EU-SCORES
European Scalable Offshore Renewable Energy Sources

European Scalable Offshore Renewable Energy Source

(EU-SCORES)

D2.3 Optimal consenting and permitting processes for multi-source offshore energy parks

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Executive Summary

This D2.3 report, being a deliverable in the Horizon2020 project EU-Scores, aims at assessing optimal permitting processes for multi-source offshore energy parks, such to provide insights and present key conclusions for improvement and optimisation in the permitting of large-scale offshore renewable energy parks with multiple types of energy sources, such as wind and solar PV and/or wave energy.

This report starts with an overview of typical permitting processes where offshore renewable energy projects are advanced by project developers and that take place in an extensive supply chain and value chain, with many players interacting at different stages in the process. This interplay is set in an evolving political-economic and regulatory setting, where the urgency in the energy trilemma of affordability, security of supply and sustainability is widely acknowledged by European Member States (and the UK). In this challenging setting the differences in permitting approaches and designs between countries should also be included.

A review process has been conducted to discover permitting practices that support and strengthen the acceptance of multi-source energy projects. The method chosen to do so, builds on similar review processes done previously in adjacent energy subsectors.

Based on the outcomes of this review, it can be concluded that only *now* multi-source energy projects – being large-scale offshore energy parks with multiple types of energy sources such as offshore wind combined with offshore solar and/or wave energy – come explicitly into play in the new tenders. This is because project developers, TSOs, and governments recognise the benefits of multi-source energy projects, such as a more continuous power output that can lead to a higher offshore grid stability and more efficient use of offshore electrical infrastructure. A viable approach in the tender award scoring is to place greater emphasis on the integration of offshore solar and/or wave energy in the non-price criteria. Alternatively, multi-source can be included in the pre-conditions criteria or in the price criteria to prove scalability of such applications and their price competitiveness. To reduce unnecessary transaction costs, further harmonisation in the tender designs between the different Member States (and the UK) would also benefit the inclusion of multi-source projects. Other lessons focus on specific tender process improvements and further digitalisation. Expansion is foreseen to be needed in permit resource management at national and lower levels to cater for the projected large growth in offshore energy capacity that needs to be built. Finally, regional and local authorities also play a crucial role in citizen communication efforts, awareness raising in local communities, and supporting local benefits sharing.

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Abbreviations

BEMIP	Baltic Energy Market Interconnection Plan (High-Level group)
BF	Bottom Fixed Offshore Wind
CAPEX	Capital Expenditure
CESEC	Central and South-Eastern Europe Energy Connectivity (HL grp)
CfD	Contract for Difference (one/two-sided)
EIA(R)	Environmental Impact Assessment (Report)
FID	Final Investment Decision
FOW	Floating Offshore Wind
FPV	Floating Solar PV (this refers to *inland* floating solar PV, such as at lakes and water reservoirs, and is different from OS)
IRENA	International Renewable Energy Agency
ISWE	Interconnections for South-West Europe (High-Level group)
LCOE	Levelized Cost of Energy
MS	Member State of the European Union
MSP	Marine Spatial Plan
NSEC	North Seas Energy Cooperation (High-Level group)
OEM	Original Equipment Manufacturer
O&M	Operations and Maintenance
OPEX	Operational Expenditure
ORE	Offshore Renewable Energy
OS	Offshore Solar (this refers to *offshore* floating solar PV, and is different from FPV)
OW	Offshore Wind
PPA	Power Purchase Agreement
SPV	Special Purpose Vehicle
TSO	Transmission System Operator
T&I	Transportation & Installation
WAV	Wave energy device
WTG	Wind Turbine Generator

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1. Introduction

This deliverable, the D2.3 *Report on optimal consenting and permitting processes for multi-source offshore energy parks* aims to provide insights and presents key conclusions for improvements and optimisations in the permitting processes of large-scale offshore renewable energy parks with multiple types of energy sources, such as offshore wind (OW) and offshore solar (OS) and/or wave energy (WAV).

In the European Green Deal, subsequent European regulatory frameworks and Commission guidance and recommendations, the oceans' role in mitigating climate change is recognized, with offshore renewable energy, including ocean energy and offshore solar PV, as a key maritime sector to achieve this.

The process to obtain a concession, licence and permission to build and operate an offshore energy park with one or multiple technologies is time-consuming, burdensome and lacking uniformity between the Member States in Europe (and the UK).

A balance between three aspects needs to be found: i) reaching the Green Deal goals and specifically the (national) renewable energy goals, ii) the economic viability of the park(s) and obligations specified in the permits or concessions, and iii) the environmental impact, not only at individual park level but also the cumulative impact in a multi energy source arrangement or with adjacent parks.

This report reviews the permitting processes for building and operating large-scale offshore renewable energy parks with multiple energy sources in the following countries: Belgium, France, Germany, Ireland, The Netherlands, Portugal and the United Kingdom of Great Britain and Northern Ireland. Best practices are showcased for countries where multi-source in offshore wind park areas is already (partly) incorporated in their planning process (e.g. BE, NL, PT, UK).

This report is divided into six chapters. Chapter 2 provides an introduction to permitting and tendering processes. Chapter 3 details the methodological framework used for reviewing the different processes, with chapter 4 presenting the practices. Chapter 5 provides recommendations and chapter 6 the conclusions and lessons learned.

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2. Context and overview of offshore permitting and tendering processes

From the perspective of a project developer, a typical offshore renewable energy park development follows the next steps:

I. Notification (proof feasibility) – starting with establishing consortia and initiating early phase financing, preparing permitting processes.
II. Permitting (concept selection) – involving regulatory work and commercial agreements.
III. When permit are granted: detailed planning (optimising concepts) – procurement, financing/SPV, PPAs/direct energy contracts.
IV. Construction – next procurements, O&M agreements.
V. Operations – warranties, divestment, next phase O&M agreements.
VI. (If not divested: Decommission or repowering (proof feasibility, select process) – next procurements, next phase O&M agreements or decommissioning agreements.)

A developer will engage with a broad range of suppliers across the value chain. An example is provided in figure 1. This example covers one energy type: offshore wind. When we consider multi-source parks, the range of suppliers will expand with at least several columns in the supply chain, possibly enabling some efficiency gains in the value chain, though some supply chains may work perfectly independent.

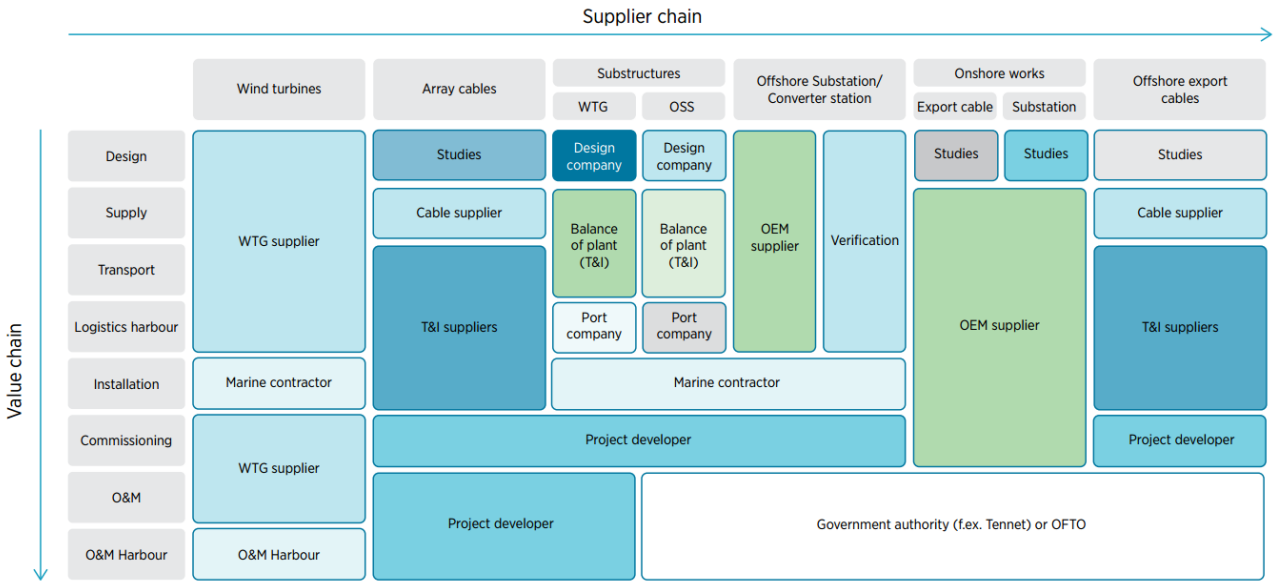

Figure 1 – Developer's complex supply chain (source: [Norsk Industri 2020])

This complex supply chain and value chain constellation of energy park developments identifies the different players as 'building blocks'. This can be seen as a static picture, but each building block operates in a dynamic environment with market forces, citizens demands, and public sector policy

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ambitions. There are several economic and regulatory dynamics at play that need some elaboration in the following paragraphs [among others, see: BloombergNEF 2024; DNV 2024; OEE 2024; IEA-OES 2024; ETIP-Ocean & Wind 2024].

