MARINEWIND

Market Uptake Measures of Floating Offshore Wind Technology Systems (FOWTs)

1/11/2022 – 31/10/2025

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D3.4 MARINEWIND Survey analysis Report

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EXECUTIVE SUMMARY

This **Deliverable D3.4 – MARINEWIND Survey analysis Report** builds on the MARINEWIND survey methodology and framework established in **D3.3 - MARINEWIND Survey analysis Report - First version**, offering a thorough analysis of stakeholder insights gathered from five MARINEWIND "Labs": the **United Kingdom**, **Greece**, **Italy**, **Spain**, and **Portugal**. Through a combination of multiple-choice and open-ended questions, this deliverable captures stakeholders' perceptions across **policymaking**, **social acceptance**, **environmental impact**, **financial and market analyses**, and **techno-economic** considerations pertinent to **Floating Offshore Wind Technology (FOWT)**.

Key observations for each thematic section could be summarised as follows:

1. **Policy and Regulatory Structures**: Participants across countries emphasised the necessity for long-term policy signals—such as specialised auctions or feed-in frameworks—and well-defined permitting processes to expedite FOWT growth. Fragmented jurisdictional responsibilities often prolong planning horizons and complicate investors' decisions.
2. **Social Acceptance and Community Involvement**: Public awareness regarding floating offshore wind differs significantly among regions, though social acceptance at the local level can be improved via early engagement, transparent revenue-sharing, and adequate communication of environmental impacts. Communities living near potential FOWT installations seek clear socio-economic benefits and ecological safeguards.
3. **Environmental Considerations**: Stakeholders recognise FOWT capability to reduce carbon emissions. However, they also stress the importance of comprehensive Environmental Impact Assessments (EIAs) and the potential for cumulative impacts when floating wind farms are in proximity. This concern highlights the need for robust, evidence-based ecological monitoring and mitigation strategies.
4. **Financial Feasibility**: Survey responses highlight high Capital Expenditure (CAPEX) needs, uncertain permitting timelines, and infrastructural deficits as major challenges. Nonetheless, respondents remain optimistic about bridging these gaps through stable revenue mechanisms (e.g., Contracts for Difference) and EU-level funding instruments that lower risk profiles for early movers.
5. **Techno-Economic Roadmaps**: Each MARINEWIND Lab demonstrates strong potential for deeper-water installations that can expand overall wind energy capacity. Nevertheless, meaningful cost reductions hinge on advanced mooring systems, supply-chain development and standardisation, and large-scale demonstration projects to validate floating platforms' reliability and commercial viability.

Value and Outcomes: The comprehensive assessment provided by the analysis of the results of the MARINEWIND Survey offers critical insights for policy advocates, industry actors, and research stakeholders aiming to fortify floating offshore wind's position in Europe's decarbonisation roadmap. By pinpointing policy gaps, public engagement strategies, environmental due diligence requirements, and investment-friendly frameworks, the results from D3.4 help chart effective, long-term solutions to accelerate FOWT deployment across diverse maritime contexts.

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1. INTRODUCTION

This Deliverable D3.4 – MARINEWIND Survey analysis Report builds upon the MARINEWIND survey design and scope introduced in **D3.3**, offering a more detailed, country-specific look at how policy frameworks, social acceptance, ecological considerations, financial and market conditions, and techno-economic factors jointly influence the trajectory of FOWT deployment across the *United Kingdom, Greece, Italy, Spain, and Portugal.* By examining each national context focusing on regulatory models, and market readiness levels, this deliverable develops a rich comparative perspective on FOWT evolution in the UK and European countries analysed by the MARINEWIND project.

1.1 Purpose of the Document

The primary aim of D3.4 is to analys and consolidate **stakeholders feedback** gathered through the MARINEWIND survey, focusing on five thematic areas:

- **Policymaking**: Measure the degree of governmental dedication, regulatory proficiency, and stakeholder participation in shaping offshore wind strategies. Identify best practices and policy gaps in areas such as permitting, fiscal incentives, and multi-agency coordination.
- **Social Acceptance**: Investigate public awareness, perceived advantages of floating wind technology, potential frictions (e.g., fisheries, tourism, environmental concerns), and workable engagement tactics ranging from early consultation sessions to benefit-sharing models.
- **Environmental Impact**: Assess stakeholders' perspectives on the ecological trade-offs of floating wind deployment, including beneficial outcomes (reduced emissions, artificial reef formation) and recognised risks (disturbance to marine ecosystems, underwater noise). Emphasise the significance of stringent environmental due diligence and adaptive monitoring measures.
- **Financial and Market**: Explore Capital Expenditure (CAPEX) and Operational Expenditure (OPEX) benchmarks, investment barriers, revenue support mechanisms, and supply-chain dynamics across diverse national contexts. Understand how stable revenue guarantees, targeted grants, or EU-level instruments might bolster investor confidence and accelerate FOWT market uptake.
- **Techno-Economic Feasibility**: Gauge the readiness of advanced turbine and mooring designs, the potential for significant cost reductions, and the scalability of pilot projects. This includes appraising how standardisation efforts, industrial partnerships, and integrated demonstration sites could streamline floating wind's integration into the broader energy mix.

By delving into these areas for each MARINEWIND lab (UK, Greece, Italy, Spain, and Portugal), this report pinpoints both country-specific conditions and cross-cutting themes that shape the future of floating offshore wind in Europe. Ultimately, D3.4 offers evidence-based recommendations and comparative insights to guide the next phases of MARINEWIND research and collaboration activities.

1.2 Approach and Methodology

Over **540 stakeholders** *(128 from Greece, 102 from UK, 101 from Italy, 106 from Spain and 103 from Portugal)* representing government agencies, industry operators, local communities, and academic experts participated in

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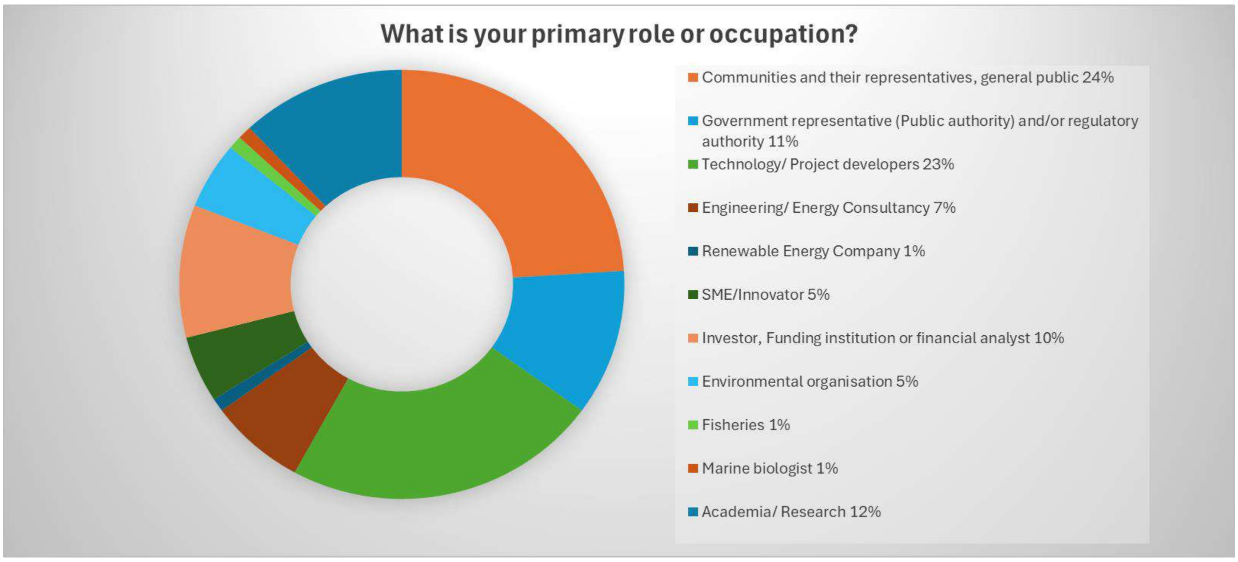
the MARINEWIND surveys available in multiple languages. Their inputs span multiple-choice ratings—often designed to measure commitment levels, awareness, or perceived risks—and open-ended questions, enabling deeper insights into localised challenges. Responses were systematically examined to pinpoint:

1. **Recurring Themes**: issues—such as protracted permitting procedures or inadequate supply-chain capacity—shaping acceptance of FOWT and advancement.
2. **Country-Specific Variations**: differences in maritime governance, infrastructure readiness (ports, grid capacity), and public perceptions.
3. **Best Practices**: Innovative policy models, stakeholder engagement processes, or technology pilots that could be replicated or adapted more widely.

By correlating data across the five areas, Deliverable D3.4 highlights both fundamental obstacles such as protracted consent, underdeveloped supply chains, and high CAPEX and promising solutions, including policy consolidation, targeted outreach, and technological breakthroughs for mooring.

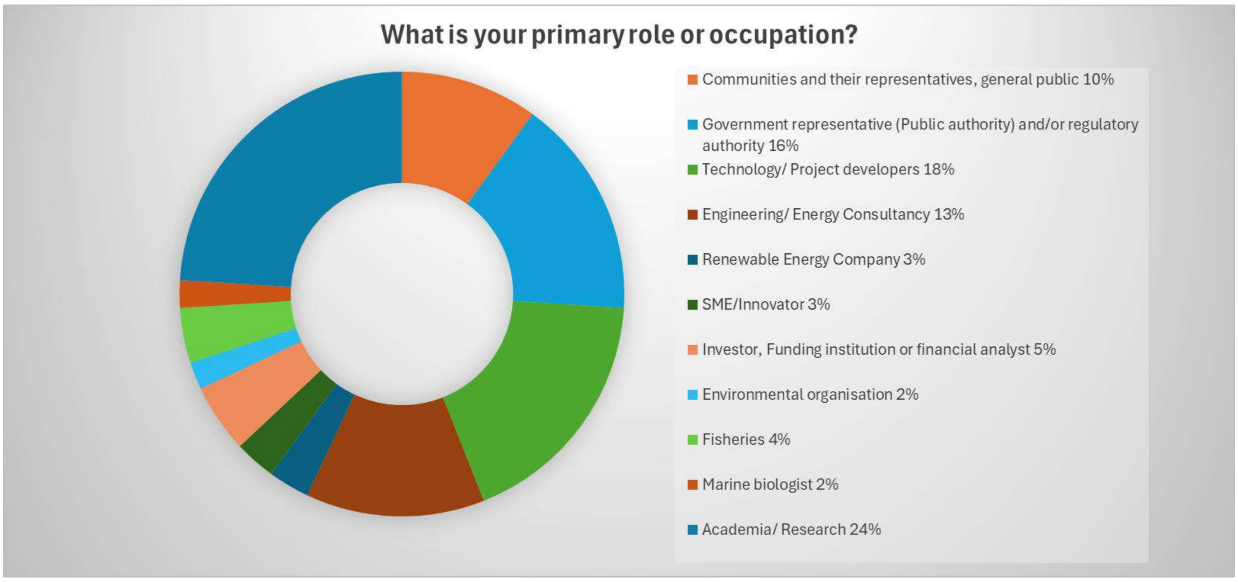
1.3 Overview of the MARINEWIND survey Respondent Profile

United Kingdom



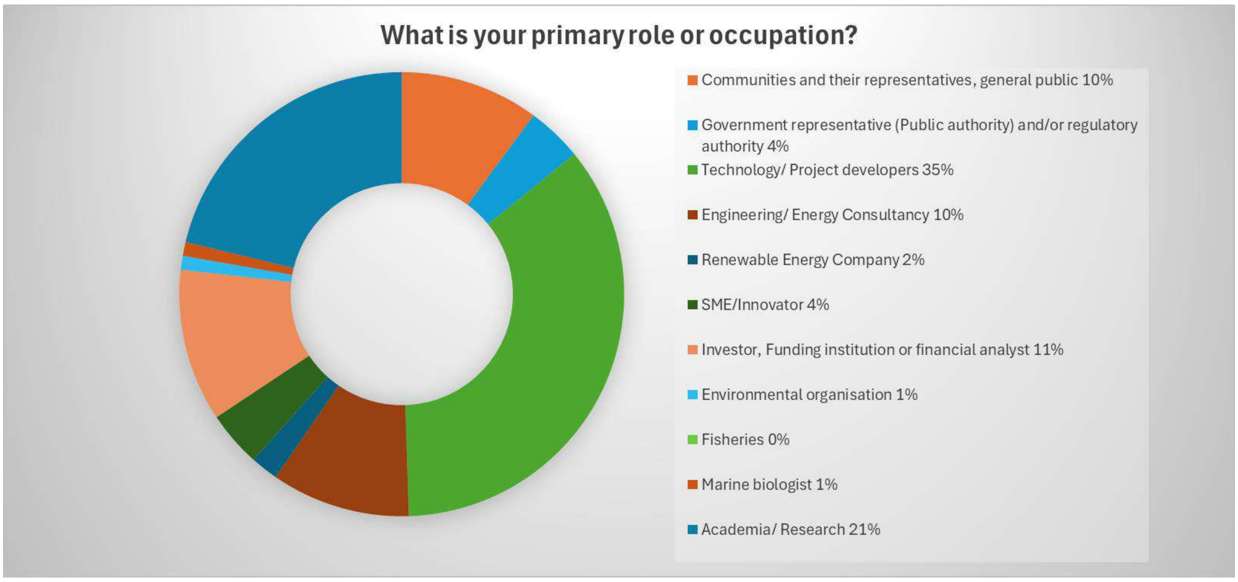
A total of 102 participants from the UK completed the MARINEWIND survey. Their roles spanned community representatives (24%), technology or project developers (23%), academic researchers (12%), government or regulatory authorities (11%), investors (10%), energy consultants (7%), SMEs and innovators (5%), and environmental organisations or related experts (5% in total). Geographically, while some respondents explicitly identified with England, Wales, or Scotland, the majority simply listed “UK” or “United Kingdom,” suggesting they operate at a national scale. Although this sample included stakeholders with varied backgrounds, many respondents (roughly 18%) reported current involvement in at least one offshore wind project, reflecting hands-on familiarity with real-world challenges in permitting and planning.

Greece



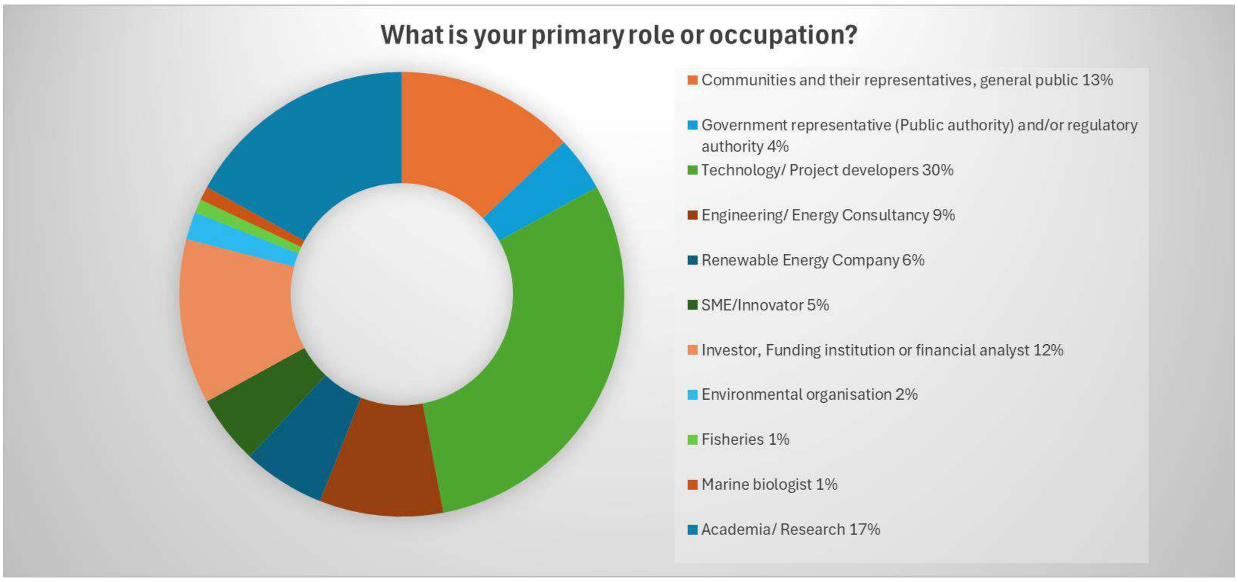
A total of 128 participants from Greece completed the MARINEWIND survey. They represented a broad range of professional backgrounds, with 24% from academia or research, 18% from technology or project development, 16% from government or regulatory authorities, and 13% from engineering or energy consultancies. Community representatives made up 10% of the sample, investors and funding institutions accounted for 5%, followed by fisheries (4%), renewable energy companies (3%), SMEs or innovators (3%), environmental organisations (2%), and marine biologists (2%). Notably, one in four respondents (25%) reported active involvement in at least one offshore wind project, indicating a tangible level of hands-on expertise and direct familiarity with the nuances of implementing floating offshore wind (FOWT) in Greece.

Italy



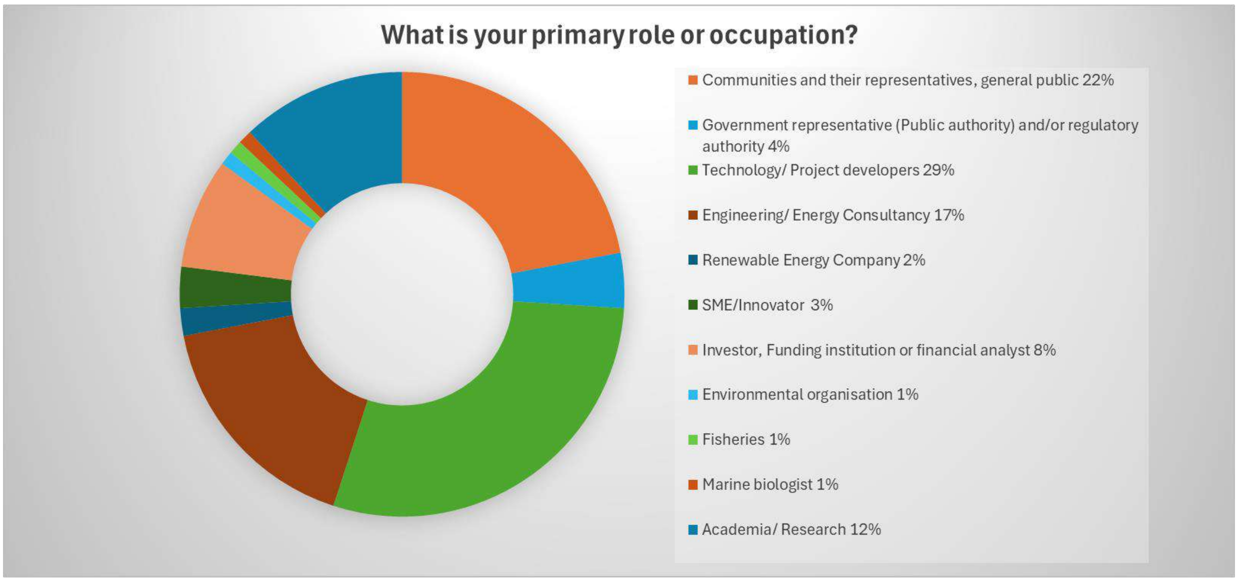
A total of 101 participants in Italy completed the MARINEWIND survey. They came from a range of professional backgrounds: 35% identified themselves as technology or project developers, 21% as academics or researchers, 10% as engineering and energy consultants, and 11% as investors or funding specialists. About 10% indicated they were community or public representatives, while a smaller share reported roles in government or regulatory bodies (4%), renewable energy companies (2%), SMEs or innovators (4%), environmental organisations (1%), and marine biology (1%). Overall, roughly one-fifth of the group (23%) stated they were currently involved in an offshore wind farm project, providing hands-on perspective on both policy strengths and challenges related to FOWT (floating offshore wind) within Italy.

Spain



In Spain, a total of 106 participants completed the MARINEWIND survey. These respondents represented a wide cross-section of stakeholders: technology or project developers (30%), academia and research (17%), community representatives (13%), investors or financial analysts (12%), engineering and energy consultancies (9%), renewable energy companies (6%), SMEs and innovators (5%), government or regulatory authorities (4%), environmental organisations (2%), fisheries (1%), and marine biologists (1%). Notably, 32% of the respondents reported direct involvement in at least one offshore wind farm project, reflecting substantial hands-on expertise. While they spanned multiple regions of Spain, there was a discernible clustering in coastal areas poised for floating offshore wind (FOWT) initiatives, indicating local-level engagement where FOWT deployment is more imminent.

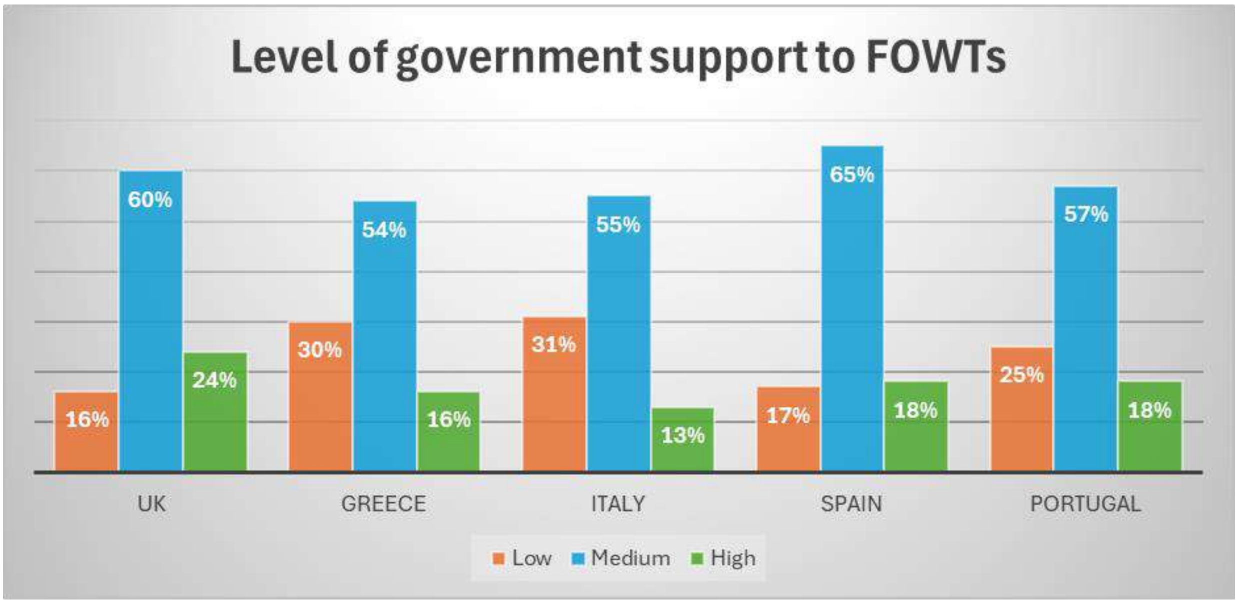
Portugal



In Portugal, 103 participants completed the policymaking section of the MARINEWIND survey. They represented a wide spectrum of stakeholders, with the largest groups being technology and project developers (29%), community representatives (22%), and engineering and energy consultancies (17%). Academia or research followed at 12%, investors at 8%, government and regulatory authorities at 4%, SMEs and innovators at 3%, renewable energy companies at 2%, fisheries at 1%, marine biologists at 1%, and environmental organisations at 1%. Notably, 24% of the respondents reported active involvement in at least one offshore wind farm project, offering direct insights into the challenges of floating offshore wind (FOWT) deployment in Portuguese waters.

2. POLICY AND REGULATORY ANALYSIS

2.1 Government Commitment



United Kingdom: When assessing governmental dedication to floating offshore wind (FOWT), about 60% of participants rated it “medium,” 24% considered it “high,” and 16% deemed it “low.” Several pointed to growing policy mechanisms such as the Contracts for Difference (CfD) scheme as evidence of active support. Yet, comments also revealed a perception that clarity in strategic priorities can fluctuate between central government and devolved administrations, potentially creating uncertainties for investors. In terms of the overarching development approach, nearly half (46%) described the UK’s offshore wind strategy as “hybrid,” mixing plan-led elements with developer-led initiatives. Another one-third perceived a predominantly “developer-led” framework, and around one-fifth saw it as mostly “plan-led.”

Greece: When asked about Greek authorities’ commitment to meeting EU 2030-2050 energy targets through FOWT, a majority (54%) described it as “medium,” 30% deemed it “low,” and just 16% regarded it as “high.” While some respondents praised policy discussions and incentives that suggested growing official interest, others lamented a lack of definitive policy direction. Regarding overall strategic approaches, nearly half (47%) saw Greece’s path as “hybrid,” blending plan-led regulation with developer-driven efforts. Another 36% characterised it as mostly “developer-led,” and 17% viewed it as “plan-led.”

Italy: When asked to evaluate the Italian authorities’ commitment to meeting EU 2030 and 2050 renewable energy objectives via floating offshore wind, most respondents described it as moderate or emerging, though with noticeable variability in how different agencies communicate and enforce guidelines. Several participants cited policy instruments—such as designated zones for offshore energy and emerging financial incentives—as signals that national interest in FOWT is growing. However, others voiced concerns that policy clarity remains inconsistent across regional governments, complicating the long-term outlook for floating wind developers and investors.

Spain: Survey respondents offered a mixed assessment of Spain’s commitment to achieving EU 2030 and 2050 targets via floating offshore wind. Many of them perceived government awareness and initiative-taking around offshore technologies as improving, with a handful pointing to recent policy frameworks that explicitly reference deeper-water turbines. However, others felt that guidelines remain inconsistent or overly fragmented across different autonomous communities, each with its own procedural requirements and timelines.

Portugal: A recurring theme among Portuguese respondents was a perception of moderately strong but at times uneven governmental support for FOWT. Slightly over half of the participants felt there was growing momentum, pointing to nascent policy frameworks that increasingly address deeper-water wind projects. However, a sizable minority highlighted differing levels of engagement across ministries and regions, which can introduce uncertainties for prospective developers.

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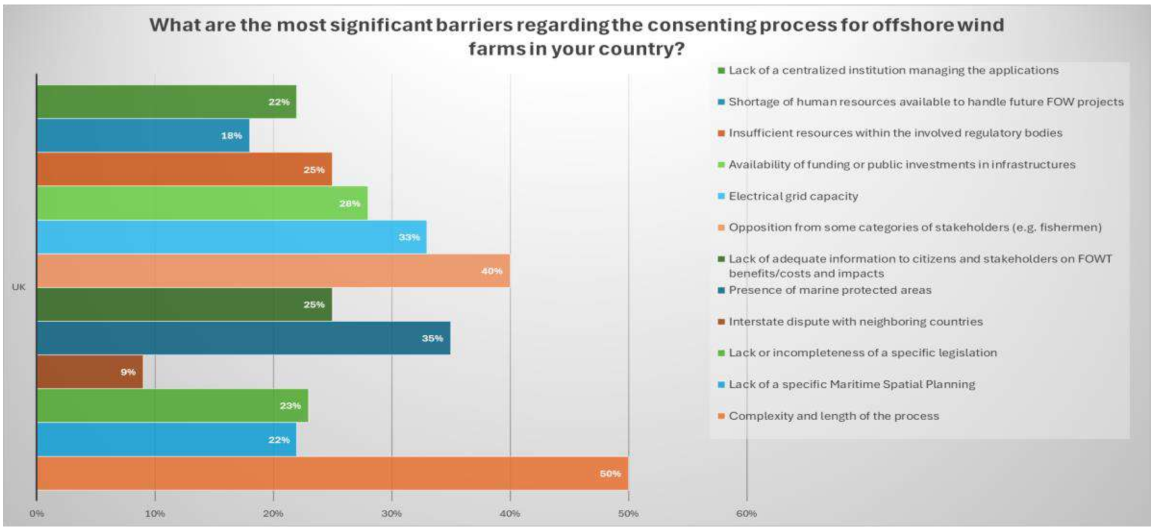
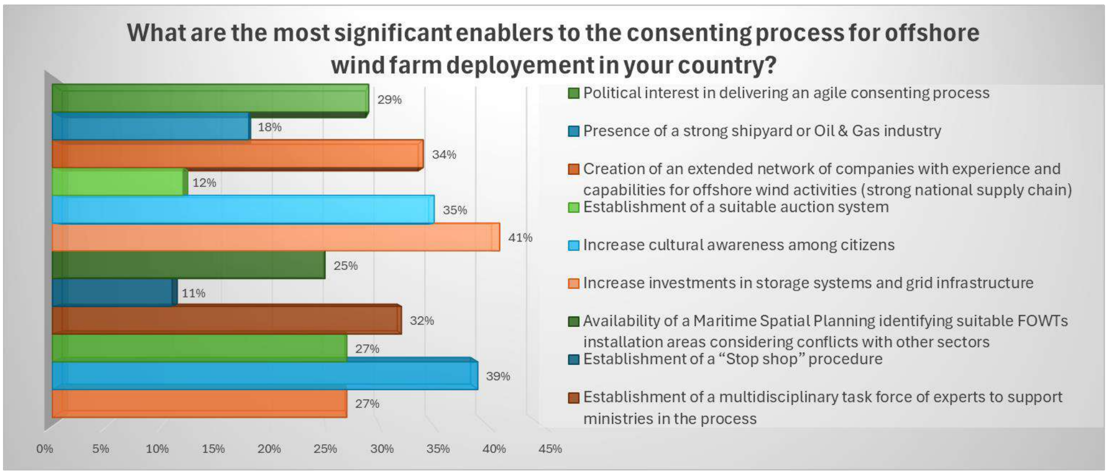
2.2 Barriers and Enablers of the consenting process

United Kingdom

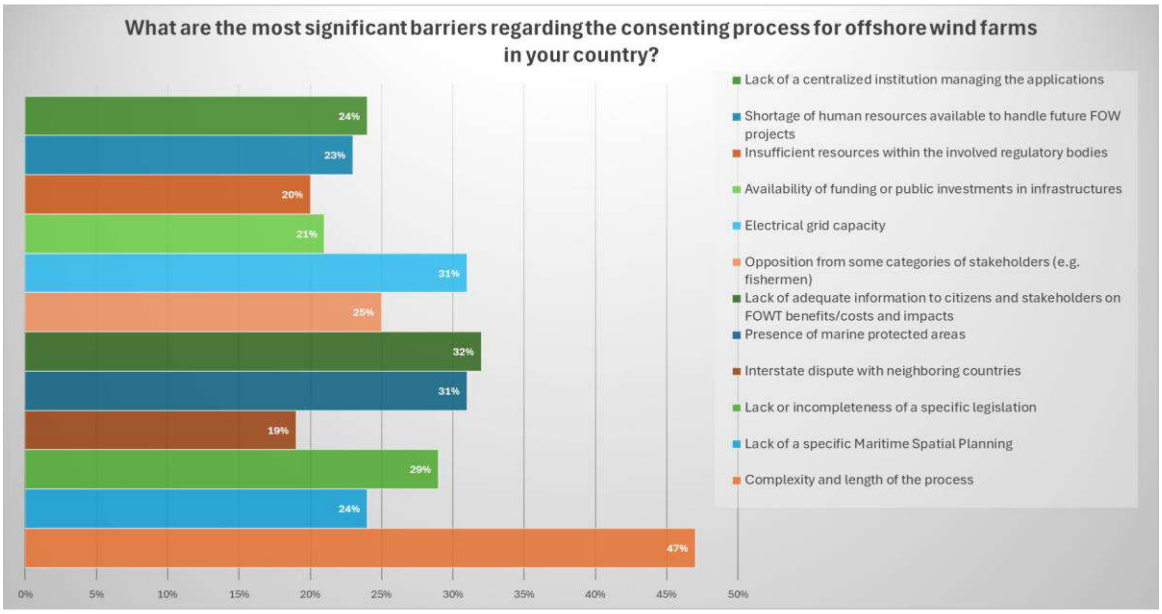


The consenting process for offshore wind deployment in the UK faces several well-documented hurdles, with 50% of respondents identifying **the complexity and length of the process** as the most significant barrier. This is reflective of the UK's layered governance structure, where marine spatial planning and environmental regulation are handled by multiple entities such as the Marine Management Organisation (MMO), The Crown Estate, and devolved governments in Scotland, Wales, and Northern Ireland. These overlapping jurisdictions contribute to confusion, delays, and inconsistencies in the approval pipeline especially for floating offshore wind, which is still emerging and lacks streamlined regulatory guidance. Developers frequently face long consultation timelines and coordination issues across environmental, fishing, and community impact domains.

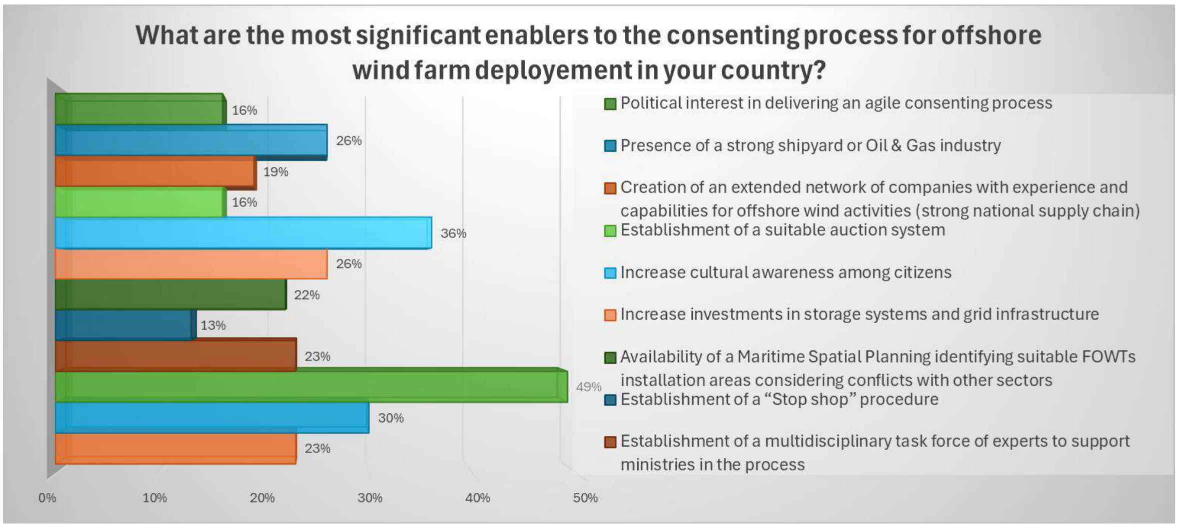


In terms of enablers, only **27% of respondents cited the establishment of a dedicated coordination body** as a solution, highlighting a perception that while efforts may be underway (such as strategic planning led by the former BEIS - [Department for Business, Energy & Industrial Strategy]() or The Crown Estate), they are not yet fully operational or impactful. Respondents clearly desire a "one-stop shop" model where spatial planning, permits, and compliance checks are harmonised under one entity. The large proportion of stakeholders who skipped this question suggests there is still uncertainty about the visibility or role of such enabling institutions in practice.

Greece

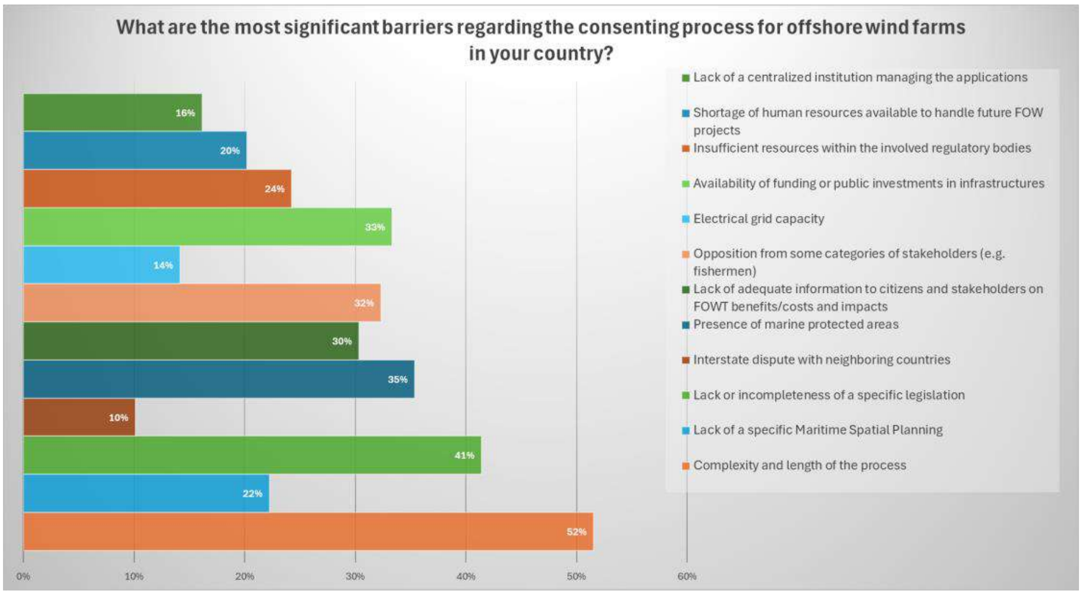


In Greece, the consenting process is similarly seen as a major impediment to the deployment of offshore wind technology. According to the MARINEWIND survey, **47% of Greek stakeholders** identified **"complexity and length of the process"** as the most significant barrier. Greece's regulatory landscape includes numerous actors, including the Ministry of Environment and Energy, the Hellenic Hydrocarbon Resources Management agency, and local maritime authorities. These institutions often lack alignment and centralised planning, resulting in a burdensome and often unclear approval process. Stakeholders noted that the absence of designated offshore development zones further complicates early planning and financial risk management.

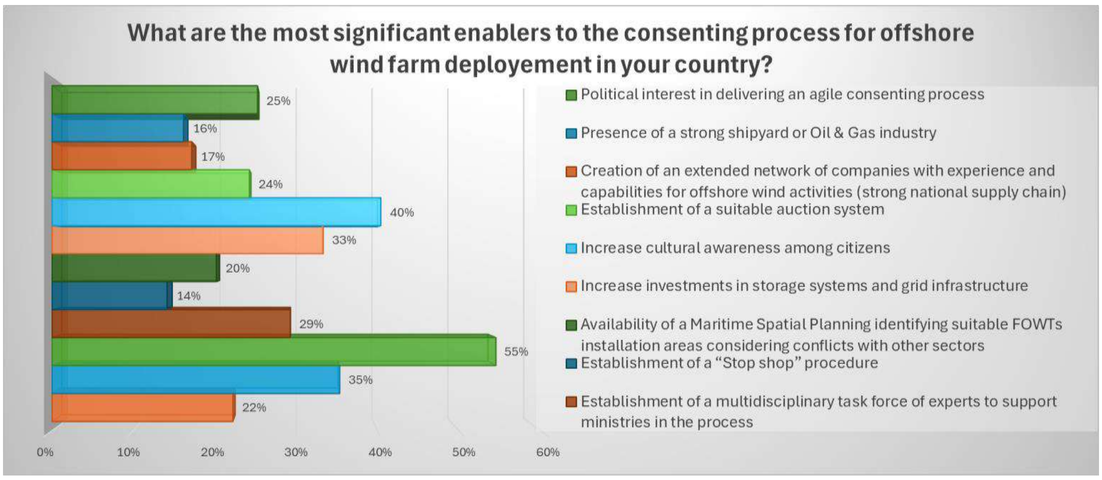


In terms of enablers, **only 23% of respondents selected the establishment of coordination bodies** as a key solution. Some stakeholders proposed creating a national offshore energy coordination agency to manage planning, stakeholder engagement, and environmental assessments. This would ensure better guidance for investors and developers alike. The responses suggest a need for Greece to not only accelerate its permitting reforms but also to communicate more effectively the mechanisms being developed to support offshore wind consenting processes.

