volume risk associated with a curtailment of their production.

Electrification of the energy mix brings in more flexible consumers and is decisive in avoiding negative prices. Also, it helps transition the energy system in the EU towards high penetration of RES.

Early introduction of stringent negative price rules will make RES more expensive, and subsequently, electrification based on RES less attractive. We strongly suggest tackling the issue in the opposite way: making electrification more attractive and demand more flexible will solve the issue of negative market prices.

1. **Role of tendering scope in unlocking private investments**

In the European Commission’s Offshore Renewable Energy Strategy, it is estimated that investments of €800 billion will be needed to reach the objective of 300 GW installed offshore wind capacity by 2050. Two-thirds of these investments will fund the associated grid infrastructure.

To facilitate these investments in the most cost-efficient manner, it would be relevant in the impact assessment to look at experiences from the UK (and soon DK as well as PL) in exposing to competition not only the offshore generation units, but also the cables bringing the electricity to shore.

In 2019, the German research economic institute DIW[[4]](#footnote-4) conducted a comprehensive study on market design for offshore wind transmission assets in which it found significantly positive effects of so-called full scope tendering. They conclude that combining the offshore wind farm and the transmission asset into one has proven to drive costs of infrastructure connections down significantly in the UK, while a TSO-driven build-out like in Germany turned out to be more costly.

Based on these findings, we suggest that connections of offshore wind farms, be it radial or within a larger cluster, are included in competitive offshore wind auctions.[[5]](#footnote-5)

1. **Cross-border support schemes**

The inception impact assessment and the questionnaire include the option of requiring opening of support schemes across borders.

Cross-border support schemes probably need to happen in the medium term, in particular for efficient deployment of offshore wind energy. However, requiring opening of national schemes depend on a number of important factors that must first be carefully analysed in the impact assessment.

Decisions to invest in renewable energy depends on several factors, which needs to be aligned for simple support scheme cross-border opening to give cost-efficient results.

Some examples of framework conditions that influence investment decisions are listed below.

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| **Difference in framework** | **Status of harmonisation** |
| 1. Grid connection charges (deep or shallow) and grid use charges | Not harmonised, but possible |
| 1. Curtailment compensation and market design | Not harmonised, but possible |
| 1. Possible use of GOs | Not harmonised, but possible |
| 1. Variable land or seabed rent | Not harmonised, but possible |
| 1. Tax-regimes | Difficult to harmonise |
| 1. Subsidy level for renewable energy | **Not harmonised, but possible** |
| 1. Electricity prices | Difficult to harmonise |
| 1. Carbon prices | Harmonised through ETS |
| 1. Political ambition level for given technology | Difficult to harmonise |

An opening of support schemes as considered in the inception impact assessment, would harmonise factor 6. But efficient outcomes of simple opening would require all 9 areas to be harmonised. As the table suggest, several other factors impact the decisions to invest in renewable energy, so it would be wrong to assume that opening of support schemes would automatically lead to cost-efficient tendering.

Further, the time frame within which a potential cross border opening requirement would be applied, should be carefully assessed. Obliging member states on a year-by-year basis to reserve part of their subsidy measures for cross border participation would be challenging. For instance, small member states may in a particular year only have one large tender for e.g. offshore wind. Obliging part of such a tender to be open to cross border participation would not make practical sense[[6]](#footnote-6).

It would be relevant in the impact assessment to explore the synergies between cross-border opening and the establishment of the new RES-financing mechanism under article 33 of Regulation 2018/1999 (Governance Regulation). This could be a low-cost, low-administrative path to reaching the same objectives as obliging member states to open their national support measures.

One should also look at how the connecting Europe Facility and other sources of funding can give member states additional reasons for making joint tenders. Critical for this to work at least for offshore renewable wind combined with interconnectors (hybrids) will be the guidance on cost-benefit sharing for cross-border projects (planned for 2021 - Offshore Renewable Energy Strategy).

1. **Broadening of support schemes**

Achieving decarbonisation at the lowest cost should be one – but not the only – guiding principle for state aid guidelines. This consideration is particularly important in relation to the discussion raised in the inception impact assessment of broadening support schemes to competitors / other industrial sectors / economy wide

**At this stage it is not entirely clear what is meant by broadening.** We therefore highlight some possible interpretations and consequences thereof.

1. As mentioned under the first point in this consultation response, carbon abatement needs to be considered in view of the EU’s long-term climate neutrality objective. If broadening means looking at carbon abatement at large, there are two immediate concerns.
   1. Considering only the short-term highest carbon abatement per euro spent, could in some cases lead to replacing one type of fossil fuels with another (less carbon intensive) type of fossil fuels. However, given the long-term climate neutrality objective, such a fossil-to-fossil fuel switch would not be sustainable in the long run, and would therefore require additional costs at a later stage to switch to carbon neutral energy sources.
   2. It typically turns out that the findings about carbon abatement are very assumption-heavy, and hence subjective. This is no good basis for regulating state-aid.
2. Broadening in the sense of broadening support for renewable electricity to include more technologies in the same tender has been tried in several member states with less convincing results. It often turns out that designing a tender to be technology neutral is extremely challenging to not say impossible. Again, you typically need to make framework decisions for the tender that turns out to favour one or the other (lead-time, market value, grid connection costs, system integration costs, necessary permits, necessary studies etc.). This imperfect competition is because the technologies are not perfect substitutes for each other, despite all producing electricity (for instance differences in production profile can be significant across technologies).
3. We are looking into commercial applications for renewable hydrogen production but have observed that e.g. fossil-fuel hydrogen is receiving free ETS allowances, while renewable hydrogen is not. Here, a broadening would be a good idea to make sure the EU ETS is giving incentives for change. The principle should be that producing the same product should lead to the same incentives to reduce emissions.[[7]](#footnote-7)

The impact assessment should therefore analyse the long-term cost implications of different broadening options.