Recent economic challenges, not in the least as a result of the Ukraine-Russia war, disrupted the energy and financial markets (and is still causing significant human suffering in the war). Commodity prices and supply chain disruptions in renewables and elsewhere are only now stabilising, with inflation rates coming under control. In the still shallow investment markets of renewables, the outlook is getting better, with interest rates stabilising in the lower segments and the bond prices recovering. This means that equity allocation by institutional investors will be on the rise, opening markets in taking up again the offshore renewables. However the current rise of a multi-polar global system of economic blocks may increase costs and is raising levels of uncertainties. Noticeable in this context is the Draghi report on European competitiveness [Draghi, 2024] where several recommendations, also relevant for the clean tech industry, are made to address these challenges in the still fragmented public and private investment landscape.

It is unclear to what extent and how rapid systemic market shifts in the electrical power markets are playing out. The traditional power production based on bids at one- or two-sided CfDs or via feed-in-tariffs and sold at wholesale markets, is shifting into lower CfD contract levels, with capture price rates significantly declining for some (land-based) renewables, with the electrical grids needing higher load efficiency in the foreseeable future. The need for more grid balancing capability leads to storage investments but also offers great opportunities for multi-source energy farms with their unique power profile. Emerging business models that focus on direct two-way alignment of supply and demand may offer interesting openings for multi-source projects.

Along with these economic forces, policy ambitions and regulatory proposals and measures are also at play. In 2021 the EC proposed to raise the 2030 renewable energy target to 40% as part of the 'Fit for 55' package [EC 2023 iv]. In 2022 the RePowerEU Plan [EC 2022 iii & iv] proposed to further raise the targets. In October 2023 a binding target of 42.5%, while aiming for 45% was put into Directive 2023/2413 [EU 2023]. The EU strategy on offshore renewable energy has set the goal for cumulative offshore wind to 111 GW by 2030 and 317 GW by 2050, becoming an important basis for Europe's electricity mix. This strategy was adopted in various summits (such as the meeting of nine Member States in April 2023, where the Ostend Declaration was adopted by EU Energy Ministers [Ostend Decl. 2023]). In March 2023 the EC proposed the Net-Zero Industry Act (which came into power in 2024) to scale-up manufacturing of clean technologies in the EU and improve the enabling conditions [EU 2024]. One significant commonality in many EC proposals and recommendations, and largely absorbed in new EC Directives, is the urgent need to accelerate and improve the permitting processes for renewable energy projects.

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The permitting process needs to be seen in this context of economic and regulatory dynamics.

For offshore renewable energy projects, the following foundational elements exist:

I. **Area mapping for the new concession area (in context of the national MSP or similar plan).**
II. **Site selection in more detail within the concession area.**
III. **Pre-development of the site (in most EU countries conducted by the government or by contracted supplier(s) covering grid application and surveys (geophysical, geotechnical, energy & metocean measurements, public consultations), design envelope development, tender preparation).**
IV. **Launch of tender process / auction for PPA.**
V. **Permitting phase (secure offtake agreements, tender agreement).**
VI. **Development with procurement (tier one contracts, secure finance, acquire all (sub) permits and licenses, FID, tender compliance).**
VII. **Construction (onshore works, mobilisation, cabling, foundations, major items, commission, tender compliance).**
VIII. **Operations (asset management, O&M agreements, trading energy, tender compliance).**
IX. **Divest/decommission/repower (proof feasibility, follow-up actions, tender compliance).**

- **Legal challenges can occur and depending on the legal windows, they can happen in all of the above phases.**

The order at which the first three elements are executed may differ, e.g. in DE tenders are split between sites that are pre-investigated and others that are not; or in NL and BE the grid connection is realised before the OW farm is built. In summary, there are different models followed in different countries, and even within countries. A common model is where the governmental authorities are directly involved in the area selection (under a MSP), the site selection and site pre-development (elements I to III, see above), while in other models the authorities limit themselves up to the site development (elements I and II). The latter models leave more room for the project developers, but ask for a greater share of the development risk, while the prior model tends to be faster in execution.

Of importance here is how the distribution of costs (and future benefits) is foreseen between the governmental authorities and the project developers. The costs of site pre-development and the grid connection are significant and are of great influence on the tender design.

There are several challenges in permitting processes. These challenges have been flagged at various moments by the industry and the EC, notably in 2022 and 2023 in conjunction with Calls for Evidence and stakeholder consultations. In 2023 the RES Simplify study [EC 2023 i] and the EC recommendation on

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speeding up permit-granting procedures SWD149 of 18.05.2022 [EC 2022 ii], led to an amendment of Directive 2018/2001 in C3219 [EC 2022 i]. In 2023, a Call for Evidence was held together with two online workshops, underscoring a EC staff working guidance document to Member States on auction (tender) design in the document SWD300 of 13.05.2024 [EC 2024 ii] and followed up by EC recommendations in C2650 of 13.05.2024 [EC 2024 i] and C3998 of 27.06.2024 [EC 2024 iii].

The latter two documents are worth highlighting here as they offer a good framework for a review of the permitting processes and how to (further) optimize them, especially in relation to multi-source energy parks.

There are six principles stated in the EC staff working documents to recommend an optimized tender design:

1. **Contribute to rapid, efficient and sustainable renewables deployment and provide value for the sector.**
2. **Ensure the auction design guarantees a competitive bidding process.**
3. **Ensure legal certainty.**
4. **Align the complexity of tender design with market maturity.**
5. **Involve market participants and experts early and during the auction design process.**
6. **Harmonise the auction design to reduce transaction costs.**

In these principles are two considerations mentioned that have specific multi-source relevance: i) the non-price criteria and ii) incentives for timely completion.

Member States can make use of non-price criteria in tenders as pre-qualification or award criteria, or both, in order to pursue objectives that cannot be captured by the price-only dimension, such as quality, ability to deliver the project on time, responsible business conduct, cyber-security and data security, contribution to resilience, environmental sustainability beyond legal requirements, system integration or innovation. The latter two may be of particular interest to use to stimulate multi-source projects in the bids. In some cases, such as in the Netherlands, with similar innovation stimulating incentives, non-price criteria were called "innovative solutions for system integration" or lately even with a specific reference to OS: "stimulating investments in electricity production using offshore solar".

Member States may also include in their tender non-price criteria that help contribute to resilient supply chains (and where appropriate local or regional supply chains). This can be further deepened with a framework of measurements to strengthen Europe's net-zero technology manufacturing ecosystem (see the Net-Zero Industry Act [EU 2024]). This may include the avoidance of overdependence on a single type of energy source, such as offshore wind, or overdependence on a limited number of suppliers or supplier countries, while preserving the competitiveness of the tenders. This diversification and strengthening of the European manufacturing ecosystem

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should offer opportunities to develop and grow *European* Original Equipment Manufacturers (OEMs), including European *multi-source* OEMs.

The Net-Zero Industry Act also recommends time limits on the permit-granting processes both for manufacturing and for net-zero strategic projects. Furthermore of relevance is its article 26 [EU 2024] that states several auction (tender) design criteria for renewable energy sources, such as including award criteria on sustainability and resilience contribution that weigh up to 30% of the award points, provided that excessive costs can be avoided.

Overall, the use of non-price criteria should have mechanisms in place to ensure that they are transparent, measurable and adhered to. Appropriate, not excessive, penalties can be put in place to identify and act on non-compliance, taking away any potential incentive to not comply. These penalties should then be sufficiently high to deter bidding strategies pursuing non-compliance of non-price criteria which are only verified ex-post.

It should be noted that the application of non-price criteria in tenders must be applied with prudence. If unwisely applied, they may substantially increase the complexity and costs in the bid preparation process and overall may lead to less effective and cost-efficient outcomes. Aiming for a minimum number of non-price criteria based on transparent and measurable parameters is recommended (as also mentioned in the above referred EC documents).