Italy



Italy's consenting process for offshore wind, including floating technologies, is seen as one of the more significant bottlenecks by survey respondents. **52% of participants indicated "complexity and length of the process"** as the top barrier, citing the involvement of multiple layers of government—from national ministries to regional and port authorities—as a key issue. Offshore wind projects in Italy must navigate environmental approvals, maritime spatial planning procedures, and often face public resistance due to concerns over visual impact and ecological disruption. This multi-jurisdictional system contributes to project delays, increased administrative costs, and inconsistent interpretations of regulation across regions.



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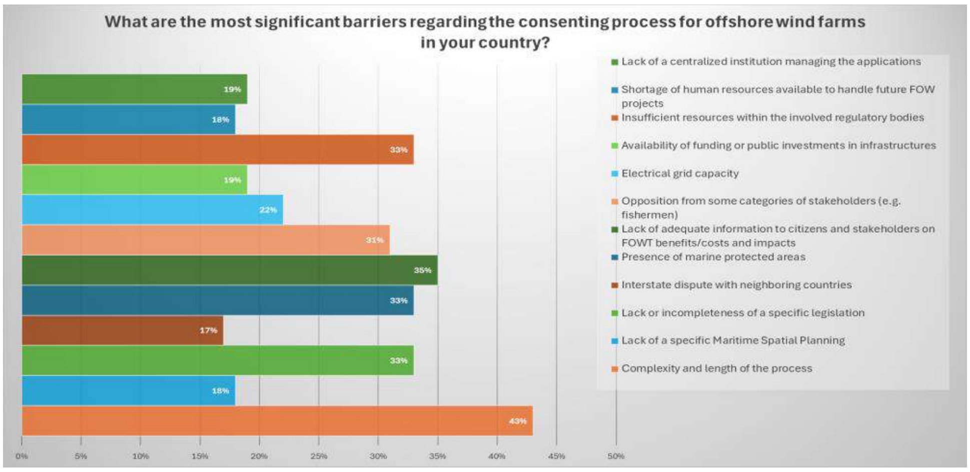
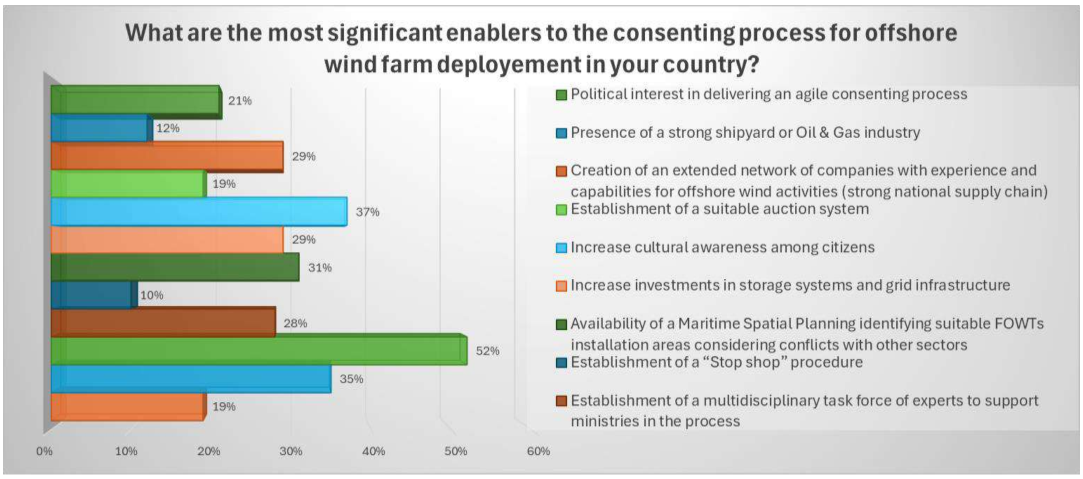
Only **22% of Italian stakeholders selected the presence or need for dedicated institutional coordination bodies** as an enabling factor. This suggests that, while some respondents are aware of initiatives led by GSE – the Italian Energy Services Operator or Italy's national energy plan, the overall visibility of these support structures remains low. Stakeholders emphasised the need for a centralised permitting portal that could house environmental data, spatial maps, and application tracking tools to reduce developer uncertainty. Many also supported capacity-building in regional institutions to ensure consistent application of national guidance. Italy's regulatory environment remains fragmented, and stakeholders strongly desire structural reforms to streamline the permitting process and improve investor confidence.

Spain

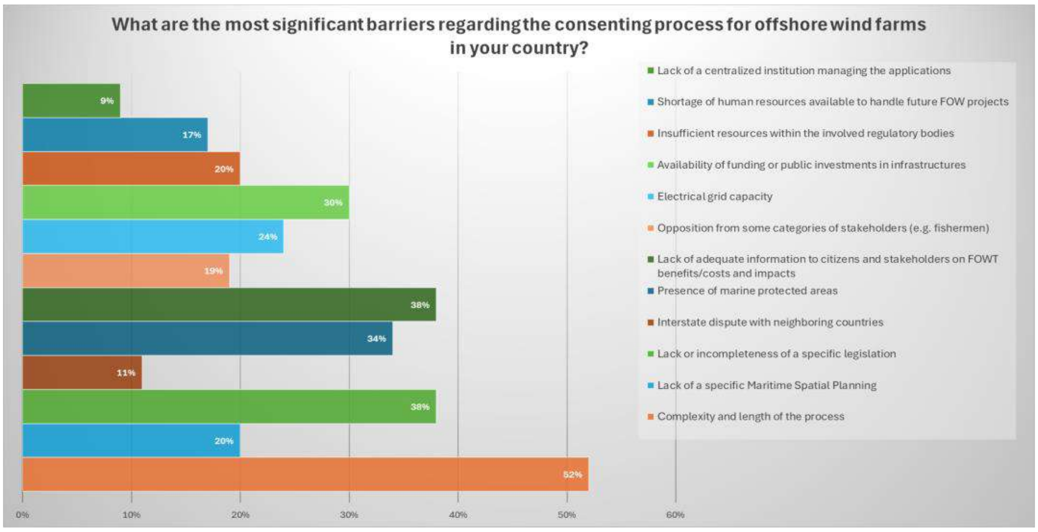


In Spain, permitting for offshore wind is currently viewed as one of the greatest hurdles in the project development timeline. **43% of Spanish respondents identified "complexity and length of the process"** as the most significant barrier. The delay in finalising the country's Maritime Spatial Plans (POEMs), combined with regulatory overlap between regional and national authorities, made it difficult for developers to obtain clarity on site viability and timelines. Several respondents mentioned that the coordination between environmental, fisheries, and transport departments adds months, if not years, to project planning. These regulatory challenges increase uncertainty and deter early-phase investment in floating wind projects, despite Spain's excellent wind resources.

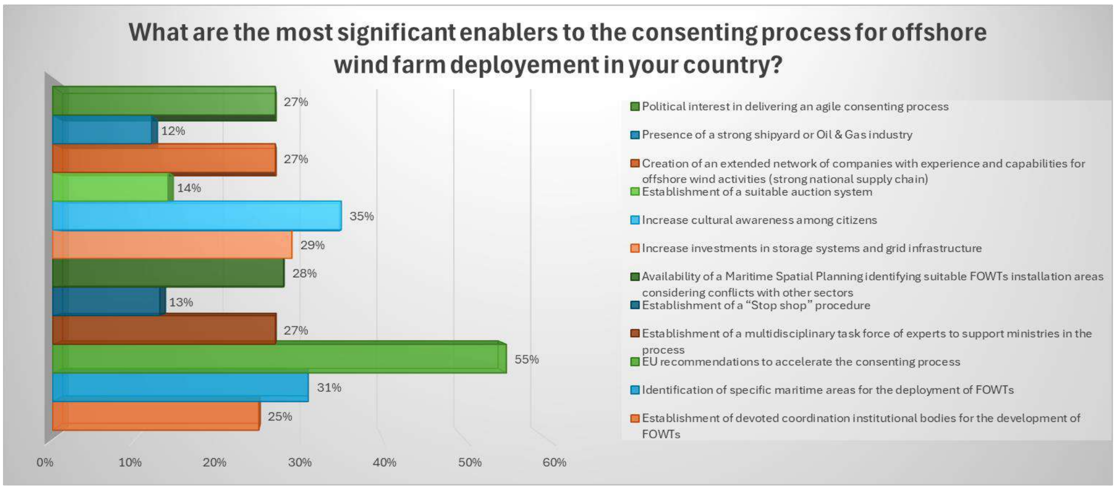


As for the enablers, only **19%** identified **the establishment of institutional coordination bodies** as a key support mechanism, suggesting that current or emerging institutions aimed at streamlining permitting—such as interministerial task forces—have not yet earned stakeholder trust or visibility. Stakeholders stressed the importance of clearly defined offshore zones, a single licensing authority, and fast-track permitting processes. Spain's ability to accelerate FOWT deployment hinges on unifying its institutional response and building trust in a streamlined, investor-friendly permitting process.

Portugal



Portugal stands out among the MARINEWIND countries for having the **highest share of respondents (52%)** identifying **consenting complexity and slowness as the most significant barrier.** This aligns with broader concerns about Portugal's fragmented regulatory landscape, where multiple agencies—including the Directorate-General for Maritime Policy, the Portuguese Environment Agency, and local port authorities—must coordinate on permits. The lack of finalised maritime spatial planning and limited deep-sea survey data further complicates early-stage development. Respondents noted that, even for pilot projects, long timelines for Environmental Impact Assessments (EIAs) and unclear jurisdictional roles cause significant project uncertainty and discourage smaller players from entering the market.



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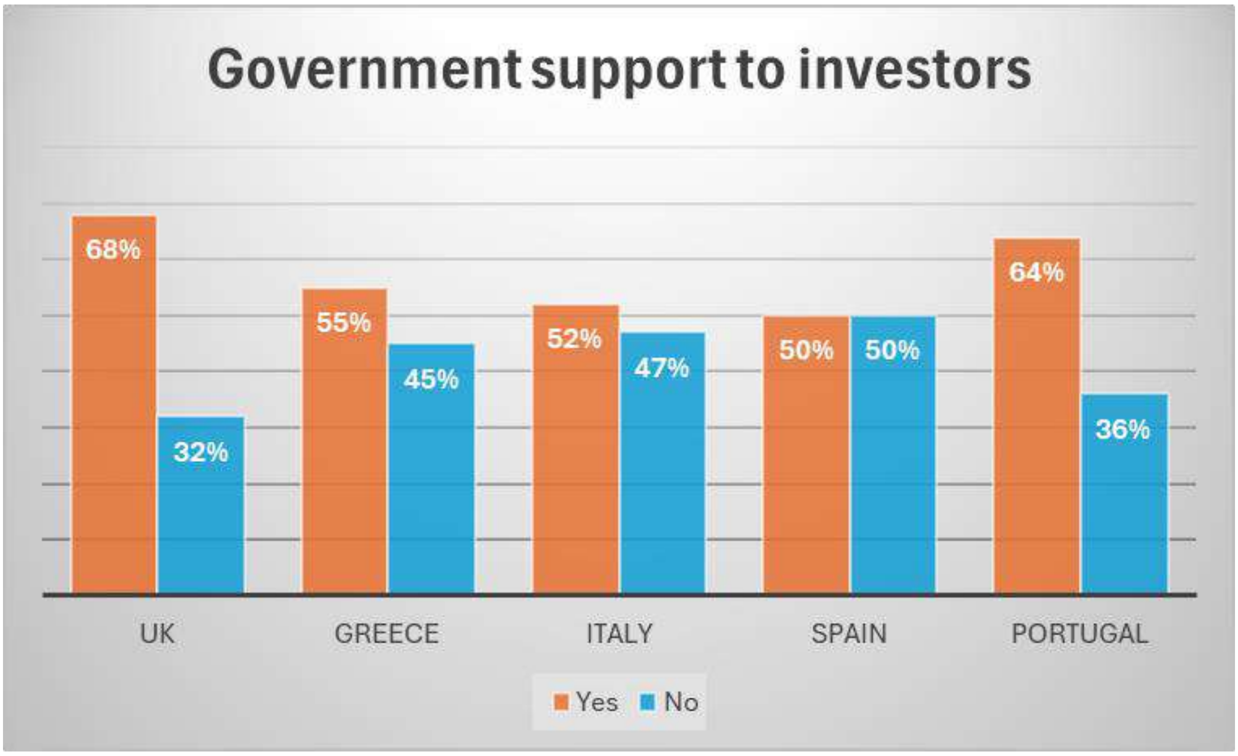
Interestingly, **Portugal** also had the highest percentage (25%) identifying **coordination institutions as a key enabler.** This suggests that stakeholders are more aware of, or hopeful about, recent government efforts to streamline permitting and attract floating wind investment. Respondents cited recent government strategies linked to EU climate funding as potential vehicles for reform, demonstrating government support to investors.

2.3 Governmental support to investors



United Kingdom

Questioned about major barriers in the permitting process, roughly half of respondents highlighted the **complexity and length of the process, pointing** to **overlapping jurisdictional requirements**. Many noted that, while organisations such as Marine Scotland and The Crown Estate help in defining procedures, differences across devolved regions can add extra layers of administration. Regarding **financial instruments and revenue mechanisms**, two-thirds (68%) believed the government offers some form of support—be it **grants, tax benefits, or targeted funding**—for investors seeking to develop FOWT. However, a third felt that such backing was either insufficient or poorly communicated.

Greece

The **permitting process** itself emerged as a significant challenge. Several participants pointed to procedural overlaps and difficulties in securing approvals from various national and regional bodies. Just over half the group (55%) believed there were some **government-sponsored incentives or support mechanisms**—ranging from grants and tax breaks available for offshore wind investments. Meanwhile, 45% either disagreed or were not aware of any such benefits. Many participants also noted uncertainty around how fees, taxes, and potential royalties apply specifically to floating offshore wind ventures.

Unlike some established frameworks for fixed-bottom offshore wind, Greece's FOWT policies are viewed as new and not very well developed, making it hard for developers to confidently map out their full financial obligations. Survey comments suggested that investors, community stakeholders, and local authorities alike would benefit from a **clearer blueprint** on how any revenue streams from offshore wind farms might be shared or reinvested.

Italy

Regarding the subject of **consenting and administrative barriers**, a consistent theme emerged around streamlining, since numerous participants underscored the need for a more centralised approach. They argued that Italy's current system, which is spread across various ministries, port authorities, and environmental agencies, can lead to duplicative paperwork and protracted review periods. While some developers reported relatively smooth experiences, others encountered frequent delays, partially tied to region-specific regulations or divergent interpretations of national guidelines. A similar variety of perspectives arose around fees and taxes. While some respondents were aware of local and regional fee mechanisms, including potential community benefit funds, many expressed uncertainties about whether these apply to floating offshore wind. In addition, several highlighted that Italy's existing legislative framework—originally shaped around onshore or fixed-bottom offshore wind—does not always align with the financial and logistical realities of installing and maintaining floating structures further from shore.

Spain

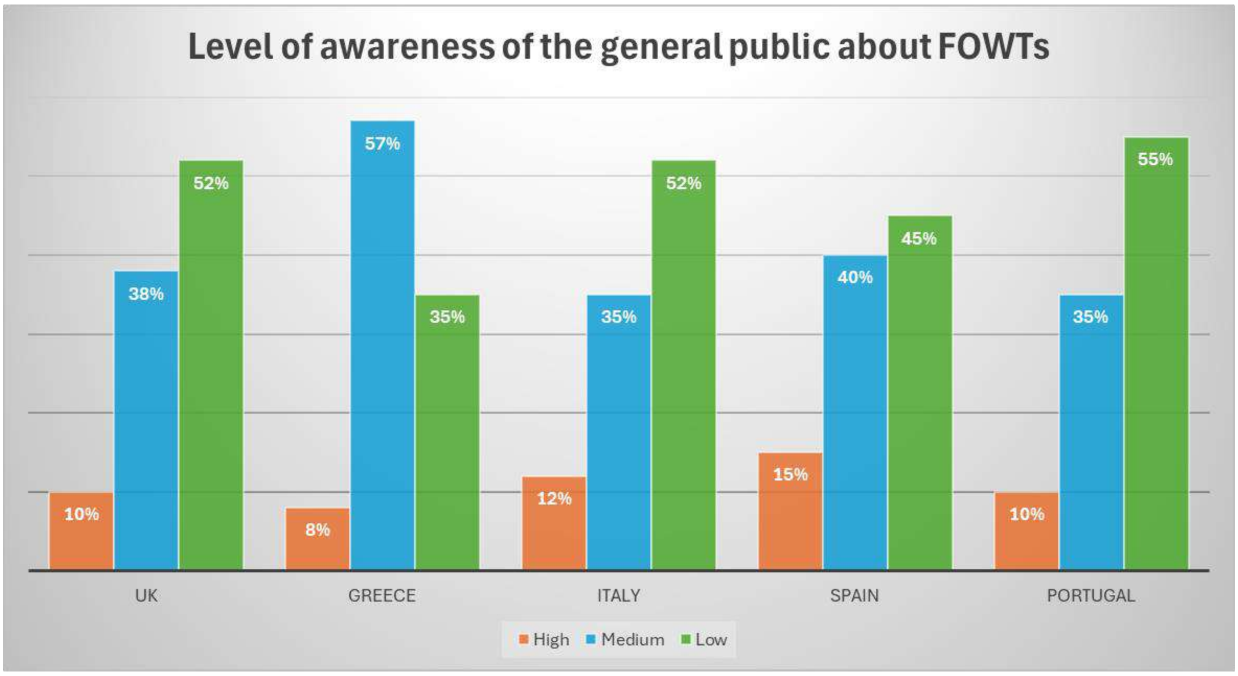
When asked about **permitting processes**, Spanish respondents repeatedly emphasised a desire for more streamlined and regionally coherent regulations. Several participants pointed to the **interplay of central and autonomous community jurisdictions**, each with its own documentation standards and timelines, which can inadvertently prolong development and push up administrative costs. Regarding fees and royalties, around one-third stated awareness of potential mechanisms by which local authorities could benefit financially, often in the form of community-oriented funds. However, many remained uncertain whether these measures would extend to floating offshore wind specifically. A smaller segment suggested that Spain's existing tax regime—largely shaped by fixed-bottom offshore frameworks—may not fully align with the cost profile of FOWTs, leaving some developers unsure of the fees they might incur over a project's lifespan.

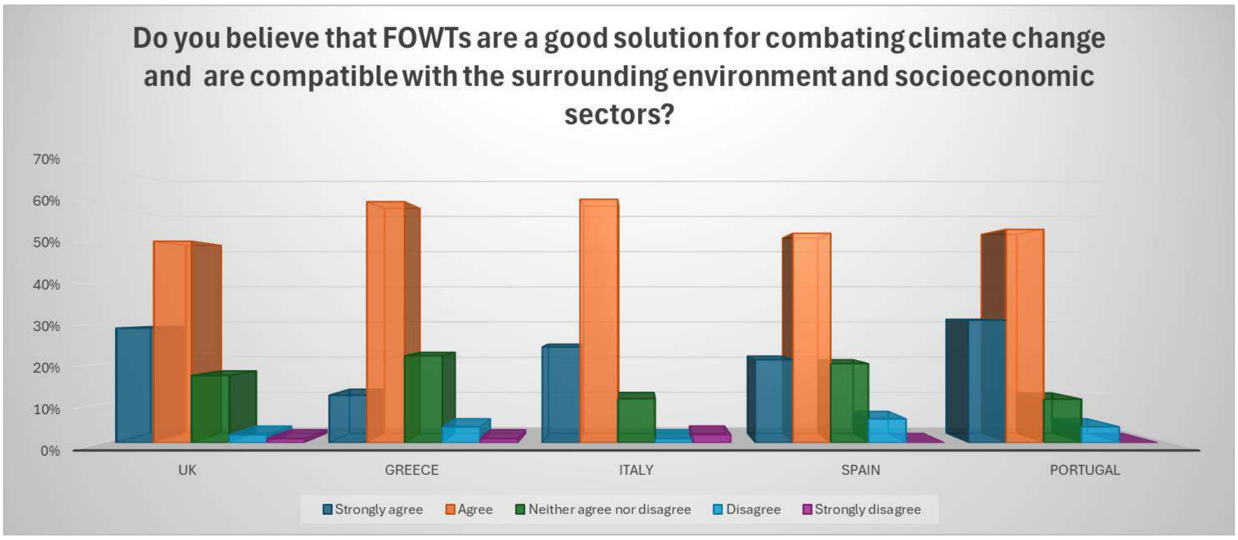
Portugal

When asked about the **permitting landscape**, Portuguese participants repeatedly underlined the need for clearer, more consolidated pathways and a "one-stop-shop" model to streamline national, regional, and local approvals. Regarding the distribution of revenues from taxation of offshore wind projects, a third of the respondents suggested that part of the revenues should be invested in improving the infrastructure in the local communities. Additionally, a smaller portion (about 15%) indicated that the existing tax framework originally geared toward onshore or nearshore wind may not fully align with the capital-intensive nature of floating turbines.

3. SOCIAL ACCEPTANCE

3.1 Levels of Awareness and Perception





United Kingdom: Within the United Kingdom, awareness of floating offshore wind technology (FOWT) tends to be moderate to high, largely because the UK has a long tradition of offshore wind development in shallower waters. Media coverage and government-led decarbonisation targets have familiarised many citizens with renewable energy projects, although some still conflate fixed-bottom offshore turbines with floating ones. Approximately 10% of stakeholders surveyed described public awareness of FOWT as high. Another 38% considered public knowledge moderate. The remaining 52% of respondents perceived awareness to be low, especially among communities or locations with limited direct exposure to wind power developments. In terms of perception, most UK respondents (roughly 60%) conveyed that local attitudes toward floating wind range from neutral to positive, rooted in widespread acceptance of renewables as a climate-friendly energy source. Many local stakeholders

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see FOWT as an engine for socioeconomic growth—especially if developers prioritise local content, specialised training, and supply-chain investments. This overall awareness and perception landscape reflects a country steadily moving toward deeper offshore solutions.

Greece: In Greece, survey results indicate that more than 57% of Greek respondents categorized overall awareness of FOWT as "low to moderate." Despite these modest awareness levels, the general perception of renewables in Greece is positive: a significant portion of the population sees green energy as pivotal for economic revitalisation and reducing dependence on imported fossil fuels. However, floating offshore wind proposals sometimes evoke cautious reactions among fishers, coastal tourism operators, and local authorities, who worry about changes to marine views, habitat disruption, or navigational hazards near islands. This caution suggests that, while the broad national sentiment around clean energy is favorable, the acceptance of FOWT specifically hinges on community engagement and clear evidence of local benefits.

Italy: Survey responses suggest that 35% of the Italian public has a moderate understanding of offshore renewables, and only 12% fully comprehends the operational and engineering differences of floating turbines compared to conventional ones. Many participants emphasised that local communities, especially those in regions grappling with high youth unemployment or limited industry, view any green energy project as a potential economic lever.

Spain: About 40% of Spanish respondents characterise the social awareness of offshore wind as moderate. The majority of the participants estimate that around two-thirds of Spaniards have supportive or at least neutral attitudes toward renewables, seeing them as an economic engine and a step toward sustainable energy independence. Stakeholders commonly remark that local fishers fear losing prime fishing grounds, while tourism operators worry about the potential of turbines interrupting scenic seascapes that attract visitors. Local acceptance also appears stronger when authorities prioritise broader marine spatial planning. Furthermore, many respondents see floating offshore wind as an advanced, future-ready technology that can differentiate the country's energy portfolio, with assurance that FOWT will be planned with sensitivity to maritime heritage and economic traditions before fully embracing it.

Portugal: In Portugal, floating offshore wind technology is gradually gaining popularity, yet the general public's familiarity still lags behind more established renewables such as onshore wind or solar. Survey data suggest that around half of participants categorises public awareness of FOWT as moderate. Given Portugal's emphasis on ocean-related innovation, some coastal communities are more open to offshore solutions. Perception tends to be favorable toward renewables, given Portugal's history of strong pro-environment policies and ambitions to reduce fossil fuel dependency. Around two-thirds of Portuguese respondents see local stakeholders as supportive, especially if developers highlight job creation potential in shipbuilding, port operations, and ongoing turbine maintenance. Still, concerns linger certain fishing communities, for instance, worry about gear entanglement or closed-off maritime spaces.

3.2 Barriers and Enablers of Social Acceptance

United Kingdom

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Table 1 below shows the percentage of respondents who rated each potential barrier to the deployment of floating offshore wind technology as very important, important, somewhat important and not important. The barriers to social acceptance in the UK revolve around community concerns such as **potential disruptions to fishing grounds**, **visual impacts on iconic coastlines**, and **lingering mistrust from prior energy developments**. Around 35% of respondents highlighted conflicts with fisheries, where some fishers fear restrictions on historically used waters or gear entanglement with mooring lines. Visual and noise-related apprehensions, although somewhat minimised by the distance of floating wind farms from shore, remain relevant for scenic coastal towns. In certain communities, skepticism is fueled by a perception that large-scale energy initiatives may lack genuine local input or tangible benefits, echoing past grievances around insufficiently shared revenues.

Barriers	Very important	Important	Somewhat important	Not important
Impact of FOWT on the loss of fishing grounds	41%	47%	9%	3%
Impact of FOWT on the fishermen's flexibility and restriction on their operability (travelling time for fisheries, local communities, employment, decision making, etc)	37%	43%	18%	2%
Impact of reduced fishing grounds due to the installation of FOWT and to the potential interference of the cables with the fishing nets	40%	44%	13%	3%
Impact of FOWT noise on coastal resorts and hotels in the area during construction, maintenance, and operation periods.	34%	34%	23%	9%
Impact of FOWT on aquaculture.	41%	42%	12%	5%
Real estate value reduction.	17%	34%	29%	20%
Recreational boating and sports activities are limited or affected by the FOWT farm.	19%	32%	31%	18%
Cultural heritage.	27%	29%	35%	9%

Table 1 UK - Importance of the listed barriers to increasing concerns against deploying FOWT

On the other hand, strong enablers are observed from the UK data. The leading facilitators of acceptance include direct economic benefits—particularly **job creation and the possibility of reduced electricity rates or local community fund mechanisms.** Over 87% of respondents viewed specialised training and educational programmes as important or very important in building goodwill suggesting that, when residents see real opportunities for skill development, they are likely to favor new offshore wind projects. Transparent environmental monitoring, such as demonstrating minimal disturbance to seabed habitats and highlighting the potential for artificial reef effects, also contributes to increase the level of social acceptance. Public outreach campaigns showing how floating turbines can coexist with existing marine uses, tourism, shipping lanes, or aquaculture ease concerns about being pushed out by

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developers. Finally, structured consultations, where local councils and sector representatives (such as fishers or tourism operators) co-create project timelines or citing details, stand out as crucial enablers. Indeed, the consensus is that well-communicated economic, environmental, and societal benefits often offset initial skepticism, provided local voices are included from the beginning of the project.

Enablers	Very important	Important	Somewhat important	Not important
Positive gross added value	27%	59%	13%	1%
New activities related to tourism/recreational boating.	29.00%	41.00%	23.00%	7%
New activities related to R&D on marine energy development or monitoring of environmental aspects.	41%	42%	14%	3%
Employment generation, specialized training and education related to FOWT.	54%	33%	12%	1%
Development of the supply chain of the FOWT.	41%	45%	11%	3%
Compatibility of uses (including aquaculture, tourism, fisheries activities).	37%	48%	13%	2%
Artificial reef and marine protected areas.	44%	37%	15%	4%
Development of communication platforms.	31%	36%	27%	6%
Lower electricity rate	53%	39%	6%	2%

Table 2 UK - Importance of the listed enablers to increase the acceptance of FOWT

Greece

Barriers	Very important	Important	Somewhat important	Not important
Impact of FOWT on the loss of fishing grounds	23%	63%	11%	3%
Impact of FOWT on the fishermen's flexibility and restriction on their operability (travelling time for fisheries, local communities, employment, decision making, etc)	29%	40%	26%	5%
Impact of reduced fishing grounds due to the installation of FOWT and to the potential interference of the cables with the fishing nets	18%	60%	19%	3%

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Impact of FOWT noise on coastal resorts and hotels in the area during construction, maintenance, and operation periods.	34%	42%	20%	4%
Impact of FOWT on aquaculture.	27%	47%	22%	4%
Real estate value reduction.	24%	49%	25%	2%
Recreational boating and sports activities are limited or affected by the FOWT farm.	28%	33%	36%	3%
Cultural heritage.	17%	44%	32%	7%

Table 3 Greece - Importance of the listed barriers to increasing concerns against deploying FOWT

Greek respondents pinpointed a cluster of interrelated barriers to social acceptance. First, a dominant theme is **knowledge gaps**: many communities have never encountered an operational floating wind farm, breeding misconceptions about its scale, cost, and environmental footprint. A second concern centers on **marine ecosystem preservation**, with about 29% of respondents highlighting that fishermen and local environmental groups worry about potential habitat disturbances or altered fish migration routes. Additionally, the country's **fragmented communication** across different governmental tiers often creates uncertainty at local level about the entities overseeing the licensing, planning, and monitoring processes—raising anxiety that FOWT could be fast-tracked without thorough local consultation.

Enablers	Very important	Important	Somewhat important	Not important
Positive gross added value	26%	56%	16%	2%
New activities related to tourism/recreational boating.	23%	51%	23%	3%
New activities related to R&D on marine energy development or monitoring of environmental aspects.	35%	42%	18%	5%
Employment generation, specialized training and education related to FOWT.	26%	48%	24%	2%
Development of the supply chain of the FOWT.	46%	37%	14%	3%
Compatibility of uses (including aquaculture, tourism, fisheries activities).	27%	39%	31%	3%
Artificial reef and marine protected areas.	26%	42%	28%	4%
Development of communication platforms.	27%	37%	32%	4%
Lower electricity rate	30%	46%	21%	3%

Table 4 Greece - Importance of the listed enablers to increase the acceptance of FOWT

Despite the above-mentioned challenges, there are strong enablers. A recurring enabler is **stakeholder liaison officers**, which are showing that designating a consistent contact between government, developers, and local communities, fosters trust and keeps lines of communication open. Equally important is to highlight **economic opportunities**, especially for younger generations in island areas that struggle with year-round employment outside of tourism seasons. If FOWT can be tied to stable jobs—through specialised training, maintenance roles, or R&D initiatives—acceptance climbs. Lastly, the creation of synergies with existing marine industries is a powerful enabler. If done properly, mooring lines and floating platforms might function as artificial reefs, boosting marine life. Fishers who actively witness improved catches or reduced competition in certain zones become more inclined to champion floating wind developments.

Italy

Barriers	Very important	Important	Somewhat important	Not important
Impact of FOWT on the loss of fishing grounds	28%	52%	18%	2%
Impact of FOWT on the fishermen's flexibility and restriction on their operability (travelling time for fisheries, local communities, employment, decision making)	27%	44%	24%	4%
Impact of reduced fishing grounds due to the installation of FOWT and to the potential interference of the cables with the fishing nets	32%	37%	28%	2%
Impact of FOWT noise on coastal resorts and hotels in the area during construction, maintenance, and operation periods.	25%	35%	23%	16%
Impact of FOWT on aquaculture.	23%	36%	33%	7%
Real estate value reduction.	12%	25%	44%	18%
Recreational boating and sports activities limited or affected by the FOWT farm.	13%	27%	36%	23%
Cultural heritage.	22%	37%	22%	18%

Table 5 Italy - Importance of the listed barriers to increasing concerns against deploying FOWT

When examining potential barriers to the deployment of floating offshore wind technology (FOWT) in Italy, the data reveals that restrictions on fishing—particularly the loss of fishing grounds and possible interference with nets—resonate strongly with respondents. Over half of the respondents considered diminished fishing grounds to be either “Very Important” or “Important,” indicating a heightened focus

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on how FOWT installations might affect coastal livelihoods and local marine activities. Similarly, concerns about reduced flexibility for fishermen— such as longer travel times and limitations on employment or community decision-making— show a moderate-to-high level of importance, underscoring how operational impacts can shape opposition. Environmental factors and user conflicts also emerge as notable issues. Noise from FOWT construction and operations attracts scrutiny, with around 60% of respondents rating it as "Very Important" or "Important." Aquaculture stands out as another area of sensitivity, as many participants voice apprehension about potential disruptions to fish farming activities. Additionally, the possibility of real estate value reduction, while seen as less pressing by a share of respondents, still registers as a concern for a quarter of those surveyed, who deem it "Important," and another 12% who identify it as "Very Important." Recreational activities —such as boating and sports — fall in the middle range of perceived barriers, reflecting a balanced mix of opinions on whether FOWT projects genuinely impede leisure pursuits or can coexist with other activities. Cultural heritage likewise garners moderate concern. While a little over half indicate it is "Very Important" or "Important," a significant minority classify it as "Not Important." Overall, the data points to a clear emphasis on preserving traditional uses of the sea, including fishing, aquaculture, and tourism, while highlighting pockets of skepticism toward how FOWT might reshape economic, environmental, and cultural landscapes.

Enablers	Very important	Important	Somewhat important	Not important
Positive gross added value	21%	59%	16%	3%
New activities related to tourism/recreational boating.	17%	47%	27%	8%
New activities related to R&D on marine energy development or monitoring of environmental aspects.	32%	41%	23%	3%
Employment generation, specialized training and education related to FOWT.	34%	40%	23%	2%
Development of the supply chain of the FOWT.	24%	45%	24%	6%
Compatibility of uses (including aquaculture, tourism, fisheries activities).	33%	42%	20%	4%
Artificial reef and marine protected areas.	32%	38%	21%	8%
Development of communication platforms.	16%	46%	28%	9%
Lower electricity rate	46%	41%	11%	1%

Table 6 Italy - Importance of the listed enablers to increase the acceptance of FOWT

The survey findings suggest that most respondents see clear economic and social benefits from floating offshore wind technology (FOWT). Reduced electricity costs stand out as a pivotal factor for many, with nearly half of participants deeming it "Very Important", while another sizable proportion rating it

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"Important." This emphasis on direct financial benefits underscores how tangible savings can enhance public acceptance. Similarly, employment generation and specialised training opportunities receive high marks, as over a third of respondents label them as "Very Important." This outcome points to the substantial role that job creation and skill development can play in shaping positive attitudes toward new energy initiatives. Moreover, the data highlights a strong recognition of potential synergy between FOWT and existing coastal or marine activities. A significant share of respondents' rate research and development, along with compatibility with other uses like fisheries or tourism, as "Very Important," indicating a receptivity to innovative developments that blend well with local livelihoods. Gross added value and supply chain expansion show similar levels of support, reflecting the desire for broader economic gains and improved infrastructure in the surrounding regions. In terms of tourism, recreation, and communication, responses are somewhat mixed but still lean positively. A moderate number of participants see new tourism or boating opportunities as beneficial, and communication platforms receive fair levels of importance ratings. While fewer respondents outright dismiss these enablers, others remain cautious about their practicality. Overall, the data indicates that tangible economic advantages—especially lower energy costs and job creation—are key drivers of FOWT acceptance. When such benefits are effectively integrated and communicated within regional development strategies, skepticism about offshore wind projects appears more likely to be alleviated.

Spain

Barriers	Very important	Important	Somewhat important	Not important
Impact of FOWT on the loss of fishing grounds	36%	51%	13%	0%
Impact of FOWT on the fishermen's flexibility and restriction on their operability (travelling time for fisheries, local communities, employment, decision making)	30%	49%	19%	2%
Impact of reduced fishing grounds due to the installation of FOWT and to the potential interference of the cables with the fishing nets	35%	47%	15%	3%
Impact of FOWT noise on coastal resorts and hotels in the area during construction, maintenance, and operation periods.	22%	38%	31%	9%
Impact of FOWT on aquaculture.	24%	45%	25%	6%
Real estate value reduction.	10%	48%	32%	10%
Recreational boating and sports activities are limited or affected by the FOWT farm.	14%	36%	35%	15%
Cultural heritage.	27%	44%	18%	11%

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Table 7 Spain - Importance of the listed barriers to increasing concerns against deploying FOWT

Survey results from Spain highlight that the preservation of fishing activities is the most pressing concern regarding floating offshore wind technology (FOWT). More than 80% of respondents rank the potential loss of fishing grounds as either “Very Important” or “Important,” underscoring the importance of safeguarding traditional livelihoods. Similarly, many respondents emphasise restrictions on fishermen’s flexibility—such as travel time and community decision-making—as a crucial barrier. The potential reduction in fishing grounds due to FOWT structures and cable interference also garners high levels of concern, reflecting the pivotal role of commercial fisheries in Spain’s coastal regions. Beyond fishing, the majority of respondents view the noise produced during construction, maintenance, and operation as a serious issue, with around 60% rating it “Very Important” or “Important.” Likewise, aquaculture requires attention, as nearly seven out of ten participants perceive it to be at risk. Real estate value reduction elicits moderate concern, while one-third sees it as only “Somewhat Important” or “Not Important.” Issues such as recreational boating, sports activities, and cultural heritage reveal a more balanced mix of opinions, suggesting that respondents have different perceptions about the influence of FOWT projects on these aspects. Overall, the data suggests that any successful effort to deploy floating offshore wind in Spain must address how turbines might constrain core maritime activities—particularly commercial fishing and aquaculture, along with potential impacts on tourism. Engaging local stakeholders early and adopting targeted mitigation strategies could be key to overcoming these perceived barriers and building broader acceptance.

