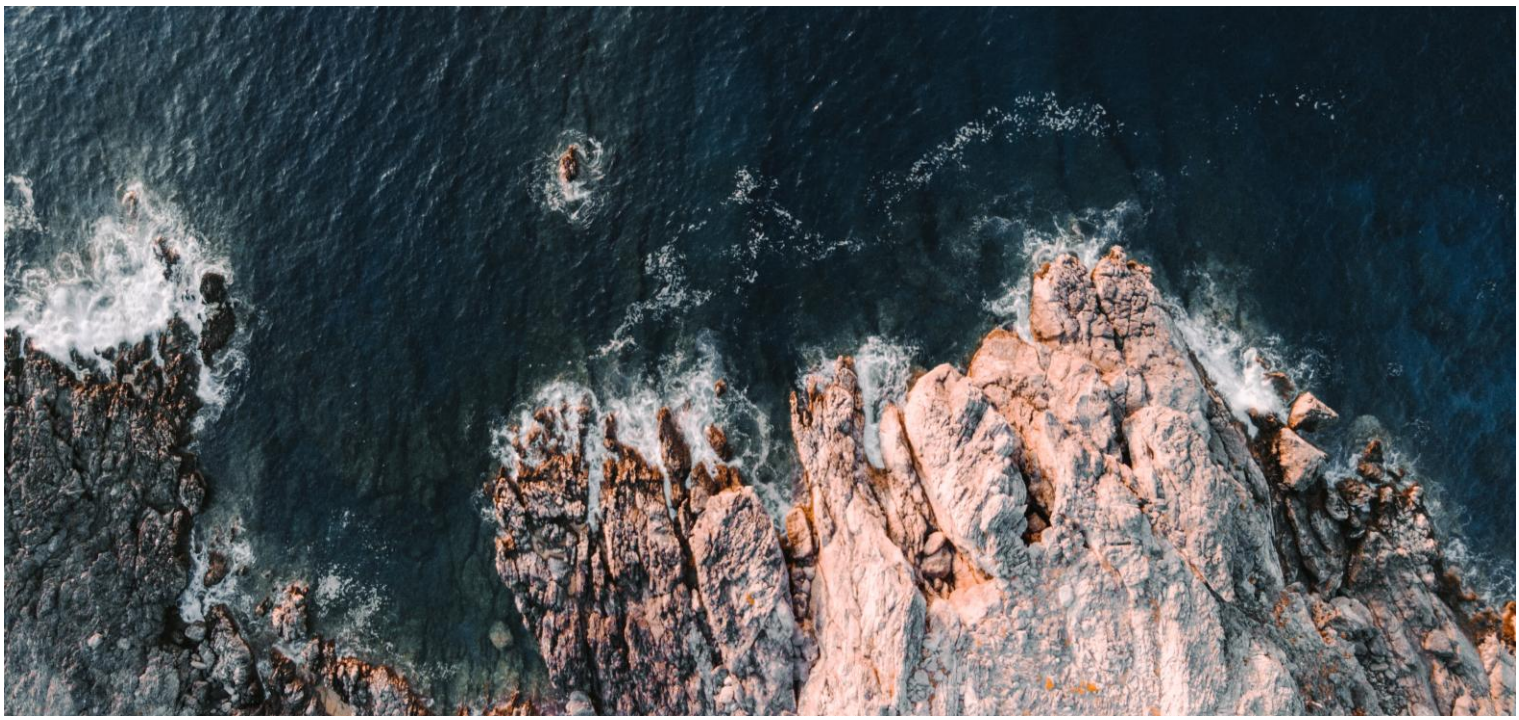

BalticSeaH2

Considerations for a Successful Offshore Wind Auction on Åland

Hydrogen Economy Drivers and Barriers

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Introduction

There is significant potential for offshore wind energy north of Åland. Afry has identified a total potential in Åland waters of up to 6-10 GW (Offshore wind roadmap for Åland, December 2021). Through the ***Sunnanvind*** project, the Government of Åland aims to harness this potential while maximising socio-economic benefits to Åland. The Government is carrying out preparatory work for auctioning the utilisation rights of the northern sea areas, with a total capacity of up to 4 GW. The auction is scheduled to commence in 2025 and aims to attract investors and offshore wind project developers.