It should further be highlighted that Member States are free to apply non-price criteria in tenders to their own choosing, as provided under the Net-Zero Industry Act. But this comes with the transaction cost of a fragmented marketplace. Something that the Draghi report on European competitiveness [Draghi, 2024] also mentioned as a hurdle to innovation and scaling-up growth. Harmonisation between the Member States is mentioned in various European policies. In the case of ORE, a dialogue at sea basin level may be a good way to address this. There are established and structured dialogue mechanisms in place (like the NSEC, ISWE, BEMIP, CESEC)[i] to seek harmonisation and standardisation in ORE tender design.

There is also a relevant guidance staff working document of the Commission that elaborates on regulatory learning with a focus on the energy sector [EC 2023 vi]. Regulatory learning is here described as enabling competent authorities to gain better knowledge and understanding of the risks and opportunities while newly interpreting existing legislation in the light of new technological developments and innovative developments. There are different tools designed to facilitate a 'space to experiment'. Ranging from regulatory sandboxes to pilot projects, pilot regulation, and testbeds and living labs. Each with their own specific focus. Sandboxes enable the testing of innovation in a controlled setting in a specific plan that is developed and monitored by a competent authority. While testbeds focus mostly on the technological requirements and performance, without the direct presence of a competent authority. Living labs focus on involvement of citizens and other stakeholders

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in a socio-technical setting and can be used as an input source for future regulatory requirements. An extensive list of various examples is made available in this staff working document, though no ORE examples are included. To best available insight, of all the tools, the testbed tool is being used in the development of multi-source projects. Two examples of testbeds are included in the EU-Scores project: the Portuguese 'Aguçadoura' testsite, near Póvoa do Varzim [https://oceanact.eu/] and the Belgium 'Blue Accelerator' offshore platform, near Ostend [www.blueaccelerator.be].

This concludes the setting of offshore renewable energy (ORE) permitting and tendering processes and its challenges. Assessing permitting processes of various European countries to enable multi-source deployment is covered in the next chapters, starting with a methodology description in chapter 3 and the review in chapter 4.

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3. Methodology

Several reports have analysed the permitting processes of offshore renewable energy parks, particularly for offshore wind. A collective list of recommendations is evolving over time in the interplay between developers (promoters), the maturing supply industry, the energy sector, the regulators and governmental authorities.

This report builds on these recommendations and applied methods of analysis. Distinctive is that this reports focusses on permitting processes for *multi-source* energy parks.

To provide maximum clarity in the assessment, section 3.1 identifies relevant definitions and section 3.2 presents the design framework that is use in the analysis of permitting processes for multi-source energy parks.

3.1 Definitions

Good definitions are essential to review the permitting process with clarity.

Auction	(See Tender)
Tender	A tender (or auction) is a market mechanism which aims to allocate goods in case of excess supply and price discovery for goods with unknown market prices from an auctioneer's perspective. The allocation is based solely on the bids submitted by the participating bidders according to transparent awarding rules. Renewable energy projects are constructed with and without public economic support. When they involve public support, it is mostly allocated through tenders. However, tenders can also be used to allocate projects which do not require support, in line with the Commission Notice on the Notion of Aid as referred to in Article 107(1) of the Treaty on the Functioning of the European Union (OJ C 262/1 19.7.2016), and are financed on a purely commercial basis, either through PPAs or through sales to the wholesale electricity markets. This has been the case for some offshore wind projects where the use of seabed, a public resource, is also allocated through the tender. Renewable energy tender design options differ across Member States, and the different setups may lead to completely different performances. According to IRENA, tender design elements can be classified into four main categories: (i) auction demand (i.e. defining the auction volume and how it is divided between different technologies and

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	project sizes), (ii) qualification requirements (i.e. minimum requirements for participation in the auction), (iii) winner selection process (i.e. how the eligible bids are ranked), and (iv) risk allocation and remuneration (i.e. rules to ensure the timely and complete implementation of the awarded projects) [see: IRENA 2019; and: EC 2024 i & footnote 4 & 10 in EC 2024 ii]
Permit (permitting process)	Permitting is the process of obtaining a permit to develop an offshore energy park. Projects are awarded a permit when the regulator decides that their project is suitable for development, and the assessment of potential impacts submitted alongside their application demonstrates there will be no significant impacts on the environment. It is essentially the permission granted by the regulator for the project to go ahead. The permit outlines what the consent is for, how long it will be in place, and the conditions that must be met for the permit to remain valid. In some cases, multiple permits are required, each covering a specific element. The permitting process is undertaken by the developer to submit an application, including undertaking consultation with relevant stakeholders, and providing details of the development. A 'permit' received by a developer is also called a 'consent' or a 'license' (may differ slightly by country). In this report is the wording of 'permit' and 'permitting' used to align with the EU legal framework.
Concession area	The geographical area covered by the permit of the licensee. 'Licensed area' is synonymous.
Special Purpose Vehicle	Special Purpose Vehicle (SPV) is established for the single purpose of executing one or more projects, such as an offshore energy park. An SPV usually is intended to separate the exposure from the parent companies (the project developers in this case).
Project developer	Project developer has a broad scope of responsibilities ranging from bidding, contracting, and managing the project. A contractor is hired by the project developer. There are different contractual arrangements, such as EPC (engineering, procurement, construction) to wider scopes that include also installation and commissioning.

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Contracting	**Developers tend to bundle Balance of Plant scopes into an EPCII contract – Engineering, Procurement, Construction, Installation (Commissioning). Alternatively, they may opt for multi-contracting strategies. Timing, long-lead items planning, sequencing, financial structuring are key elements to include.**
Multi-source energy park	**An offshore energy concession area where different types of renewable energy devices are located and interconnected in an electrical array to export, via an offshore sub-station, either to the landside into the electrical grid, or via an interconnector to an offshore hub for further aggregation. Multi-source signifies that more than one type of energy source is integrated in the park; such as wind turbines and solar PV farms and/or wave energy devices.**
Multi-use devices	**Multi-use relates to multiple applications integrated on one device, such as a solar PV farm with a seaweed installation.**
Stakeholders	**Stakeholders are bodies or persons that can affect or be affected by the actions of a developer and more specifically by the development that is being proposed. They can be classified as i) key players (major OEM suppliers, governmental authorities), ii) context setters (regulators, TSOs), iii) impacted (local fishery sector, coastal tourism, local community), and iv) supply industry (vessels, contractors, etc.).**
Environmental Impact Assessment	**The aim of the Environmental Impact Assessment (EIA) process is to ensure that, when deciding whether to grant consent for a project, a regulator does so in the full knowledge of the potential significant effects of the project on the environment and takes these into account in the decision-making process. Regulations in the European Union such as this one (EU EIA Directive 2011/92/EU and amended by 2014/52/EU) is transposed into MS law (and relevant UK regulation). The EIA set out a procedure for identifying those projects which should be subject to an EIA coming to a decision on those projects which are likely to have significant environmental effects.**

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3.2 Methodological framework

The following framework for analyses has been developed.

An expansive literature study was conducted from a range of sources, varying from monitoring reports to project studies, private and (semi)public policy reports and sector recommendations, covering the period from 2018 till present, with a focus on the most recent years.

Notably here in particular are the reports from: Catapult [Catapult 2021], ETC [ETC 2023], ETIP-Ocean [ETIP-Ocean 2020], and IRENA and GWEC [Irena-GWEC 2023]. This was further enriched with the several especially relevant EC documents: on auction design [EC 2024 i & ii], on speeding up permitting processes and facilitating PPAs [EC 2022 i & ii], on promoting the use of renewable energy sources [EC 2022 v], the founding Green Deal [EC 2019], and the updates and amendments of the promotion of renewable sources in RED III [EU 2023]. Lastly, both EC Calls for Evidence of 2022 and 2023, the queries and all responses were reviewed.

This literature review resulted in a grouped list of key topics that were identified to be relevant for permitting of offshore renewable energy projects. The queries on each topic were phrased as statements and included in a form for qualitative analysis of national permitting schemes. For each statement, space was offered to i) comment on the current status in the country and ii) to add comments, remarks and confirm or disagree on the statement. This review was performed per country. The countries included were BE, DE, FR, IE, NL, PT and the UK.

Next to the data from the country reviews, insights from the secondary stakeholder group [see EC 2024 ii] were considered in the analysis (a brief summary of the 89 responses in this secondary stakeholder group is provided in Annex 2).

The data received from the national reviews and the secondary stakeholder group represent a broad range of sector participants. The results were analysed on common patterns, challenges and best practices.

The table 1 below presents the statements.

	Related to policy makers	
1	Strategy and multi-source permitting:	
	1.1	Set quantitative targets for renewable electricity capacity (incl. multi-source), with milestone dates.
	1.2	Design and implement auction/tender process for offshore generation, that includes multi-source projects.
	1.3	Create and communicate a strategic vision of the power system that includes offshore multi-source.