Enablers	Very important	Important	Somewhat important	Not important
Positive gross added value	26%	63%	9%	2%
New activities related to tourism/recreational boating.	23%	46%	20%	11%
New activities related to R&D on marine energy development or monitoring of environmental aspects.	30%	46%	24%	0%
Employment generation, specialized training and education related to FOWT.	41%	38%	17%	4%
Development of the supply chain of the FOWT.	27%	51%	20%	2%
Compatibility of uses (including aquaculture, tourism, fisheries activities).	33%	41%	20%	6%
Artificial reef and marine protected areas.	30%	49%	15%	6%
Development of communication platforms.	16%	51%	32%	1%
Lower electricity rate	47%	36%	14%	3%

Table 8 Spain - Importance of the listed enablers to increase the acceptance of FOWT

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In Spain, several strong enablers emerged as key factors that could boost local acceptance of floating offshore wind technology (FOWT). Lower electricity rates top the list, with nearly half of respondents identifying them as “Very Important” and another 36% considering them “Important,” indicating that tangible cost-savings can significantly bolster public support. Employment generation, specialised training, and education initiatives also resonate strongly, as over 40% view them as “Very Important,” reflecting a desire for job creation and skills development tied to new industries. Similarly, adding positive gross value to the region is widely valued, with a substantial majority (89%) calling it either “Very Important” or “Important.” Activities linked to tourism or recreational boating garner considerable attention as well, though slightly more than a tenth remain skeptical about these benefits. Moreover, a notable share of participants considers as crucial to expand research and development related to marine energy and environmental monitoring, echoing Spain’s potential to become a center for innovation. The growth of the FOWT supply chain and compatibility of uses—such as aquaculture, tourism, and fisheries—further signal the importance of ensuring that various coastal activities can co-exist harmoniously. Respondents generally believe that communication platforms, artificial reefs, and marine protected areas have a constructive role to play, though there is still a segment expressing only moderate or limited enthusiasm. Overall, the data implies that, if FOWT developments can visibly benefit local economies, reduce electricity costs and offer meaningful employment opportunities while remaining compatible with existing marine and coastal activities, they are more likely to gain widespread acceptance in Spain.

Portugal

Barriers	Very important	Important	Somewhat important	Not important
Impact of FOWT on the loss of fishing grounds	36%	51%	13%	0%
Impact of FOWT on the fishermen's flexibility and restriction on their operability (travelling time for fisheries, local communities, employment, decision making, etc)	30%	49%	19%	2%
Impact of reduced fishing grounds due to the installation of FOWT and to the potential interference of the cables with the fishing nets	35%	47%	15%	3%
Impact of FOWT noise on coastal resorts and hotels in the area during construction, maintenance, and operation periods.	22%	38%	31%	9%
Impact of FOWT on aquaculture.	24%	45%	25%	6%
Real estate value reduction.	10%	48%	32%	10%
Recreational boating and sports activities	14%	36%	35%	15%

are limited or affected by the FOWT farm.				
Cultural heritage.	27%	44%	18%	11%

Table 9 Portugal - Importance of the listed barriers to increasing concerns against deploying FOWT

In Portugal, potential disruptions to fisheries emerge as a leading concern related to floating offshore wind technology (FOWT). A significant majority (87%) identify the loss of fishing grounds and restrictions on fishermen's flexibility as either "Very Important" or "Important," underscoring the economic and cultural significance of these activities. Similarly, reduced fishing grounds caused by turbine installation and cable interference draws high levels of concerns, with 35% rating it as "Very Important" and 47% as "Important." By contrast, concerns about noise from FOWT impacting coastal resorts and hotels show a more varied response—about 60% deem it "Very Important" or "Important," while nearly a third judge it only "Somewhat Important." Issues surrounding aquaculture follow a similar pattern, and although real estate value reduction, recreational boating, and cultural heritage do not stand out as paramount across the board, they still register moderate anxiety. Overall, the data highlights Portugal's strong focus on preserving marine-based economies and activities, while indicating that environmental and socio-economic factors such as noise pollution, aquaculture viability, and coastal heritage remain relevant, even if considered as somewhat secondary concerns.

Enablers	Very important	Important	Somewhat important	Not important
Positive gross added value	26%	63%	9%	2%
New activities related to tourism/recreational boating.	23%	46%	20%	11%
New activities related to R&D on marine energy development or monitoring of environmental aspects.	30%	46%	24%	0%
Employment generation, specialized training and education related to FOWT.	41%	38%	17%	4%
Development of the supply chain of the FOWT.	27%	51%	20%	2%
Compatibility of uses (including aquaculture, tourism, fisheries activities).	33%	41%	20%	6%
Artificial reef and marine protected areas.	30%	49%	15%	6%
Development of communication platforms.	16%	51%	32%	1%
Lower electricity rate	47%	36%	14%	3%

Table 10 Portugal - Importance of the listed enablers to increase the acceptance of FOWT

The survey data for Portugal indicates that a lower electricity rate is a particularly strong enabler for gaining public

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acceptance of floating offshore wind technology (FOWT), with nearly half of respondents labeling it as "Very Important" and another third deeming it as "Important." Employment generation, specialised training, and education also stand out signifying that direct economic benefits—whether through cheaper energy or improved job prospects—resonate most strongly with participants. Additionally, a notable majority recognises the value of positive gross added value to the broader economy, reinforcing the idea that visible economic gains can be persuasive in winning local support. Beyond these top-tier factors, many respondents consider new tourism and recreational boating activities, as well as research and development related to marine energy, to be "Very Important" or "Important." This highlights a willingness to embrace FOWT if it fosters innovation, boosts regional employment, or coexists harmoniously with other maritime industries like aquaculture and fisheries. The compatibility of uses, along with artificial reefs and marine protected areas, speaks to the public's interest in ensuring that environmental considerations remain at the forefront of development. Even though communication platforms and additional community outreach rank slightly lower on the "Very Important" scale, more than half of respondents still finds them important, indicating an appetite for clear information sharing and stakeholder engagement. Overall, these results suggest that FOWT projects demonstrating tangible local benefits—particularly in the form of cost savings and new job opportunities—are likely to receive a stronger public support in Portugal.

3.3 Strategies to Mitigate Social Conflict

UK

Risk mitigation strategies	Very important	Important	Somewhat important	Not important
Including socioeconomic criteria to award projects as a strategy to increase project integration (from a socioeconomic and environmental point of view) in their surroundings.	24%	58%	17%	1%
Criteria on FOWT farm design that reduce its impact (buried onshore evacuation line, buried offshore evacuation line, distance from shore, etc.)	49%	32%	18%	1%
Apprenticeship and Scholarship programmes: training programs, financial contributions to education, or educational programs for local schools to learn about climate change, sustainability and renewable energy.	44%	38%	15%	3%
Direct investment and project Funds to support local communities in the surrounding areas to the FOWT farm (Contribution to charitable causes, supporting energy transition and local business, supporting women empowerment programmes, infrastructure improvements, support local tourism activities)	39%	39%	19%	3%
Electricity discounts in the surrounding areas to the FOWT farm and increase in internet speed.	40%	37%	15%	8%
Engagement of local communities in the equity of the FOWT farm (community ownership) through solutions such as crowdfunding, raising capital from local SME entrepreneurs, etc.	34%	43%	19%	4%
Affected sectors, such as fishermen, provide services	38%	43%	17%	2%

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during the development, execution, and O&M stages, as well as the tourism sector, with visitor centres, boat trips, information boards, etc.				
Community engagement activities. A website explaining the projects, meetings, and events explaining the project	34%	47%	15%	4%
Informing and involving the local community from the outset of a floating wind turbine project, making them aware of both the advantages and disadvantages	61%	30%	8%	1%

Table 11 UK - Importance of the listed strategies in reducing social conflicts around the deployment of FOWT

Conflict mitigation strategies in the UK revolve around early engagement, transparent benefit-sharing, and conscientious design. First, a majority (about 91%) of respondents believe that informing and involving local communities at the project's earliest stages is vital. Whether via open-house meetings, town halls, or digital communication platforms, this approach offers residents genuine participation in site selection and environmental management plans. When people sense that decisions are being made "with" rather than "to" them, tensions are far less likely to erupt. Second, many UK participants highlighted the importance of direct community investment ranging from local improvement funds to discounted electricity tariffs. By clearly demonstrating how a FOWT project yields everyday advantages, developers can bridge skepticism quickly. For example, ring fencing a portion of wind farm revenues for community projects, such as sports facilities or broadband upgrades, turns an abstract energy installation into a catalyst for tangible neighborhood progress. Still, respondents emphasised that financial solutions alone cannot handle all potential frictions. They recommended pairing these measures with formal stakeholder forums, where fishers, tourism operators, environmental NGOs, and local councils coordinate on any emerging issues. A final key strategy is thorough environmental stewardship, which includes burying onshore cable landfall when feasible, situating turbines far from sensitive habitats, and rigorously monitoring marine life. Publishing results of these studies in accessible language helps communities track real impacts, preventing rumors or inflated fears from festering. Together, such strategies foster a collaborative atmosphere in which local stakeholders become integral to shaping floating offshore wind's rollout, reducing the likelihood of protests or lengthy legal contests that could otherwise stall development.

Greece

Risk mitigation strategies	Very important	Important	Somewhat important	Not important
Including socioeconomic criteria to award projects as a strategy to increase project integration (from a socioeconomic and environmental point of view) in their surroundings.	26%	56%	16%	2%
Criteria on FOWT farm design that reduce its impact (buried onshore evacuation line, buried offshore evacuation line, distance from shore, etc.)	23%	51%	23%	3%
Apprenticeship and Scholarship programmes: training programs, financial contributions to education, or educational programs for local schools to learn about climate change, sustainability and renewable energy.	35%	42%	18%	5%
Direct investment and project Funds to support local	26%	48%	24%	2%

communities in the surrounding areas to the FOWT farm (Contribution to charitable causes, supporting energy transition and local business, supporting women empowerment programmes, infrastructure improvements, support local tourism activities)				
Electricity discounts in the surrounding areas to the FOWT farm and increase in internet speed.	46%	37%	14%	3%
Engagement of local communities in the equity of the FOWT farm (community ownership) through solutions such as crowdfunding, raising capital from local SME entrepreneurs, etc.	27%	39%	31%	3%
Affected sectors, such as fishermen, provide services during the development, execution, and O&M stages, as well as the tourism sector, with visitor centres, boat trips, information boards, etc.	26%	42%	28%	4%
Community engagement activities. A website explaining the projects, meetings, and events explaining the project	27%	37%	32%	4%
Informing and involving the local community from the outset of a floating wind turbine project, making them aware of both the advantages and disadvantages	30%	46%	21%	3%

Table 12 Greece - Importance of the listed strategies in reducing social conflicts around the deployment of FOWT

In Greece, conflict mitigation hinges on localised engagement, transparent environmental assessments, and culturally respectful outreach. Given the country's varied topography and numerous islands, a one-size-fits-all strategy rarely suffices. Instead, many respondents advocate for **coastal and island-specific engagement** structures, where local leaders, fishers, tourism representatives, and relevant NGOs convene to discuss potential FOWT projects well before any final citing decisions. This early collaboration helps communities sense ownership over the process and can reduce friction that typically emerges when proposals appear suddenly. A second critical measure is **publicising environmental data** in a straightforward, non-technical language. Greek communities are deeply tied to the sea, so providing real-time or periodically updated information on fish stocks, benthic habitat health, and seabird activity becomes paramount. When trustworthy, neutral parties—such as academic institutions—lead these studies, the results carry more credibility. Meanwhile local authorities, if actively involved, can quell rumors and ensure that evolving policies reflect accurate data. Another recommended approach involves **maritime spatial planning** that incorporates stakeholder preferences from the outset. For instance, if fishers can help identify their most crucial grounds, or if tourism operators highlight scenic vistas integral to their marketing, FOWT developers and policymakers can avoid those zones proactively. Finally, Greek respondents emphasised the need to respect local cultural events and traditions, such as fishing festivals or island fairs. Hosting educational stands, demonstration videos, or Q&A sessions at such gatherings fosters an inclusive environment, lessening the "outsider" stigma around new energy infrastructure. Altogether, these strategies underscore that conflict often arises from perceived top-down imposition, and Greece's best path to reconciling new wind projects with local identity is to ensure every voice is heard from inception.

Italy

Risk mitigation strategies	Very important	Important	Somewhat important	Not important
Including socioeconomic criteria to award projects as a strategy to increase project integration (from a socioeconomic and environmental point of view) in their surroundings.	25%	58%	16%	1%
Criteria on FOWT farm design that reduce its impact (buried onshore evacuation line, buried offshore evacuation line, distance from shore, etc.)	42%	38%	18%	1%
Apprenticeship and Scholarship programmes: training programs, financial contributions to education, or educational programs for local schools to learn about climate change, sustainability and renewable energy.	29%	32%	32%	6%
Direct investment and project Funds to support local communities in the surrounding areas to the FOWT farm (Contribution to charitable causes, supporting energy transition and local business, supporting women empowerment programmes, infrastructure improvements, support local tourism activities)	37%	44%	16%	2%
Electricity discounts in the surrounding areas to the FOWT farm and increase in internet speed.	46%	32%	18%	3%
Engagement of local communities in the equity of the FOWT farm (community ownership) through solutions such as crowdfunding, raising capital from local SME entrepreneurs, etc.	25%	40%	28%	6%
Affected sectors, such as fishermen, provide services during the development, execution, and O&M stages, as well as the tourism sector, with visitor centres, boat trips, information boards, etc.	22%	57%	19%	2%
Community engagement activities. A website explaining the projects, meetings, and events explaining the project	26%	45%	20%	8%
Informing and involving the local community from the outset of a floating wind turbine project, making them aware of both the advantages and disadvantages	36%	40%	20%	3%

Table 13 Italy - Importance of the listed strategies in reducing social conflicts around the deployment of FOWT

Effective conflict mitigation in Italy centers on **proactive local engagement**, **marine spatial planning**, and **transparent monitoring**. Many participants advocate hosting town hall meetings or public forums well before official permitting begins, where developers can present visual simulations of how turbines look from various coastal vantage points. In tourism-dominated towns, these discussions might also explore how to balance scenic vistas with the broader shift toward clean energy. Simultaneously, **marine spatial planning** stands out as a structured means to mediate between different stakeholders (fisheries, tourism, environmental NGOs) and FOWT developers. By adopting a single authoritative plan that demarcates fishing grounds, sensitive habitats, and potential wind farm zones, the possibility of last-minute conflicts diminishes. Italian respondents further stressed the importance of giving fishers and small-scale tourism operators a seat at the decision-making table, letting them propose feasible solutions, such as minimal anchoring footprints or mooring line layouts that preserve key routes. Another essential element is a **transparent and ongoing monitoring process**. Many communities remain uncertain about how turbines might influence fish populations or seabird migration. Publishing periodic data from independent marine biologists—highlighting any changes in fish stock composition or water quality—empowers local residents to judge the project's impact for themselves. Should any unintended harm surface, the adoption of a robust mitigation plan, which is co-created with local experts, would foster trust. Ultimately, Italy's approach to conflict resolution acknowledges the country's rich coastal traditions and the desire to remain a world-class tourist destination, meaning acceptance flourishes where communities see tangible benefits, minimal aesthetic intrusion, and genuine seats at the negotiating table.

Spain

Risk mitigation strategies	Very important	Important	Somewhat important	Not important
Including socioeconomic criteria to award projects as a strategy to increase project integration (from a socioeconomic and environmental point of view) in their surroundings.	33%	54%	13%	0%
Criteria on FOWT farm design that reduce its impact (buried onshore evacuation line, buried offshore evacuation line, distance from shore, etc.)	39%	38%	22%	1%
Apprenticeship and Scholarship programmes: training programs, financial contributions to education, or educational programs for local schools to learn about climate change, sustainability and renewable energy.	31%	39%	23%	7%
Direct investment and project Funds to support local communities in the surrounding areas to the FOWT farm (Contribution to charitable causes, supporting energy transition and local business, supporting women empowerment programmes, infrastructure improvements, support local tourism activities)	30%	56%	11%	3%
Electricity discounts in the surrounding areas to the FOWT farm and increase in internet speed.	39%	33%	25%	3%
Engagement of local communities in the equity of the FOWT farm (community ownership) through solutions such as crowdfunding, raising capital from local SME entrepreneurs, etc.	28%	40%	28%	4%
Affected sectors, such as fishermen, provide services during the development, execution, and O&M stages, as well as the tourism sector, with visitor centres, boat trips, information boards, etc.	40%	35%	24%	1%
Community engagement activities. A website explaining the projects, meetings, and events explaining the project	17%	57%	23%	3%
Informing and involving the local community from the outset of a floating wind turbine project, making them aware of both the advantages and disadvantages	31%	53%	13%	3%

Table 14 Spain - Importance of the listed strategies in reducing social conflicts around the deployment of FOWT

Conflict mitigation in Spain pivots on **multi-stakeholder collaboration, public data availability, and alignment with national decarbonisation aims.** Many participants recommended creating official councils that bring together fishers, tourism representatives, local government, port authorities, and developers. Holding regular meetings—both in-person and online—keeps lines of communication open so that emerging concerns (e.g., potential collisions, gear entanglements, or tourism impacts) can be addressed collectively. This approach also spreads information about the project's timeline, technical details, and environmental assessments, reducing the "surprise factor" that often triggers public backlash. A second cornerstone is **accessible, transparent data** on ecological monitoring and socioeconomic effects. Spanish coastal communities heavily prize their marine ecosystems, so robust environmental assessments—ideally conducted by independent scientific bodies—are imperative. Publishing real-time or quarterly reports fosters credibility. Additionally, demonstrating that floating wind turbines could have minimal or even positive effects on local fish populations—such as artificial reef benefits or regulated mooring footprints—helps dispel the fear that the technology is intrinsically harmful. Another strategy centers on linking FOWT to Spain's broader decarbonisation narrative. If local communities understand how these turbines advance national climate targets and potentially bring manufacturing, maintenance, or logistic hubs to their region, their stance softens. Over 25% of Spanish respondents noted that pairing large-scale floating wind with port upgrades or new maritime research facilities promotes synergy with the local economy, building local pride and acceptance. Ultimately, the key to conflict resolution is ensuring that Spain's complex tapestry of regional authorities, fishing cooperatives, and tourism associations all feel heard, see tangible benefits, and remain integrated in decisions from start to finish.

Portugal

Risk mitigation strategies	Very important	Important	Somewhat important	Not important
Including socioeconomic criteria to award projects as a strategy to increase project integration (from a socioeconomic and environmental point of view) in their surroundings.	27%	58%	14%	1%
Criteria on FOWT farm design that reduce its impact (buried onshore evacuation line, buried offshore evacuation line, distance from shore, etc.)	42%	45%	12%	1%
Apprenticeship and Scholarship programmes: training programs, financial contributions to education, or educational programs for local schools to learn about climate change, sustainability and renewable energy.	40%	44%	16%	0%
Direct investment and project Funds to support local communities in the surrounding areas to the FOWT farm (Contribution to charitable causes, supporting energy transition and local business, supporting women empowerment programmes, infrastructure improvements, support local tourism activities)	42%	43%	13%	2%
Electricity discounts in the surrounding areas to the FOWT farm and increase in internet speed.	48%	35%	17%	0%
Engagement of local communities in the equity of the FOWT farm (community ownership) through solutions such as crowdfunding, raising capital from local SME entrepreneurs, etc.	28%	52%	15%	5%
Affected sectors, such as fishermen, provide services during the development, execution, and O&M stages, as well as the tourism sector, with visitor centres, boat trips,	41%	42%	14%	3%

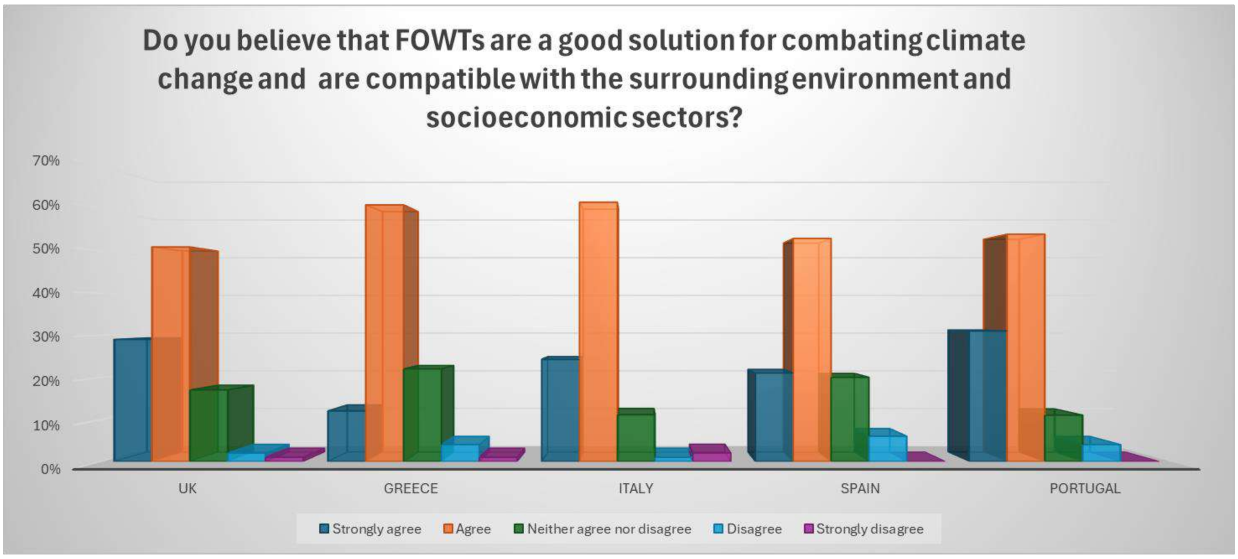
information boards, etc.				
Community engagement activities. A website explaining the projects, meetings, and events explaining the project	25%	42%	29%	4%
Informing and involving the local community from the outset of a floating wind turbine project, making them aware of both the advantages and disadvantages	43%	40%	15%	2%

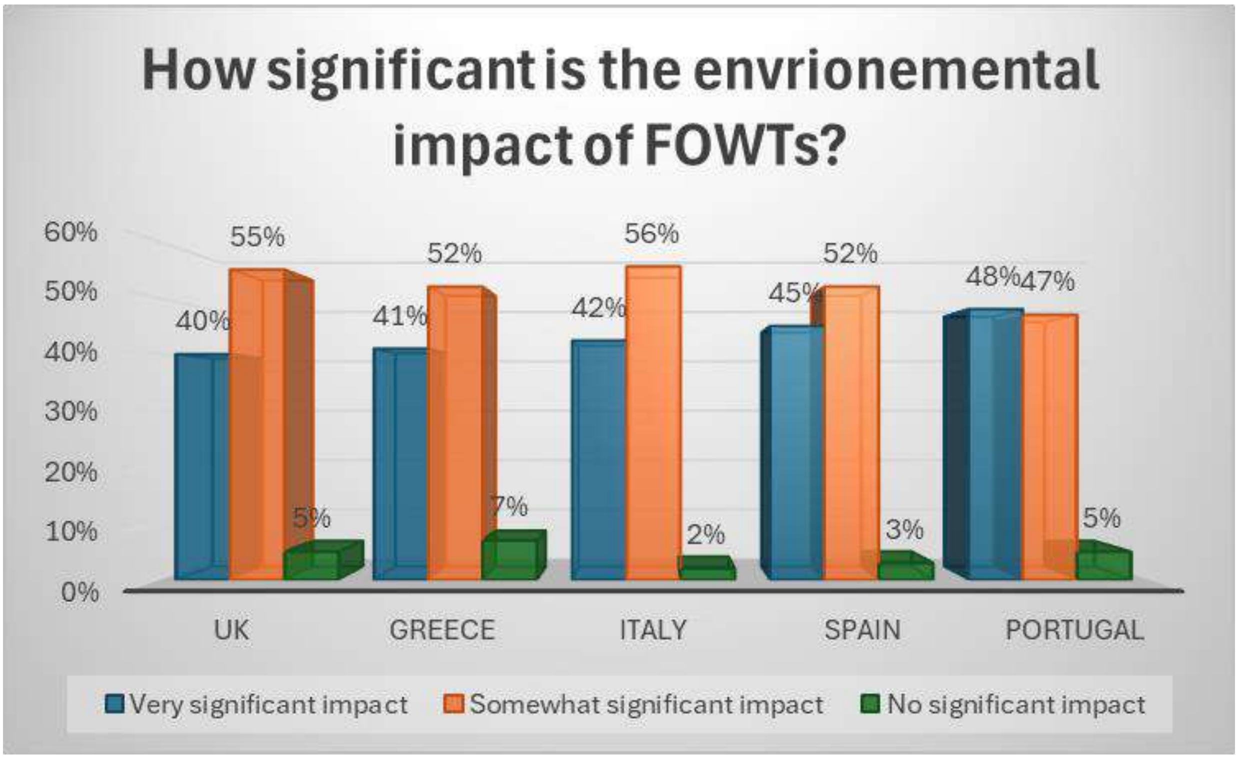
Table 15 Portugal - Importance of the listed strategies in reducing social conflicts around the deployment of FOWT

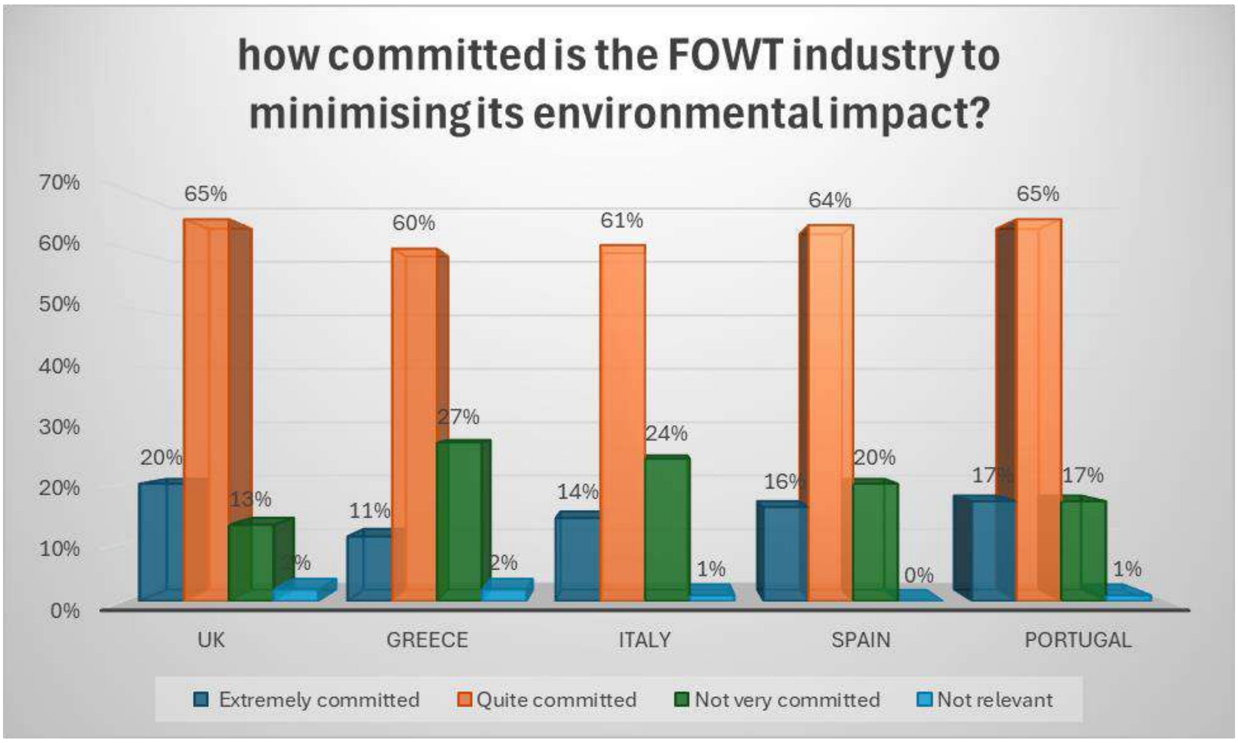
Conflict resolution in Portugal centers on a few strategic pillars: **coordinated stakeholder engagement, open-access data, and region-specific outreach.** For instance, one recommended approach is the creation of a "one-stop" consultation body that convenes local government, fisheries associations, tourism representatives, developers, and relevant NGOs. Meeting routinely—even quarterly—allows all parties address new or ongoing concerns, from navigational routes to potential marine ecosystem impacts. Such a body fosters a sense of shared responsibility for floating wind farms' success rather than the developer or government operating in isolation. **Open-access data**—particularly environmental monitoring related to fish stocks, benthic habitats, and avian populations—also diminishes misunderstandings. When real-time or periodic updates are available on official portals, speculation is replaced by evidence-based assessments. If issues are detected, a prearranged remediation path can be activated, reinforcing the idea that local interests are safeguarded. Notably, several participants endorsed the involvement of Portuguese universities or research institutes, whose neutral scientific stance can bolster public trust in findings. Finally, **region-specific engagement** acknowledges that Portugal's mainland and archipelagos (the Azores and Madeira) have unique cultural, economic, and environmental conditions. Customising outreach to each setting—respecting traditional maritime uses, factoring in local language preferences, or even adjusting the timing of consultations to align with fishermen's calendars—demonstrates genuine responsiveness. These tailored solutions consider the different perspectives of local communities, who are not overshadowed by top-down mandates. Ultimately, the shared takeaway is that robust local collaboration, transparent science, and flexible consultation frameworks prevent conflict from escalating, smoothing the path for floating offshore wind's expansion in Portugal's deep waters.

4. ENVIRONMENTAL IMPACT

4.1 Perceived Risks vs. Benefits







United Kingdom: According to the MARINEWIND survey, UK respondents showed a predominantly positive outlook toward floating offshore wind turbines (FOWTs) in relation to environmental protection and climate mitigation. **80%** of participants either agreed or strongly agreed that FOWTs are a good solution for addressing climate change and that they can be made compatible with surrounding ecosystems and socioeconomic activities. This support likely stems from the UK's long-standing experience with fixed-bottom offshore wind, which has helped to normalise offshore renewables as part of its broader decarbonisation strategy. Only a small minority—**3%**—disagreed or strongly disagreed, while **17%** remained neutral, suggesting room for continued awareness-raising. Despite general support for floating wind, respondents did not overlook environmental risks. When asked about the significance of FOWTs' environmental impacts, **55%** considered them "somewhat significant," and **40%** rated them as "very significant." This suggests a high level of environmental consciousness among stakeholders, who acknowledge that FOWT development could affect marine species, seabirds, seabed ecosystems, or underwater noise levels. Just **5%** of participants believed the environmental impact was negligible. This balance of enthusiasm and caution implies that, while stakeholders are supportive, they expect proper regulation, monitoring, and risk mitigation. Regarding industry behavior, **65%** believed the FOWT sector is "quite committed" to minimising its environmental footprint, and another **20%** considered it "extremely committed." Meanwhile, **13%** of the respondents were skeptical and rated the industry's commitment as low, with **2%** finding the question not relevant. These results indicate that most stakeholders perceive the industry as proactive in environmental stewardship, but a notable segment still sees room for stronger accountability, transparency, and action.

Greece: The MARINEWIND survey responses from Greece reveal a largely positive view of floating offshore wind turbines (FOWTs) due to their potential for climate action and environmental compatibility. A combined **73%** of respondents either **agreed (61%)** or **strongly agreed (12%)** that FOWTs are a good solution for tackling climate change and can coexist with marine ecosystems and

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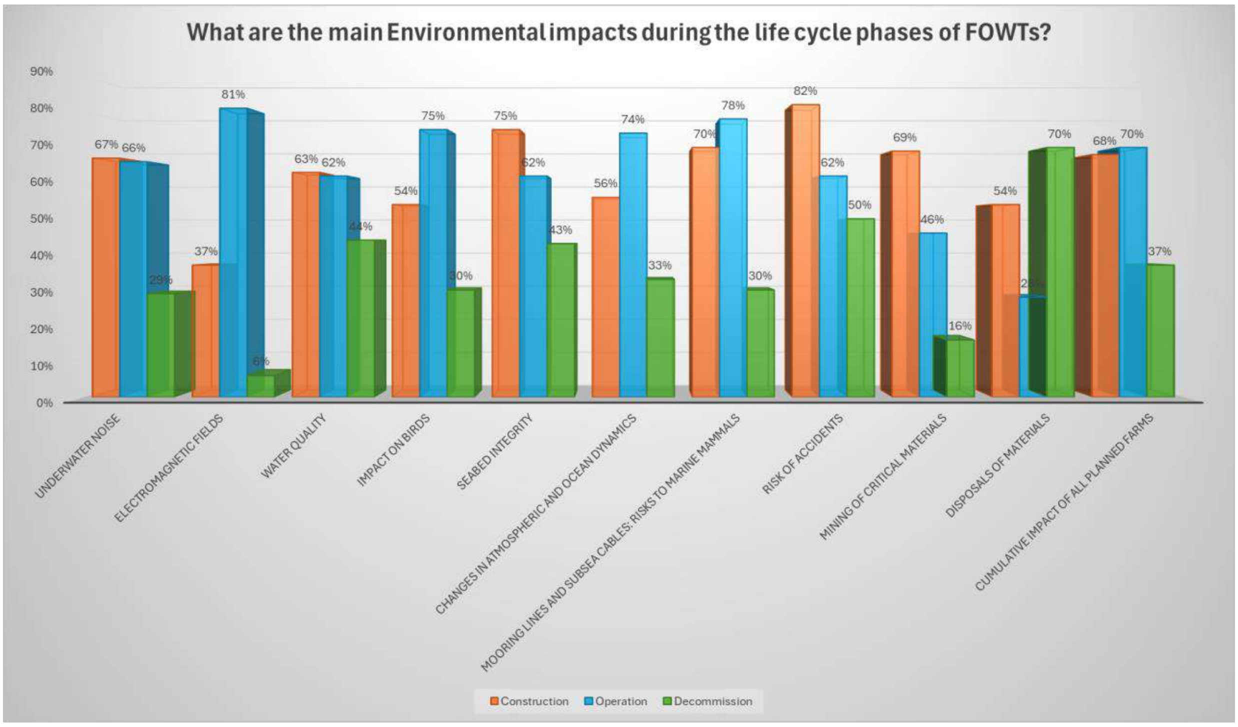
socioeconomic activities. **22%** of participants were neutral, and just **5%** disagreed or strongly disagreed. These figures indicate a high level of support among Greek stakeholders, though not as unanimous as in some other participating countries. When evaluating the **environmental significance of FOWTs**, a majority of **93%** recognised that there are notable impacts to consider. Specifically, **41%** described the environmental impacts as “very significant,” while **52%** chose “somewhat significant.” Only **7%** believed that FOWTs had no significant environmental impact. These responses suggest that Greek stakeholders perceive real environmental risks and expect them to be seriously addressed, especially given Greece’s extensive coastline, rich marine biodiversity, and reliance on tourism and fishing. On the question about **industry commitment**, **60%** of Greek respondents believed that the FOWT industry is “quite committed” to minimising its environmental footprint, while only **11%** described it as “extremely committed.” A notable **27%** believed the industry is “not very committed,” and **2%** said it was not relevant. These views reflect a generally positive outlook tempered by some skepticism and a demand for stronger accountability in how industry players manage environmental responsibilities in Greek waters.

Italy: Italian respondents tended to see floating offshore wind as a potentially lower-impact alternative compared to many conventional energy projects, particularly because Italy’s deeper waters can accommodate floating foundations with less nearshore intrusion. However, an underlying tension emerged around whether these deeper deployments might endanger highly biodiverse areas in the central or southern Mediterranean. Around 30% of respondents emphasised that the region hosts numerous marine protected areas and migration corridors for large marine mammals such as fin whales. As a result, some stakeholders fear that poorly placed FOWT farms could create collision risks for cetaceans, disturb benthic seamount ecosystems, or disrupt upwelling zones crucial for fish stock. Nevertheless, more than half of participants signaled a belief that, if sited with scientific rigor, FOWT could yield notable environmental benefits. First, the technology might displace more polluting, land-hungry power plants, contributing to Italy’s decarbonisation goals without taking up farmland or overshadowing iconic coastal views. Second, well-designed mooring systems could, in principle, spur artificial reef creation, giving a lifeline to declining fish stocks. Several respondents from maritime-focused NGOs suggested that no-fishing buffer zones around turbines may even boost local fisheries in the long run, following agreements with the representatives of the fishing sector. Meanwhile, about 20% of the respondents expressed interest for the potential synergies between floating turbines and other marine industries, such as aquaculture, if environmental guardrails are put in place. Opponents, however, worry about “industrialising” pristine seascapes, especially near tourist-heavy coastlines such as in Sardinia or Sicily. These detractors often questioned whether mooring lines or cable-laying could degrade seafloor habitats that have not yet been comprehensively mapped. Ultimately, Italy’s perceived environmental risks and benefits revolve around a delicate balance: harnessing strong offshore winds to address the climate crisis while preserving, or even enhancing, the marine ecosystems that underpin critical industries such as fishing and tourism.

Spain: Spain’s respondents widely agreed that floating offshore wind could bolster the country’s renewable energy mix and contribute meaningfully to climate commitments. This perspective was particularly strong in regions such as the Atlantic coast and the Cantabrian Sea, where deeper waters provide a suitable environment for floating platforms. However, about 25% of the survey participants emphasised that each coastal region has distinct ecological considerations—Galicia’s fishing-rich waters differ markedly from the Balearic Islands' tourism ecosystems, for example. As such, the perceived balance of risks and benefits can vary significantly from one autonomous community and region to another. On the positive side, nearly two-thirds of participants underlined the potential of FOWT to reduce nearshore conflicts seen with conventional offshore turbines. By shifting turbines farther offshore, scenic coastlines and nearshore habitats may face fewer disruptions, preserving critical breeding grounds for species such as sea bass or sardines. Moreover, developers and environmentalists alike praised the idea that carefully placed mooring lines might create artificial reefs for fish or shellfish, thus boosting biodiversity and potentially rejuvenating certain depleted fishing grounds. Some local NGOs also welcomed the possibility that floating platforms could deter illegal trawling in designated "no-take" areas. Nevertheless, many respondents (especially around 20–30%) pointed out that Spain's lack of large-scale floating wind farms to date means actual ecological outcomes remain somewhat speculative. Their concern centers on potential negative effects of anchor lines on the benthos, as well as collisions or disorientation for marine mammals navigating busy shipping corridors. Others cautioned that bird migration patterns—especially around the Strait of Gibraltar—could be affected if floating turbines cluster in sensitive flight paths. Thus, while the broad sentiment in Spain leans optimistic about net environmental gains, there is a noted need for further pilot projects and scientific monitoring to demonstrate tangible benefits and minimise potential harm.