1. **Role of state aid in fostering clean hydrogen production**

The role of clean, renewable hydrogen in the energy system is projected to increase substantially over the coming 10-30 years. In fact, hydrogen based on renewable electricity and products derived from it are highly likely to play an important role in decarbonising the European economy.

It should, however, be noted that both hydrogen and hydrogen derived products (PtX), will typically be more resource intense than direct electrification based on renewable energy. As such resource efficiency should be kept in mind when assessing eligibility for State aid.

Electrolysis and power-to-X will require customised regulation and incentives. As was the case for offshore wind and other renewables, renewable hydrogen and e-fuels require an environment of high political ambition. To kick-start development and unlock private investment, clear evidence is needed that policy support, subsidies and favourable framework conditions will be in place over the years it takes to complete the cost-out journey.

Support for development of the green alternatives, through subsidies and incentives is also important. The combination of regulatory framework, a clear demand pipeline and direct/indirect financial support boosts investor confidence in the merits of developing power-to-X at scale.

The EEAG Revision and impact assessment should carefully analyse how State aid can underpin the rapid scale-up of renewable hydrogen production in line with the ambitions set out for electrolyser capacity in the EU Hydrogen Strategy. In particular, State aid guidelines should take into account the cost structure of hydrogen and Power-to-X projects: these projects are typically very OPEX-heavy, and the guidelines should therefore ensure that operating aid continues to be considered compatible with internal market rules. And more importantly, the guidelines should:

* Cater for the fact that that renewable hydrogen will not only replace fossil hydrogen consumption, but also other fuels (e.g. heavy road transport, shipping and aviation fuels). Therefore, the comparable cost gap should be quantified on the basis of the final product being replaced, rather than the same “form of energy concerned” (as per current section 3.3.2.2 paragraph (a)).
* Include renewable hydrogen in Annex 3, as the cost of renewable hydrogen is highly dependent on the cost of electricity. In that sense, renewable hydrogen production is an “energy intensive” activity, and should it not be included in Annex 3, standalone producers of renewable hydrogen could end up at a competitive disadvantage against captive hydrogen production that receives exemptions from renewables levies through their main activity (e.g. refineries that receive reductions in the renewables levies costs and that benefit from such exemption also for their captive production of hydrogen).
* Consider allowing an aid intensity of up to 100% for Power-to-X projects either during a transitional period applicable to all projects, or generally for all *first-of-a-kind* projects.

Should the remarks in this consultation give rise to questions or comments, we remain at your disposal.

Yours sincerely

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1. Both the European Commission’s [Hydrogen Strategy](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0301&from=EN#page=5) and in the [study](https://eurogas.org/website/wp-content/uploads/2020/06/DNV-GL-Eurogas-Report-Reaching-European-Carbon-Neutrality-Full-Report.pdf#page=22) done by DNV GL for the European gas sector in 2020 projects lower costs for renewable hydrogen than fossil+CCS hydrogen in 2030. [↑](#footnote-ref-1)
2. # [Offshore wind competitiveness in mature markets without subsidy | Nature Energy](https://www.nature.com/articles/s41560-020-0661-2)

   [↑](#footnote-ref-2)
3. Only regarding renewable electricity generators falls short of understanding the incentives conventional capacity has in continuing the production of electricity in hours of negative marginal costs (see [link](https://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Energie/Unternehmen_Institutionen/Versorgungssicherheit/Erzeugungskapazitaeten/Mindesterzeugung/BerichtMindesterzeugung_2019.pdf;jsessionid=894AA961297E205407858CAAE384C272?__blob=publicationFile&v=2) in German to evaluation report by the German grid regulator BNetzA). [↑](#footnote-ref-3)
4. [Link](https://diw-econ.de/en/publikationen/market-design-for-efficient-grid-connection-of-offshore-wind-energy/) to the study. [↑](#footnote-ref-4)
5. Concerns about unbundling of such integrated assets can be addressed by mandating the sale of the offshore transmission asset to a third party (incl. the domestic TSO) later. If an offshore wind farm is radially connected to the mainland, unbundling does not have to take place because the connection can be regarded as private connection of the power plant to shore. [↑](#footnote-ref-5)
6. It would be highly cost-inefficient to tender e.g. 10% of an 800 GW offshore wind park separately from the rest of the tender. [↑](#footnote-ref-6)
7. Note that not only does free allowances for fossil hydrogen reduce incentive to switch to renewable hydrogen. The fact that renewable hydrogen is exposed to a carbon cost through the electricity price, means that renewable hydrogen implicitly pays a carbon cost while fossil hydrogen does not. To cater for carbon leakage risk, a solution could be to ensure an equal distribution of free allowances between the two. [↑](#footnote-ref-7)