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	1.4	Assign *priority development status* for multi-source in the permit-granting process (e.g. by expanding EC Dir 2018/2001: "overriding public interest and serving public health and safety when balancing legal interests").
	1.5	Dedicate or assign space in the Marine Spatial Plan for renewable energy projects/concessions, *including* specific space for multi-source projects.
	1.6	Dedicate a *specific and fast-track* permitting process for multi-source projects.
	1.7	Plan dedicated multi-source space in *future concessions*.
	1.8	Include non-price tender criteria on *biodiversity impact and social effects*.
	1.9	Include non-price tender criteria on installed *multi-source* capacity in MWh.
	1.10	Include non-price tender criteria on the *capacity factor and/or power smoothness*.
	1.11	Include in *pre-qualification criteria* for tender on capacity factor and/or power smoothness.
	1.12	Include non-price tender criteria on *system integration innovation*.
	1.13	Include concession transfer ownership rights (instead of for instance the right to use).
2	Grid connection in permit process, incl. for multi-source:	
	2.1	Set and enforce a *grid connection negotiation target*: negotiation period limited to 4-5 years.
	2.2	Develop a grid connection *queuing approach* with clear priority criteria.
	2.3	Develop an *electrical infrastructure strategy* for network availability *with* coastal landing points and grid capacity.
	2.4	Specify explicitly *which party has to pay for what* in the permitting process (e.g. grid connection, initial survey; and do some costs have to be refunded with a successful application).
3	Processes and enforcement, incl. for multi-source:	
	3.1	Streamline legal process: limit the window for legal challenges to project developers for submission, to a maximum of 4 months (exact starting point in timeline may depend on national legislation).
	3.2	Limit the maximum number of legal appeals to 2 during the permitting process (by sending to the highest court of appeal or by limiting the appeals in case of deviations), limiting the options to reopen the entire case.
	3.3	Introduce a clearing house mechanism to deter speculative legal challenges, such that only viable perceived litigation passes through (this may not be possible in some jurisdictions).

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	3.4	Set and enforce permitting processing targets: permit-granting period limited to 18 months.
	3.5	Enforce permitting to include the rule of "positive silence" (lack of response by administrative authority within a set time frame, leads to an approval of the related step or phase)
	3.6	Create one-stop-shops for permitting to have a single national contact point across all regulatory bodies and/or regional/national levels.
	3.7	Publish clear permit-granting roadmaps with specific sequencing.
	3.8	Provide project developers with the flexibility to optimize the layout and design within specified ranges outlined in the initial permit or project's submitted bid (often referred to as the 'box-model', 'design envelope' or 'Rochdale envelope').
	3.9	Ensure that staffing and training of permitting departments can meet the growth in the sector (given rising EU renewable energy targets).
	3.10	Streamline permit-granting process in repowering (brownfield)/ late capacity addition of existing offshore wind farms with multi-source energy solutions.
4	Information and systems, incl. for multi-source:	
	4.1	Digitalise entire permitting process, removing any need for paper-based forms.
	4.2	Record and monitor digital permitting records to enable tracking and mitigating bottlenecks.
	4.3	Create and maintain environmental data banks at national level (where possible enable wider environmental mapping across borders & cumulative impacts).
	4.4	Make public sharing of environmental studies conducted by project developers, a pre-qualification tender criterion.
	4.5	Create digital mapping of energy resource potential (e.g. solar irradiation, wave, current, wind speed) with high granularity.
	4.6	Create digital mapping of current and planned electrical transmission network, relevant permitting information, harbour and logistical facilities.
	4.7	Optimize tendency of increased monitoring and tracking requirements with applying integration and compatibility of reporting standards and datasets.
	4.8	Ensure monitoring requirements are based on risk-based principles in determining needs and scope for post-permit monitoring.

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	Related to project developers	
5	Logistical-operational permit considerations:	
	5.1	Design a legal structure for *shared* multi-source siting and operations (e.g. ownership, communal property and liability, underperformance or bankruptcy of co-user, financial compensation, curtailment arrangement, disputes coverage of PAP v.v. SAP (primary- resp. secondary allocation point)).
	5.2	Design mitigation and insurance measures for shared multi-source siting and operations.
6	Stakeholder engagement (permit duty of project developer):	
	6.1	Design and maintain engagement plan and process.
	6.2	Siting and design in consultation with local stakeholders regarding visual impact (coastal community) and interaction with other users of the sea (professional and recreational).
	6.3	Design benefits sharing with local communities (e.g. reduced energy tariffs, community co-ownership schemes, fiscal contributions, funding local public services, skills development programmes).
	6.3	Implement action plans when issues may occur and allocate resources to implement responses.
	Related to local/regional authorities:	
7	Responsibilities of local/regional authorities in permitting process:	
	7.1	*Publish* offshore renewable development plans, ahead of implementation, *promoting* upcoming opportunities for local workforce and infra impact.
	7.2	*Support* offshore renewable energy education activities and information activities to communities.
	7.3	*Support* community groups, incl. government, private sector, research organisations, to clarify the coastal offshore energy potential and values for the whole community.
8	Processes and resourcing (of local/reg. authorities):	
	8.1	Ensure that *local planning processes* do not prohibit offshore renewable energy goals, are clear, comprehensive and encourage project developers to engage with communities.
	8.2	Ensure that *local/regional* staffing and training of involved departments can meet the growth in the sector to fulfil the above mentioned tasks.
	Related to civil society groups:	
9	Stakeholder engagement:	
	9.1	Contribute to engagement process with focus on broader societal objectives (energy trilemma: supply security, sustainability, affordability). This is in the permitting process supported by a non-price tender criterion (see above 1.8).

Table 1 – List of statements used in the survey

The complete query form is included in Annex 1.

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Finally, to validate the findings, a targeted group of technology– and project developers was interviewed to comment on the findings. To guide these interviews, a list of 12 statements - based on the interim results of the review, was presented for comments. The results were fed back into the findings and conclusions of this report.

A challenge for the data gathering was that till present there are very few permitting processes designed, let alone implemented in Europe that include explicitly *multi-source* project deployments.

The review of the collected responses, including the Call for Evidence results are presented in the next chapter 4.

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4. Practices in permitting in targeted countries

This chapter contains a compilation of the responses from the survey, the results of the Call of Evidence (see Annex 2), as well as the targeted interviews with a selected group of OS and WAV technology developers and ORE project developers. This chapter follows the same structure as table 1, with its nine sub-headings. If some items from that table are not mentioned below then it means that the responses were largely absent on that topic.

1. Strategy and multi-source permitting

Offshore wind targets are set and gradually raised in all countries. When it comes to other offshore renewable energy sources, only some countries have policy goals. The Netherlands announced in 2023 the target of tendering 3 GW of offshore solar by 2031. However, that goal has been cancelled due to increasingly challenging market conditions. Portugal aims for 200 MW of wave energy by 2030 and recognizes in the national energy and climate plans the relevance of multi-source energy. The situation in FR is pending. None of the countries has a specific target for multi-source.

Creating and communicating a strategic vision that includes multi-source projects would be an important signal to the supply chain and the industry. This was confirmed in almost all countries. Mentioned was also that in the case of multi-source technology, OS supply chains can differ from OW and can therefore operate largely independent without common demand constraints.

Giving priority to ORE as 'overriding public interest' is getting included in various national legislations, but the inclusion of multi-source projects or setting related targets is (still) absent. It is relevant that this prioritisation is being introduced in NL for green hydrogen, in UK for Net-Zero policies, and in DE for offshore wind. Applying this type of prioritisation for multi-source projects in a next phase, is seen as a positive and contributing factor.

Marine spatial plans that prioritise multi-source projects are already put into practice in PT, while in NL non-binding 'area passport' (that would facilitate such priority) are not yet applied (though this would give a positive signal to the industry regarding the 2032 OS target). In 2024 a exploration started in NL about the multi-use concept of nature-inclusive mariparks. In mariparks is multi-source energy merged with nature development, fishery and aquaculture. This exploration focuses on fiscal-legal management structure matters in an open defined context [EY 2024].

Similar to the "Accele-RES" initiative of the EC in the European Wind Power Action Plan [EC 2023 v] where the launch of an online tool is

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announced to support government authorities in the permitting process, a best practices tool for multi-source permitting would be useful. This could serve as a repository for generic conditions irrespective of the country's jurisdictions and as a resource of ideas and suggestions.

Non-price criteria on installed multi-source capacity in MWh have been included in tenders in NL in the past, though only for non-permanent (demo) deployment. BE has allowed a WAV pilot test with no specified capacity in an earlier tender (2012). Currently no country has multi-source capacity criteria (in MWh) in place.