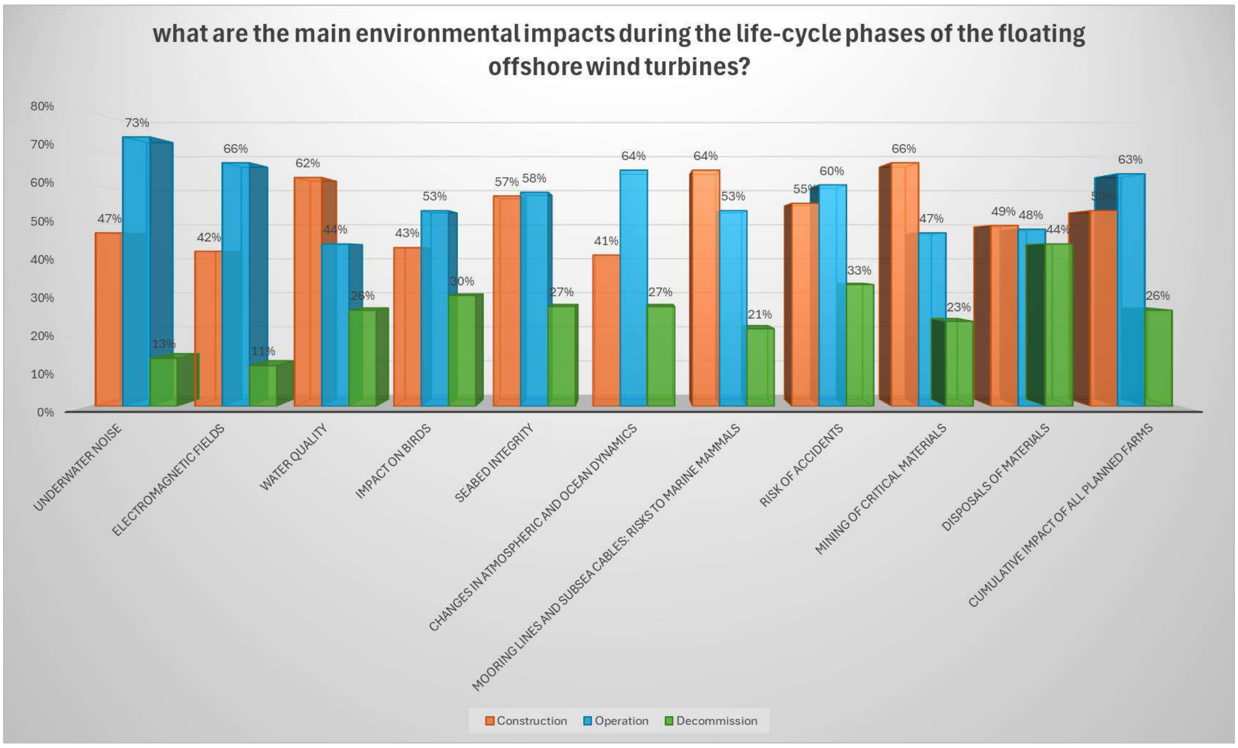
Portugal: Respondents from Portugal expressed strong confidence in the environmental compatibility of floating offshore wind turbines (FOWTs) with national climate goals and marine sustainability. A combined **85%** either **agreed (54%)** or **strongly agreed (31%)** that FOWTs are a good solution for tackling climate change and could be implemented without undermining environmental and socioeconomic systems. **11%** of respondents were neutral, and only **4%** disagreed, indicating high public and stakeholder alignment around the climate benefits of floating wind in Portugal. When asked about the **environmental impact of FOWTs**, **48%** considered the impacts to be "very significant," and another **47%** assessed them as "somewhat significant." This near-total consensus (**95%**) indicates widespread awareness that, while FOWTs offer important climate solutions, they also carry ecological risks that must be mitigated. Only **5%** believed the environmental impact is negligible. In terms of **industry commitment**, **65%** of respondents said that the FOWT industry is "quite committed" to minimising its environmental footprint. Meanwhile, **17%** rated the industry as "extremely committed," and another **17%** expressed skepticism, selecting "not very committed", while only **1%** felt the question was not relevant. These findings suggest that, while the majority of the respondents views the sector as environmentally responsible, there is still room for enhanced transparency and demonstration of real-world ecological safeguards in Portuguese waters.

4.2 Environmental impacts during the lifecycle phases of FOWTS

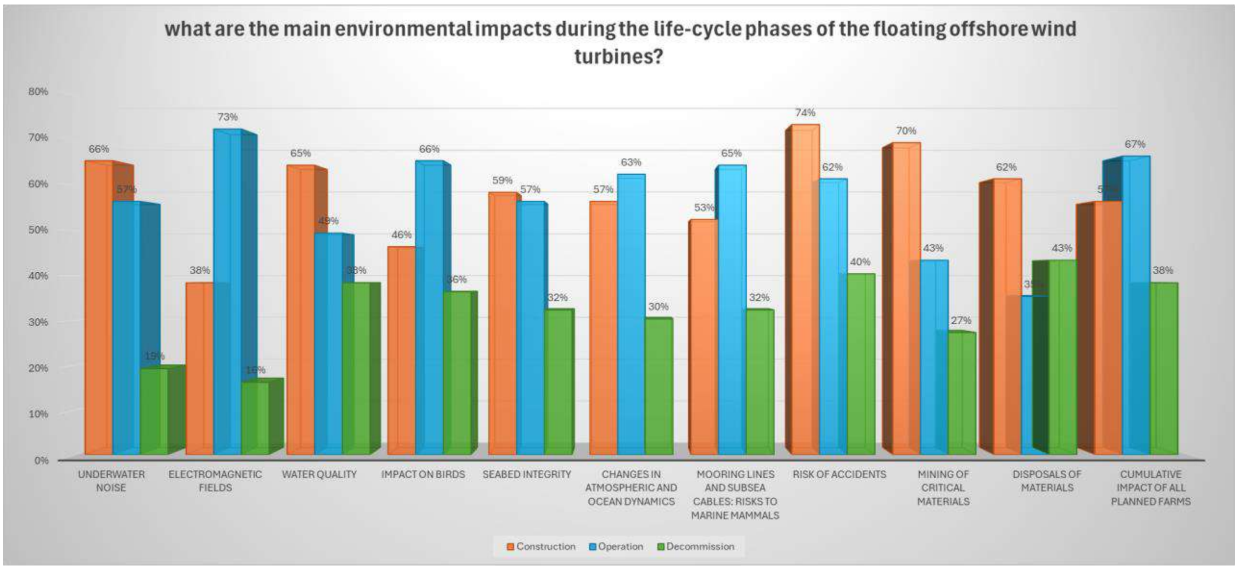


United Kingdom: The survey reveals that perceived environmental risks vary markedly across a floating offshore wind-farm's life-cycle. During the construction phase, respondents focused mainly on acute, site-specific disturbances: the *risk of accidents* tops the list at 82%, followed closely by *seabed integrity* (75%), *mooring-line and subsea-cable hazards to marine mammals* (70%), *underwater noise* (67%), and *mining of critical materials* for turbine components (69%). These high scores underscore worries about heavy-lift vessels, pile-driving, cable-laying, and raw-material extraction at the project outset. In the operational phase, concern shifts toward chronic or persistent stressors. *Electromagnetic fields* generated by export cables surge to 81%, while *mooring-line / cable risks to marine mammals* (78%), *impacts on birds* (75%), and *changes in atmospheric and ocean dynamics* (74%) registered as major issues. Underwater noise remains elevated (66%), suggesting that turbine blade rotation and maintenance traffic are still viewed as disruptive. The consistently high score for the *cumulative impact of all planned farms* (70%) indicates apprehension about large-scale build-outs rather than isolated projects.

At the decommissioning stage, worries largely target waste and residual hazards: *disposal of materials* dominates at 70%, reflecting fears over how steel, composites, and subsea hardware will be recovered or recycled. *Risk of accidents* (50%) and *water-quality degradation* (44%) remain salient, linked to heavy vessel activity and seabed disturbance during removal. By contrast, electromagnetic fields (6%) and underwater noise (29%) drop sharply once turbines stop operating, signalling confidence that some impacts end with power production. Overall, the pattern suggests UK stakeholders see construction as the phase with the greatest immediate physical disturbance, the operation stage as the period of ongoing interaction with the ecological ecosystem and decommissioning as a waste-management challenge. Therefore, effective mitigation requires phase-specific strategies: stringent safety and seabed-protection protocols during installation, continuous wildlife monitoring and cable-shielding in operation, and robust recycling and removal plans at end of life to maintain public confidence in floating offshore wind.



Greece: For Greek stakeholders, environmental worries evolve noticeably over a floating offshore wind farm's life-cycle. During construction, concerns cluster around direct physical disturbance and resource extraction: *mining of critical materials* (66%), *mooring lines and subsea cables posing risks to marine mammals* (64%), and *water-quality degradation* (62%) headline the list, while *seabed integrity* (57%) and *risk of accidents* (55%) also rank high. These scores reflect apprehension about heavy vessel traffic, piling, and the sourcing of raw materials. Once the turbines are operating, the focus shifts to persistent, technology-specific stressors. *Underwater noise* surges to 73% emerging as the top operational concern, followed by *electromagnetic fields* from export cables (66%) and *changes in atmospheric and ocean dynamics* (64%). Broad-scale issues—such as the *cumulative impact of all planned farms* (63%)—and collision risks to wildlife (*impact on birds*, 53%) further underscore anxieties about the long-term ecological footprint of multiple installations. At the decommissioning phase, attention turns to waste management and residual hazards. *Disposal of materials* dominates at 44%, signalling worries about how turbine blades, cables, and anchors will be removed or recycled. Although acute noise and electromagnetic fields (EMF) concerns drop sharply (13% and 11%, respectively), *risk of accidents* (33%) and *seabed integrity* (27%) remain notable, highlighting the need for safe extraction and seabed restoration. In sum, Greeks see construction as the stage of physical disturbance, operation as the period of chronic acoustic and electromagnetic emissions and decommissioning as a waste-handling challenge. Addressing these phase-specific concerns—through rigorous resource sourcing standards and marine-mammal safeguards during installation, continuous noise/EMF and wildlife monitoring in operation, and robust recycling plans at end-of-life—will be pivotal for securing public confidence in floating offshore wind.



Italy: Italian stakeholders assign different environmental priorities to each life-cycle phase of a floating offshore wind farm. During construction, the greatest apprehension centres on acute, “heavy-works” disturbances: *risk of accidents* leads at 73.7%, followed closely by *underwater noise* (65.7%), *water-quality deterioration* (64.7%), and *mining of critical materials* required for turbine manufacture (69.7%). Concerns about *seabed integrity* (58.6%) and *changes in atmospheric or ocean dynamics* (56.6%) round out a picture of anxiety over large vessels, piling, dredging, and raw-material extraction. Once turbines are operating, attention pivots to chronic, technology-specific stressors. *Electromagnetic fields* (EMF) produced by export cables rose to 72.7%, becoming the top operational worry. Wildlife interactions also stand out: *impacts on birds* reach 65.7%, and *risks to marine mammals from mooring lines and subsea cables* sit just behind at 64.7%. Broader system effects—*cumulative impacts of all planned farms* (66.7%) and *changes in atmospheric and ocean dynamics* (62.6%)—reinforce apprehension about scaling up multiple projects along Italy’s coast. Underwater noise remains substantial (56.6%), signifying that turbine rotation and maintenance traffic are still viewed as disruptive. At decommissioning, worries shift toward waste and lingering hazards. *Disposal of materials* becomes the dominant issue at 43.4%, reflecting questions about how blades, cables, and anchors will be recovered or recycled. *The risk of accidents* remains elevated (40.4%), while *water-quality impacts* (38.4%) and *cumulative effects* (38.4%) underscore concerns about seabed disturbance and potential contamination during removal. Although EMF (16.2%) and underwater noise (19.2%) fall sharply once power generation ceases, stakeholders still expect rigorous end-of-life management for seabed and waste. Overall, Italian respondents see construction as a phase of physical disturbance and material sourcing, operation as a period of continuous EMF, noise, and wildlife interaction, and decommissioning as a waste-management and safety challenge. Addressing these phase-specific concerns—through strict accident-prevention and spill-control plans during installation, robust EMF shielding and biodiversity monitoring in operation, and comprehensive recycling and seabed-restoration protocols at end-of-life—will be essential for strengthening public confidence in floating offshore wind development along Italy’s shores.

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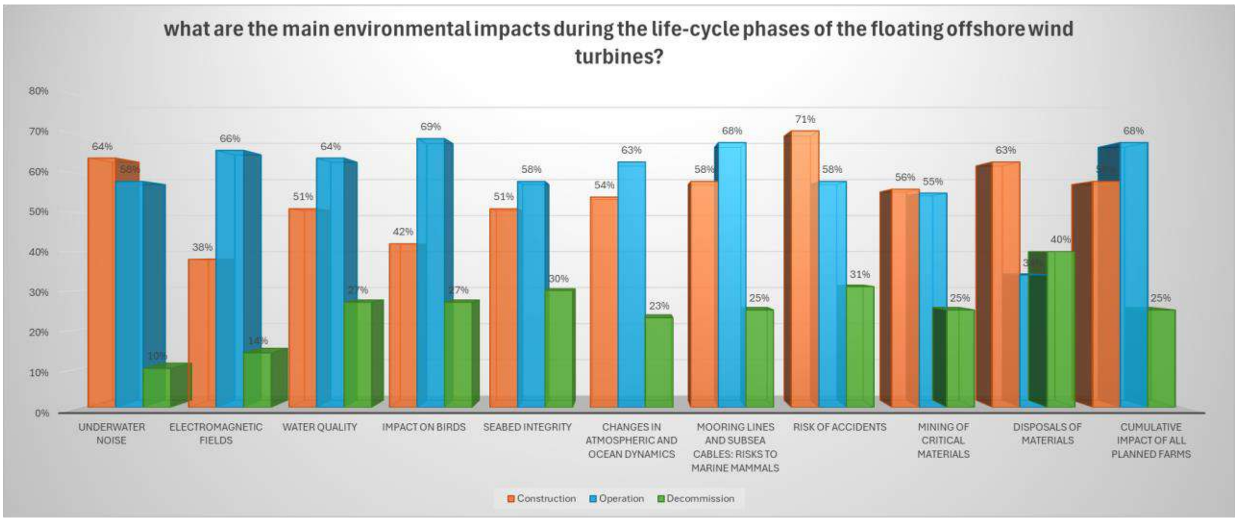

Spain: For Spanish stakeholders, the salience of environmental issues shifts noticeably over a floating offshore wind farm's life-cycle. During construction, respondents concentrate on short-term, high-intensity disturbances: *risk of accidents* is the leading worry at 71%, followed by *underwater noise* from pile-driving and vessel traffic (64%) and *disposal of construction materials* (63%). Concerns about *mooring-line and cable hazards to marine mammals* (58%), *cumulative impacts of multiple farms* (58%), and *seabed integrity* (51%) point to fears over direct physical disruption of coastal ecosystems. Once turbines are operating, attention pivots to persistent emissions and wildlife interactions. *Electromagnetic fields* (EMF) generated by export cables jump to the top at 66%, while *impacts on birds* reach 69%, followed by risks *to marine mammals* (68%). Broader system effects— such as *cumulative impacts* (68%) and *changes in atmospheric and ocean dynamics* (63%)—underscore apprehension about the long-term footprint of an expanding fleet of floating farms. Water-quality issues rise to 64%, reflecting concerns about accidental leaks or antifouling maintenance practices. Interestingly, underwater noise remains high (58%), indicating that blade rotation and service-vessel traffic are still perceived as disruptive even after the end of the construction phase. At decommissioning, worries concentrate on end-of-life waste and lingering seafloor disturbance. *Disposal of materials* becomes the foremost issue at 40%, far exceeding EMF (14%) or underwater noise (10%) once power production stops. *Risk of accidents* (31%), *seabed integrity* (30%), and dual wildlife metrics—birds and marine mammals (both 27%–25%)—remain notable, signalling expectations for safe dismantling, seabed restoration, and continued biodiversity safeguards. In essence, Spanish respondents view construction as the phase of heavy-works disruption, operation as the period of continuous EMF, noise and wildlife interaction, and decommissioning as a waste-management and safety challenge. Developers can bolster public confidence by aligning mitigation with these phase-specific priorities: stringent safety protocols and noise abatement during installation, robust EMF shielding and wildlife monitoring in the operation phase, and comprehensive recycling and seabed-restoration plans for end-of-life removal.

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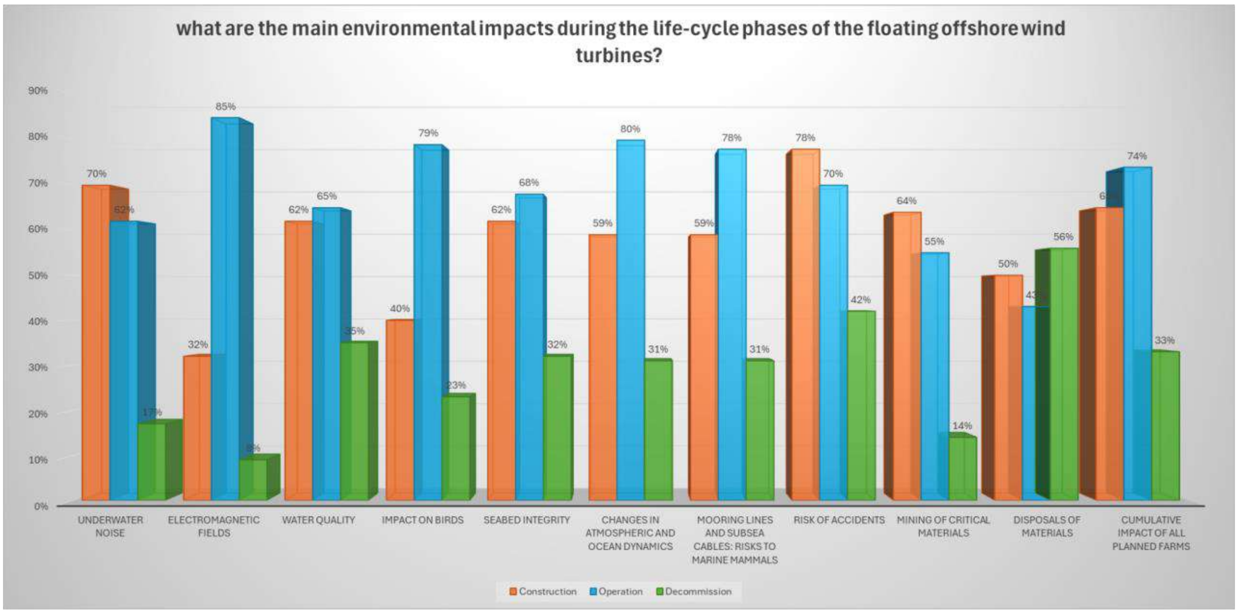

Portugal: Portuguese respondents assign distinct environmental priorities to each phase of a floating offshore wind farm's life-cycle. During construction, the overriding concern is safety: *risk of accidents* ranks highest at 78%, followed by acute disturbance factors such as *underwater noise* (70%), *cumulative impacts of multiple farms* (65%), and heavy-works pressures on *seabed integrity* and *water quality* (both 62%). Extraction-related issues— such as *mining of critical materials* (64%)—and ecosystem-wide changes – such as *atmospheric and ocean dynamics* (59%) - round out a picture of anxiety over vessel traffic, pile-driving, and raw-material sourcing. During the operation phase, attention pivots to chronic emissions and wildlife interaction. *Electromagnetic fields* (EMF) generated by export cables surge to 85%, becoming the top operational worry. Ecological interactions follow closely: *impacts on birds* (79%), *changes in atmospheric and ocean dynamics* (80%), and *risks to marine mammals from mooring lines and cables* (78%) all increase, while *cumulative impacts* of an expanding fleet (74%) underscore apprehension about large-scale deployment. Although underwater noise drops from its construction peak, it remains notable (62%) alongside a steady 70% concern for accidents during routine maintenance. At decommissioning, worries shift decisively toward waste and residual hazards. *Disposal of materials* dominates at 56%, reflecting questions about how blades, cables, and anchors will be removed or recycled. *Risk of accidents* (42%) and water-quality degradation (35%) remain relevant aspects, while concerns over EMF (9%) and underwater noise (17%) diminish sharply once power generation ceases. Nevertheless, respondents remain attuned to *seabed restoration* (32%) and broader system effects: *cumulative impacts* (33%) and *atmospheric/oceanic changes* (31%). In summary, Portuguese stakeholders view construction as a phase of high accident risk and physical seabed disturbance, operation as a period dominated by EMF emissions and wildlife interactions and decommissioning as a waste-management and safety challenge. Mitigation strategies tailored to these phase-specific concerns—comprehensive safety and noise abatement during installation, robust EMF shielding and biodiversity monitoring in operation, and rigorous recycling and seabed-restoration protocols at end-of-life—will be crucial for sustaining public acceptance in floating offshore wind along Portugal's coast.

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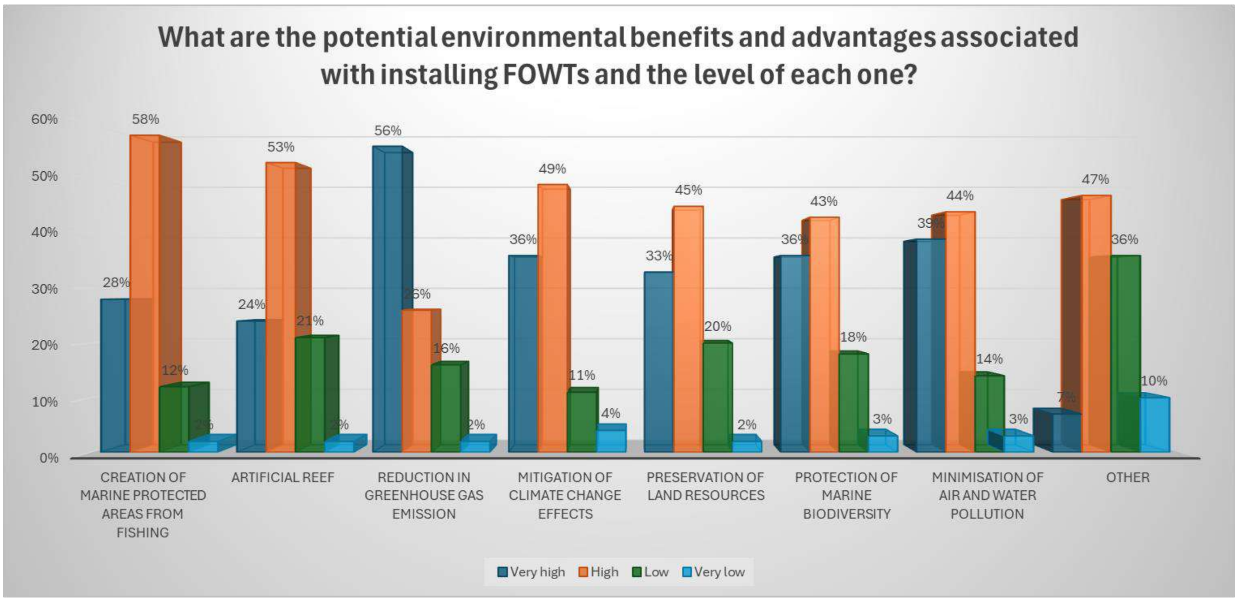
4.3 Environmental Enablers



United Kingdom: Survey results show that British stakeholders overwhelmingly attribute strong environmental upside to floating offshore wind technology (FOWT). **Climate-related gains register highest:** more than half of respondents (56%) rate the *reduction of greenhouse-gas emissions* as "Very high," and another 26% regard it as "High," signalling near-universal confidence that FOWTs advance the UK's decarbonisation agenda. A similar pattern appears for *minimising air and water pollution* (83% "Very high" or "High") and *mitigating broader climate-change effects* (85%). **Biodiversity and habitat benefit also score well.** Roughly three-quarters of participants see a *creation of de-facto marine protected areas*—through exclusion of trawling or other disruptive fishing—as either "Very high" (28%) or "High" (58%). The concept of turbines acting as *artificial reefs* garners a solid majority of positive ratings (77% combined), though enthusiasm is slightly more muted, with one in five regarding this benefit as "Low." *Protection of marine biodiversity* posts a comparable profile, with 79% placing it in the upper importance tiers. **Resource-use advantages are recognised, even if less emphatically.** Two-thirds of respondents (78%) believe that FOWTs aid the *preservation of land resources* by shifting energy infrastructure offshore, yet a notable 20% classify that gain as only "Low," suggesting some uncertainty about the scale of on-shore land savings. Finally, the catch-all "Other" category attracts the widest spread of opinions: while nearly half of the participants see unspecified additional benefits as "High," more than a third labels them "Low," implying that respondents need clearer information to judge ancillary advantages. Taken together, the data indicate that **carbon-reduction, pollution abatement, and broad climate-mitigation benefits are the most compelling arguments for FOWT deployment in the UK,** while habitat creation, biodiversity protection, and land-resource preservation provide important—though slightly secondary—supporting narratives. Communicating these high-confidence benefits, alongside rigorous evidence for reef and protected-area effects, is therefore likely to resonate most with UK stakeholders.

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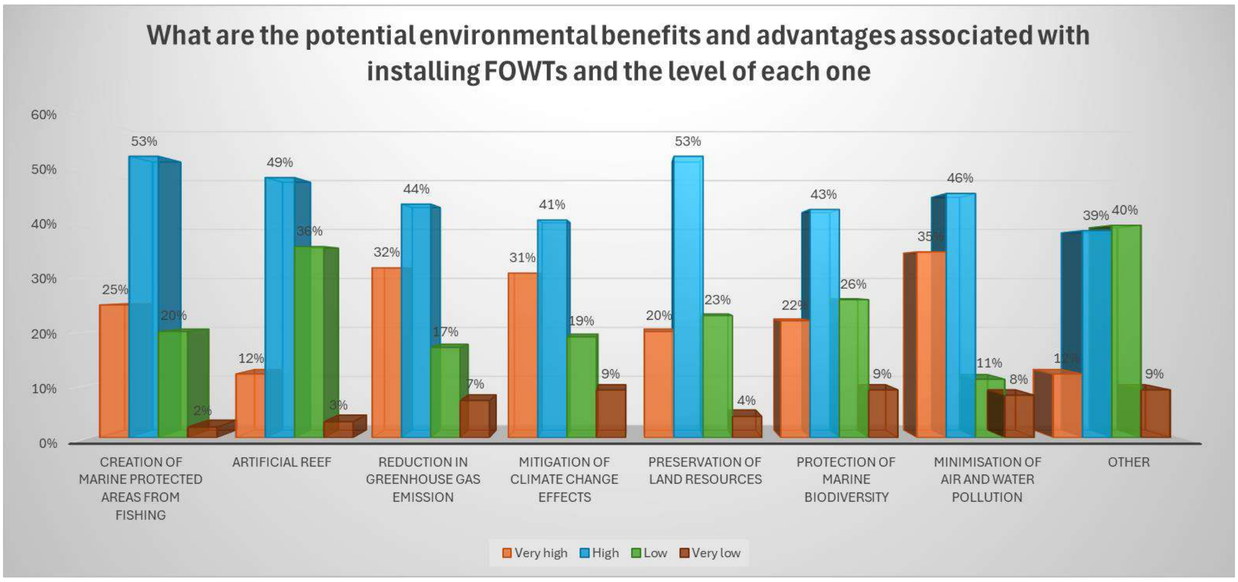
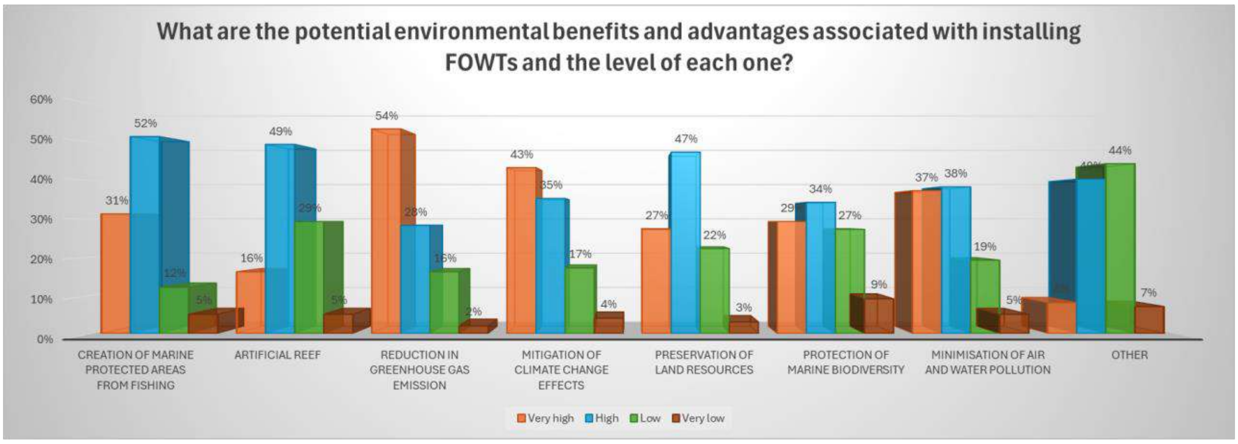


Greece: Greek respondents regard floating offshore wind technology (FOWT) as offering meaningful, though somewhat varied, environmental upsides. **Pollution- and climate-related benefits are most convincing:** more than four in five participants rate *minimising air and water pollution* as either "Very high" (35%) or "High" (46%), while three-quarters view the *reduction of greenhouse-gas emissions* in the upper two tiers (32% as "Very high," 44% as "High"). A similar, albeit slightly softer, pattern appears for *mitigating broader climate-change effects* (72% "Very high" or "High"). **Habitat-creation and resource-preservation narratives draw moderate support.** Roughly the same share of respondents (78%) see the *creation of de-facto marine protected areas* from fishing exclusion and the *preservation of land resources* by shifting generation offshore as "Very high" or "High," yet one-fifth still rate each as only "Low." The notion of turbines acting as *artificial reefs* elicits more mixed reactions: while 61% place this benefit in the upper importance ranges, over a third (36%) are skeptical, signalling a need for clearer ecological evidence. Views on *protection of marine biodiversity* mirror those for artificial reefs—65% in the top two tiers but a sizeable 26% in "Low"—suggesting cautious optimism that hinges on effective environmental management. Finally, the unspecified "Other" category shows the widest uncertainty: just over half of the respondents see additional benefits as "High" or "Very high," but 40% label them "Low," indicating limited awareness of further advantages. Overall, **Greek stakeholders are most persuaded by FOWT's capacity to cut emissions and pollution, while benefits tied to habitat creation and biodiversity protection are viewed positively but with notable reservations.** Emphasising robust scientific studies on artificial-reef formation and protected-area effects, alongside clear data on emission reductions, would likely strengthen public confidence in environmental values of FOWT in Greece.



Italy: Italian respondents view floating offshore wind technology (FOWT) primarily through a climate-mitigation lens. The most compelling advantage is clearly *greenhouse-gas reduction*: 54% of the respondents rate this benefit as “Very high” and another 28% as “High,” leaving only a small minority unconvinced. Closely behind, *mitigating wider climate-change effects* garners strong support (43% as “Very high,” 35% as “High”), while *minimising air and water pollution* registers a solid 75% in the top two tiers. Habitat-related advantages draw positive—but more tempered—responses. More than four in five participants (83%) believe that turbine exclusion zones can *create de-facto marine protected areas*, yet enthusiasm for turbines as *artificial reefs* is mixed: although 65% of the respondents place this benefit in the upper importance ranges, nearly a third (29%) is skeptical. A similar ambivalence appears for *protection of marine biodiversity* (63% “Very high” or “High,” but 36% “Low/Very low”), indicating that respondents are willing to receive clearer ecological evidence. Resource-use considerations receive moderate endorsement: about three-quarters (74%) feel FOWTs help *preserve land resources* by moving generation offshore, though roughly one in five rates that gain “Low.” Finally, the catch-all “Other” category shows the greatest uncertainty—over half of respondents assign it “Low” or “Very low”—suggesting limited awareness of additional, unspecified benefits. Overall, **Italian stakeholders are most persuaded by FOWT’s role in decarbonisation and pollution abatement, while habitat creation and biodiversity protection are viewed positively but with notable reservations**. Strengthening public confidence will likely require robust, site-specific data on reef formation and biodiversity outcomes, presented alongside the already compelling climate-related arguments.

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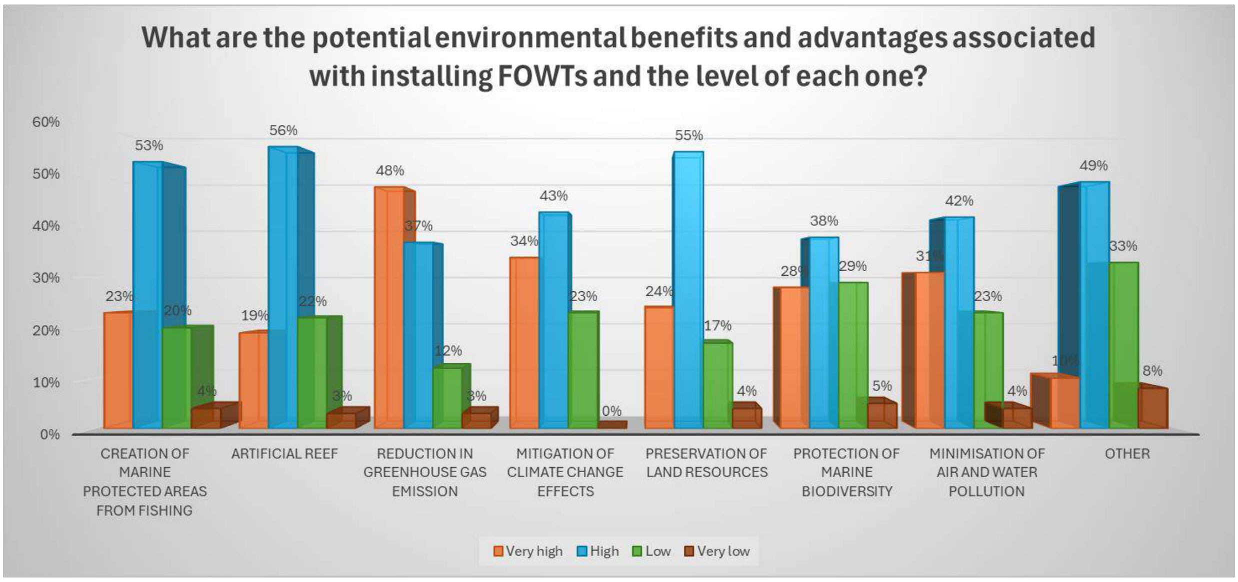
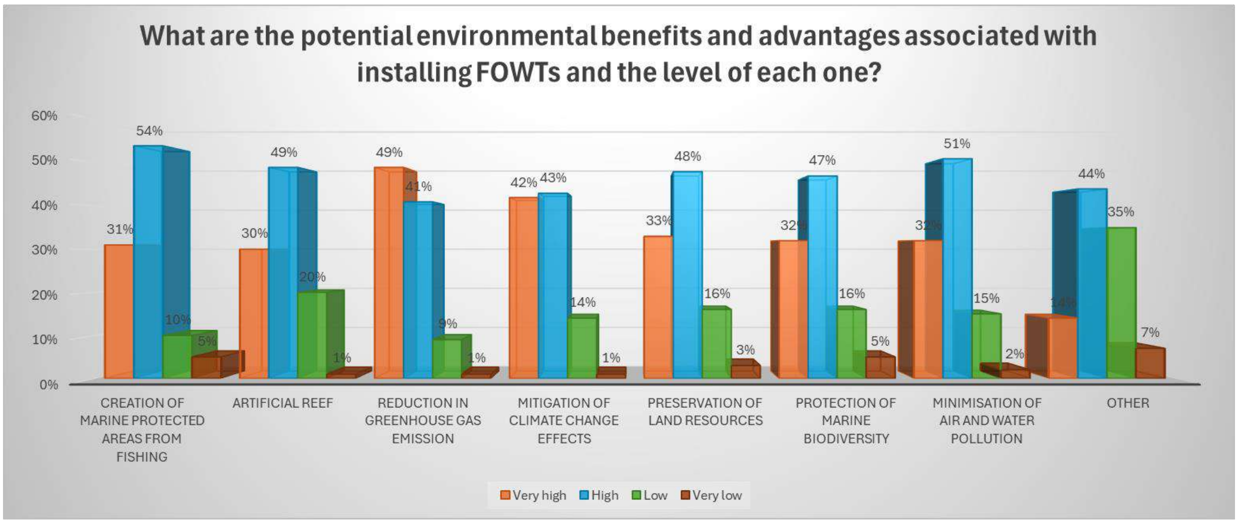


Spain: Spanish respondents see floating offshore wind technology (FOWT) as offering clear climate and pollution advantages, while expressing more nuanced views on habitat-related gains. The greatest consensus concerns *greenhouse-gas reduction*: 85% of participants classify this benefit as either "Very high" (48%) or "High" (37%). Closely linked, *mitigation of broader climate-change effects* draws a combined 77% in the top two tiers, and *minimisation of air and water pollution* reaches a comparable 73%. Perceptions of ecological and resource-use benefits are favourable but less emphatic. Roughly three-quarters believe FOWT exclusion zones can *create de-facto marine protected areas* (23% as "Very high," 53% as "High"), and a similar share endorse *artificial-reef formation* (75% "Very high" or"High"). Nevertheless, one in five respondents remain sceptical about both reef and protected-area outcomes. The idea that FOWTs help to *preserve land resources* by relocating generation offshore resonates with 79%, though 17% still view this advantage as "Low." When it comes to *protection of marine biodiversity*, opinion is more divided: while two-thirds express strong confidence, nearly a third (29%) rates the benefit as "Low," signalling a demand for concrete ecological evidence. The catch-all "Other" category records the widest uncertainty—over 40% of the respondents place unspecified benefits in the lower importance brackets—indicating limited awareness of additional advantages beyond those listed. Overall, **Spanish stakeholders are most persuaded by FOWT's role in decarbonisation and pollution abatement, whereas habitat-creation and biodiversity-protection narratives garner substantial but more conditional support**. Providing site-specific studies on reef formation, biodiversity impacts, and land-resource savings—alongside robust emissions data—will be vital for deepening public acceptance in the environmental benefits stemming from floating offshore wind in Spain.



Portugal: Portuguese stakeholders express broad confidence that floating offshore wind technology (FOWT) will deliver tangible environmental gains—especially in the areas of climate mitigation and pollution abatement. Nearly nine out of ten respondents rate *reduction of greenhouse-gas emissions* in the two highest tiers (49% as "Very high," 41% as "High"), and a similarly large share (85%) views *mitigating wider climate-change effects* as strongly beneficial. More than four-fifths (83%) also believe FOWTs will *minimise air and water pollution*, underscoring the technology's perceived contribution to cleaner coastal environments. Habitat-related benefits draw solid support as well. Roughly the same proportion of respondents—about 85%—see turbine exclusion zones creating de-facto *marine protected areas* (31% as "Very high," 54% as "High"), while the prospect of turbines acting as *artificial reefs* garners a combined 79% in the top two categories. Enthusiasm for *protection of marine biodiversity* mirrors these figures, with 79% of the respondents ranking it as "Very high" or "High" and only a small minority expressing strong doubts. Resource-use advantages are likewise recognised: more than four-fifths (81%) say FOWTs help *preserve land resources* by shifting power generation offshore. Although around one in six respondents registers some reservations, clear majorities view this as an important ancillary advantage. The only notable uncertainty appears in the catch-all "Other" category, where benefits not specified in the survey elicit the widest spread of opinions—just under half labels them as "High," while more than a third choose "Low," indicating a need for more information on additional, less obvious advantages. Overall, **Portuguese respondents consider FOWT a powerful tool for decarbonisation and pollution reduction, while also crediting it with meaningful habitat creation, biodiversity protection, and land-use savings**. Communicating concrete, site-specific evidence—particularly on artificial-reef development and protected-area outcomes—will reinforce these largely positive perceptions and help maintain strong public support for floating offshore wind along Portugal's coast.