The Sunnanvind project targets bringing significant value to Åland in the form of site lease, property tax and local job creation. However, this value creation is contingent upon proper planning and execution in the context of market and economic challenges, transmission limitations and regulatory hurdles.

This policy brief lends a private sector perspective from the BalticSeaH2 project Consortium on critical aspects for the Government to consider when preparing for the auction.

The paper analyses mechanisms for de-risking the project based on first-hand industry experiences and learnings from other new offshore wind markets.

Risking an unfavourable outcome with "offshore wind only" auction scope

It is understood that the Government of Åland intends to only auction the seabed area of project Sunnanvind for offshore wind development during 2025 before undertaking further general planning activities for cable routes, landfall, grid connection, and onshore electrical and Power-to-X (P2X) components.

Under these circumstances, and as Åland is located far away from large European energy demand centres necessitating P2X to be part of a project, there is a perceived high risk that the outcome of the auction will be unfavourable for the Åland society, with one of two scenarios being likely:

1) **No bids** are received, as in the recent cases of offshore wind auctions in Denmark (North Sea 2024) and the United Kingdom (CFD R5, 2023), because of too high a risk for private actors that other necessary plans and permits will be rejected, or

2) **Developer(s) submit low, opportunistic bids**, treating Åland offshore wind as a reserve option that will be developed only if electricity prices for Sweden and Finland increase significantly above current power price forecasts.

Neither of these outcomes yields the long-lasting, high-value benefits desired by the Åland Government.

Suggestion: To stimulate a competitive bidding environment among qualified developers and investors and realise a commercially viable project, it is recommended to create a clear pathway including both offshore wind and onshore P2X on Åland. This could be done through pre-tender completion of initial planning stages for an integrated tender design but also contain options for derisking of post-award developer permitting risks.

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Value of an integrated project and the role of hydrogen

An integrated project refers to a single concession that encompasses the rights to develop both offshore wind, associated electrical components and hydrogen production, potentially in conjunction with hydrogen derivatives, on Åland. In this regard, it is also important to consider the necessary supporting infrastructure.

The key value-adds of pursuing an integrated project are:

1) **Hydrogen production increases revenues when electricity market prices are low** and is essential for optimising the utilisation of the generated wind power. When all regional wind assets are generating, a cannibalisation effect occurs, yielding periods of low electricity market prices that make it unfavourable to sell the produced power to the wholesale electricity market and difficult to sign fixed price power purchase agreements that yield sufficient returns. This aspect is particularly important to consider since the forecasted levelised cost of electricity (LCOE) for Sunnanvind exceeds the forecasted Finnish and Swedish electricity market prices. This is driven by the comparable longer distance to the relevant power grids. Sunnanvind will compete with regional offshore and onshore projects and is therefore required to enable the highest value product at any point in time.

2) **Hydrogen production diversifies the available routes-to-market**. The production and export of hydrogen produced from direct connection to the offshore wind in Åland enables a competitive levelised cost of hydrogen (LCOH) and access to markets with higher willingness-to-pay (WTP). For example, the upcoming Baltic Hydrogen Collector (BHC) pipeline provides a direct connection to central Europe with larger expected hydrogen demand and potential to access markets with corresponding higher energy prices.

The Sunnanvind project team hired the independent consultant Gaia to assess the commercial strategy. Gaia reached a similar conclusion, that Åland offshore wind will only be commercially viable as part of an integrated offshore wind and hydrogen development. An additional potential benefit is identified with the refinement of hydrogen to derivatives, e.g. e-methanol or e-ammonia that can be used to decarbonise hard-to-abate sectors such as industry and marine traffic.