Non-price tender criteria on capacity factor and/or power smoothing are indirectly applied (e.g. under system integration) in a few countries only. It may be an opportunity to emphasize this more, given the unique power supply profile of multi-source projects.

Non-price tender criteria on system integration are introduced in e.g. NL. Storage capacity enhancement is also starting to be introduced, e.g. under system integration. It may be an opportunity to emphasize system integration criteria more, given the unique power supply profile of multi-source projects.

The survey shows that non-price criteria can play a role in stimulating the integration of OS and WAV in offshore wind farms. As such, they can contribute to the roll-out of multi-source energy parks.

Irelands new approach to offshore renewable energy zones

Ireland's first six offshore wind farms ('Phase 1' – 5GW total) were consented under historic marine spatial allocation ('Foreshore Licensing') arrangements, originally designed for harbour infrastructure, mussel farming etc. Sites for these offshore wind projects were developer selected. A minimum target of 37GW by 2050 for Irish offshore renewables has been set alongside an ambition of 50GW by that time. The Phase 1 projects are now seeking planning permission from the national planning board (Bord Pleanála). From here on, however, offshore wind projects will be located in Designated Maritime Area Plans (DMAPs) i.e. offshore renewable energy zones identified by the State. In each instance, developers must seek a Maritime Area Consent from the Maritime Area Regulatory Authority (MARA), then compete for revenue support under an Offshore Renewable Energy Support Scheme auction. Successful developers then seek planning permission from Bord Pleanála. This governance regime is set out in the Maritime Area Planning Act. Future challenges include expanding marine spatial planning to encompass marine environmental protection at scale and linking energy policy with industrial policy e.g., growing the local offshore wind supply chain and evolving the traditional Foreign Direct Investment model to exploit the plentiful availability of offshore renewable energy.

The survey and stakeholder results presented a mixed opinion on the usage of non-price criteria. One viewpoint was that non-price criteria overuse leads to complexity and costs both at the tender bidders' side

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and at the side of the awarding authorities. A different viewpoint highlighted the benefits of non-price criteria usage, in particular for multi-source applications to gain entry in large tenders that are dominated by OW production capacity criteria and pricing.

Harmonisation in tender design, including in non-price criteria setting, between the Member States is widely mentioned. Also here are mixed opinions found, one the hand those favouring the national uniqueness in supply chain matters and specific environmental circumstances. Others favoured efficiency in European wide common designs. As referred to in above chapter 2, suitable mechanisms are found in the sea basin high-level dialogue groups NSEC, ISWE, BEMIP, and CESEC. [i)] Mentioned was that impact at holistic level and at large scale may be better approached at sea basin level than at national level.

2. Grid connection in permit process, incl. for multi-source

Considered here is how a higher utilisation rate of the export cables in case multi-source application with its different power profiles, could positively affect the high grid connectivity demand by ORE. This maximalisation of infrastructure was across the board confirmed as of general interest.

None of the countries have a grid connection negotiation term limit in place. The challenges in grid capacity may here be a cause.

A grid connection queuing approach with priority criteria is in most countries limited to an entry based on a numbered list; it is unknown if more detailed criteria are applied in prioritising. In DE it is known that certain criteria influence the order (such as utilisation grade of connection, state of the project, proximity to the landfall, expected capacity and commissioning time).

In most countries there is an electrical infrastructure strategy in place, in PT, NL, DE it is known that a two-years update takes place with details of the landing points for the offshore part. In PT is recently the National Electrical System Law updated to include multi-source projects in the grid access. Capacity challenges in the grid at the landfalls in light of the national ORE target remains an issue in several countries.

Cost allocation of the grid connection varies by type of project. The pre-development costs (see chapter 2) are pre-paid by the national government (or a governmental agency) in DE, NL, FR, BE and reimbursed by the winner of the tender (in DE and NL). In case of non-centrally pre-investigated sites in DE, the costs are covered by the project developer. In other countries is a variation of approaches applied.

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Offshore capacity challenges and scope for OS in Germany

Recent policy developments in Germany demonstrate a clear commitment to offshore wind energy (OW). The government classified OW as an Overriding Public Interest, introduced acceleration areas, added non centrally pre-developed areas to the tender roadmap, and lowered planning approval requirements for centrally pre-developed areas. These changes aim to meet the ambitious OW goals of 30 GW in 2030 and 70 GW by 2050. However, the existing sites will not be sufficient to accommodate these capacities. To include other offshore renewables, like OS, in wind farms could contribute to achieve the installed capacities in the current sites. Other offshore renewable energy sources, besides OS, are currently not being discussed in Germany. Also, the landfall grid connection issues pose a risk to the country's policy goals. In the permitting process are steps been taken to digitalise with room for improvement to better facilitate and speed up the process. In this context, it is promising that a one-stop shop approach for permitting issues has been introduced, with the Federal Maritime and Hydrographic Agency (BSH) serving as the single point of contact.

3. Processes and enforcement, incl. for multi-source

Streamlining the legal processes, in particular to narrow the windows for legal challenges is important. Legislation of such is in place in UK (6 weeks limit post consent award), in DE (4 weeks, with the provision that the lawsuit does not have a suspensive effect), and in IE with restrictions on who can legally challenge (only those with proven legitimate interest). In PT a new task force has been installed to streamline the entire tendering processes and to enforce REDIII.

To best insight, none of the countries have a clearing house mechanism in place to deter speculative legal challenges.

Targets regarding the total permit-granting period are applied in DE, BE, NL, FR, UK, either in the tender documentation or in the general procedures. In PT and IE authorities are in the process of being installed to determine this. In PT the government has confirmed a centralised sequential process for OW development areas with set timeframes to bring predictability and clarity to developers.

Enforcing permits with "positive silence" is in place in several countries, but mostly in parts of the application process.

A single point of contact for permits is in place in most countries, without necessarily being the only authority responsible for all licenses, as several authorities may maintain their own approval processes. For smaller projects this may differ. In other countries this single-point approach is still under development.

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All countries have clear permit-granting roadmaps for offshore wind published, while no permit-granting roadmaps exist for multi-source applications.

Most countries have some (limited) level of build-in flexibility based on a 'design envelope' approach. In PT and IE this is pending or under consideration.

One-stop shop approach in England and Wales

Since 2008, The Planning Act has provided the framework for consenting Nationally Significant Infrastructure Projects (NSIPs) in England and Wales (in Scotland, a different regime applies). For renewables, including Offshore Generating Stations, this means that projects which meet the relevant thresholds are consented under a one-stop shop approach whereby the offshore wind farm, alongside associated development, such as electrical infrastructure offshore and onshore, are consented under a single Development Consent Order. The requirements for consents are clearly defined, and the Act brings together various legislative frameworks which has proved largely successful in delivering consented projects. It is anticipated that for multi-source projects there may be an opportunity to utilise the same regime, however, there may be requirements to update legislation and/or policy to facilitate this process.

Ensuring that sufficient staff is available and trained in permitting processes is a concern in most countries.

Streamlined permit-granting processes for repower projects are not yet present or are unknown.

4. Information and systems, incl. for multi-source

All countries are involved in digitalising the entire permitting process, including monitoring. Some issues of appropriateness in certain cases, or further improvements and streamlining is required.

Environmental data banks at national level are partly implemented; more work on this could be beneficial to all stakeholders involved. Further work in most countries is needed to make all environmental studies publicly available, including those undertaken by developers. In NL and UK for instance, project developers have to guarantee that such studies are public.

Digital mapping of energy resource potential and of electrical transmission (present and planned) is undertaken by multiple initiatives, though with mixed success in terms of further disclosure and data collections.

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Area passports in the Netherlands

An area passport is a non-binding policy instrument that aims to streamline the permitting procedure for multi-use activities in existing offshore wind farms, ranging from passive fishery to other forms of ORE besides offshore wind. The area passport consists of a map with guidelines where various parameters are considered, such as the turbine locations, inter-array cables paths and export cable corridors, as well as shipping lanes and vessel access corridors. Area passports are drafted by a national agency, Rijkswaterstaat, as soon as the design of the offshore wind farm is decided, after which key stakeholders are consulted. These stakeholders communicate preferences based on e.g. accessibility, a location near the farm's power substation (e.g. for a solar farm), or a location facing the dominant wave direction (for a wave energy array). Announced in 2020, the first area passport was published a year later for the operational Borssele offshore wind zone. The area passport has been successful in aiding six permits for multi-use activities, the first permits for a mussel farm. None of these permits were allocated to ORE. After the Borssele zone, area passports have been published for two other zones: HKZ and HKN. Currently, the aim is to provide this instrument as early as possible, to avoid fragmentation of multi-use activities and to further include cumulative environmental impact on sea basin level. The area passport as instrument remains under constant review.