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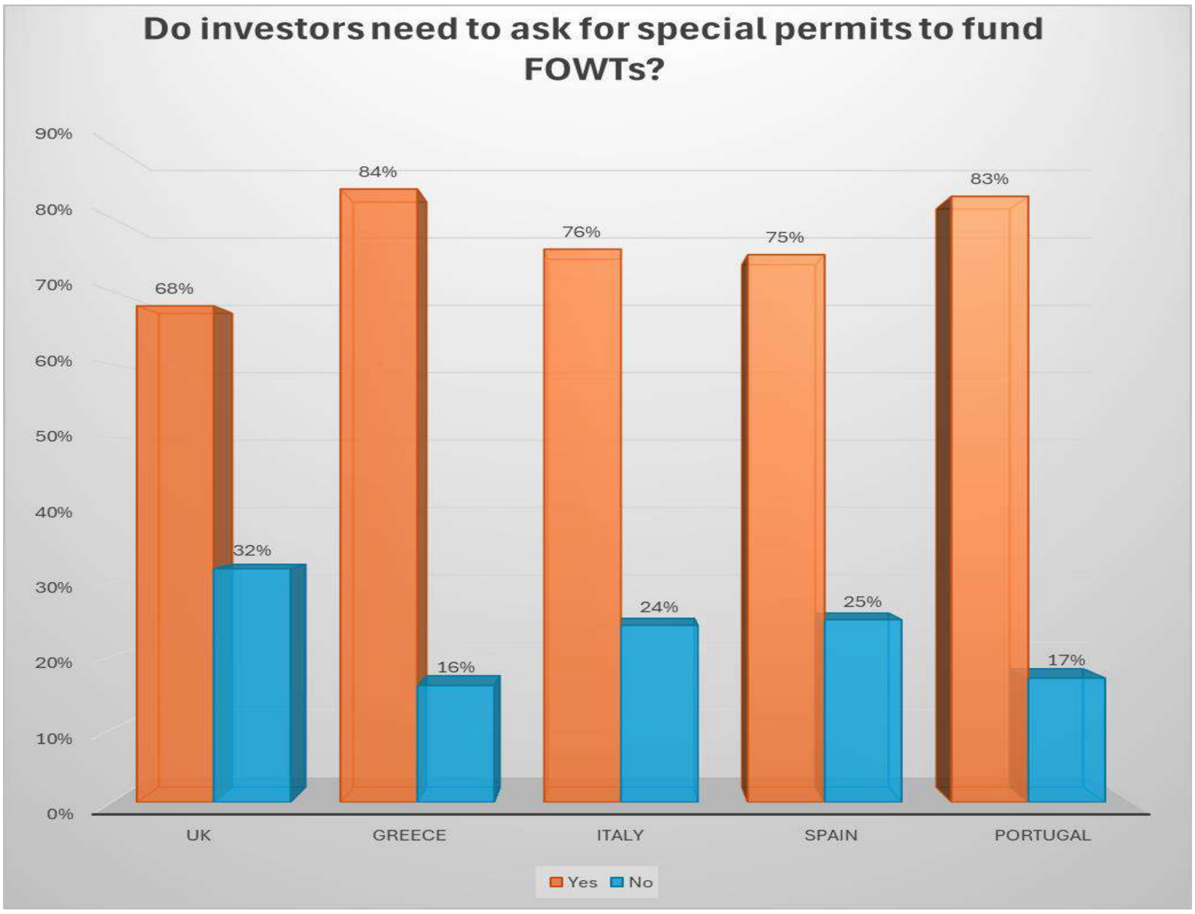
5. FINANCIAL ANALYSIS

5.1 Investor Permitting requirements



United Kingdom: One of the key financial-related questions in the MARINEWIND survey asked UK respondents whether **investors need to ask for special permits** in order to fund floating offshore wind turbine (FOWT) projects. According to the data, **68% of respondents answered "Yes"**, while **32% answered "No."** This indicates that nearly **two-thirds of UK stakeholders** believe that regulatory or permitting hurdles exist for financial actors seeking to support FOWT development. This finding highlights a crucial challenge in the UK FOWT finance landscape, namely the perceived administrative or legal complexity in the early investment phase. Although floating offshore wind technology continues to evolve and receive policy backing in the UK, these responses suggest that a sizable proportion of stakeholders believe financial flows are not yet seamless or unrestricted. The existence of required permits might be linked to overlapping jurisdiction among government agencies or to the evolving nature of floating wind-specific legislation. It is possible that some of these permits pertain to foreign investments, public-private partnerships, or the environmental conditions tied to capital deployment. On the other hand, the **32% who answered "No"** could indicate either actual experiences with straightforward funding pathways or a lack of uniform understanding about the permitting process. This divergence in responses underscores a possible **gap in communication or transparency** within the sector, suggesting that clearer national-level guidance on FOWT finance procedures could reduce uncertainty, improve investors' confidence, and accelerate capital mobilisation.

Greece: One of the core financial questions in the Greek MARINEWIND survey explored whether **investors must seek special permits to fund FOWT projects**. According to the responses, a significant **63% of Greek stakeholders answered "Yes,"** indicating that investment in floating offshore wind faces formal regulatory hurdles. Meanwhile, **37% responded "No,"** reflecting either direct experience with streamlined procedures or a lack of clarity around funding-linked permits. This result suggests that, as in many other emerging FOWT markets, Greece's permitting regime still introduces some level of **administrative complexity or legal uncertainty** for financial actors. The requirement for investor permits may be due to overlapping authorities between national ministries, energy regulatory bodies, and regional planning institutions, particularly in island and coastal jurisdictions where maritime infrastructure is governed through multiple frameworks. Additionally, given the Greek market's relative nascency in floating wind compared to fixed-bottom technologies, respondents may be reacting to recent institutional shifts or gaps in policy updates. This divergence in opinion underscores a need for **greater transparency and harmonisation** across permitting pathways. A streamlined, one-stop-shop mechanism for investors could improve **funding predictability**, facilitate early-stage capital flows, and build trust among developers and lenders. Clear guidance tailored to **foreign investors, consortia, or blended finance arrangements** would further enhance Greece's competitiveness in attracting FOWT funding.

Italy: In response to the MARINEWIND survey question asking whether **investors in floating offshore wind turbines (FOWTs) need to obtain special permits to fund projects**, a **majority of Italian respondents (64%) answered "Yes,"** while **36% answered "No."** This indicates that most stakeholders perceive a **regulatory burden or administrative procedure** associated with attracting or applying investment into the FOWT sector. The requirement for such permits is likely linked to **Italy's decentralised governance structure**, where multiple regional, maritime, and environmental authorities share jurisdiction over coastal and marine projects. Stakeholders noted that investment procedures, particularly those involving foreign capital, often trigger **additional approval steps**, such as due diligence reviews by the Ministry of Infrastructure and Transport or local maritime authorities. This split between "Yes" and "No" also reflects **a knowledge gap or inconsistent experience** across regions. Some developers or institutions may have navigated simpler processes, especially where port infrastructure is already in place or where streamlined frameworks are being piloted. Overall, the data suggests that, while **FOWT financing is possible in Italy**, there is **room to improve clarity and coordination**. Creating a **centralised, transparent permitting system** for investment—particularly for early-stage projects and public-private partnerships—would enhance confidence and help unlock domestic and international capital flows into floating wind.

Spain: According to the MARINEWIND survey, **75% of Spanish respondents** confirmed that **investors need to ask for special permits** to fund floating offshore wind turbine (FOWT) projects, while **25% said "No."** This majority response suggests a widespread perception of **regulatory or administrative complexity** surrounding financial involvement in the Spanish FOWT sector. These permitting requirements may stem from Spain's layered regulatory framework, where responsibilities are split between national maritime authorities (e.g. the Directorate General for the Coast and the Sea), regional governments, and the Ministry for the Ecological Transition. The involvement of multiple agencies can generate delays or legal ambiguities, particularly in the investment phase. Additionally, foreign investors or consortiums often face additional layers of due diligence and disclosure obligations. The 25% of

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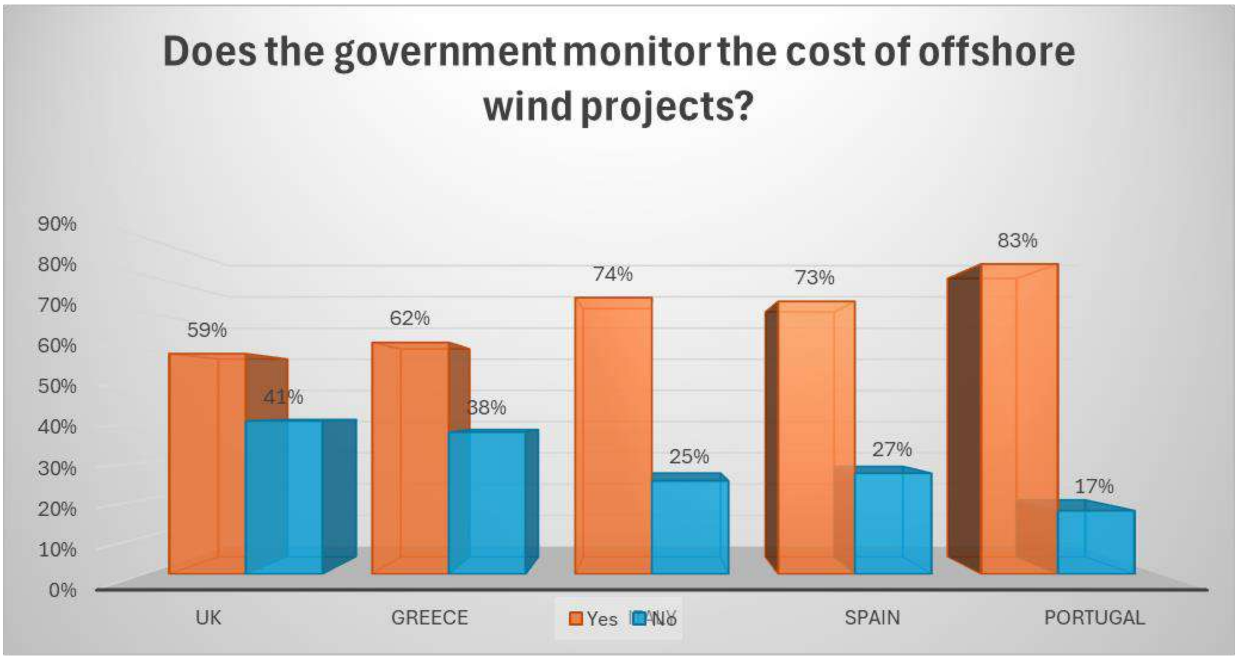
the participants who responded "No" may represent actors engaged in smaller or demonstration projects, or those who have operated in regions with simplified approval procedures. This variation shows the **need for harmonised national permitting procedures**, especially for investment-linked clearances. A one-stop-shop model for financing permits could boost capital inflows and reduce entry barriers for international developers and funders.

Portugal: The MARINEWIND survey shows that **83 %** of respondents believe investors **must obtain special permits** before financing floating offshore wind turbine (FOWT) projects, whereas **17 %** indicated no such requirement. The clear majority points to a common perception that Portugal's FOWT investment landscape is shaped by **additional regulatory layers** beyond standard environmental and construction licences. These permits likely arise from Portugal's multi-agency system, where the Directorate-General for Energy and Geology (DGEG), the Portuguese Environment Agency (APA), and port authorities each retain approval powers. Such overlap can slow financial close and add legal uncertainty—especially for international lenders unfamiliar with the country's marine-energy rules. The **17 % "No" cohort** may reflect investors involved in small-scale demonstration arrays or those financing through government-backed programmes that streamline approvals. This split underscores the need for **harmonised, investment-specific guidelines**. Establishing a **one-stop financing gateway**—or integrating the financing permit into Portugal's existing online licensing portal—could shorten timelines, cut transaction costs, and make the market more attractive to global capital seeking large-scale FOWT opportunities in Atlantic waters.

1. Governmental monitoring of the cost of offshore wind projects



United Kingdom: The majority of UK respondents answered **"Yes"** to the question of whether the government monitors the cost of offshore wind projects, indicating a clear belief that public institutions are involved in overseeing or assessing cost structures in the FOWT sector. To gain more detail, respondents were also asked what tools or metrics are used by the government in this process. The most frequent answer was **"Cost-benefit analysis,"** suggesting that stakeholders associate governmental oversight with economic evaluation frameworks that weigh financial viability against potential public and environmental value. This answer pattern highlights the perception that public authorities take an active—though perhaps indirect—role in evaluating the economics of floating wind development. The use of cost-benefit analyses could be tied to national funding schemes, subsidies, or planning approval processes. However, some responses lacked specifics which may indicate that, while stakeholders are aware of monitoring in principle, the mechanisms remain opaque.

Greece: When asked whether the government **monitors the cost of offshore wind projects**, **62% of Greek respondents answered "Yes",** while **38% answered "No."** This majority suggests that a significant portion of stakeholders believes public institutions are engaged in assessing or tracking cost structures related to floating offshore wind projects. According to respondents, this monitoring is primarily linked to formal procedures surrounding public tenders, regulatory compliance, and project approval stages. However, the **38% of the respondents who disagreed** reflect a degree of **uncertainty or skepticism** about how systematic or effective monitoring is. In some cases, stakeholders expressed concerns about the **lack of transparency or consistency** in how project costs are audited or shared across ministries and agencies involved in licensing and marine spatial planning. The split opinion points to a need for more structured and **widely communicated cost-monitoring frameworks**, especially as floating offshore wind enters the commercialisation phase. Respondents implied that public institutions in Greece might benefit from adopting standardised tools—such as cost-benefit **analyses or project evaluation scorecards**—to ensure that financial oversight aligns with environmental performance and long-term national energy goals. Enhanced cost visibility would not only improve investor confidence but also support more competitive and equitable market development for floating offshore wind.

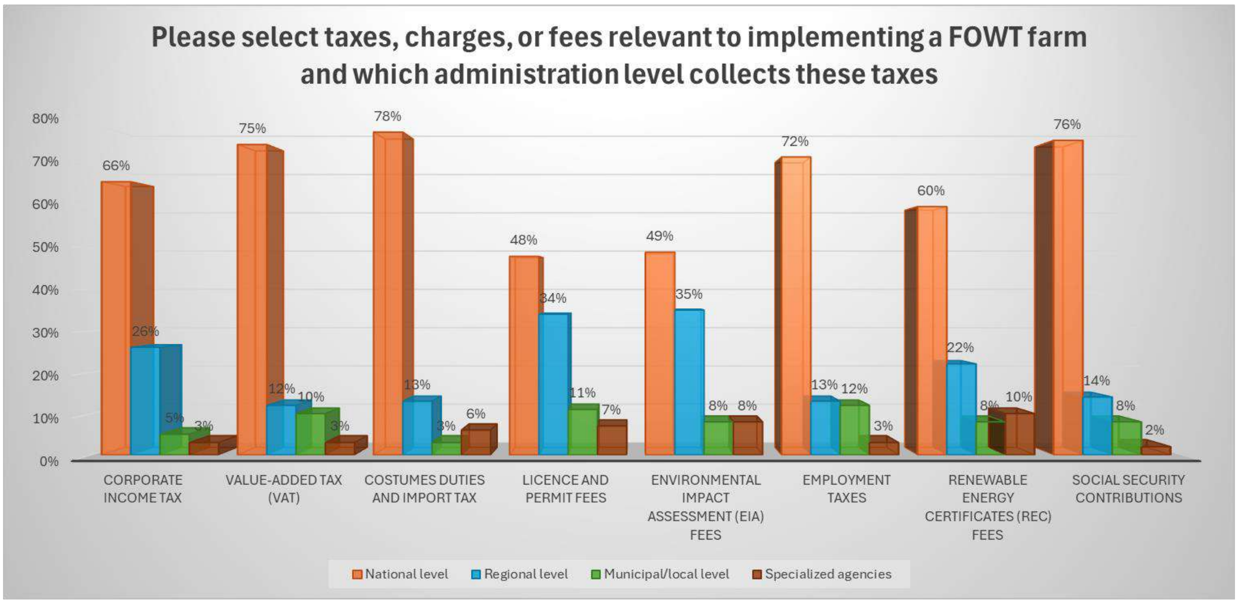
Italy: Italian respondents were also asked whether **the government monitors the cost of offshore wind projects**, including FOWTs. The majority of respondents (61%) answered **"Yes",** while **39% said "No."** This indicates that, while some institutional oversight exists, it may not be **universally applied or visible** across all development stages and administrative bodies. Among those who answered "Yes", the most mentioned tools for cost monitoring included **cost-benefit analysis, feasibility studies, and market benchmarking reports**. Respondents cited entities such as GSE (Gestore dei Servizi Energetici) and ARERA (the Italian Regulatory Authority for Energy, Networks, and Environment) as potential actors involved in cost assessments, either directly through auctions or indirectly via regulatory mechanisms. However, 39% of the respondents who answered "No" reflect a **perceived lack of transparency or standardisation**. Respondents suggested that cost tracking is often limited to projects receiving public incentives and not consistently applied to all types of offshore wind initiatives. Some respondents also noted that FOWT-specific cost frameworks are underdeveloped compared to fixed-bottom offshore wind technologies, particularly when it comes to grid integration and infrastructure financing. These findings underscore the need for **clearer, project-level cost-monitoring standards**, as well as the **public disclosure of evaluation criteria** used during permitting, subsidy allocation, or auction design.

Spain: A strong **73% of Spanish respondents** believe that the **government monitors the cost** of offshore wind projects, including FOWTs, while **27% believe it does not**. This indicates that cost oversight is generally acknowledged in the Spanish context, possibly linked to frameworks tied to public subsidies, auction pricing mechanisms, or infrastructure tenders. Respondents pointed to the role of regulatory authorities such as the **CNMC (National Commission on Markets and Competition)** and the **Ministry for Ecological Transition**, which assess market competitiveness and financial feasibility during project evaluation. Cost-benefit analysis and environmental-economic feasibility tools were commonly mentioned. 27% of the respondents who answered “No” may reflect either **uncertainty about transparency** or variability in cost tracking across different phases of development (e.g. permitting vs. operation). Overall, the data reflects the **importance of increasing clarity on cost monitoring mechanisms**, particularly for emerging technologies such as FOWT that have unique OPEX and CAPEX profiles compared to fixed-bottom offshore wind.

Portugal: An overwhelming majority, namely the 83% of Portuguese respondents, say that the government actively monitors the cost of offshore-wind projects, while only 17% believe that this oversight does not exist. This high level of perceived governmental scrutiny suggests that cost tracking, budgeting, and reporting mechanisms are already in place or, at minimum, widely communicated to stakeholders. Effective cost monitoring can bolster investor confidence, ensure transparency in public spending, and help policymakers fine-tune support schemes (e.g., feed-in tariffs, auctions) as the domestic floating-wind sector scales up. Nonetheless, the one-in-six respondents who do not see evidence of monitoring underscore the importance of continuing to publish clear, accessible data on project budgets and lifecycle expenditures so that all stakeholders remain informed and engaged.

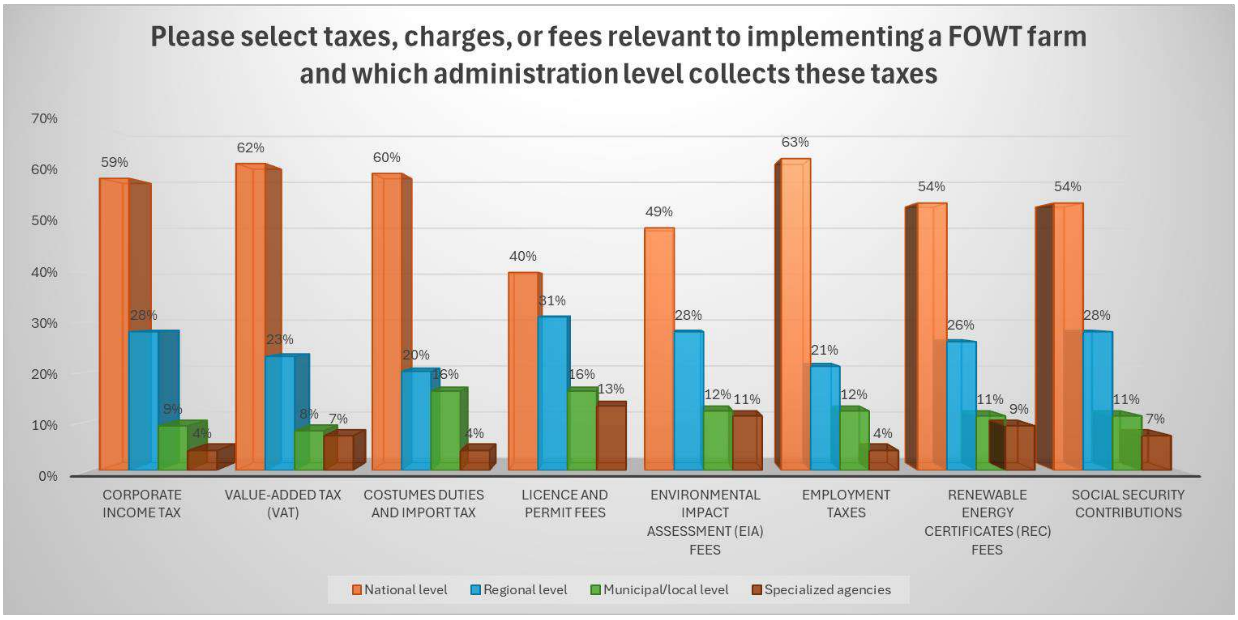
2. Taxes, charges, or fees applied during the operation of a FOWT farm

United Kingdom



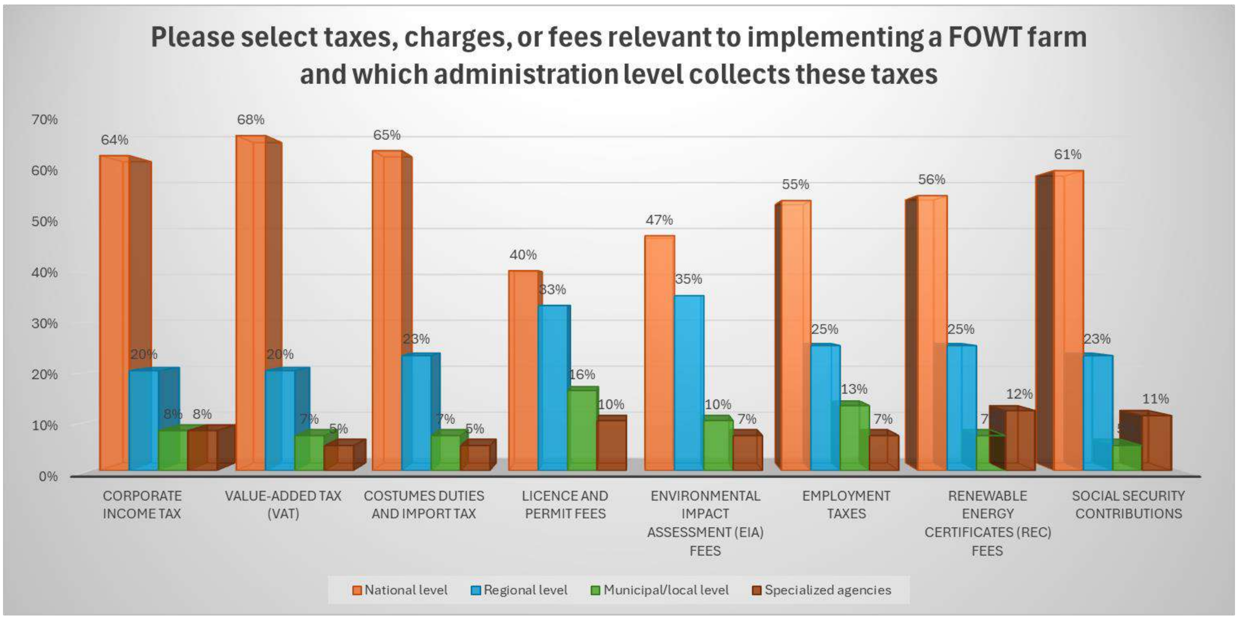
Survey respondents indicate that the bulk of taxes, charges, and fees relevant to developing a floating offshore wind-turbine (FOWT) farm in the UK are collected by the national government. Core revenue streams—including customs and import duties (78%), VAT (75%), social-security contributions (76%), corporate income tax (66%), and employment taxes (72%)—are perceived as overwhelmingly central-government responsibilities. By contrast, costs linked to regulatory approvals are more dispersed: roughly half of respondents say that *licence and permit fees* (48%) and *environmental-impact assessment (EIA) fees* (49%) are levied nationally, but sizeable minorities (34–35%) point to the regional (devolved) tier, reflecting planning and marine-licensing powers held by Scotland, Wales, and Northern Ireland. Municipal or local authorities play only a modest role—capturing 8–12% of licence, Environmental Impact Assessment (EIA), or employment-tax collections—primarily through harbour dues or minor planning charges. Specialised agencies appear chiefly in niche areas: 10% of the respondents cite them as collectors of *Renewable Energy Certificate (REC) fees*—aligned with Ofgem's Renewables Obligation administration—while smaller shares assign import duties or licensing charges to specialist bodies such as the Marine Management Organisation. Overall, the findings suggest that developers must prioritise engagement with UK-wide fiscal authorities for the major tax burden, while also navigating devolved administrations for project-specific licences, EIAs, and REC compliance. Clear coordination across these tiers can streamline permitting timelines and reduce regulatory uncertainty for future FOWT investments.

Greece



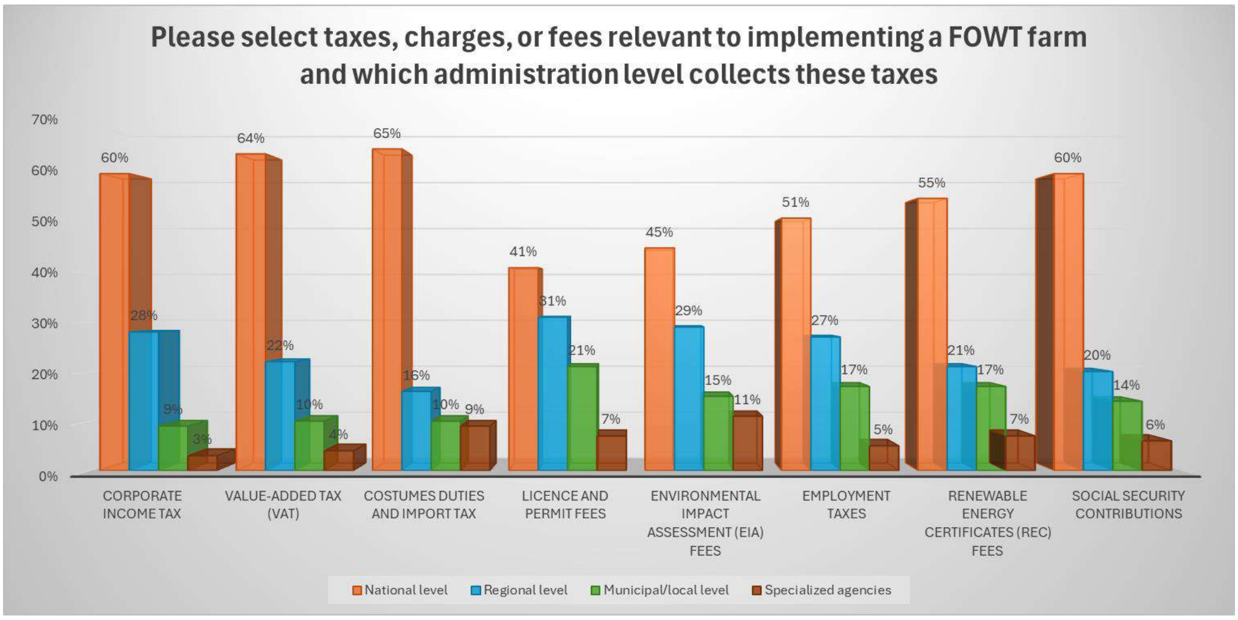
According to respondents, the fiscal burden associated with developing a floating offshore wind-turbine (FOWT) farm in Greece is divided across several layers of government, yet the national tier still collects the largest single share of most charges. National authorities are seen as the primary collectors of VAT (62%), employment taxes (63%), corporate income tax (59%), customs and import duties (60%), and Renewable-Energy-Certificate (REC) fees (54%). Regional administrations play a more visible role in Greece than in many other countries surveyed: roughly one-quarter to one-third of respondents say regions levy licence and permit fees (31%), environmental-impact-assessment (EIA) fees (28%), and even corporate income taxes (28%). Municipal or local governments also receive a meaningful slice—about 11–16%—of permits, EIAs, and customs revenues, reflecting Greece's decentralised planning and port-authority structure. Specialised agencies account for 7–13% of collections on licences, EIAs, and RECs, underscoring the importance of sector-specific compliance in the Greek permitting process. In practice, developers must therefore coordinate not only with national ministries (Finance, Environment & Energy) for core taxes, but also with regional prefectures, municipal authorities, and specialised regulators for project-specific permits and certificates. Early engagement across these tiers—combined with clear guidance on fee schedules—will be crucial for streamlining timelines and containing soft-cost risks for forthcoming Greek FOWT investments.

Italy



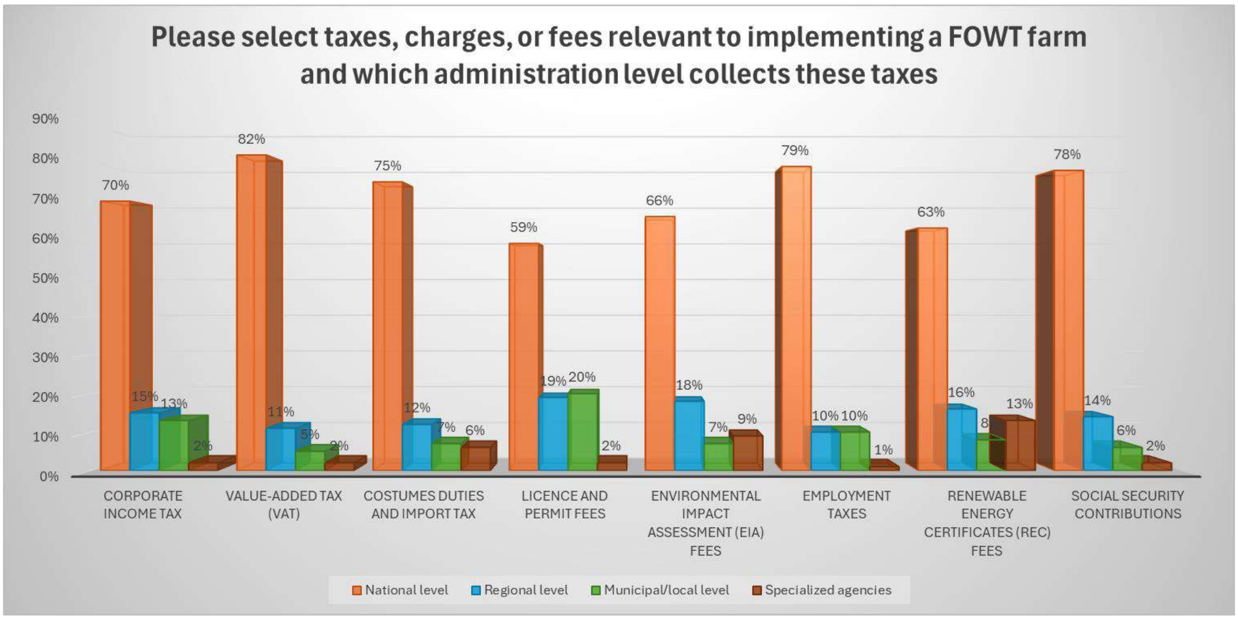
Survey responses indicate that developing a floating offshore wind-turbine (FOWT) farm in Italy entails dealing with a multi-layered fiscal landscape, yet the national government remains the dominant collector of most revenue streams. Interviewees say that the central Italian Government captures roughly two-thirds of VAT (68%), customs and import duties (65%), corporate income tax (64%), and social-security contributions (61%). National agencies also receive the largest single share of employment taxes (55%) and Renewable-Energy-Certificate (REC) fees (56%), underscoring the central role of state-level ministries and the national energy regulator in financing and compliance. Regional administrations—primarily the coastal regions with delegated environmental and industrial powers—are nonetheless significant players. Around one-third of the respondents' attribute licence and permit fees (33%) and environmental-impact-assessment (EIA) fees (35%) to regional authorities, while roughly one-quarter cites regions for employment taxes and REC levies. These figures reflect Italy’s devolved planning regime, in which regions issue the so-called Single Authorisation (Autorizzazione Unica) for large renewables and oversee marine spatial-planning requirements. Municipal or local governments, though less prominent, still account for a non-trivial slice—between 7% and 16%—of permit, EIA, and employment-tax collections, usually through harbour dues, building consents, or local payroll surtaxes. Specialised agencies (e.g., GSE for green-certificate schemes, the Port System Authorities, or the Italian Customs and Monopolies Agency) round out the picture, taking 8–12% of several categories, particularly REC fees (12%) and social-security contributions (11%). For developers, the upshot is clear: engaging early with national ministries (Economy & Finance, Ecological Transition), regional energy and environment departments, local port authorities, and sector-specific bodies such as GSE and the customs agency is essential to map the full tax-and-fee burden. Streamlined coordination across these tiers—and transparent guidance on payment schedules—will help control soft costs and keep project timelines on track in Italy's scaling floating-wind market.

Spain



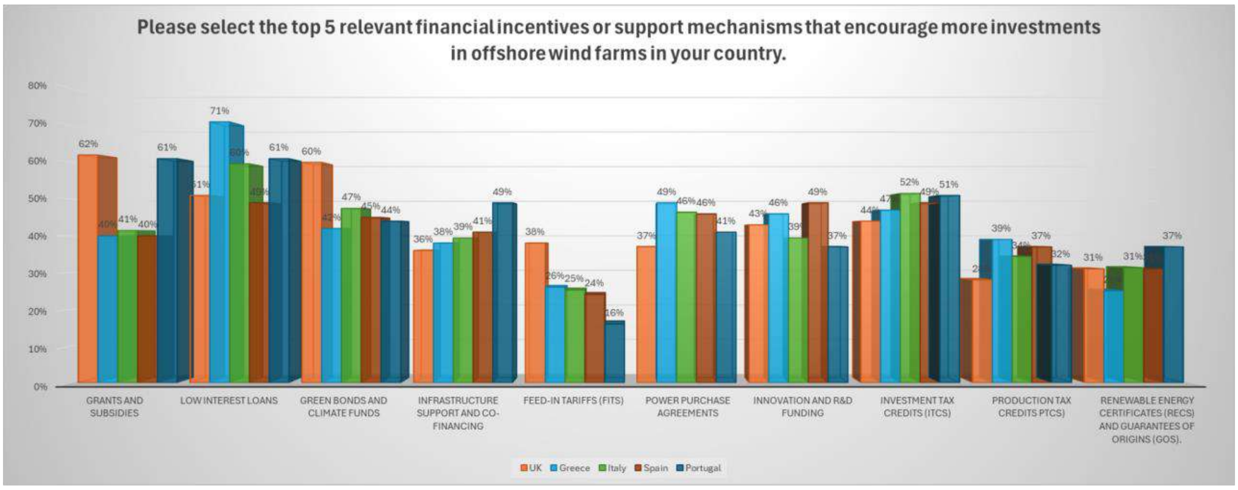
Survey responses suggest that developing a floating offshore wind-turbine (FOWT) farm in Spain involves a multi-tier fiscal structure, yet the national government remains the principal collector of most revenues. Participants attribute roughly two-thirds of customs and import duties (65%) and VAT (64%) to state coffers, while corporate income tax and social-security contributions each show a 60% national share. National agencies likewise receive the largest portion of employment taxes (51%) and Renewable-Energy-Certificate (REC) fees (55%), underscoring Madrid's dominant role in core taxation and energy-market oversight. That said, autonomous communities (regions) and local councils hold meaningful fiscal levers, particularly for project-specific authorisations. A substantial minority of respondents cite regions for licence and permit fees (31%) and environmental-impact-assessment (EIA) fees (29%), reflecting devolved planning and coastal-management powers in jurisdictions such as Galicia, the Basque Country, and Andalusia. Municipal or port authorities also play a notable part: one in five survey-takers say local governments levy licences (21%), EIAs (15%), or employment-related charges (17%), typically through harbour dues, zoning approvals, or local payroll surtaxes. Specialised agencies—for example the so-called *Comisión Nacional de los Mercados y la Competencia* (National Commission for Markets and Competition, CNMC) for RECs, *Puertos del Estado* for port tariffs, or the Institute for Energy Diversification and Saving (IDAE)—capture 7–11% of EIA, REC, and customs-duty collections, signalling the need for sector-specific compliance. For FOWT developers, the implication is clear: while the lion's share of taxes flows to national coffers, efficient project execution demands coordinated engagement with three additional layers—regional governments, municipalities/port authorities, and specialised regulators—to secure permits, settle EIA fees, and satisfy certification schemes. Early alignment across these tiers can minimise administrative delays and provide financial certainty for Spain's emerging floating offshorewind pipeline.

Portugal



Respondents indicate that Portugal's central government is the primary collector of almost every tax, duty, or fee associated with developing a floating offshore wind-turbine (FOWT) farm. More than three-quarters assign *VAT* (82%), *employment taxes* (79%), *social-security contributions* (78%), *customs and import duties* (75%), and *corporate income tax* (70%) to the national tier. Even project-specific charges—*licence and permit fees* (59%) and *environmental-impact-assessment (EIA) fees* (66%)—are most often viewed as state-level responsibilities. That said, regional and municipal authorities still command a meaningful share of certain collections. Roughly one-fifth of respondents believe regions levy licences (19%) and EIAs (18%), reflecting Portugal's coastal planning competences held by CCDR regional agencies. Municipalities also capture 20% of licence fees and about 10% of employment-related charges, typically via port tariffs, zoning approvals, or local surcharges—an important consideration for developers siting projects near specific harbours. Specialised agencies are mentioned chiefly in niche areas. 13% of participants point to sector bodies—such as the Directorate-General for Energy and Geology or the Portuguese Environment Agency—as collectors of *Renewable-Energy-Certificate (REC) fees*, while smaller fractions (6–9%) cite these entities for customs duties and EIA charges. For FOWT developers, the message is clear: navigate primarily through national ministries (Finance, Environment & Climate Action) for core taxation and the bulk of project fees, but engage early with regional CCDRs, coastal municipalities, and specialised regulators for permits, EIAs, and REC compliance. Streamlined coordination across these tiers will be essential to keep administrative costs predictable and project timelines on track in Portugal's growing floating-wind market.