Recommended market design for offshore wind on Åland

For Åland offshore wind to be developed in an economically beneficial way, it is necessary to ensure a tender and planning framework that allows the offshore wind development and onshore P2X development to move forward in parallel.

Considering the circumstances of offshore wind development on Åland and the learnings from the current energy markets, the following two mechanisms should ideally be in place before the auction to yield an attractive opportunity to developers and investors:

1) **Market design and tender criteria:**

a. Integrated, large-scale project

i. Auctioning for an integrated project that requires the awarded developer to connect electric cables to Åland and to Sweden and/or Finland, as energy production potential of Sunnavind far exceeds the energy

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demand on Åland, and to produce hydrogen and/or chemical derivatives on Åland for utilisation and export.

ii. Having a single concession, rather than dividing the seabed areas into multiple smaller concessions to enable economies of scale and to make large infrastructure investments (i.e. hydrogen pipeline, transformer station, compressor and transmission) economically viable.

b. Prudent award model

i. Requiring bidders to demonstrate a proven track record of bringing large-scale (>400 MW) offshore wind projects to commercial operations date (COD) and bringing P2X projects to COD. Requiring an experienced developer with competence and track-record in executing large-scale, complex projects will significantly increase the probability of the Sunnanvind project being realised for the benefit of both the developer and the Åland society.

ii. No upfront payments and adoption of upside sharing model to ensure value maximisation for Åland and the developer long term with reasonable risk sharing and alignment of incentives.

iii. Structuring of the post-tender work as a joint cooperation model between the Government and the awarded developer to work together to de-risk the project. By doing so, the strengths of each party can be used to maximise benefits, and incentives can be aligned.

iv. Allowing flexible milestones and timeline without cancellation fees until the project is de-risked to an acceptable level. The terms and expectations for all parties involved must be clearly stated. Once relevant milestones have been met, it will be possible for the developer to move into the project execution phase.

***2)* Planning framework preparation needed:**

a. Executing a general plan extension that ensures that offshore and onshore electrical equipment, onshore P2X equipment and associated infrastructure can be planned and developed in parallel.

b. Executing a planning framework consisting of procedures and regulations applicable to all assets within the project scope (offshore wind, cables, hydrogen pipelines, electrolyser facility, etc.) to enable simultaneous development and permitting of each asset class. The planning framework should include a general plan with one or ideally several identified sites or areas suitable for onshore (e.g. factories) and offshore infrastructure (e.g. pipelines).

c. Adopting well-known and tested regulations, such as Finnish regulations, for the project is recommended to streamline development and save time and resources for Åland.

Auction timing and de-risking with parallel processes

While it is recommended to have all the aforementioned elements in place before the auction, it is recognised that the Government of Åland faces constraints in terms of time and resources. Furthermore, private actors and stakeholders have varying preferences regarding the timing and scope of the auction, adding further complexity to the decision-making process.

By following the recommendations in *1) Market design and tender criteria*, it is deemed realistic

for the Åland Government to achieve its long-term goals of maximising the socio-economic benefits to Åland and creating an attractive auction for investors, despite possible temporary shortcomings in *2) Planning framework preparation* prior to the auction.

In the near term, it is critical for government officials to weigh risk-reward aspects and manage expectations regarding what can be accomplished during 2025 in terms of de-risking the project and corresponding impacts on the upfront value of the auction.

Based on an outside-in view, a few challenges to be tackled by the Government before the auction can be identified. Below is a table listing these challenges together with suggestions on how to potentially de-risk the project to achieve an attractive and competitive auction.

Table 1. Suggested government actions pre-tender to de-risk the project despite other constraints.