5. Logistical-operational permit considerations

Legal structuring for shared multi-source siting and operations, including mitigation and insurance measures is seen by all as still too far away, or not needed when the energy park concession holder will have various ORE technologies deployed (like OW with OS and/or WAV) in its energy park.

A critical part to de-risk project execution relies on the availability of relevant and efficient assembly/logistic hubs. These require upfront investments and developments and as such need better planification and co-development between countries at sea basin level to minimize cost and to de-risk execution, e.g. with mutualization between countries to avoid duplication.

6. Stakeholder engagement as permit duty of the project developer

To design and implement a local stakeholder engagement process, possibly including a benefits sharing scheme, is to varying degrees in most countries a standard part of the tender bid, and positively accepted as a buy-in by the general public. A limited form of co-ownership is included in the latest tender in BE (zone PEZ-1), with a minimum of 1% CAPEX open to citizen participation (pre-qualification criteria) and as an non-price award of 10 out of 100 points for higher citizen participation up to maximum 2% direct participation and maximum 4% including indirect citizen participation. Other survey and stakeholder results show some caution towards (significant) community ownership due to the risk of

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having inexperienced shareholders that may increase overall complexity and possibly even project delays; recommended is to focus on regional/local benefit or revenue sharing.

Technology Free Zone in Portugal

Portugal's ambitions for offshore wind development are advancing within the framework of the Portuguese Maritime Spatial Planning (PSOEM). In line with the National Energy and Climate Plan (PNEC), the short- to medium-term target is set at 2 GW by 2030, with a longer-term goal of achieving 10 GW of installed offshore wind capacity by 2050. The auction rules are expected to be published by the end of 2024, and close to 50 developers have formally expressed their interest to the Portuguese government in participating in this competitive process.

Building on Portugal's existing legal framework for hybridization/multi-source, several onshore multi-source projects—mainly combining solar and wind—have been successfully implemented. Future auction rounds may incentivize multi-source projects through non-price criteria, promoting environmental and technological innovation alongside cost competitiveness.

To support innovation and technological advancement, a Technology Free Zone is planned off the coast of Viana do Castelo, enabling the testing and development of new offshore renewable energy technologies, particularly aimed at the demonstration stage.

7. Responsibilities of local/regional authorities in permitting process

To publish ORE development plans ahead of implementation and to promote upcoming job opportunities, is partly implemented in IE and BE. Comments suggest that this should be broader applied as it would improve engagement with local/regional stakeholders and local businesses.

To support ORE education activities and local community groups is partly implemented in FR, IE, BE, PT. Similar comments suggest that this could be further considered to improve engagement with local/regional stakeholders.

8. Processes and resourcing of local/regional authorities

Local planning and licenses should not derail large ORE projects, and such planning should be embedded in overall territorial planning processes. One comment was to emphasize a landscape integration approach that is adapted to current developments.

The review and several responses highlighted the need to have local/ regional staff sufficient and well-trained to meet the growth in the ORE sector. This would also enhance informed decision making based on adequate understanding, especially concerning the benefits of multi-source projects.

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9. Stakeholder engagement of civil society groups

As part of a non-price tender criteria this may be beneficial to develop a proper understanding of the societal challenges in the energy trilemma and how informed opinions can be created with adequate engagement. The benefits of especially multi-source projects can be used to highlight the case. In some countries several initiatives exist, such as in DE and IE.

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5. Recommendations

Based on the review of permitting practices in several European countries and interviews with technology and project developers, a guiding template is presented below that includes recommendations for the design of tender and permitting processes for multi-source energy parks.

1. Strategy and multi-source permitting

- **Explicit multi-source capacity targets are recommended to be included in upcoming ORE tenders. Explicit targets will offer a strong incentive to stimulate multi-source deployment and accelerate multi-source deployment.**
- **Inclusion of multi-source as a viable solution in ORE tenders can be supported by an online permitting guidance tool such as the "Accele-RES" announced by the EC [EC 2023 v], with a specific focus on multi-source.**
- **Non-price tender criteria are recommended as a means to introduce multi-source projects at a large scale. (Including multi-source in the price criteria is challenging when negative price bidding and absence of financial support is at play. Better is to include multi-source in the criteria, as recommended above.)**
- **Non-price criteria should not be used excessively to avoid complexity and costs. This should also apply when multi-source projects are included.**
- **Additionally it is recommended to highlight (include) in the tender criteria the advantages that multi-source projects can bring in terms of power output profile and offshore infrastructure optimization.**
- **Recommended is to harmonise tender design at sea basin level, where the specific environmental challenges can be more appropriately addressed than at national level. Also grid and landing point congestion matters are likely to be better addressed at cross-border sea bed level.**

2. Grid connection in permit process, incl. for multi-source

- **Given the broader grid connection challenges, including export-cable landing points that remain a major concern in all ORE projects, no specific multi-source recommendation can be made on this topic. Nevertheless, multi-source will enhance the overall project economics with its optimisation of the power output profile in an offshore network.**

3. Processes and enforcement, incl. for multi-source

- **Recommended is to maintain the effort to streamline the legal and regulatory processes, as well as in the digitalisation of permitting processes. Inclusion of multi-source projects requires more attention, including training and informing policy makers and permitting staff**

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across the board to adequately understand the benefits of multi-source projects.

- **Recommended is to keep monitoring the developments around the legal structuring of *shared* multi-source siting and operations. Currently it is seen as of less or no relevance (see previous chapter). But the legal project structure of future multi-source energy farms may evolve such that the following topics become more relevant: communal property and liability, underperformance or bankruptcy of a co-user, financial compensation, curtailment arrangement, dispute coverage of primary- v.v. secondary allocation point. In case an actual maripark emerges then this topic is likely to become relevant as well.**
- **Recommended is to include in the permit-granting roadmaps, that most countries now have published, multi-source applications as an integral part.**
- **Recommended is to review and where possible to include multi-source project development in energy farm repowering efforts. The sea bed impact of OS and WAV is significant different from OW and may offer opportunities here.**

4. Information and systems, incl. for multi-source

- **Further work in most countries is needed to make all environmental studies publicly available, including those conducted by project developers.**

5. Logistical-operational permit considerations

- **Recommended is to emphasize more the planification and co-development of relevant and efficient assembly/logistical hubs between countries at sea basin level. This is a critical part to de-risk project execution and will minimize cost and de-risk execution, e.g. with mutualization between countries to avoid duplication. Several studies have analysed this in more detail (see e.g.: [RoyalHaskoningDHV 2023]).**

6. Stakeholder engagement as permit duty of the project developer

- **Some caution towards (significant) community ownership is recommended due to the risk of having inexperienced shareholders that may increase overall complexity and possibly even delay projects; it is recommended to better focus on regional/local benefits or revenue sharing.**

7. Responsibilities of local/regional authorities in permitting process

- **Local and regional authorities play often a crucial role in the permitting process. Ongoing attention on citizen communication efforts and awareness raising in the broader sense of the energy trilemma (supply security, sustainability, affordability) are of paramount importance. Early**

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stage communication campaigns and townhall discussion sessions can supplement and better prepare for the public consultation rounds that are often part of the formal permitting process. Being better informed can limit the false narrative.

8. Processes and resourcing of local/regional authorities

- Early stage and active engagement with local/regional authorities can mitigate delays in the early planning phases.
- Ensure that also local and regional staff is sufficient and well-trained to meet the growth in the ORE sector. See above recommendation under point 3.

9. Stakeholder engagement of civil society groups

- Recommended is to seek engagement with local civil society groups to limit and where possible avoid 'not-in-my-backyard' viewpoints by presenting ORE projects as necessary choices in the context of the energy trilemma (supply security, sustainability, affordability), where the holistic landscape is changing.

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6. Conclusion and lessons learned

The aim of this report on optimal permitting processes for multi-source offshore energy parks is to provide insights and present key conclusions for improvement and optimisation in the permitting processes of large-scale offshore renewable energy parks with multiple types of energy sources, such as wind and solar PV and/or wave energy.

The permitting process for ORE projects is undertaken by the project developer (or promotor) to submit an application, including undertaking consultation with relevant stakeholders, submission of an application form providing details of the development and submission of an accompanying environmental statement. In several countries the permitting process starts with a concession zone development and readiness before an auction is started. The permitting process enters in a tender (or auction) market mechanism that aims to allocate goods, and can be with or without public support either through PPAs or direct sales to the wholesale electricity market. The allocation is based solely on the bids submitted by the participating bidders according to awarding rules. In this review, it is noted that the uptake of PPAs is emerging as a relevant route for OS and WAV. The permitting process for ORE projects and offshore energy concessions is often time-consuming, costly at the bidders' and awarding authorities' sides, and lacking uniformity between the Member States (and UK). Further harmonisation is recommended, at least at the level of sea basin, obviously with respecting the European principle of subsidiarity.