5.2 Government incentives and support mechanisms to FOWTs deployment



United Kingdom: Survey evidence indicates that British stakeholders regard direct capital support and preferential financing instruments as the pivotal determinants of floating–offshore-wind deployment. Grants and up-front subsidies are prioritised by 62% of respondents, signalling enduring confidence in lump-sum transfers for mitigating technology and construction risk at the pre-commercial stage. Green bonds and climate-aligned funds follow closely (60%), underscoring the perceived synergies between the City of London's deep debt markets and the UK Infrastructure Bank's mandate to mobilise sustainable capital. Concessional loans likewise feature prominently (51%), reflecting an appreciation of the role that subsidised debt can play in lowering the weighted average cost of capital during lengthy consenting periods. Fiscal policy remains salient: 44% favour investment tax credits that expedite cost recovery and reduce equity dilution, while 43% emphasise innovation and R&D programmes—such as the Floating Offshore Wind Demonstration Scheme—as essential for enhancing domestic supply-chain capabilities in mooring systems, dynamic cables, and semi-submersible substructures. The comparatively modest support for feed-in tariffs (38%) is consistent with the United Kingdom's transition to Contracts-for-Difference auctions, which already provide long-horizon revenue certainty. Collectively, these preferences highlight a capital-stack paradigm in which subsidised debt and targeted fiscal incentives complement market-based remuneration mechanisms.

Greece: The Greek investment community strongly favours debt-based support mechanisms to catalyse floating offshore wind uptake. Low-interest or concessional loans are identified by 71% of respondents as a top-five instrument, a finding that reflects persistent sovereign-risk premia and the elevated cost of domestic credit. Revenue stabilisation tools are also deemed indispensable: 49% of the respondents highlight long-term power-purchase agreements as critical for securing predictable cash flows, followed by investment tax credits (47%) and production tax credits (39%) which are endorsed for their capacity to offset CAPEX and operating risk. Grants and subsidies achieve only a 40% endorsement rate, suggesting that developers perceive debt and tax instruments as more fiscally sustainable within Greece's constrained budgetary environment. Innovation and R&D funding resonates with 46% of participants, mirroring the state's intention to leverage Recovery and Resilience Facility resources for technology transfer and yard modernisation. Feed-in tariffs are comparatively marginal (26%), reflecting the Hellenic Republic's pivot toward competitive premium auctions. Overall,

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stakeholder preferences coalesce around a blended-finance architecture that combines low-cost debt, fiscal incentives, and contractually guaranteed revenues to ameliorate both financing and market risks.

Italy: Italian stakeholders emphasise measures that attenuate financing costs and accelerate capital recovery. Concessional loans receive the highest endorsement (60%), indicative of sensitivity to rising Euribor indices and Italy's bank-dominated project-finance landscape. Investment tax credits follow (52%), pointing to a preference for immediate fiscal offsets over performance-linked incentives. The prominence of green bonds and climate funds (47%) reflects increasing domestic issuance of sovereign green instruments and heightened Environment, Social and Governance (ESG) demand among pension funds. Long-term power-purchase agreements (46%) are likewise valued, especially by energy-intensive industries seeking price hedges. Direct grants, while still relevant (41%), appear to have ceded primacy to market-compatible mechanisms given expenditure ceilings under the National Recovery and Resilience Plan. Infrastructure co-financing (39%) underscores logistical bottlenecks at ports such as Taranto and Augusta. Feed-in tariffs record minimal support (25%), consistent with Italy's auction-based feed-in-premium regime. These findings suggest an optimal policy mix predicated on subsidised debt and tax relief during early expenditure phases, complemented by market-based revenue contracts and sustainable-finance instruments.

Spain: Spanish respondents advocate a diversified incentive portfolio. Investment tax credits and concessional loans jointly lead (both 49%), reflecting confidence in fiscal and debt instruments to mitigate capital costs amid tightening monetary conditions. Innovation and R&D funding also garners 49%, consistent with national objectives to anchor a floating wind industrial cluster in the Basque Country and Galicia. Revenue-certainty mechanisms remain salient: 46% of the respondents selected long-term power-purchase agreements, while 45% selected green bonds and climate funds as vehicles for mobilising ESG-oriented capital. Public infrastructure co-financing (41%) highlights the imperative to upgrade port and grid assets essential for large-scale assembly. Feed-in tariffs rank lowest (24%), corroborating Spain's shift to competitive Contracts-for-Difference auctions. Taken together, the Spanish investment community endorses a multi-faceted framework in which tax incentives, subsidised debt, innovation grants, and market-based contracts collectively reinforce bankability.

Portugal: Portuguese stakeholders converge on a dual emphasis: non-repayable grants and low-interest loans both received 61% endorsement, underscoring their perceived indispensability for first-of-a-kind floating-wind ventures. Investment tax credits (51%) constitute a further pillar, offering predictable fiscal relief in a market characterised by limited domestic institutional capital. Public co-financing of infrastructure (49%) reflects acute needs for port upgrades at Viana do Castelo and Setúbal, while 44% of respondents point to green bonds and climate funds as complementary sources of long-term capital. Power-purchase agreements secure 41% support, signalling emergent demand from Portuguese industrial off-takers for stable renewable-energy contracts. Lower rankings for feed-in tariffs (16%) align with Lisbon's preference for competitive auctions and two-way CfDs. Overall, the Portuguese financing preference matrix favours blended packages that combine grant funding, concessional debt, investment-tax credits, and sustainable-finance channels, thereby reducing both capital-market and revenue risks for forthcoming floating wind developments.

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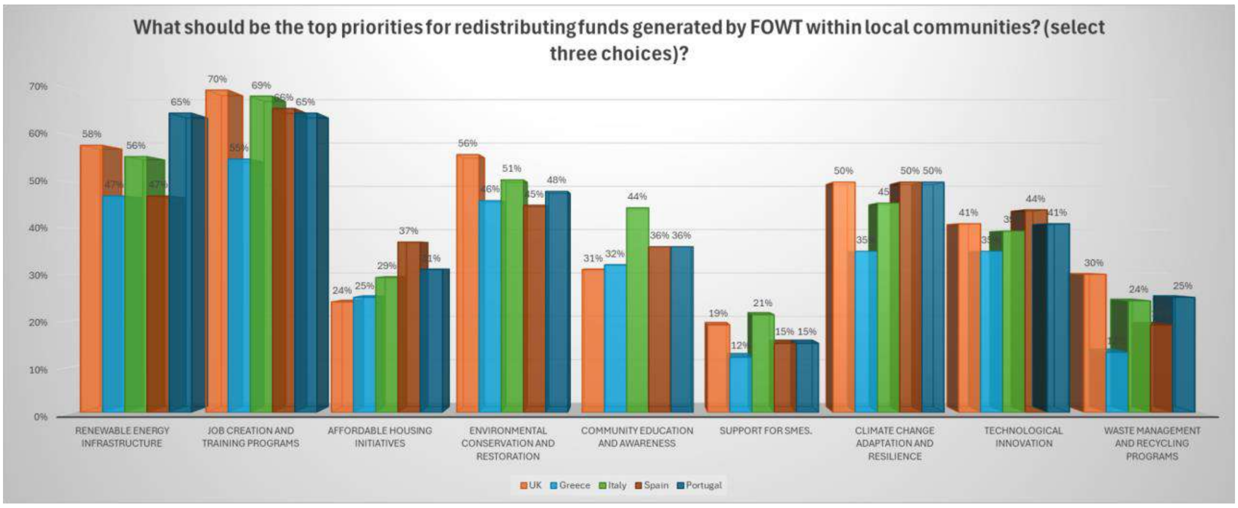
5.3 Priorities for redistributing FOWT-generated funds within communities



United Kingdom: When asked to select the top priorities for redistributing revenue generated by floating offshore wind turbines (FOWTs) within local communities, 58% of respondents selected "Renewable energy infrastructure" as a key focus area. This was the most frequently chosen response, highlighting a strong stakeholder preference for using wind-generated wealth to fund further decarbonisation and green technology upgrades. The survey format did not allow for a breakdown of multiple ranked choices in the dataset, but previous qualitative responses indicated a strong support for areas such as:

- Skills development and education programmes
- Coastal protection and marine conservation
- Support for local social services

These areas, though not quantified here due to format limitations, reflect priorities that balance economic development, environmental stewardship, and social equity. Overall, these results emphasise the demand for inclusive and transparent local redistribution mechanisms, grounded in community participation and long-term sustainability objectives.

Greece: Respondents were asked to identify the top priorities for redistributing funds generated by FOWT projects in local communities. The most frequently chosen response was "Renewable energy infrastructure", selected by 47% of participants. This reflects a strong stakeholder interest in reinvesting profits into further decarbonisation, grid upgrades, or community energy systems. Notably, 53% of survey participants did not provide a specific response to this question. This non-response rate may indicate a lack of awareness, scepticism about current redistribution mechanisms, or a disconnect between developers and community priorities. It also reveals a possible gap in public policy communication and stakeholders' engagement on financial redistribution in the floating offshore wind sector. Although the question allowed up to three selections, responses primarily centred around:

- Support for local renewable energy initiatives;
- Coastal protection and marine biodiversity programmes;
- Education and skills development in energy and engineering.

These priorities suggest that stakeholders see FOWT as a long-term economic development opportunity, particularly for Greece's coastal and island regions. However, the high rate of skipped responses emphasises the need for clear policy articulation and participatory mechanisms to ensure FOWT revenues contribute meaningfully to community well-being and local resilience.

Italy: When asked to identify top priorities for redistributing financial returns from floating offshore wind turbines (FOWTs) within local communities, 50% of Italian respondents selected "Renewable energy infrastructure". Similarly to the Greek case, the high rate of non-responses underscores a potential communication or policy design gap: while the idea of revenue-sharing is well-supported in principle, many stakeholders appear unaware of current options or frameworks for local reinvestment. Although only one response category was quantifiable from the dataset, previous qualitative feedback indicated strong interest in:

- Community development funds
- Skills training for green jobs
- Coastal resilience and biodiversity conservation initiatives

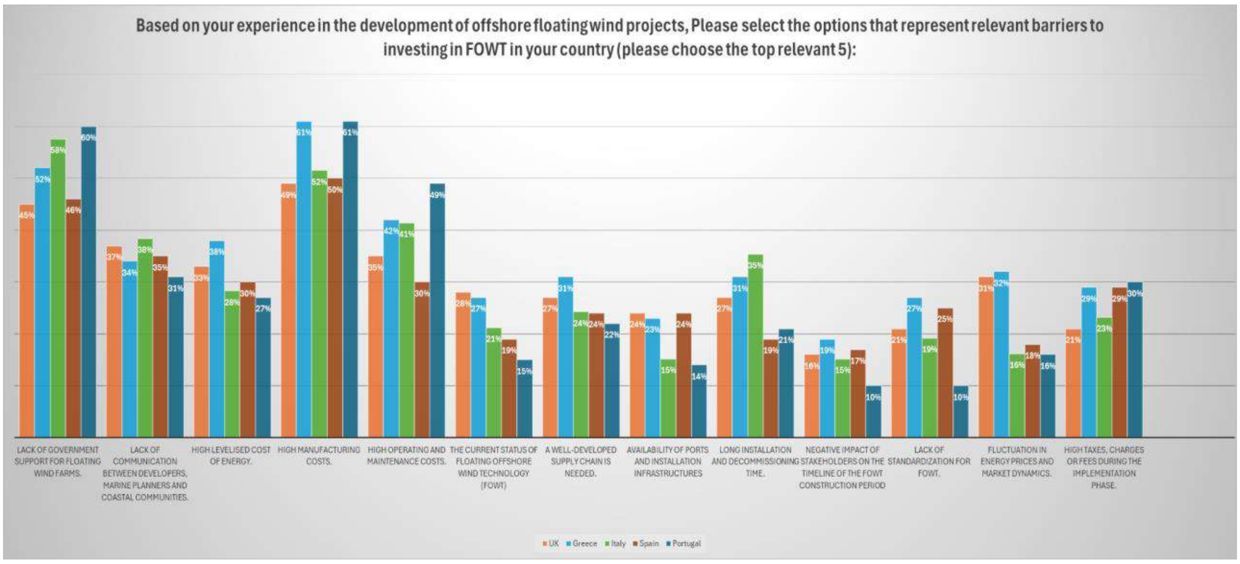
This feedback suggests that Italian stakeholders would welcome formalised, transparent redistribution schemes that align with regional development goals. Creating a national redistribution framework, possibly tied to auction design or licensing agreements, would help align project success with local socioeconomic progress.

Spain: When asked about the redistribution of funds generated by FOWTs, 47% of Spanish respondents selected "Renewable energy infrastructure" as the top priority. The popularity of renewable energy reinvestment suggests that stakeholders view floating wind as part of a circular energy economy, where revenues from offshore installations should fuel local decarbonisation initiatives—such as solar integration, microgrids, or energy storage. In previous qualitative responses, other commonly supported uses included:

- Skills training and job creation
- Environmental and coastal protection
- Local social programmes

This feedback emphasises the need for formal and participatory frameworks that allow local communities to help shape how FOWT-generated value is allocated and reinvested.

5.4 Key Barriers to Investing in Floating Offshore Wind



United Kingdom: Respondents locate the principal barrier to UK floating-wind investment in the **capital stack** itself. Although the country's Contracts-for-Difference (CfD) scheme delivers 15-year price certainty, 58% of the survey participants argue that **project-equity and debt gaps** remain—particularly for pre-Final Investment Decision (FID), engineering studies, environmental surveys, and early serial production. Developers must still fund long lead-time items (e.g., dynamic cables, station-keeping chains) up-front, and commercial lenders are reluctant to enter before Final Investment Decision without additional public guarantees. High **CAPEX inputs** aggravate this problem: 49% of the respondents cite elevated manufacturing costs owing to sterling-denominated steel prices, congestion at UK yards, and limited domestic capacity for XL monopiles or semi-sub pontoons; the 35% add that harsh-weather O&M strategies (larger service-operation vessels and motion-compensated gangways) inflate annual operating budgets. **Policy sufficiency** has been also identified as a concern. Nearly half of the sample (45%) hold that existing strike-price ceilings, innovation grants (£160 M FOW CoE), and green-port funding do not yet neutralise floating-specific cost premiums. Stakeholders also stress **planning-process friction**: 37% of respondents suggest weak communication among developers, Inshore Fisheries Conservation Authorities, and local councils, leading to objections over visual footprint and gear entanglement. Timeliness is another issue, with the 27% of the respondents complaining about multi-year installation windows dictated by weather and supply constraints and 24% warning that heavy-lift quay space is scarce outside Scotland's Cromarty Firth and Port Talbot in Wales. Conversely, **technical maturity** worries few investors (28%), as Hywind Scotland and Kincardine have validated mooring performance, and the new INTOG leasing round will test serial build-out. To de-risk projects, respondents propose (i) a ring-fenced floating budget in Allocation Round 6 with higher administrative strike prices, (ii) low-interest construction loans from the UK Infrastructure Bank, (iii) a streamlined "single-consent" window under the Marine Management Organisation, and (iv) targeted port-infrastructure grants for South-west and North-east hubs.

Greece: Greek stakeholders report that financing conditions and production costs are the biggest challenges to floating offshore wind projects. More than half of the respondents (54%) identify the lack of affordable capital as one of their five main barriers, reflecting Greece's higher borrowing costs. High

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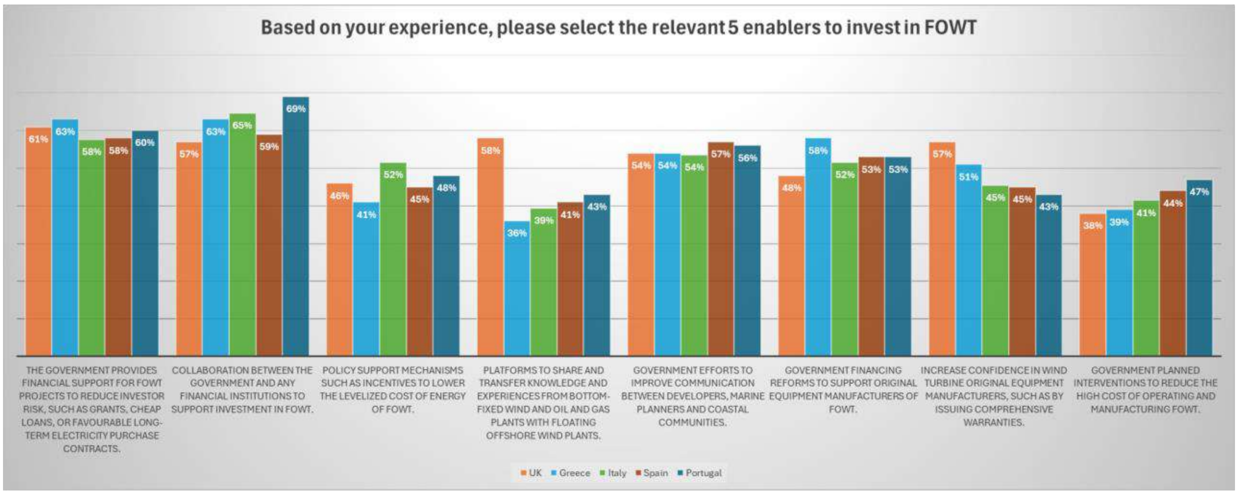
manufacturing costs are a concern for 61% of respondents, while 42% mention high Operation and Maintenance (O&M) expenses. These numbers point to the need for local supply-chain development and cost-sharing measures. Government support is also seen as limited: 52% of the participants believe current auctions and subsidies do not yet reduce risk enough. Market instability and project delays rank next: 32% worry about energy-price swings, and 31% point to long construction or decommissioning periods. Communication problems with coastal communities are registered at 34%. On the positive side, only 27% feel that technology readiness is a serious obstacle, suggesting confidence in available platform designs. Respondents recommend a combined policy approach that includes low-interest loans from national and EU funds, clearer auction rules for floating projects, and port upgrades. Such measures could lower costs and give investors more confidence to proceed.

Italy: Italian respondents identify funding availability (62%) as the top barrier, higher than in any other country except Portugal. High manufacturing costs (52%) and high O&M costs (41%) follow, showing that cost pressures are central to investment decisions. Over half (58%) also think government support is insufficient, despite auction premiums introduced under the FER2 decree. Administrative and social factors matter as well: according to 38% of respondents, communication with local authorities and fishing groups is weak, and 35% note that long installation and decommissioning timelines make projects risky. Energy-price volatility and port capacity are mentioned less often (both about 15%), indicating these issues are secondary. Only 21% question the maturity of floating-wind technology, reflecting growing confidence in European platforms. To improve investment conditions, stakeholders support three actions: expanding low-cost lending, for example through the so-called *Cassa Depositi e Prestiti* (Deposits and Loans Fund), simplifying permits into a single “one-stop shop”, and offering targeted tax credits or subsidies for domestic manufacturing of substructures and cables.

Spain: According to Spanish stakeholders, the barriers profile is more balanced. Although 42% of the respondents cite lack of funding as a key barrier to invest in FOW, this share is lower than in Greece, Italy, or Portugal, probably because Spain’s domestic banks and the public credit institute (ICO) are active in renewables. However, high manufacturing costs remain critical (50%). Nearly half (46%) of the respondents argue that government incentives designed for fixed-bottom wind do not yet fit floating projects, suggesting the need for dedicated auction premiums. Communication between developers and coastal communities is another concern (35%), as fishing, tourism, and environmental interests must be addressed especially in Galicia, the Basque Country, and the Canary Islands. Port-infrastructure limits are noted by 24%, being an important, though not the top, issue. Technology readiness (19%) and energy-price volatility (18%) rank lowest, showing that most investors trust the technical concept and Spain’s electricity-market design. Recommended actions include cost-reduction grants for local fabrication, stakeholders' engagement plans to secure social licence, and a floating-specific add-on within Spain’s existing CfD auctions.

Portugal: Data collected from Portuguese stakeholders shows the strongest concern about financing: 74% of respondents list lack of funding as a major barrier. High manufacturing costs (61%) and high O&M costs (49%) also score very high, revealing that overall project economics are challenging. Government support is viewed as inadequate by 60% of the respondents, even though Portugal plans to launch two-way CfD auctions for floating offshore wind. Taxes and fees during construction (30%) are a further worry, while port capacity (14%) is less of an issue thanks to upgrades at Viana do Castelo. Only small shares flag technology readiness (15%) or standardisation (10%) as problems, suggesting confidence in proven designs. To attract capital, respondents propose a blended-finance scheme that combines EU Innovation Fund grants, concessional loans, and risk-sharing guarantees from the European Investment Bank. They also call for manufacturing-cost incentives, such as accelerated depreciation, and clearer local-tax rules. These measures could lower costs and give investors the confidence to support Portugal's ambitious floating offshore wind targets.

5.5 Key Enablers to Investing in Floating Offshore Wind



United Kingdom: UK stakeholders identify a broad suite of enablers as critical to de-risking and scaling floating offshore wind. A strong majority (61%) place **direct government financial support**—including grants, concessional loans, or favorable long-term CfD contracts—in their top five, reflecting the continuing need to bridge early-stage financing gaps. **Collaboration between government and financial institutions** (57%) is nearly as valued, suggesting that mechanisms such as state-backed loan guarantees or green-bond issuance will be vital for lowering the weighted average cost of capital. **Knowledge-transfer platforms** that leverage best practices from bottom-fixed wind and offshore oil & gas earn 58%, underscoring the view that cross-sector learning can accelerate supply-chain readiness. Early **government–stakeholder communication** initiatives rank at 54%, highlighting how structured dialogue with marine planners and coastal communities can shorten consenting timelines. Original Equipment Manufacturer **(OEM) financing reforms**—for example, targeted credit lines or equity-support schemes for turbine and substructure manufacturers—are cited by 48%, signalling concern over domestic production capacity. Similarly, 57% back **comprehensive OEM warranty frameworks** to instill investor confidence in technology performance over 20-year lifespans. By contrast, fewer respondents (46%) prioritize **policy incentives to lower levelized cost of energy**, perhaps because the existing CfD regime already embeds a price floor. **Government interventions aimed directly at cutting high operating and manufacturing costs** garner 38%, indicating that investors expect cost reductions to emerge through market learning and private R&D rather than new subsidies.

Greece: The top-ranked enablers reflect acute funding and risk-sharing needs. **Direct public financial support** for floating offshore wind projects—ranging from equity grants to preferential debt—is endorsed by 63% of respondents, while **government–financial-institution collaboration** also scores 63%, underscoring the urgency of mobilising low-cost capital amid elevated sovereign premia.

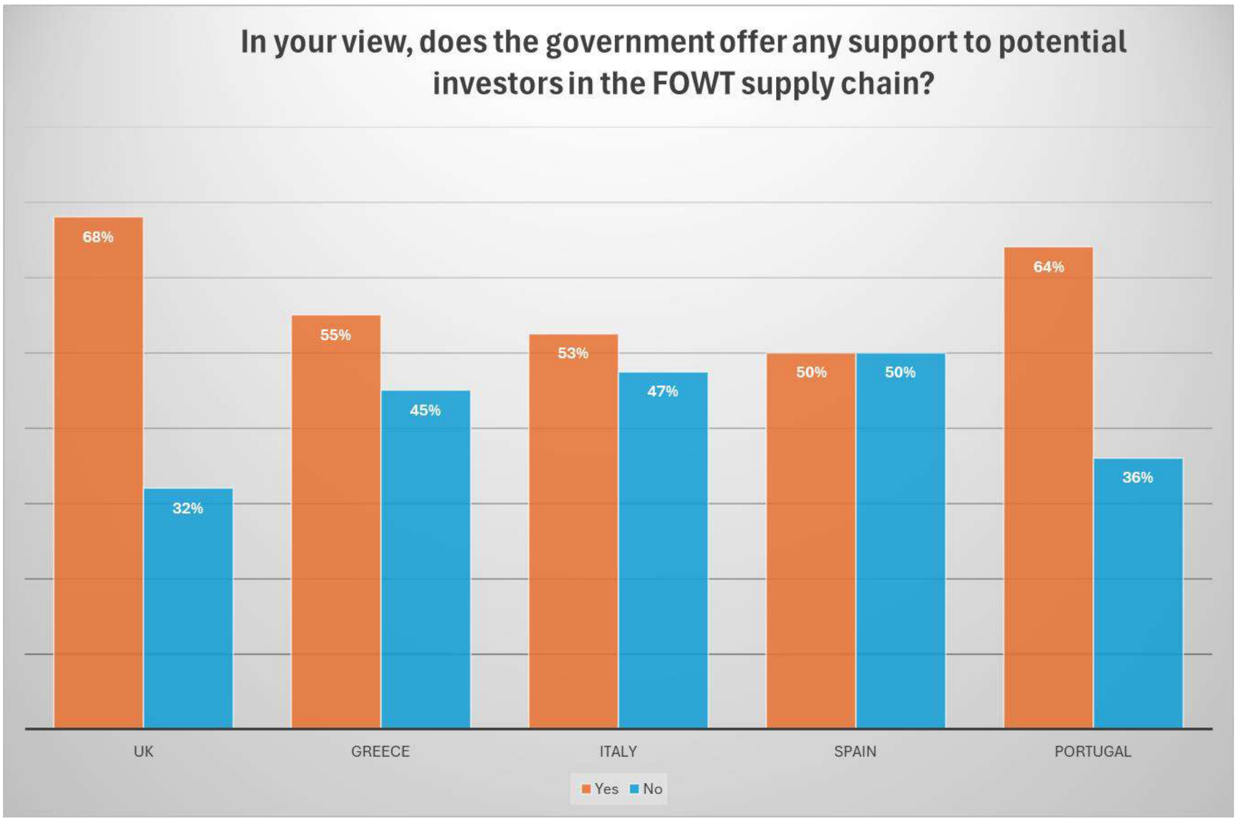
Investors place strong emphasis on **financing reforms for OEMs** (58%), indicating that credit or guarantee schemes for platform and turbine manufacturers are crucial to localize production and reduce import dependencies. **Enhanced stakeholders' communication** between developers, marine planners, and coastal communities (54%) is equally important, reflecting Greece's complex maritime-spatial planning and the need to build social licence in island regions. **OEM warranty assurances** earn 51%, underscoring that long-term performance guarantees are key to unlocking institutional investment. By comparison, **policy measures to lower levelized cost of energy (LCOE)** (41%) and **government interventions to curb O&M and manufacturing costs** (39%) attract modest support, suggesting that financial risk reduction currently trumps cost-curve interventions. **Knowledge-transfer platforms** score 36%, implying that fewer domestic stakeholders have offshore-wind experience to share.

Italy: Italian respondents emphasise **institutional financial partnerships** and **direct government backing** as the foremost enablers. Collaboration between the State and financial institutions ranks highest at 65%, followed closely by **public financial support** (58%), indicating that blended-finance vehicles—combining concessional loans, green bonds, and grant elements—are seen as essential for addressing high borrowing costs. **Policy incentives to lower LCOE** (52%) and **OEM financing reforms** (52%) share third place, reflecting a desire for tax credits, CfD adders, or bespoke guarantee schemes that reduce both CAPEX and technology risks. **Government-led community engagement** also scores 54%, highlighting the importance of early dialogue with coastal municipalities and fishing cooperatives in Italy's multi-layered permitting framework. **Knowledge-transfer platforms** (39%) and **OEM warranty enhancements** (45%) are viewed as useful but less urgent, suggesting that once financial risk is addressed, investors will focus on technical assurances and cross-sector knowledge exchange. **Interventions to directly lower O&M and manufacturing costs** attract 41%, pointing to support for local fabrication incentives and R&D funding to improve fabrication efficiencies in ports such as Taranto and Ravenna.

Spain: Spanish stakeholders offer a balanced view of five top enablers. **Collaboration between government and financial institutions** (59%) and **direct public support** (58%) lead the list, indicating that risk-sharing instruments—such as co-financed green bonds or subsidised loans—are crucial for addressing capital-cost gaps. **Structured community engagement** (57%) ranks third, reflecting Spain's need to reconcile floating offshore wind deployment with fishing and tourism interests, especially in the Region of Galicia. **Financing reforms for OEMs** (53%) and **knowledge-transfer platforms** (41%) follow, underscoring the strategic importance of localizing supply chains in the Basque Country and facilitating technical learning from Iberdrola's bottom-fixed experience. **Policy mechanisms to lower LCOE** (45%) and **OEM warranty confidence** (45%) receive mid-level support, suggesting that tariff adders or warranty frameworks are valued complements to auction-based revenue models. **Government interventions to reduce O&M and manufacturing costs** (44%) are also seen as beneficial, pointing to targeted subsidies for heavy-lift port expansions and composite-blade R&D.

Portugal: In Portugal, respondents overwhelmingly endorse **public–private financing collaboration** (69%) as the single most powerful enabler, reflecting the country's high perceived capital-scarcity. **Direct government financial support** (60%) also ranks prominently, signifying the importance of grants, concessional debt, and two-way CfD premium structures. **Government–community communication efforts** (56%) and **OEM financing reforms** (53%) are similarly valued, highlighting the need for clear maritime-spatial dialogue and targeted credit lines or equity incentives for turbine and substructure manufacturers. **Policy incentives to lower LCOE** (48%) and **OEM warranty schemes** (43%) garner moderate support, implying that tariff uplifts and long-term performance guarantees are effective but secondary to pure risk-sharing. **Knowledge-transfer platforms** (43%) earn equal standing, reflecting interest in importing best practices from established European floating offshore wind clusters. Finally, **government interventions to curb O&M and manufacturing costs** (47%) round out the top five enablers, underlining the strategic focus on reducing lifecycle costs through targeted R&D grants, port-infrastructure subsidies, and localized fabrication initiatives in Viana do Castelo and Setúbal.

3. Government Support to FOWT Supply Chain Investors



United Kingdom: Respondents were asked whether the UK government currently offers support to investors in the **floating offshore wind turbine (FOWT) supply chain**. According to the survey, **68% of participants answered "Yes",** acknowledging the presence of national schemes, grants, and infrastructure funds aimed at facilitating FOWT-related industrial growth. These stakeholders likely had in mind initiatives such as the **Floating Offshore Wind Manufacturing Investment Scheme (FLOWMIS)**, **Offshore Wind Manufacturing Investment Support**, Innovate UK's funding calls, and the broader Industrial Decarbonisation Challenge programs—all of which provide targeted support for manufacturing, port infrastructure, and R&D. However, a notable **32% of respondents answered "No",** indicating a lack of awareness or access to these mechanisms. This discrepancy suggests that, while support does exist at the national level, **communication gaps, complexity in application procedures, and eligibility restrictions** may limit visibility and uptake, especially among small- and medium-sized enterprises (SMEs), start-ups, and regional developers. The results underscore the need for **simplified,**

transparent, and inclusive investment support frameworks. Respondents indicated that streamlining grant applications, increasing outreach to regional actors, and establishing centralized platforms for accessing funding opportunities would enhance the impact and reach of existing support. Moreover, developing a floating-specific supply chain development strategy—backed by public-private partnerships and regional economic incentives—was viewed as a critical step to ensure the sector matures alongside investor needs and climate targets.

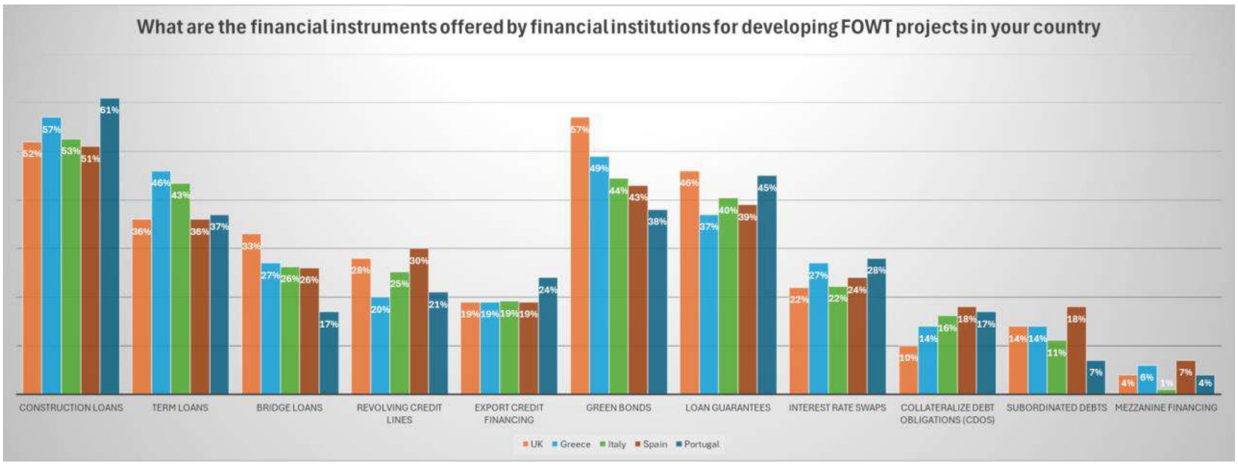
Greece: 55% of survey participants report that the government supports floating offshore wind supply-chain investors, whereas 45% do not. Public backing currently comes via the **Hellenic Development Bank's concessional-loan windows** and targeted grants under the **Recovery and Resilience Facility**, which have financed preliminary yard upgrades and grid-connection studies. However, nearly half of stakeholders perceive these measures as insufficiently tailored to floating offshore wind OEMs and substructure fabricators. To bridge this divide, the Greek Government might consider launching a dedicated guarantee fund for platform-component manufacturers, extending tax-credit schemes to cover heavy-lift vessel charters, and co-financing a national Floating Offshore Wind Cluster to link island-based yards with mainland ports. Enhanced outreach—through a one-stop "Floating Wind Gateway" within the Ministry of Environment and Energy—could also raise awareness of existing support, ensuring that smaller workshops and logistics providers can tap into available funding.

Italy: According to the data collected, the Italian industry seems to be split: 53% of the respondents believe that government support for floating offshore wind supply-chain investment is adequate, while 47% do not. Current measures include **concessional financing from *Cassa Depositi e Prestiti*, tax-credit incentives under the National Recovery and Resilience Plan, and strategic port upgrades in Taranto and Ravenna**. These have catalysed initial orders for semi-submersible hull modules and mooring-chain production. Yet, nearly half of respondents feel under-served—especially SMEs in central and southern shipyards that lack direct access to central-government tenders. To bolster the entire supply chain, the Italian Government could introduce a dedicated Floating Wind Industry Contract of National Strategic Interest, expand accelerated-depreciation allowances for fabrication equipment, and create co-financed R&D consortia linking OEMs, universities, and regional authorities. A centralized "FOWT Supply-Chain Desk" within the Ministry of Enterprise and Made in Italy would enhance transparency and coordinate grant, loan, and tax-credit programs for emerging component producers.

Spain: Responses were evenly divided, with half of stakeholders affirm government support for floating offshore wind supply-chain investors, and half do not. Current frameworks include **ICO's low-interest loan lines, IDAE's renewable-energy grants, and the PERTE ERA cluster initiative**, which has funded several pilot fabrication yards in Galicia and the Basque Country. Despite these measures, many OEMs and sub-contractors report difficulty accessing long-term credit and navigating regional permit variations. To strengthen supply-chain confidence, the Spanish Government might establish a national Floating Wind Supply-Chain Fund—jointly financed by ICO and the European Investment Bank—to guarantee equipment orders. Complementary actions could include expanding Spain's FLOTEX cluster to cover dynamic-cable and turbine-tower production, launching co-funded vocational training centres in key ports, and publishing a consolidated directory of public financing schemes through a "FOWT One-Stop" portal at the Ministry for the Ecological Transition. These steps would help ensure that both large OEMs and smaller SMEs can scale with predictable support.

Portugal: In Portugal, a clear majority of stakeholders (64%) affirm that the government actively supports investors in the floating offshore wind turbine (FOWT) supply chain, though more than a third (36%) remain unconvinced. This widespread perception of public backing likely reflects several recent initiatives: **targeted grants and concessional loans under the Blue Economy Fund, accelerated depreciation allowances for locally manufactured floating foundations, and port-infrastructure upgrades in Viana do Castelo and Setúbal**. Such measures have helped attract manufacturers of semi-submersible platforms, dynamic-cable suppliers, and heavy-lift service providers. However, 36% dissent with the statement suggesting that support may be unevenly distributed or insufficiently communicated—particularly to smaller yards in the Algarve and central-coast regions that lack direct access to central-government channels. To bolster confidence across the entire supply chain, policymakers could consider extending guarantee schemes for equity investors, expanding tax-credit eligibility to cover assembly-line equipment, and launching regional “floating offshore wind clusters” that integrate SMEs into larger consortium bids. Improved transparency around incentive criteria—and a dedicated liaison office within the Ministry of Economy—would also ensure that both domestic and international component suppliers fully capitalize on Portugal’s emerging FPWT market.

5.6 Financial instruments offered by financial institutions for the development of FOWTs



United Kingdom: UK banks and institutional investors offer a broad range of instruments to finance floating offshore wind, but three stand out as most prevalent. **Green bonds** lead at 57%, reflecting London’s deep capital markets and strong demand from pension funds and ESG mandates for labelled-sustainability debt. **Construction loans** account for 52% of responses; these short-term, draw-down facilities fund up-front costs such as hull fabrication, dynamic cables, and installation vessels, with interest rolled into post-commissioning refinancing. **Loan guarantees** (46%) provided by the UK Infrastructure Bank or the British Business Bank mitigate lender risk, allowing banks to extend larger term loans at tighter margins. Beyond these, **term loans** (36%) replace construction debt once power sales under Contracts-for-Difference become operational, carrying lower spreads and amortizing over 10–15 years. **Bridge loans** (33%) and **revolving credit lines** (28%) help manage cash-flow timing between equipment delivery and commissioning. **Export credit financing** (19%) supports turbine imports under UK Export Finance schemes, while **interest rate swaps** (22%) hedge floating-rate exposures. More complex securitisations—collateralized debt obligations (10%) and subordinated debt (14%)—play only a niche role, and **mezzanine tranches** (4%) remain rarely used. The UK thus combines traditional bank products with sustainable-finance innovations to optimise its floating offshore wind capital stack.

Greece: Greek financial institutions prominently provide **construction loans** (57%) to cover CAPEX for floating substructures, mooring systems, and grid connection, often co-financed by the Hellenic Development Bank. **Green bonds** (49%) have emerged under EU-backed climate frameworks, attracting institutional investors to renewable projects. **Term loans** (46%) repay construction facilities post-commercial operation, relying on stabilized cash flows from power-purchase agreements. **Loan guarantees** (37%) reduce senior-lender risk by covering a portion of principal in default scenarios, while **interest rate swaps** (27%) hedge the higher Euribor spreads typical in Greek debt markets. **Bridge loans** (27%) and **revolving credit lines** (20%) address short-term funding mismatches during commissioning and maintenance cycles. **Export credit financing** (19%) supports imported turbines and dynamic cables, subject to local-content rules. Secondary instruments such as Collateralised Debt Obligations (**CDOs)** (14%) and **subordinated debt** (14%) fill junior-capital needs, though **mezzanine financing** (6%) remains limited by market depth. Greece's mix reflects the twin priorities of reducing high funding costs and attracting green-debt investors to nascent floating offshore wind ventures.