Item	**Suggestion(s) for actions to be taken pre-tender**
(1) Route-to-market: secured electricity connection to Finland and/or Sweden and to gas pipelines (e.g., Baltic Sea Hydrogen Collector)	The tender must include a structure for joint development (between the Government of Åland and the developer) post-tender. This includes the role of Åland TSO, Kraftnät Åland, and strategy to enable radial connection to Fingrid and/or Svenska Kraftnät through, as an example, updated legal framework between Kraftnät Åland and Fingrid.
(2) General plan (for offshore wind farm only) approved by the relevant municipalities	As announced by the Government, the decision-making municipalities will get access to the general plan material before summer 2025. However, there is no guarantee that the general plan will be approved before the tender, thereby adding significant uncertainty to the developer. A structure for municipal approval, also considering the extended scope in (3) below, must be in place pre-tender.
(3) General plan scope extension including H2 and other land-based infrastructure, electricity/gas transmission and routing	The municipalities must be informed in the current general plan (if not amended to include the integrated project structure prior to the auction) what the ambitions for hydrogen production are, so that later additions to the scope are not met with rejection and possible show-stopping concerns from the municipalities. The tender must include a structure for joint development with the developer and the Åland Government post-tender. For example, the Government could focus on obtaining municipal approvals and implementing permitting frameworks, which are otherwise difficult

	for the developer to manage and not include penalties on the developer for showstoppers outside of the developer's control.
(4) Gas legislation and P2X permitting	The Letter of Intent (LOI) signed on 13.1.2025 between *Gasgrid vetyverkot Oy* and the Government of Åland shows commitment for hydrogen development on Åland. A clear plan and commitment from the Government of Åland on how to implement e.g. Finnish gas legislation and permitting considering local aspects for P2X is required pre-tender. This could be done via a clear roadmap for what is required to reach building permit for a hydrogen production plant on Åland, what legislation already exists and what needs to be complemented with Finnish/EU regulations, which local authorities are involved and how could, for example, Tukes play a role regarding chemical safety permit where there might be insufficient recourses on Åland.
(5) Project scope: cable/pipeline routes and landfall	It is natural that this scope falls on the developer post-tender if the planning frameworks are properly de-risked pre-tender as mentioned above.
Summary	Several aspects of the de-risking elements for the project are expected to not be fully in place before auction, accordingly it will be fundamental how the auction is formulated to handle the "in between" period after a developer has gotten exclusivity but at a time when there is still many risk aspects – in particular regarding permitting, which is left outside of the developer's control. Even though there is no one single pathway for how to exactly achieve this, by implementing the intentions of the Åland Government regarding P2X, electricity connection and municipal approval, no upfront payments, penalties or strict deadlines before the project has been derisked, there should be incentive enough for developers to bid and then work together with the Government of Åland regarding derisking. Requiring an experienced developer to increase the likelihood of project realisation will be crucial, and after the central risk elements have been handled, the more conventional models regarding milestones etc. can be implemented.

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Conclusion

The Sunnanvind project presents a significant opportunity for Åland to harness offshore wind energy and yield long-term socio-economic benefits to its residents. The Government of Åland has already taken substantial steps in planning and preparing for the launch of the auction for the northern seabed area in 2025. Nevertheless, the risk of an unfruitful auction remains, necessitating further proactive mitigation measures to sustain a healthy risk-reward balance, despite timing, resourcing and regulatory constraints.

By adopting an integrated project approach that includes both offshore wind, electrical connections and local hydrogen production in a single concession, and by implementing a robust market design and planning framework, the Government of Åland can create an attractive auction for investors. For a successful auction, it is crucial for the Government to create a prudent award model that considers strict tender criteria, not only in terms of the developers' qualifications, but also in terms of agreeing on the framework for joint development and de-risking of the project between the developer and the Government post-award.

It is of the utmost importance that the Government takes a proactive and transparent approach in communicating on the full scope and risk sharing models for the integrated project, both with all relevant municipalities and with private developers. Taking these actions now enables the long-term success and sustainability of the project, ultimately bringing substantial value to Åland.

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