The permitting process review reveals that only *now* multi-source projects, being large-scale ORE parks with multiple types of energy sources such as OW with OS and/or WAV, come explicitly into play in the new tenders. To date, tender processes did sometimes allow multi-source projects, but only in a demonstration stage, and only via non-price criteria warding. This lack of existing experience and practice limits the review outcome of this report.

The conducted literature review (in academic and grey literature) found a broad range of documents with recommendations to optimize permit processes in the already established OW. The same was found for land-based wind and solar developments, not combined in multi-source applications.

The review outcomes in this report on multi-source energy parks do reveal certain lessons that are relevant for the emerging trend in permitting of such offshore energy parks. See the below list.

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Specific lessons learned are:

1. **ORE developments are gaining momentum. While a lot of focus still lies on offshore wind, other ORE sources like offshore solar and wave energy are also gaining traction. Ambitious policy goals for multi-source energy parks can send a strong signal to the industry and supply chain.**
2. **The benefits of OS and WAV in terms of grid stability and optimised offshore grid infrastructure utilisation are getting better appreciated by offshore energy park developers and TSOs.**
3. **However, the inclusion of multi-source projects in auctions is still very limited; only in some cases multi-source solutions are included and only under the non-price tender criteria.**
4. **To leverage the benefits of offshore multi-source energy parks, multi-source solutions should be included in the tender conditions.**
5. **Overall, the tender design for ORE projects is still largely a national process; further harmonisation is needed to lower the transaction costs for European offshore energy farm developers and thus to maximise the tender uptake.**
6. **The outcomes of the analysis of national permitting processes cover a range of permitting topics that should be considered in new tender designs. With this authorities involved in tender design can optimize and expand the energy output of new offshore energy concession zones.**

The urgency in the energy trilemma of affordability, secure in supply and sustainability is widely acknowledged by Member States (and the UK). A tender design based on the recommendations made in this report should maximize the uptake of multi-source energy projects with OS and WAV is a logical next step to proof the scalability in technology and the appeal in price point.

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RoyalHaskoningDHV (2024), Whitepaper digital transformation offshore wind consent management

RoyalHaskoningDHV (2023), North Seas offshore wind port study 2030-2050

WindEurope (2024) i, Position paper Responsible business conduct prequalification auction criteria

WindEurope (2024) ii, Position paper Bidding zone review

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Annex 1

Fill-out form

Permitting and multi-source project development

EUScores - WP2 - Task 2.3

EU-SCORES
European Scalable Offshore Renewable Energy Sources

Associated deliverable: D2.3 Report on an optimal offshore tender design and consenting process (multi-source parks): aim is to provide templates and lessons-learned in this project and on the basis of best practice reviews in different Member States, who already have multi-use of wind park area in their planning (e.g. BE, NL, PT, UK)

Some specific definition matters first:

Multi-source : offshore renewable energy zones where more than one type of energy conversion is installed (e.g. offshore wind and floating solar PV a/o wave convertor array).

Multi-use : any type of offshore installation with a renewable energy convertor (e.g. an aquaculture farm with a wind turbine); some take an even wider interpretation by referring to any combined structure.

Permit-granting process : process of obtaining a permit to develop an offshore energy zone (e.g. a wind farm); in some countries 'consenting' or 'licensing' is the equivalent term.

How to fill-out?

In column B+C are permit related statements or items listed. They are grouped by four types of key actor (Policy makers, Project developers (of offshore renewable zones/farms/concession areas, Local/regional authorities, Civil society groups). In each type group, the items are organised by topic group.

> Please fill in the country for which you will fill out this form.

> Please fill out in column E the current status in your country and add in column F your comments or remarks, and where appropiate if you (dis)agree with the statement. Important is to fill out the form for all items, by the best of your knowlegde.

	Country:	

		Country analysis: The current status in your country. Please explain / describe.	Comment fields: Please add your comments & remarks, [(dis-)agree].
	Policy makers		
1	Strategy and multi-source permitting:		
	1.1 Set quantitative targets for renewable electricity capacity (incl. multi-source), with milestone dates.		
	1.2 Design and implement auction/tender process for offshore generation, that includes multi-source projects.		
	1.3 Create and communicate a strategic vision of the power system that includes offshore multi-source.		
	1.4 Assign priority development status for multi-source in the permit-granting process (e.g. by expanding EC Dir 2018/2001: "overriding public interest and serving public health and safety when balancing legal interests").		
	1.5 Dedicate or assign space in the Marine Spacial Plan for renewable energy projects/concessions, including specific space for multi-source projects.		
	1.6 Dedicate a specific and fast-track permitting process for multi-source projects.		
	1.7 Plan dedicated multi-source space in future concessions .		
	1.8 Include non-price tender criteria on biodiversity impact and social effects .		

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	1.9	Include non-price tender criteria on installed multi-source capacity in MWh.		
	1.10	Include non-price tender criteria on the capacity factor and/or power smoothness .		
	1.11	Include in pre-qualification criteria for tender on capacity factor and/or power smoothness.		
	1.12	Include non-price tender criteria on system integration innovation .		
	1.13	Include concession transfer ownership rights (instead of for instance the right to use).		
2	Grid connection in permit process, incl. for multi-source:			
	2.1	Set and enforce a grid connection negotiation target : negotiation period limited to 4-5 years.		
	2.2	Develop a grid connection queuing approach with clear priority criteria.		
	2.3	Develop a electrical infrastructure strategy for network availability with coastal landing points and grid capacity.		
	2.4	Specify explicitly which party has to pay for what in the consenting process (e.g. grid connection, initial survey; and do some costs have to be refunded with a successful application).		
3	Processes and enforcement, incl. for multi-source:			
	3.1	Streamline legal process: limit the window for legal challenges to project developers for submission, to a maximum of 4 months (exact starting point in timeline may depend on national legislation).		
	3.2	Limit the maximum number of legal appeals to 2 during the permitting process (by sending to the highest court of appeal or by limiting the appeals in case of deviations), limiting the options to reopen the entire case.		
	3.3	Introduce a clearing house mechanism to deter speculative legal challenges, such that only viable perceived litigation passes through (this may not be possible in some jurisdictions).		
	3.4	Set and enforce permitting processing targets: permit-granting period limited to 18 months.		
	3.5	Enforce permitting to include the rule of "positive silence" (lack of response by administrative authority within a set time frame, leads to an approval of the related step or phase)		
	3.6	Create one-stop-shops for permitting to have a single national contact point across all regulatory bodies a/o regional/national levels.		
	3.7	Publish clear permit-granting roadmaps with specific sequencing.		

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	3.8	Provide project developers with the flexibility to optimize the layout and design within specified ranges outlined in the initial permit or project's submitted bid (often referred to as the 'box-model', 'design envelope' or 'Rochdale envelope').		
	3.9	Ensure that staffing and training of permitting departments can meet the growth in the sector (given rising EU renewable energy targets).		
	3.10	Streamline permit-granting process in repowering (brown-field)/late capacity addition of existing offshore wind farms with multi-source energy solutions.		
4	Information and systems, incl. for multi-source:			
	4.1	Digitalise entire permitting process, removing any need for paper-based forms.		
	4.2	Record and monitor digital permitting records to enable tracking and mitigating bottlenecks.		
	4.3	Create and maintain environmental data banks at national level (where possible enable wider environmental mapping across borders & cumulative impacts).		
	4.4	Make public sharing of environmental studies conducted by project developers, a pre-qualification tender criteria.		
	4.5	Create digital mapping of energy resource potential (e.g. solar irradiation, wave, current, wind speed) with high granularity.		
	4.6	Create digital mapping of current and planned electrical transmission network, relevant permitting information, harbour and logistical facilities.		
	4.7	Optimize tendency of increased monitoring and tracking requirements with applying integration and compatibility of reporting standards and datasets.		
	4.8	Ensure monitoring requirements are based on risk based principles in determining needs and scope for post-permit monitoring.		
	Project developers			
5	Logistical-operational permit considerations:			
	5.1	Design a legal structure for shared multi-source siting and operations (e.g. ownership, communal property and liability, underperformance or bankruptcy of co-user, financial compensation, curtailment arrangement, disputes coverage of PAP v.v. SAP (primary- resp. secondary allocation point)).		
	5.2	Design mitigation and insurance measures for shared multi-source siting and operations.		
6	Stakeholder engagement (permit duty of project developer):			
	6.1	Design and maintain engagement plan and process.		