Italy: Construction loans (53%) form the backbone of FOWT financing, typically provided by syndicates of commercial banks and *Cassa Depositi e Prestiti*–backed funds. **Green bonds** (44%) complement these loans, leveraging Italy's active sovereign-green bond programme to channel ESG-oriented capital. **Term loans** (43%) replace higher-cost bridge facilities once Projects achieve steady revenues under auction-based premiums. **Loan guarantees** (40%), which are supplied by *Cassa Depositi e Prestiti* and the European Investment Bank, are crucial to lower senior-debt margins and extend tenors. **Bridge loans** (26%) and **revolving credit lines** (25%) address pre-commissioning cash-flow gaps, while **interest rate swaps** (22%) hedge against Euribor volatility. **Export credit financing** (19%) under SACE - Italy's Export Credit Agency and insurance & finance group controlled directly by the Ministry of the Economy and Finance - covers imported turbines and cable systems, and **CDOs** (16%) or **subordinated debt** (11%) serve specialized capital-structure needs, though **mezzanine tranches** (1%) are virtually non-existent due to limited demand. This suite demonstrates Italy's reliance on traditional bank debt, state guarantees, and emerging green-debt instruments to manage FOWT risk and cost profiles.

Spain: Lenders extend **construction loans** (51%) to fund initial CAPEX, often alongside ICO-backed credit lines and EU structural-fund guarantees. **Green bonds** (43%) have gained traction among Iberian pension funds, providing longer tenors and broader investor reach. **Loan guarantees** (39%) from ICO and regional governments improve bankability by absorbing first-loss risk, while **term loans** (36%) amortize once revenue streams under CfD-style auctions commence. **Revolving credit lines** (30%) and **bridge loans** (26%) help manage short-term liquidity between equipment delivery and operational cash flow. **Interest rate swaps** (24%) hedge floating Euribor liabilities, and **export credit financing** (19%) supports turbine imports via the Spanish Export Credit Agency (CESCE). More structured debt instruments—**CDOs** (18%) and **subordinated debt** (18%)—serve to fill junior slots in the capital stack, while **mezzanine financing** (7%) remains a niche solution. Spain's approach blends robust commercial-bank products, green-finance vehicles, and government guarantees to meet the specific needs of floating-wind projects.

Portugal: Portuguese banks and development agencies prominently feature **construction loans** (61%)—the highest share across the surveyed markets—to underwrite platform fabrication and installation in facilities like Viana do Castelo. **Loan guarantees** (45%) from the Portuguese Development Bank (*Banco Português de Fomento*) and the European Investment Bank bolster senior-debt capacity by covering default risk. **Term loans** (37%) provide amortizing refinancing post-commissioning, while **green bonds** (38%) mobilize ESG-focused capital through Portugal's sovereign-green bond programme. **Revolving credit lines** (21%) and **bridge loans** (17%) address timing mismatches, and **export credit financing** (24%) supports turbine and cable imports under UKEF-style arrangements. **Interest rate swaps** (28%) hedge local-currency floating rates, while **CDOs** (17%) and **subordinated debt** (7%) fill junior-capital requirements. **Mezzanine financing** (4%) remains rare. Portugal's financial landscape thus combines traditional banking, public guarantees, and nascent green-debt instruments to reduce the cost of capital and support the country's nascent floating offshore wind pipeline.

5.7 Comparison between the MARINEWIND Labs

Table 16 below aims to provide a comparison of the results of the Survey collected within the five MARINEWIND Labs, concerning the thematic section dedicated to the financial analysis, which included key aspects such as: (i) Investment Climate and Risk Appetite; (ii) CAPEX range; (iii) OPEX Premium; (iv) LCOE estimates; (v) ROI and Payback; (vi) Financial barriers; (vii) Potential solutions.

Aspect	UK	Greece	Italy	Spain	Portugal
Overall Investment Climate & Risk Appetite	High perceived risk (45–50%) but strong potential.	Elevated risk due to limited track record, though recognized deep-sea potential.	Moderate-to-high risk, 40–45% rating it riskier than onshore wind.	Risky but promising for deeper waters.	Balanced optimism.
	CfDs reduce revenue uncertainty.	Relatively new regulatory environment.	Government goals align with EU decarbonization.	Onshore wind is mature; FOWT is seen as the next frontier.	45% see FOWT as riskier than established renewables.
	Established offshore wind expertise.				Builds on wave-energy experience (e.g. WindFloat).
CAPEX Range	£2.5–4 million/MW (some higher).	€2–3.5 million/MW, with higher	€2.5–4 million/MW.	€2–4 million/MW.	€2.5–3.5 million/MW, can reach €4 million

		outliers due to imports.			for specialized systems.
OPEX Premium	20–40% above fixed-bottom in early commercial stages.	20–40% above fixed-bottom, dependent on new supply chains & deep-water conditions.	25–35% above fixed-bottom wind.	25–40% higher than conventional offshore, though may drop with technology improvements.	20–35% higher, at least initially; Atlantic conditions can be demanding.
LCOE Estimates	£100–130/MWh initially; potentially £70–90/MWh in 5–10 years.	€100–130/MWh, possible reduction to ~€70–90/MWh with supply chain dev.	€80–120/MWh, can dip below €80 with scale & standardization.	€85–120/MWh, might drop to ~€70–80 over time.	€80–110/MWh, with potential sub-€80 if local manufacturing & policy support strengthened.
				High capacity-factor sites are beneficial.	
ROI / Payback	8–10 years (optimistic) to 14–18 years (cautious).	8–12 years (optimistic) to 12–16 years (cautious).	8–12 years (optimistic), up to 12–16 years (cautious).	8–12 years (optimistic), 12–15 years with regulatory or supply chain delays.	8–12 years if stable auctions,12–16 years if risk remains high (financing, grid access, etc.).
Top Financial Barriers	High CAPEX & uncertain supply chain capacity.	High CAPEX, limited local manufacturing.	High CAPEX from platform imports.	Need for specialized substructures, uncertain local acceptance near tourism areas.	Limited local manufacturing for mooring/cables.
	Technology risk premium.	Fragmented regulatory environment.	Varied permitting among regions & authorities.	High perceived risk for new lenders.	Atlantic conditions (high storms).
	Potentially complex consenting in devolved areas.	Lenders cautious.	Investor caution.		Some banks unfamiliar with FOWT.

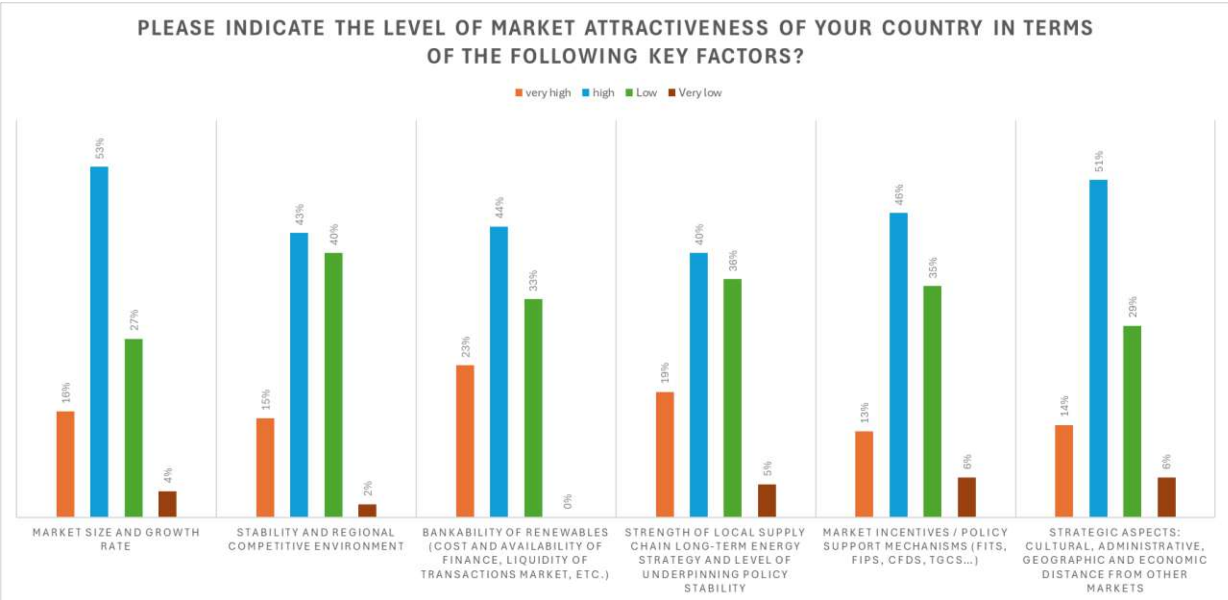
Potential Solutions	Ring-fenced CfDs for floating.	Stable revenue mechanism (auctions/FiT).	Dedicated offshore wind auctions or feed-in premiums.	Clarity on FOWT auctions, possible feed-in premiums.	Auction or feed-in premium for FOWT.
	Government-backed low-interest loans.	EU-level or national low-interest loans.	Fiscal incentives for maritime industries.	Port upgrades for floating assembly.	EU or national-level loan guarantees.
	Industrial strategy for large substructures.	Supply chain partnerships.	EU grants.	R&D partnerships.	Public- private port infrastructure Investments.

Table 16 Result comparison between the MARINEWIND Labs

6. MARKET ANALYSIS

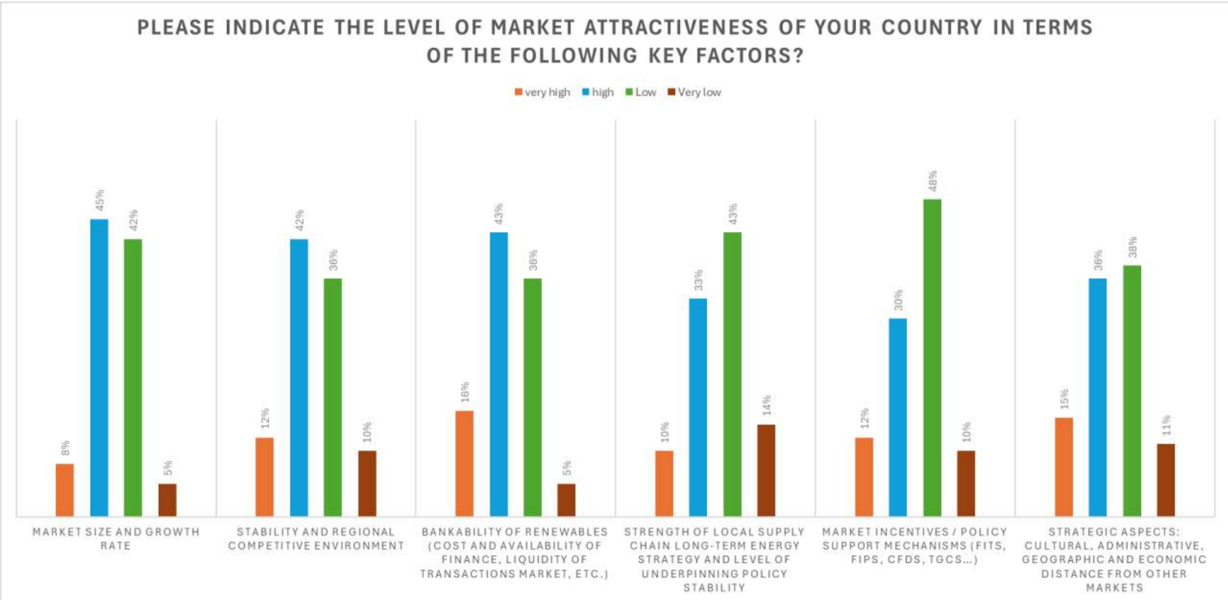
6.1 Market attractiveness

United Kingdom



UK stakeholders generally view their domestic floating offshore wind market as moderately attractive but identify important areas for improvement. Regarding **market size and growth**, 69% of the respondents rate it as “Very High” (16%) or “High” (53%), while 31% express reservations (“Low” or “Very Low”), reflecting confidence in the UK’s deployment pipelines but recognising that floating offshore wind remains a small niche. The **competitive environment and regulatory stability** receive a similar assessment: 58% of the respondents selected “Very High/High”, while 42% sleceted “Low/Very Low,” indicating that national and devolved frameworks are seen as broadly supportive, albeit with some regional inconsistencies. The UK's **bankability** scores strongest, with 67% assessing it as "Very High/High" and no respondents rating it "Very Low," underscoring robust capital markets, liquid CfD transactions, and mature project-finance structures. In contrast, **supply-chain depth and long-term strategy** elicit a more muted response, with 59% rating them as "Very High/High" against 41% assessing them as "Low/Very Low," highlighting the need for clearer multi-decade roadmaps and further domestic fabrication capacity. **Market incentives**, which include Renewable Obligation Certificates (ROCs), Feed-in Tariffs (FITs), and Contracts for Difference (CfDs), are rated as "Very High/High" by 59%, even if 41% of the respondents find them insufficiently tailored to floating offshore wind cost premiums. Finally, **strategic factors**—including geographic proximity to export markets and administrative alignment—earn a solid 65% indicating them as "Very High/High," with 35% of the respondents concerned about bureaucratic or cultural hurdles. Overall, while the UK's financial underpinnings and policy pedigree remain strong, stakeholders point to the need for expanded scale, supply-chain development, and floating-specific incentive enhancements to fully realise the market's potential.

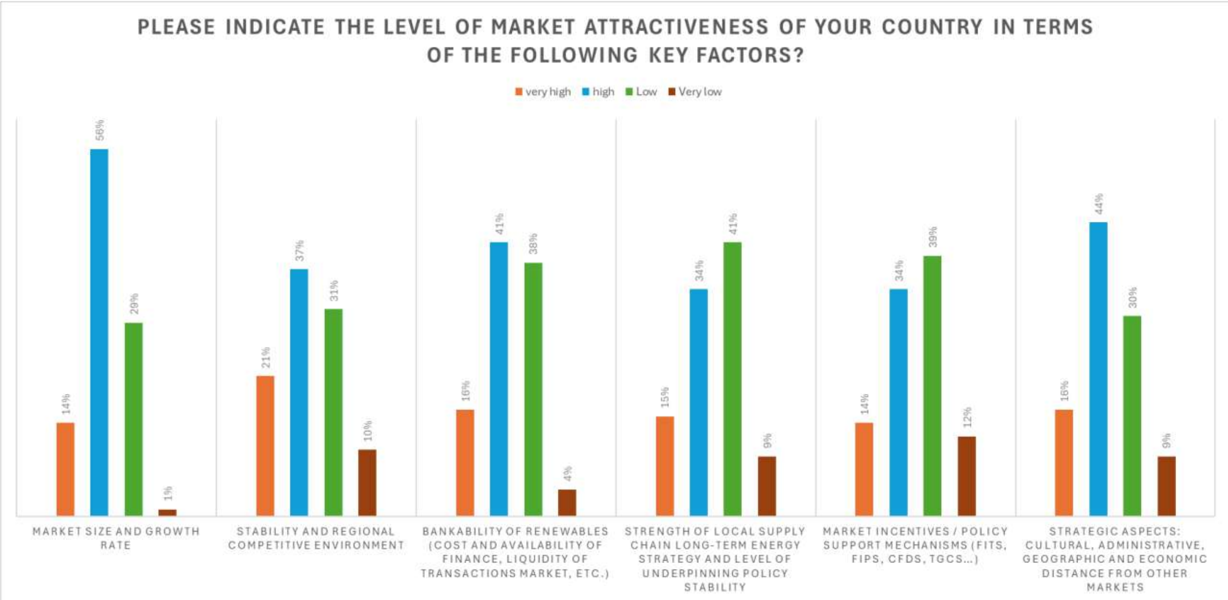
Greece



Greek stakeholders present a cautiously optimistic view of their domestic floating offshore wind market across six key dimensions. **Bankability** is seen as the strongest attribute: 59% of the respondents rate the cost and availability of finance, liquidity of the transactions market, and overall investor confidence as "Very High" (16%) or "High" (43%), while only 41% express concern. Similarly, the **stability and regional competitive environment** earns a "Very High" or "High" endorsement (54%), reflecting confidence in Greece's regulatory framework and growing Eastern Mediterranean renewables cluster. By contrast, perceptions of **market size and growth rate** are more muted: 53% rate opportunity as "Very High" or "High," but a substantial 47% view scale or expansion prospects as "Low" or "Very Low," underscoring that floating-wind remains at an early stage compared to fixed-bottom capacity. **Market incentives**—including FITs, Feed-in premiums (FIPs), and auction-style CfD pilots— were rated as "Very High" or "High" support by the 42% of the respondents (respectively 12% and 30%), with 58% deeming them insufficiently tailored to floating concepts. The **strength of the local supply chain and policy stability** is judged even less favorably: just 43% "Very High/High" versus

57% “Low/Very Low,” indicating a need for clearer multi-year energy plans and enhanced domestic manufacturing. Finally, **strategic factors**—cultural, administrative, and geographic proximity to other markets—achieve a middling 51% “Very High/High” score, pointing to Greece’s advantageous location but also highlighting challenges in cross-border logistics and regional integration. Overall, while Greece’s financial underpinnings and regulatory stability are perceived as solid foundations, investors see the principal areas for improvement in expanding market scale, refining incentive design, and deepening the local floating-wind supply chain.

Italy



Italian stakeholders offer a cautiously optimistic assessment of their floating-wind market across six dimensions, with growth prospects and competitive stability viewed more favorably than supply-chain maturity or incentive design.

- **Market Size and Growth Rate**: 70% rate Italy’s opportunity as “Very High” (14%) or “High” (56%), while 30% perceive limited scale or slower expansion—reflecting confidence in the country’s extensive coastline and planned auctions, tempered by the early stage of floating deployment.
- **Stability and Competitive Environment**: 58% judge the regulatory and regional environment as “Very High” (21%) or “High” (37%), with 41% seeing potential policy shifts or uneven regional support, particularly across diverse administrations from Sicily to Lombardy.
- **Bankability of Renewables**: 57% assign “Very High” (16%) or “High” (41%) to finance availability and transaction liquidity, but 42% express reservations, highlighting Italy’s comparatively elevated borrowing costs and limited project-finance track record in floating concepts.
- **Supply-Chain Strength & Policy Stability**: Only 49% rate these factors as “Very High” (15%) or “High” (34%), whereas 50% see long-term strategy and local manufacturing capacity as “Low” or “Very Low,” underscoring the need for clearer multi-decade roadmaps and enhanced yard

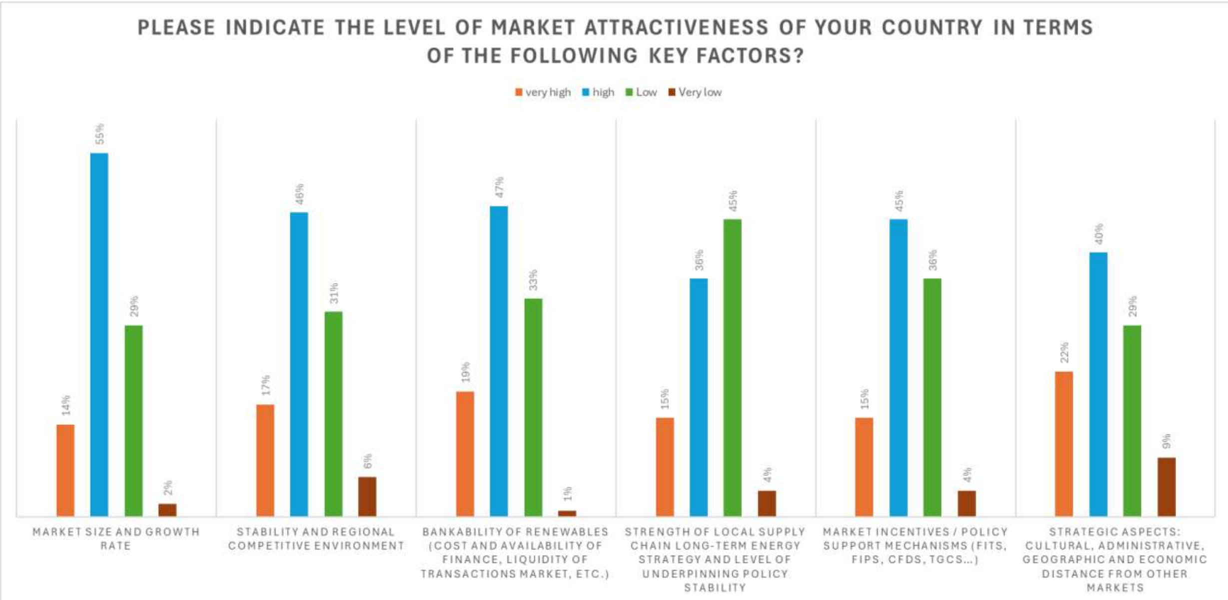
capabilities.

- **Market Incentives**: 48% regard FITs, FIPs, or CfD-style mechanisms as "Very High" (14%) or "High" (34%), while 51% find them insufficiently tailored to floating-wind costs, suggesting auction premiums or tax credits require refinement.

- **Strategic Aspects**: 60% view cultural, administrative, and geographic factors as "Very High" (16%) or "High" (44%), leveraging Italy's proximity to Mediterranean markets, though 39% note bureaucratic complexity and regional fragmentation as barriers.

Overall, **Italy's floating-wind market is seen as moderately attractive**, with solid growth potential and financing underpinnings, yet requiring targeted supply-chain development and incentive enhancements to fully capitalize on its strategic coastal advantages.

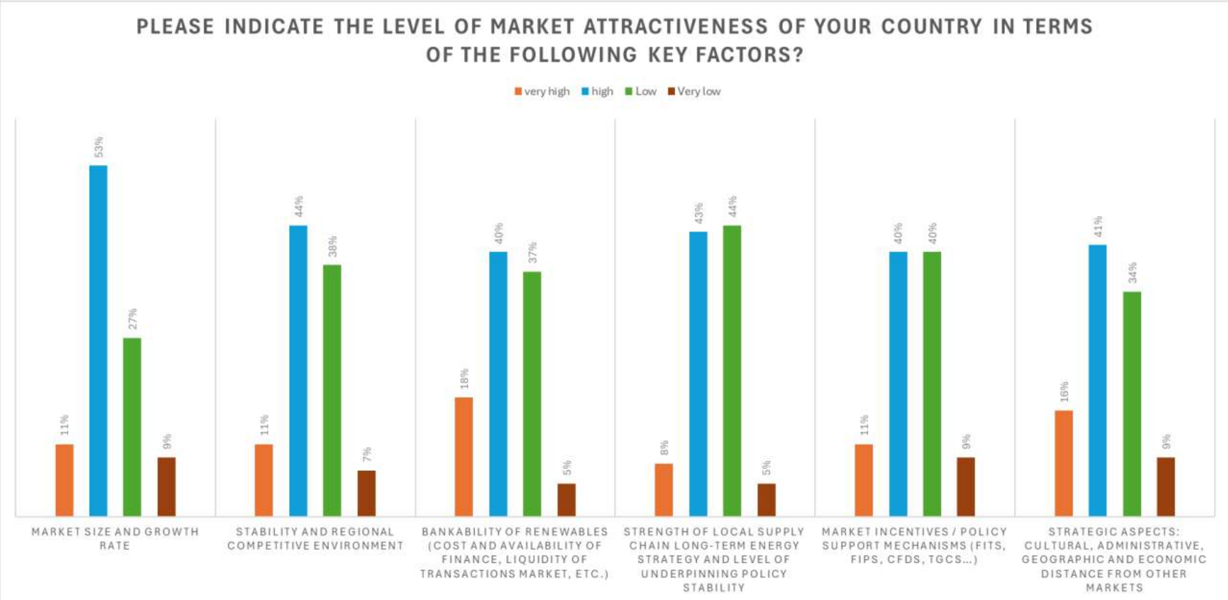
Spain



Spanish respondents paint a picture of moderate market appeal tempered by supply-chain and incentive gaps. Concerning **market size and growth**, 69% rate Spain as "Very High" (14%) or "High" (55%), with only 31% seeing limited expansion potential—reflecting confidence in the Iberian extensive coastline and planned floating offshore wind auctions, alongside acknowledgement that capacity remains nascent. The **stability and competitive environment** fare similarly, with the 63% of the respondents rating them as "Very High" (17%) or "High" (46%) against the 37% regarding it as "Low/Very Low," suggesting Spain's regulatory framework and inter-regional cooperation are broadly solid, albeit with some regional policy variation. Spain's **bankability of renewables** emerges as a relative strength, with the 66% rating it as "Very High/High" (respectively 19% and 47%) and only 1% as "Very Low," underscoring robust financing avenues—from ICO credit lines to active PPA markets—and ample transaction liquidity. By contrast, **supply-chain depth and long-term policy stability** provoke more caution: only 51% regarded these aspects ad "Very High/High", while 49% view these factors as "Low" or "Very Low," highlighting the need for clearer multi-decade energy roadmaps and expanded domestic fabrication capacity for semi-subs and dynamic cables. **Market incentives** (FITs, FIPs, CfDs) receive a

60% as “Very High/High” endorsement (respectively 15% and 45%), yet 40% find them insufficiently aligned to floating offshore wind cost structures, implying that tariff adders or dedicated auction pots may be required. Finally, according to 62% of the respondents, **strategic aspects**— such as geographic proximity to European markets and administrative alignment— are “Very High/High,” albeit 38% are concerned about bureaucratic complexity or cultural distance. In summary, Spain’s floating offshore wind market is seen as competitively bankable and poised for growth, but unlocking its full potential will hinge on deepening supply-chain capabilities and refining incentive designs to lower the levelised cost of energy for floating platforms.

Portugal



Portuguese stakeholders present a cautiously positive—but nuanced—view of their floating-wind market across six key factors.

- **Market Size and Growth Rate**: A solid 64% rate opportunity as “Very High” (11%) or “High” (53%), while 36% see limited scale or slower expansion, reflecting confidence in Portugal’s extensive Atlantic coastline yet acknowledging that floating capacity is still at an early stage.
- **Stability and Competitive Environment**: 55% assign “Very High” (11%) or “High” (44%) marks to the regulatory framework and market competitiveness, with 45% expressing concerns about regional disparities or evolving policy landscapes.
- **Bankability of Renewables**: At 58% “Very High/High” (18% + 40%), Portugal’s financing climate—encompassing credit availability, transaction liquidity, and investor confidence—is viewed as among the more robust in Southern Europe, though 42% find cost-of-capital or funding structures still challenging.
- **Supply-Chain Strength & Policy Stability**: Only 51% rate these factors as “Very High” (8%) or “High” (43%), with 49% judging domestic manufacturing capacity and long-term energy roadmaps as insufficient, underscoring a need for clearer multi-decade planning and yard expansions.

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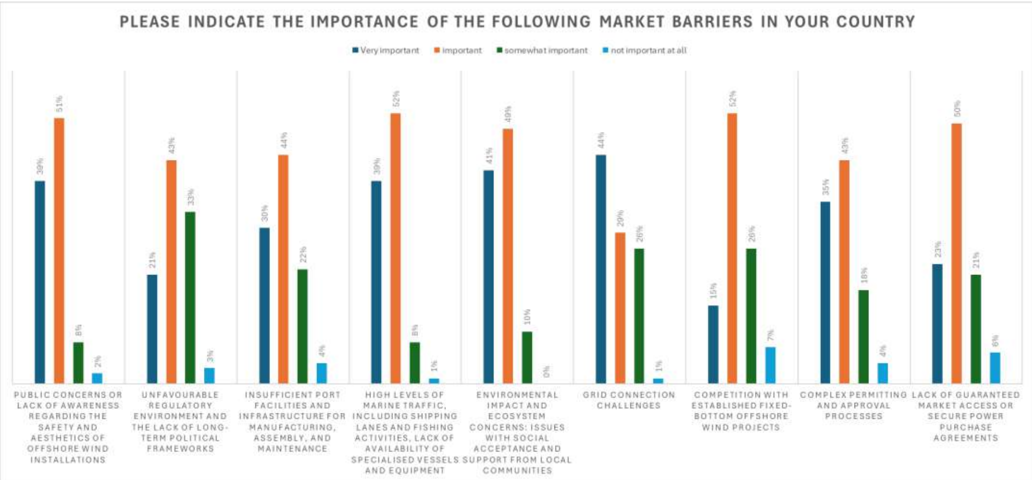
- **Market Incentives**: 51% endorse existing mechanisms (FITs, CfDs, tax credits) as “Very High/High,” whereas 49% deem them inadequate to offset floating-specific cost premiums, pointing to the potential value of dedicated auction pots or enhanced tariff adders.
- **Strategic Aspects**: A favourable 57% “Very High/High” (16% + 41%) rating highlights Portugal’s geographic proximity to export markets and cultural alignment with European partners, though 43% note administrative or logistical hurdles remain.

In sum, Portugal’s floating-wind market is broadly bankable and poised for growth, but it will require targeted supply-chain development, clearer long-term policy commitments, and refined incentive design to fully capitalize on its strategic coastal advantages.

4. Market Barriers

United Kingdom



British stakeholders identified a range of technical, social, and market obstacles that could slow floating-wind deployment, with **grid-connection challenges** cited as the most critical barrier (44% “Very important,” 29% “Important,” only 27% “Somewhat/not important”), reflecting transmission-network constraints and queue backlogs under the current consenting process of the National Grid **Energy System Operator** (ESO) Close behind are **social and environmental concerns**—with 41% of the respondents rating ecosystem impacts and local acceptance as “Very important” and 49% as “Important,” while 39% similarly highlight public worries over safety and visual impacts—underscoring the need for proactive community engagement and robust environmental monitoring. **Marine-traffic conflicts** (39% “Very important,” 52% “Important”) also rank highly, pointing to scheduling and spatial-planning issues around shipping lanes and fishing grounds, as well as the scarcity of specialised service-vessel capacity. At the regulatory level, respondents view **complex permitting and approval processes** as a significant hurdle (35% “Very important", 43% “Important”), tied to multiple consenting authorities (BEIS, MMO - Marine Management Organisation, Crown Estate) and lengthy Environmental Impact Assessments. The **regulatory environment and long-term political frameworks** receive mixed reviews—21% “Very important” but 33% “Somewhat important”—indicating confidence in the UK’s offshore-wind policy architecture overall, yet concern that floating-specific measures (e.g., differentiated strike-prices) lack explicit statutory backing. **Supply-chain**

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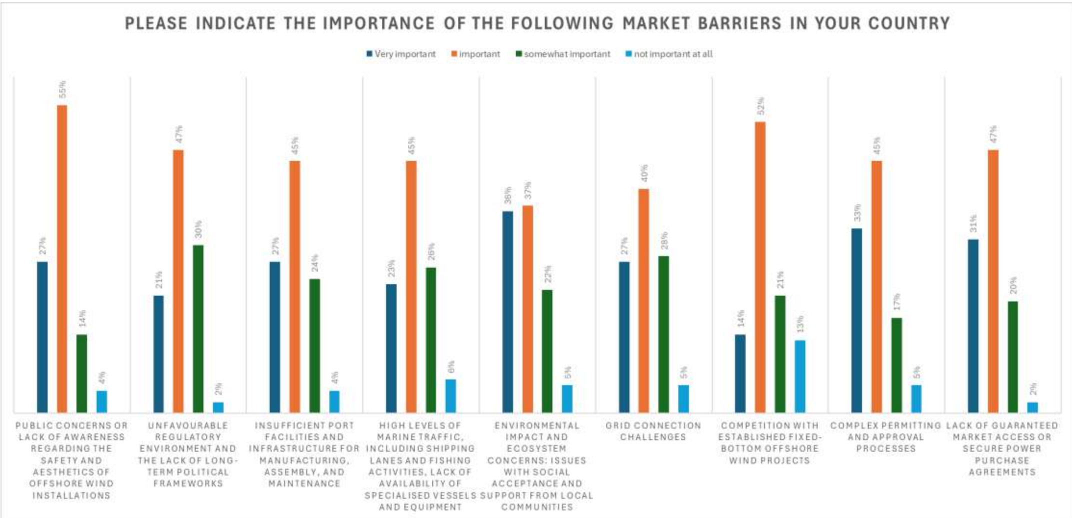
infrastructure emerges as a material barrier (30% “Very important,” 44% “Important”), with limited port capacity for large-scale prefabrication and deep-water quayside berths delaying serial production. By contrast, **competition with fixed-bottom projects** is judged less critical (15% “Very important,” 52% “Important,” 33% “Somewhat/not important”), reflecting the complementary nature of floating vs. fixed technologies rather than zero-sum market competition. Finally, **secure market access** through long-term power-purchase agreements is seen as moderately important (23% “Very important,” 50% “Important”), suggesting that while Contracts-for-Difference provide a baseline of revenue certainty, additional bilateral PPAs may be needed to underpin merchant portions of project cash flows. Collectively, these findings highlight the need for coordinated grid-upgrades, streamlined consenting, targeted community outreach, and expanded port-infrastructure investments to unlock the UK’s floating offshore wind potential.

Greece



Greek stakeholders identified a mix of social, regulatory, and infrastructural hurdles that could impede floating offshore wind deployment. **Public acceptance issues** top the list, with 27% of the participants rating safety and aesthetic concerns as “Very important” and 55% as “Important,” representing a combined 82%. This underscores the need for robust outreach and transparency around visual impact, noise, and marine-wildlife protections. **Complex permitting and approval processes** follow closely: 33% deem them as “Very important” and 45% as “Important” (78% in total), reflecting multi-agency overlaps (Ministry of Environment, Navy, Archaeology) and lengthy Environmental Impact Assessments. Equally critical is the **lack of guaranteed market access or secure PPAs**, cited by 78% (31% “Very important,” 47% “Important”), indicating that investors seek clearer long-term revenue contracts beyond auction-based premiums. **Environmental and ecosystem concerns**—including local opposition tied to habitat impacts—are selected by 73% of respondents (36% “Very important,” 37% “Important”), while **insufficient port and assembly infrastructure** scores 72% (27% + 45%), highlighting the urgent need for yard upgrades. According to the 68% of the respondents, **unfavourable regulatory frameworks** and **marine-traffic conflicts** are deemed to be “Very important” or “Important,” pointing to the necessity of floating-specific licensing rules and coordinated maritime spatial planning with fisheries and shipping authorities. **Grid-connection challenges** (67%) and **competition from established fixed-bottom projects** (66%) round out the list, indicating concerns over network capacity and market saturation.

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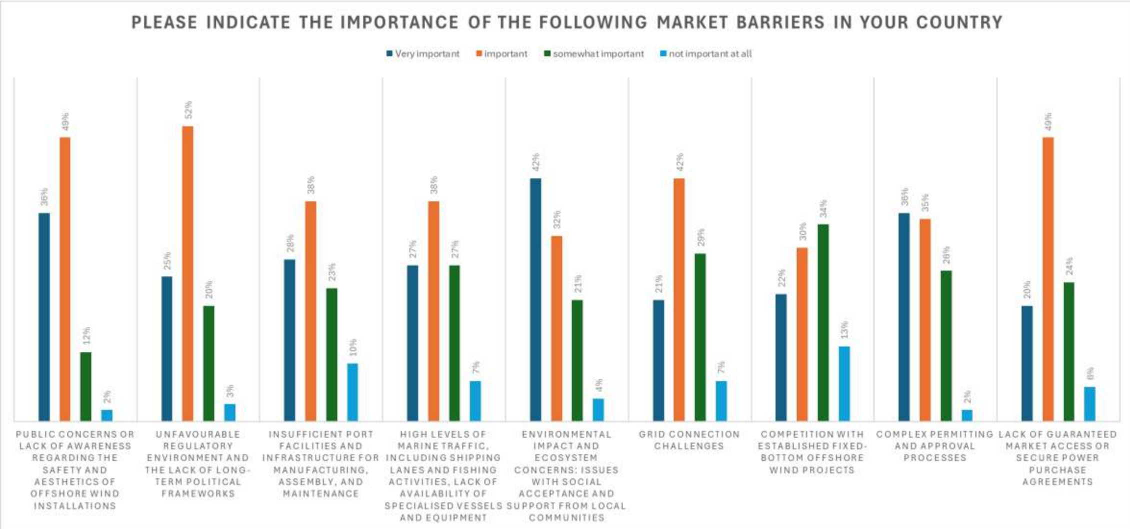
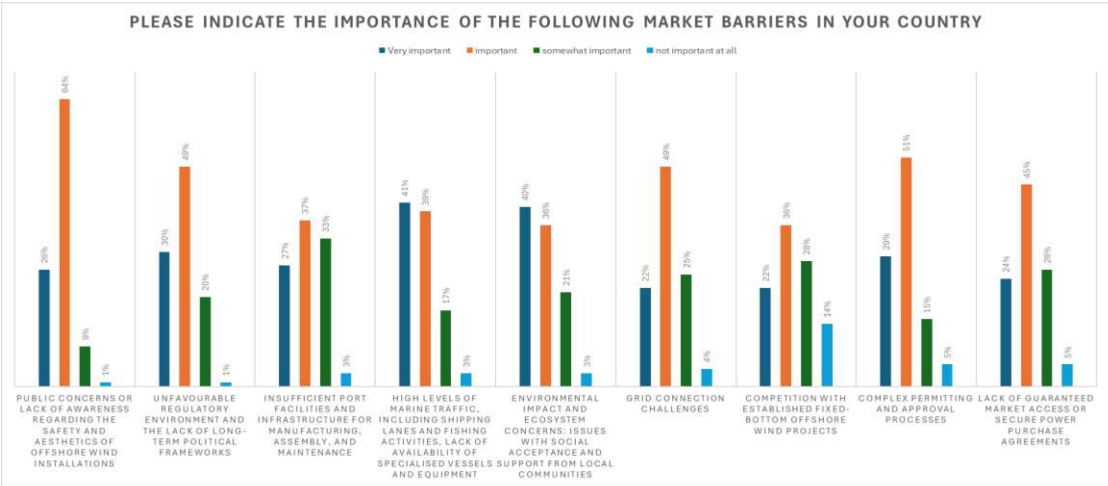
Overall, Greek investors call for streamlined permitting, reinforced PPA regimes, targeted port-infrastructure investments, and proactive community engagement to overcome these barriers and unlock the country's floating offshore wind potential.