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	6.2	Siting and design in consultation with local stakeholders regarding visual impact (coastal community) and interaction with other users of the sea (professional and recreational).		
	6.3	Design benefits sharing with local communities (e.g. reduced energy tariffs, community co-ownership schemes, fiscal contributions, funding local public services, skills development programmes).		
	6.3	Implement action plans when issues may occur and allocate resources to implement responses.		
	Local/regional authorities:			
7	Responsibilities of local/regional authorities in permitting process:			
	7.1	Publish offshore renewable development plans, ahead of implementation, promoting upcoming opportunities for local workforce and infra impact.		
	7.2	Support offshore renewable energy education activities and information activities to communities.		
	7.3	Support community groups, incl. government, private sector, research organisations, to clarify the coastal offshore energy potential and values for the whole community.		
8	Processes and resourcing (of local/reg. authorities):			
	8.1	Ensure that local planning processes do not prohibit offshore renewable energy goals, are clear, comprehensive and encourage project developers to engage with communities.		
	8.2	Ensure that local/regional staffing and training of involved departments can meet the growth in the sector to fullfill the above mentioned tasks.		
	Civil society groups:			
9	Stakeholder engagement:			
	9.1	Contribute to engagement process with focus on broader societal objectives (energy trilemma: supply security, sustainability, affordability). This is in the permitting process supported by a non-price tender criteria (see above 1.8).		

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Annex 2

Summary of secondary stakeholder groups findings (Source: annex in [EC 2024 ii])

ANNEX - SYNOPSIS REPORT ON THE CALL FOR EVIDENCE

When preparing the Commission Recommendation and guidance on auction design for renewable energy, the main stakeholder consultation activities consisted of an online 'call for evidence', which was available for feedback on the Commission's consultation website 'Have your say' for 4 weeks[135]. In addition to the call for evidence, the Commission also organised two online workshops at technical level – one with Member States on 13 November 2023 and another one with private stakeholders on 1 December 2023.

The consultation activities containing free text questions were designed following the structure and the list of topics which were included in Action 4 of the Wind power package plan of 24 October 2023[136] and which the Commission is addressing in the recommendation, as well as in the guidance on auction design for renewable energy.

The objective of the consultation was to gather feedback from the public and private stakeholders, including citizens on the proposed scope and content of the initiative, in particular as regards specific elements of auction design that are covered within the scope of the action under the Wind power package plan and the recommendation and guidance. The main stakeholders targeted for the auction design related aspects were national authorities (Member States and the authorities which are implementing renewable energy auctions), renewable energy producing companies, companies involved in the clean tech manufacturing energy communities, and branch organisations.

The consultation activities reached all identified stakeholder groups, and input from the stakeholders was received via responses to the 'call for evidence', as well as through participation in the stakeholder workshops. Feedback was received from public authorities (at central governmental level), companies active in renewable energy production and participating in renewable energy auctions, manufacturing companies which produce goods for the supply chain of renewable energy installations and branch organisations of all sizes (from micro to large). Citizens and non-governmental organisations also provided input.

A quantitative and qualitative analysis of the comments received to the 'call for evidence', including the attached position papers was carried out. The comments to the 'call for evidence' were classified according to the claims made and quantified.

This document should be regarded solely as a summary of the stakeholder contributions. It cannot in any circumstances be regarded as the official position of the Commission or its services and therefore does not bind the Commission. Responses to the consultation activities also cannot be considered as a representative sample of the views of the EU population.

[135] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14122-Design-elements-of-renewable-energy-auctions-guidance-_en.

[136] COM(2023) 669 final.

In total, 89 replies were received in response to the **'call for evidence'**. Most (37) came from companies and businesses, 24 from business associations, 15 from non-governmental organisations, 6 citizens and 3 from public authorities. One joint reply by two trade unions was submitted as well. Out of the replies from companies and businesses, the majority are from respondents which are either outside the wind sector (6) or that are operating in the wind sector but also in other sectors (24). In terms of geographical spread, most replies came from Belgium (19), Germany (15) and France (9). A smaller proportion of replies came from other Member States including Portugal (6), Denmark (5), Poland and Spain (4 each) and others. Respondents from non-EU countries including Norway (10) and the United Kingdom (2) also submitted replies.

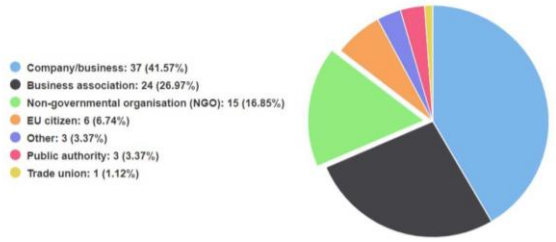

Fig. 1: Overview stakeholder replies per sector

Most respondents expressed general support for a more harmonised and common application of auction design across the EU, which will allow for synergies, streamlining and better investment environment for renewable energy developers, while also leaving some flexibility at national level. In particular, the auctions would benefit from comparable non-price criteria, if possible underpinned by reliable and comparable methodologies. Another common reply was that non-price criteria should be objective, transparent, verifiable, non-discriminatory and based on measurable and comparable indicators.

Most respondents defended the technology-specific approach to introduction of non-price criteria, stating that the application should be tailored to the needs and the market reality of the different technologies (including differentiating between solar and wind, and between onshore and offshore wind). In particular, many of the respondents argued that for solar PV and onshore wind the application of non-price criteria should take the form of pre-qualification requirements, while for offshore wind it should take the form of award criteria. When using non price criteria related to resilience and European content for solar PV auctions, the possible impact of slowing down the deployment should be considered. On penalties, most respondents shared similar views that the penalties need to be high enough to ensure the delivery of the projects, but not too strict as to lead to excessively high costs for developers, which could deter them from participating in the auction. The public authorities focus on the purpose of the penalties to reflect a proportionate response to the scale and phase of project delays or non-execution, i.e. to the need to adjust them corresponding to the specific tender.

On price indexation, most respondents argued that such indexation is needed and should apply differently in the various stages of project implementation, i.e. in the first period between the end of the auction and the final investment decision, during the construction phase and during the operation phase. This would capture both the capital expenditure ('CAPEX') and operating expenditure ('OPEX') costs. However, the public authorities raised concerns related to predictability and planning security of budgets which could ultimately lead to higher support costs, therefore they insist that indexation should be an instrument in a toolbox, rather than preferred option.

On bid ceilings, most respondents, in particular the business associations and companies agreed that the ceilings should reflect the LCOE for each technology, while others argued that they should refer to wholesale market prices (i.e. to a basket price that includes signals from both spot and forward markets). All respondents agreed that the bid ceilings need to be transparent and adapt to the market reality (i.e. be assessed and updated regularly). Also, all respondents refer to a delicate balance between high enough ceiling which will attract sufficient number of bids but without leading to excessively high bid prices, and low enough ceiling which will exclude advantageous bids but without missing deployment targets because of too little participation.

The major difference in opinions of the respondents was on the topic of negative bidding. Some respondents, notably companies and businesses and associations argued against the application of negative bidding for concession payments to the government (capped or uncapped) with the argument that it leads to detrimental race to the bottom, squeezing the supply chain (by paying less money for components and services) and passing on the costs to consumers (by concluding PPAs at higher prices). Other respondents, notably a smaller number of companies and national authorities argued in favour of negative bidding for offshore auctions as the most efficient award scheme for mature, subsidy-free technologies, which maximises the value of the rare good such as offshore wind sites and allows the generated revenues be used for other public objectives such as energy system integration or environmental protection, and without making the energy more expensive or increasing the pressure on the supply chain.

The two stakeholder workshops, held on 13 November 2023 with Member States, and on 1 December 2023 with stakeholders, focused on the main elements on auction design which will be captured by the Commission's Recommendation and guidance. The workshops' participants were selected based on their profile as participants in EU auctions in the established renewable energy technologies, as well as associations which represent the interest of the renewable energy sector and its supply chain. Participants of both stakeholder workshops identified the role of auction design and non-price criteria in particular in supporting the clean tech manufacturing sector and the sustainability and resilience of the renewables deployment, as well as the need for a common application and well-calibrated elements of the auction design.

The results of the various stakeholder consultation activities were largely consistent and contributed to the identification and development of the key elements of auction design for renewables to be addressed in the Commission Recommendation and guidance. The information and evidence gathered in the context of the consultation work as well as feedback received has been taken into account in the finalisation of the initiative.

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End notes

[i] Link to NSEC, ISWE, BEMIP, CESEC:
https://energy.ec.europa.eu/topics/infrastructure/high-level-groups_en

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