Italy



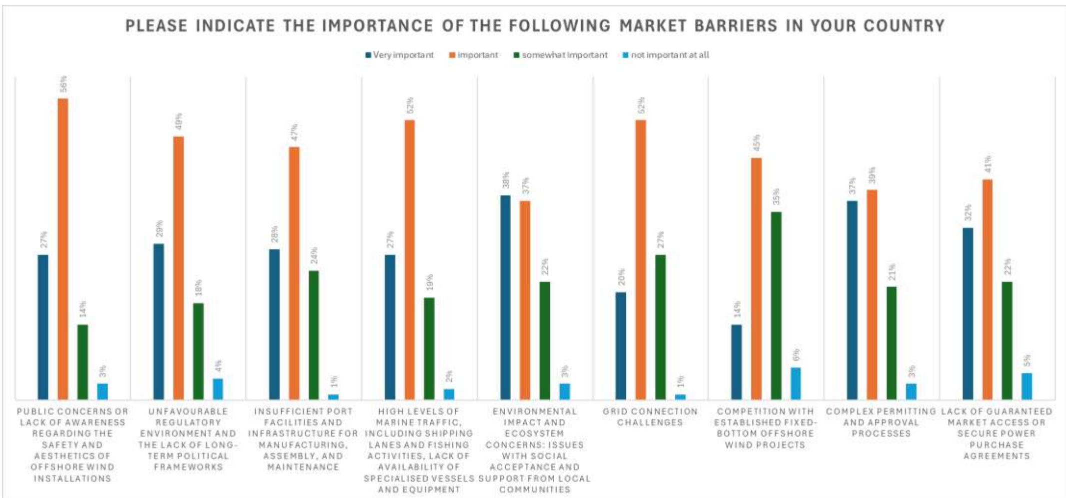
Italian stakeholders highlighted a mix of social, regulatory, and commercial obstacles to floating offshore wind deployment. Foremost, **public concerns over safety and aesthetics** top the list, with 36 % of the respondents considering them as "Very important" and 49% as "Important" (85 % total), underscoring the need for clear visualisations, noise-mitigation data, and community outreach. Next, **regulatory uncertainty and the absence of long-term political frameworks** register as critical for 77% of the participants (25% "Very important," 52% "Important"), pointing to calls for stable, floating-specific auction mechanisms and seabed-lease rules. **Environmental and ecosystem impacts** form the third major barrier (74 %), reflecting stakeholder sensitivity to marine-habitat protection and local acceptance. **Complex permitting and approval processes** follow closely (71 %), as multi-tiered authorizations across national ministries, regional governments, and port authorities lengthen project timetables. **Lack of guaranteed market access or secure PPAs** (69 %) is also seen as a significant hurdle, with 49 % rating it as "Important," suggesting that beyond auction premiums, bilateral contracts may be needed to underpin revenue forecasts. Other concerns—**port-infrastructure shortfalls** (66 %), **marine-traffic conflicts** (65 %), and **grid-connection challenges** (63 %)—round out the picture, while competition from established fixed-bottom wind (52 %) is viewed as the least pressing barrier. Overall, Italy's floating offshore wind sector requires concerted efforts on social engagement, streamlined regulation, and market-access guarantees to unlock its full potential.

Spain



Spanish respondents highlighted a combination of social, regulatory, and infrastructure challenges that could constrain floating offshore wind deployment. **Public acceptance** emerges as the most critical barrier: a total of 90% of the respondents' rate safety and aesthetic concerns as “Very important” (26%) or “Important” (64%), underscoring the necessity of clear visual simulations, noise-reduction strategies, and proactive community engagement. Closely following, **permitting complexity** is cited by 80% (29% “Very important,” 51% “Important”), reflecting the multilayered approval process involving central, regional, and port authorities that can extend timelines and increase pre-development costs. **Marine-traffic conflicts** also rank highly (80%), pointing to the need for coordinated maritime-spatial planning to deconflict shipping lanes, fishing grounds, and marine conservation areas. **Environmental and ecosystem considerations** were indicated by 76% of the survey participants, indicating stakeholders’ sensitivity to habitat protection and local support. **Grid-connection challenges** are regarded as significant by 71% respondents, underlining network constraints and queue backlogs under Spain’s TSO regimes. **Regulatory frameworks** (79%), **lack of secure market access or PPAs** (69%), and **insufficient port infrastructure** (64%) further emphasize the need for floating-specific auction adders, bilateral offtake routes, and port upgrades in Galicia and the Canary Islands. **Competition from fixed-bottom projects** is viewed as less pressing (58%), suggesting that floating offshore wind installations will largely open new zones rather than displace existing capacity.

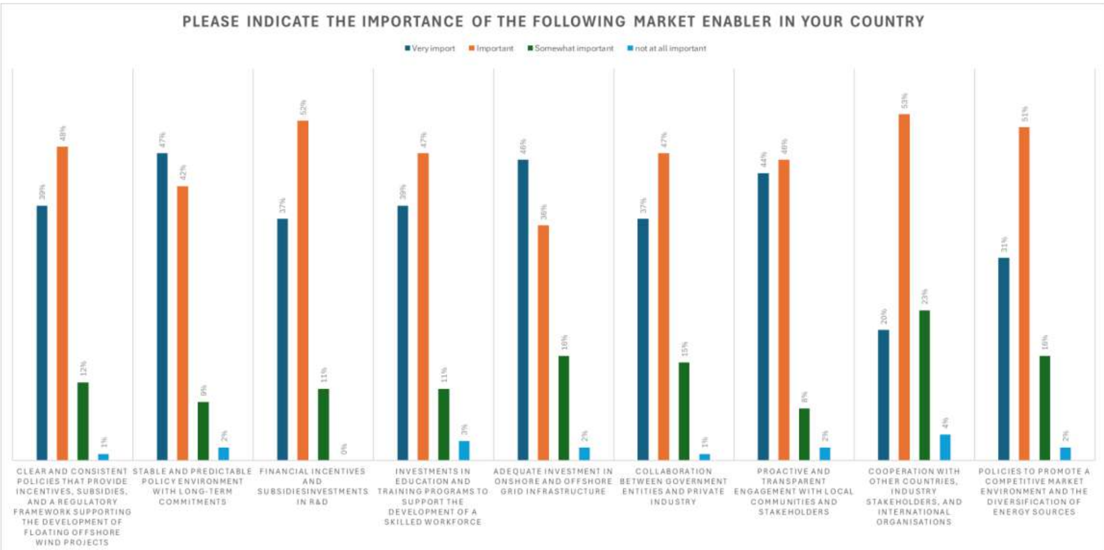
Portugal



Portuguese stakeholders identified several critical obstacles to floating offshore wind deployment, with social acceptance, regulatory complexity, and infrastructure limitations rating highest. **Public concerns over safety and aesthetics** lead this list: 83% of respondents marked these issues as “Very important” (27%) or “Important” (56%), underscoring the need for transparent visual impact studies, noise-mitigation measures, and targeted community outreach. **Complex permitting and approval processes** followed closely, with 76% deeming them a major barrier (37% “Very important”,39% “Important”). This reflects the multi-tiered consent regime involving national ministries, **Regional Coordination and Development Commission** (CCDRs), and local port authorities that can extend timelines and inflate development costs. **Grid connection challenges** are cited by the 72%, pointing to network-capacity constraints and queue backlogs under the planning process of the National Energy Grids (*Redes Energéticas Nacionais*). **Insufficient port facilities** for manufacturing, assembly, and maintenance also rank highly (75% indicating it as “Very important” and “Important”), highlighting the need for berthing upgrades at Viana do Castelo and Setúbal to handle large semi-submersible platforms. **Environmental and ecosystem concerns** (75%) reflect stakeholder sensitivity to marine-habitat protection and the importance of securing local support. Other barriers include an **unfavourable regulatory environment and lack of long-term political frameworks** (78%), **marine-traffic conflicts** (79%), and **lack of guaranteed market access or secure PPAs** (73%). Competition with established fixed-bottom wind is viewed as less critical (59%), suggesting that floating offshore wind will expand into new zones rather than displace existing projects. Overall, respondents call for streamlined, floating-specific consenting, targeted port-infrastructure investments, robust grid-expansion plans, and proactive community-engagement programmes to overcome these barriers and unlock Portugal’s floating offshore wind potential.

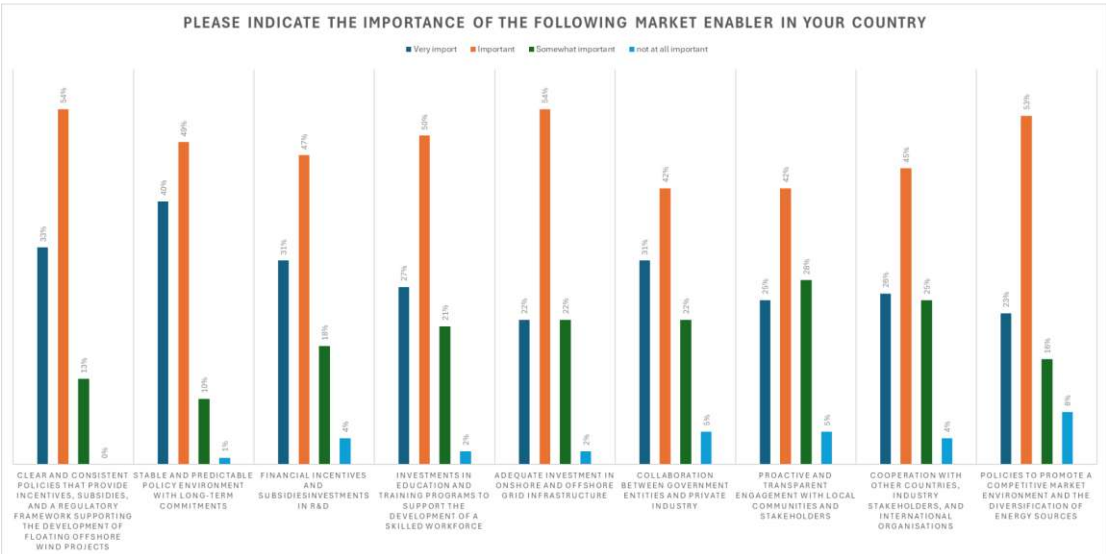
6.2 Market Enablers

United Kingdom



UK stakeholders consistently emphasise the need for robust, long-term frameworks and physical infrastructure to underpin floating offshore wind scale-up. The single most-cited enabler is **development of manufacturing and supply-chain infrastructure**, with 50% of the respondents rating it as “Very important” and 38% as "Important." This underscores widespread concern that, without deep-water quays, heavy-lift terminals, and onshore assembly yards, the sector cannot achieve serial production or cost-reductions. Closely following, there is the call for a **stable and predictable policy environment**, which 47% deemed as "Very important" by the 47% of the respondents and "Important" by the 42%. Respondents highlighted that multi-decade strike-price guarantees, clear licensing windows, and phased volume targets are essential to give confidence in long-term returns to investors. **Adequate investment in grid infrastructure** also ranks highly (46% "Very important," 36% "Important"), reflecting the need for new transmission corridors and substation upgrades to evacuate power from remote floating-wind clusters. On the demand side, **proactive and transparent community engagement** is seen as "Very important" by 44% of the respondents and "Important" by the 46%, acknowledging that social licence hinges on early dialogue over visual impact, fishing-coexistence plans, and environmental monitoring. **Clear and consistent policy incentives**—including targeted grants, R&D subsidies, and regulatory frameworks—garner strong support (39% "Very important", 48% "Important"), as do **financial incentives for innovation** (37% "Very important", 52% "Important") and **education/training programmes** (39% "Very Important", 47% "Important"). Less central, but still relevant, are **collaboration between government and industry** (37% "Very Important", 47% "Important"), **policies to promote market diversification** (31% + 51%), and **international cooperation** (20% "Very important", 53% "Important"). Overall, UK respondents agree that a combination of strategic infrastructure investment, policy clarity, and stakeholder engagement will be indispensable to unlocking the country's floating offshore wind potential.

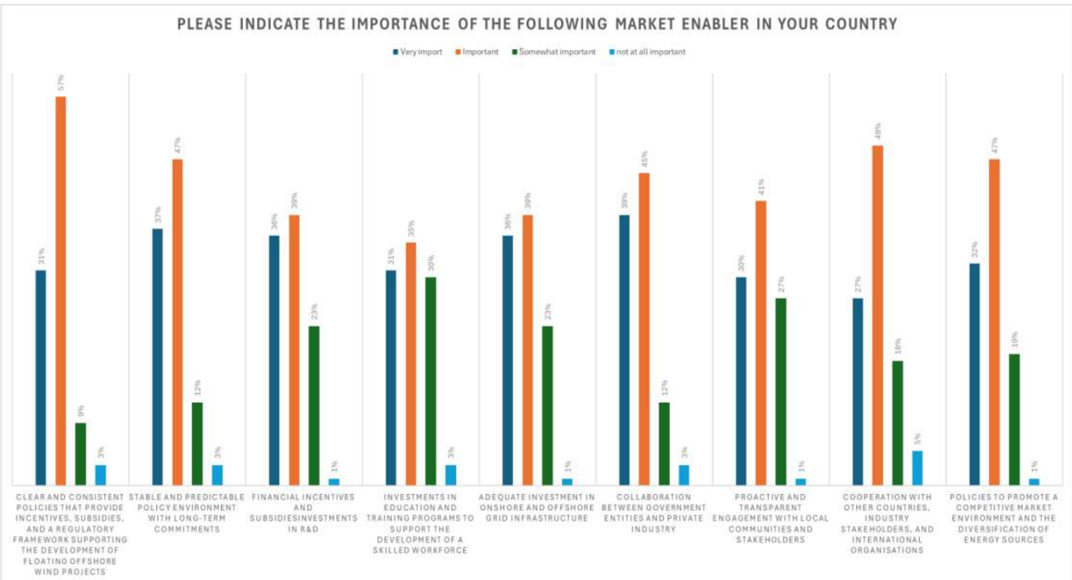
Greece



Greek stakeholders uniformly emphasise the need for **policy certainty and financial de-risking** kick-starting floating offshore wind investment. A clear and consistent regulatory framework—backed by targeted incentives and subsidies—tops the list, with 87% rating it "Very important" (33%) or "Important" (54%). Nearly as many (89%) underscore the importance of a stable, predictable policy environment with long-term commitments (40% "Very important," 49% "Important"), reflecting a desire for multi-decade auction schedules, fixed floor-price mechanisms, and transparent seabed-lease rules. **Financial incentives coupled with R&D investments** receive strong support (78%

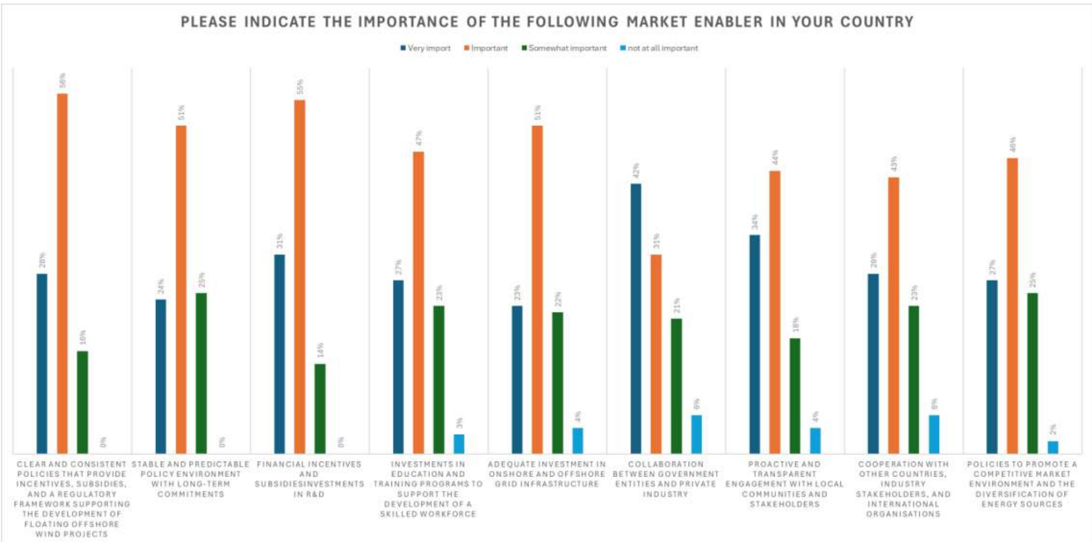
"Very important" and "Important"), as do **development of manufacturing and supply-chain infrastructure** (80%), highlighting the urgency of localizing substructure fabrication and cable assembly. Similarly, **grid-infrastructure upgrades** rank highly (76%), with 22% deeming them as "Very important" and 54% as "Important," pointing to the need for reinforced transmission corridors and substation capacity to evacuate power from remote floating-wind sites. On the human-capital front, **education and training programmes** attract substantial backing, with 77% of the respondents rating these aspects as "Very important" and "Important", emphasising the need for skilled marine-operations technicians, naval architects, and subsea engineers. **Collaboration between government and industry** is likewise valued by 73% of respondents, suggesting that public–private partnerships can streamline pilot projects and prototype development. By contrast, **proactive community engagement** (67%) and **international cooperation** (71%)—while still important—receive relatively fewer "Very important" ratings, indicating these are viewed as supportive rather than foundational. Finally, 76% of the respondents endorse **policies to promote a competitive market environment and diversify energy sources**, underscoring confidence that a broader renewables mix will enhance floating-wind bankability. In sum, Greek investors call for a **policy-first approach**—anchored in long-term regulatory clarity, robust financial incentives, and targeted infrastructure development—to unlock the country's floating offshore wind potential.

Italy



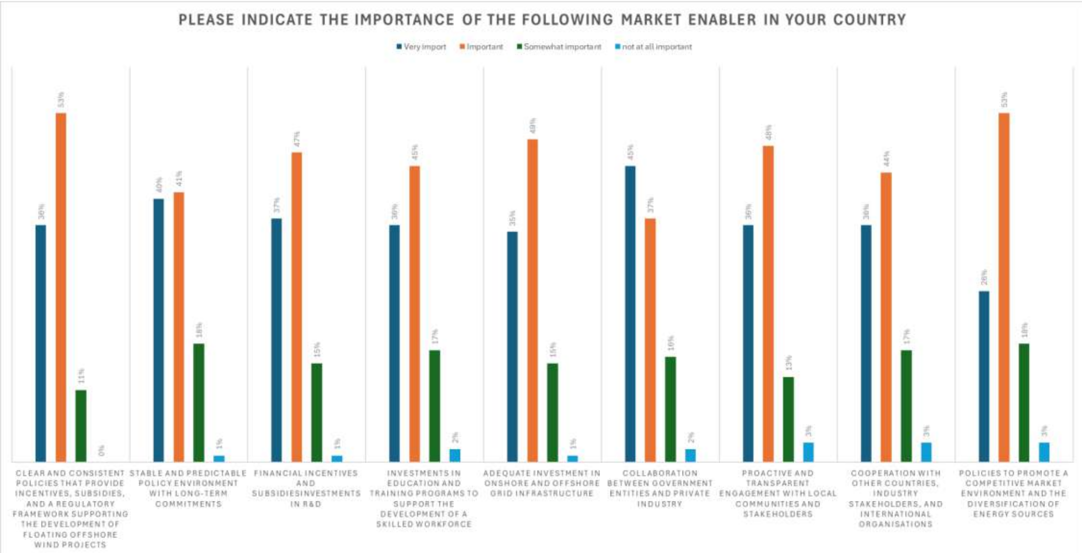
Italian stakeholders place a premium on **policy clarity and stability**, with 88% of the respondents rating *"clear and consistent incentives, subsidies, and regulatory frameworks"* as "Very important" (31%) or "Important" (57%). Moreover, 84% emphasise the need for a **stable, predictable policy environment with long-term commitments** (37% "Very important," 47% "Important"), underscoring the value of multi-year auction schedules, fixed strike-price corridors, and codified seabed-lease conditions. **Financial incentives linked to R&D** attract strong support according to 75% of the respondents, reflecting recognition that targeted grants or tax credits for floating-wind technology development can reduce CAPEX and accelerate learning-curve effects. Equally, **development of manufacturing and supply-chain infrastructure** is viewed as vital by 77% of respondents, indicating that expanding domestic yard capacity in Taranto and Ravenna is key to achieving economies of scale. **Grid-infrastructure investment** also ranks highly (75%), as robust onshore and offshore transmission networks are necessary to evacuate power from deep-water installations. **Collaboration between government and private industry** secures 84%, both as "Very important" and "Important," suggesting that public-private partnerships can streamline pilot projects and early serial production. Human-capital enablers—**education and training programmes**—are rated "Very important" or "Important" by 66%, highlighting the need for skilled marine-operations technicians and naval engineers. **Proactive community engagement** (71%) and **international cooperation** (76%) are similarly valued, reflecting the importance of social license and cross-border knowledge exchange. Finally, 79% endorse **policies to promote a competitive market environment and diversify energy sources**, confirming that a broader renewables mix will enhance floating-wind bankability. In sum, Italy's floating offshore wind sector requires a robust combination of long-term policy certainty, targeted financial incentives, strategic infrastructure development, and stakeholder collaboration to foster its uptake.

Spain



Spanish stakeholders underscore the centrality of **clear, consistent policy frameworks** and **robust financial incentives** in unlocking floating-wind ambition. A combined 84% rate "clear and consistent policies" as crucial (28% "Very important," 56% "Important"), reflecting demands for auction pots, fixed strike-price corridors, and codified seabed-lease terms which are specific for floating offshore wind. Nearly as many (75%) emphasise a **stable, predictable policy environment** (24% "Very important," 51% "Important"), underscoring the need for multi-year commitments that give confidence in long-term returns to investors. **Financial incentives linked to R&D** attract 86% support (31% "Very important" and 55% "Important"), suggesting that grants and tax credits for floating offshore wind technology development are viewed as essential to drive cost-curve improvements. **Collaboration between government and industry** is also highly prized, with 42% marking it "Very important" or "Important" (31%), indicating that public–private partnerships can expedite pilot projects and supply-chain scaling in Galicia and the Basque Country. On the infrastructure front, **onshore and offshore grid investments** earn 74% endorsement (23% "Very important" and 51% "Important"), reflecting the imperative of new transmission corridors and substation upgrades to integrate remote floating arrays. **Manufacturing and supply-chain infrastructure** garnered 77% support (28% “Very important” and 49% “Important”), highlighting the need for heavy-lift quays and assembly yards. Human-capital enablers—**education and training programmes**—are valued by 74% (27% “Very important” and 47% “Important), pointing to the need for skilled technicians and naval architects. Additional enablers such as **proactive community engagement** (78%), **international cooperation** (71%), and **policies for market diversification** (73%) receive strong support, reinforcing that successful floating offshore wind scale-up in Spain will depend on integrated policy, finance, infrastructure, and stakeholder-engagement measures.

Portugal

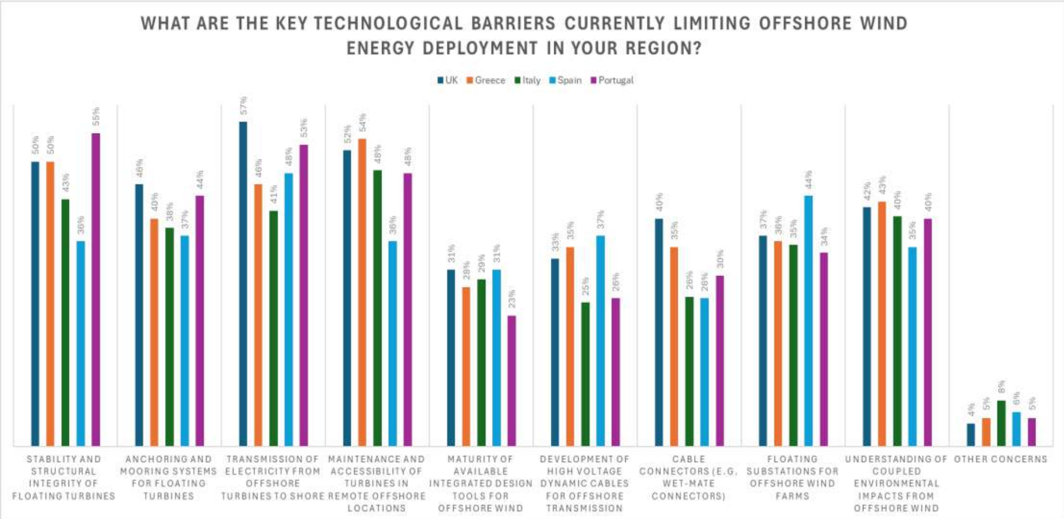


Portuguese stakeholders consistently emphasize the foundational role of **policy clarity, financial incentives, and infrastructure investment** in advancing floating-wind deployment. A combined 89% rate **clear and consistent policies** (36% “Very important” and 53% “Important”) as essential, underscoring the need for floating-specific auction designs, defined seabed-lease terms, and transparent subsidy schemes. Nearly as many (81%) stress a **stable, predictable policy environment** with long-term commitments (40% “Very important,” 41% “Important”), reflecting the desire for multi-year tariff guarantees and codified permitting timelines. **Financial incentives and R&D investments** attract 84% support (37% “Very important” and 47% “Important”), suggesting that Portuguese developers value targeted grants and tax credits to reduce CAPEX and accelerate technology maturity. **Adequate onshore and offshore grid investment** is similarly prioritized by 84% (35% “Important” and 49% “Important”), pointing to the need for new transmission corridors and substation capacity to evacuate power from Atlantic floating-wind sites. **Collaboration between government and private industry** commands even stronger backing, with 82% of the respondents rating it as “Very important” and “Important”, highlighting public–private partnerships as critical for pilot projects and supply-chain consortiums. **Proactive community engagement** is deemed vital by 84% (36% “Very important” and 48% “Important”), illustrating the importance of early stakeholder dialogue to secure local buy-in. Human-capital enablers—**education and training programmes**—earn 81% endorsement, while **cooperation with international stakeholders** is backed by 80%, emphasising the value of cross-border knowledge exchange. **Supply-chain infrastructure development** (83%) and **policies to diversify energy**

sources and foster competition (79%) round out the list. Overall, Portuguese investors call for a **comprehensive enabling framework**—anchored in long-term policy certainty, targeted financial support, strategic infrastructure upgrades, and robust stakeholder collaboration—to fully leverage the country's floating offshore wind potential.

7. TECHNO-ECONOMIC ANALYSIS

7.1 Technological Barriers



United Kingdom: Respondents identify **electricity transmission** as the foremost technological barrier to floating offshore wind deployment, with 57% ranking it as a top-concern. The challenge stems from the need for robust high-voltage dynamic cables and subsea export infrastructure that can withstand deep-water conditions and deliver multi-hundred-megawatt outputs ashore. National Grid ESO's existing transmission network is heavily loaded, and the spatial disconnection between floating-wind sites—often sited beyond the continental shelf—and onshore substations requires significant reinforcement or new infrastructure, driving up both capital expenditure and permitting complexity. Closely following, **maintenance and accessibility** issues garner 52% "top-barrier" votes. Operating in harsh North Sea weather windows demands specialised service-operation vessels, motion-compensated gangway systems, and robust remote-monitoring platforms. The limited availability of DP2-class vessels and trained crew further inflates operational expenditure and can extend downtime following equipment failures. The **structural stability and integrity** of floating turbines is also a central concern (50%), reflecting skepticism about long-term fatigue life of mooring lines, connector joints, and hull geometries under continuous wave loading. Certification bodies and OEMs are still gathering multi-year performance data to validate semi-submersible, spar, and Tension Leg Platform (TLP) designs for 20+ year service lives. **Anchoring and mooring systems** follow at 46%. Moreover, stakeholders emphasise the need for standardised, cost-effective mooring solutions—such as synthetic-fiber lines or catenary chains—that can be installed rapidly and serviced with minimal risk. Variability in seabed geotechnical conditions across UK leasing areas further complicates design optimization. Other barriers include **wet-mate cable connectors** (40%), which remain relatively immature for high-power applications and can be failure points for dynamic export lines. **Floating substations** score 37%, indicating that compact, high-voltage platforms capable of offshore

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stepping-up require additional R&D for cost reduction and safety certification. The **maturity of integrated design tools** (31%) and **development of dynamic-cable technology** (33%) are viewed as lower priorities, yet both still require continuous improvement to support optimized, multi-disciplinary engineering workflows. Collectively, the UK's survey results underscore that even in a mature offshore-wind market, the floating segment faces unique technological hurdles—particularly around deep-water grid integration and cost-effective long-term operations—that must be addressed through concerted R&D, supply-chain alignment, and regulatory innovation.

Greece: stakeholders place **maintenance and accessibility** at the top of technological concerns (54%), reflecting the archipelagic nature of the Aegean and Ionian seas. Frequent high-wind events (e.g., the summer meltemi) limit safe operation of service vessels, while a scarcity of Dynamic Positioning (DP)-class ships forces reliance on costly charters from overseas fleets. Remote site logistics—especially for deep-water sites beyond 100 m depth—demand robust remote-monitoring systems and modular repair strategies to minimize vessel time on station. **Structural stability** of floating platforms ranks equally high (50%), as investors remain cautious about mooring-line fatigue, joint weld integrity, and hull survivability under extreme wave conditions. The absence of long-term Greek-specific performance data means that certification standards must be supplemented by local pilot trials. **Transmission of electricity to shore** (46%) emerges as another major hurdle. Greece's limited high-voltage subsea cable capacity and island-grid fragility require dynamic-cable designs with enhanced bend radius, UV-resistant sheathing, and simplified wet-mate connectors. The need for shore-ends transition nodes in shallow-water ports—where seismic and tectonic activity can pose additional risks—compounds grid-integration complexity. **Anchoring and mooring systems** (40%) are also prioritised. The lack of standardised anchor types for mixed seabed lithologies—ranging from soft sediments to rocky outcrops—requires bespoke geotechnical surveys and hybrid anchoring solutions (suction piles, drag anchors). **Environmental impact understanding** (43%) is deemed critical, given Greece's rich marine biodiversity and protected Natura 2000 zones. Cupled environmental hydrodynamic modeling tools are still evolving to predict wake effects, sediment scour, and ecosystem interactions around floating arrays. Secondary concerns include **cable connectors** (35%) and **dynamic-cable technology** (35%), where Greek operators seek robust wet-mate and dry-mate junctions that can be serviced without dry-docking. **Floating substation** concepts (36%) are gaining traction but require further certification for offshore installation. Lastly, the **maturity of integrated design tools** (28%) is seen as a smaller barrier, although the adaptation of standard bottom-fixed workflows to floating scenarios still necessitates faster multi-physics solvers and data-sharing platforms.

Italy: The major technological barrier identified by 48% of respondents is **maintenance and accessibility** in remote offshore locations. Semi-submersible or spar platforms slated for deployment in the Adriatic and Tyrrhenian Seas face challenging metocean conditions and limited local service vessel fleets. The need for DP-capable ships, motion-compensated transfer systems, and high-precision remote-diagnostic tools is acute, as any repair downtime directly undermines revenue under short CfD-style auctions. **Transmission of electricity from offshore to onshore** is the second-highest concern (41%). Italy's grid reinforcements have largely focused on fixed-bottom arrays, while floating applications require high-voltage dynamic cables rated for 66 kV or higher with advanced sheathing capable of

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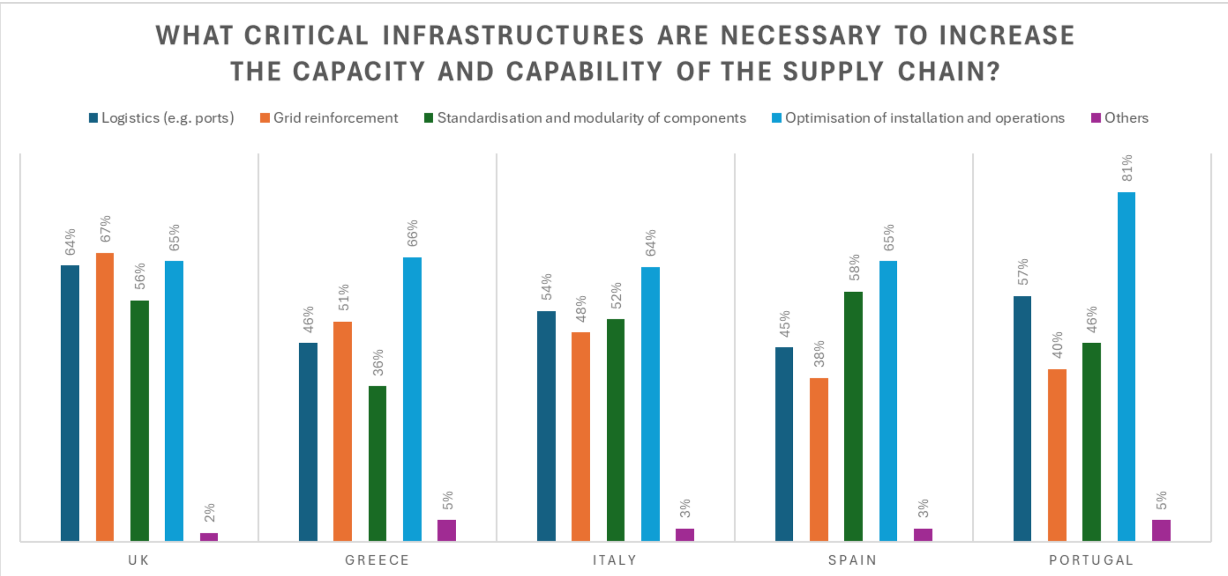
withstanding seabed abrasion and thermal cycling. Port handling of long cable lengths and subsea termination units also demands upgraded quay infrastructure. **Structural stability** of floating turbines is cited by 43%. Certification authorities and licensors need localised fatigue-testing data for hull and mooring designs operating in Italian wave climates, which combine moderate wave heights with strong seasonal swells. The interplay between hull motion characteristics and turbine control strategies to mitigate tower-bottom bending moments remains an R&D priority. **Anchoring and mooring systems** (38%) are another focal point. Italian developers seek optimised anchors—potentially combining suction-piles and drag anchors—to suit varying seabed lithologies across Sicily, Sardinia, and the Italian mainland shelf. **Environmental coupling** (40%) also garners attention, as sediment-transport modeling and benthic-habitat assessments must account for array-scale modifications in local current patterns. Emerging multi-physics simulation platforms are in use, but their resolution and computational speed require further refinement to support bankable environmental impact studies. Secondary barriers include **floating substations** (35%)—compact topside solutions for voltage step-up and grid filtering—and **wet-mate cable connectors** (26%), which must be validated under high-pressure subsea conditions. **Dynamic-cable development** (25%) and **design-tool maturity** (29%) follow, highlighting the need for integrated digital twins that close the loop between simulation, condition-monitoring, and performance optimization. Italian stakeholders therefore call for coordinated pilot programs, multidisciplinary R&D clusters around major ports, and targeted public funding to de-risk maintenance logistics, subsea-cable reliability, and hull certification for floating offshore wind.

Spain: Spanish respondents place the highest priority on **transmission of electricity to shore** (48%), reflecting the technical complexity of deploying dynamic cables in deep-water. Upgrading coastal substations to handle bi-directional power flows and integrating new subsea link corridors under the Energy Grids (*Red Eléctrica*) are essential steps. **Floating substations** emerge as a significant barrier (44%), with developers seeking modular topside designs capable of offshore installation without requiring extensive jack-up or heavy-lift crane operations. Compact HV switchgear, oil-free transformers, and autonomous monitoring systems are still maturing to provide safe, service-friendly platforms. **Maintenance and accessibility** challenges (36%) follow, as the west coast's Atlantic swell regime and seasonal storms limit service-window availability. Survey-to-work transitions rely on motion-compensated systems and DP-vessel availability, and the shortage of local support vessels can delay routine inspections and reactive repairs. **Structural stability** (36%) and **anchoring/mooring systems** (37%) rank closely since Spanish waters feature variable seabed conditions—from hard rock in Basque Country to mud in Andalusian Gulf—requiring bespoke foundation solutions and mooring-chain specifications that ensure both station-keeping and fatigue resistance. **Development of high-voltage dynamic cables** (37%) and **wet-mate connectors** (26%) are also key concerns. Manufacturers are scaling up cross-linked polyethylene insulation and field-repairable connector modules, but supply remains limited. **Environmental-impact understanding** (35%) is considered moderately important, as the complexity of coupling wave, wind, and current effects on marine ecosystems demands high-resolution numerical models and in-situ validation campaigns. **Maturity of design tools** (31%) is viewed as a lesser barrier. In conclusion, Spain's technological focus centers on deep-water grid integration and the development of floating substations, supported by improved maintenance logistics, hull-and-mooring certification, and subsea-cable innovation to enable the large-scale commercialisation of floating offshore.

Portugal: Portuguese stakeholders rank **structural stability and integrity** of floating turbines as their top concern (55%). Atlantic conditions—characterised by persistent swell, high wave heights, and strong currents—impose severe loads on hull geometries and mooring attachments. Validation of fatigue life, anchor line chafe resistance, and tower-base moment mitigation strategies require accelerated lifecycle testing and extended instrumentation of prototype floats like WindFloat Atlantic. **Transmission of electricity to shore** follows closely (53%), considering that Portugal's grid infrastructure has limited subsea-cable corridors, making the deployment of robust 66 kV or 132 kV dynamic cables essential. **Maintenance and accessibility** (48%) are likewise a prime barrier. Remote floating offshore wind farms, which are located more than 50 kilometers offshore, require specialised service-operation vessels, motion-compensated gangway systems, and fully autonomous drone or Remotely Operated Vehicle (ROV) inspection platforms to reduce costly vessel days. The limited local fleet of DP2 vessels highlights the need for domestic vessel-owner partnerships or charter agreements. **Anchoring and mooring systems** (44%) are another key issue. Portugal's varied seabed geology—ranging from sandy plains to bedrock outcrops—demands tailored suction-anchor, drag-anchor, and synthetic-line solutions. Mooring fatigue, anchor pull-out resistance, and mooring-line replacement techniques must be standardized to drive down per-unit costs. Other concerns include **environmental-impact understanding** (40%) — considering that Portuguese marine protected areas require rigorous sediment-transport and wake-effect modeling—and **floating substations** (34%), which need compact, self-anchored topside solutions. **Cable connectors** (30%) and **dynamic-cable development** (26%) rank lower but remain critical for subsea joint reliability. The **maturity of integrated design tools** (23%) is identified as the least pressing barrier, though the integration of aero-hydro-structural simulation suites for floaters still demands refinement. Portuguese experts therefore advocate for expanded pilot-scale R&D programmes, accelerated certification frameworks, and coordinated public–private investment in subsea-cable corridors, port-infrastructure upgrades, and localized service-vessel capacity to address these technological barriers comprehensively.

5. Critical infrastructures to increase supply chain capacity



United Kingdom: Stakeholders rank **grid reinforcement** (67%) as the most critical infrastructure to bolster the floating-wind supply chain, reflecting urgent needs to upgrade coastal substations and add high-capacity export corridors. Nearly as many (65%) emphasise the **optimisation of installation and operations**, underlining investments in dedicated service-operation vessels, motion-compensated gangways, and remote-monitoring hubs to reduce downtime and vessel costs. **Logistics improvements at ports** (64%)—including deep-water berths, heavy-lift cranes, and extended lay-down areas—are seen as foundational for serial assembly of semi-submersible platforms and dynamic cables. More than half of the respondents (56%) call for **standardization and modularity of components**, such as uniform flange interfaces and interchangeable buoyancy units, to streamline manufacturing and accelerate commissioning. Only a small fraction (2%) cited other infrastructures, indicating broad consensus on these four enablers. By coordinating robust grid capacity, optimised offshore operations, modernised port facilities, and component modularity, the UK can create a resilient, scalable supply chain capable of delivering floating offshore wind projects at scale.

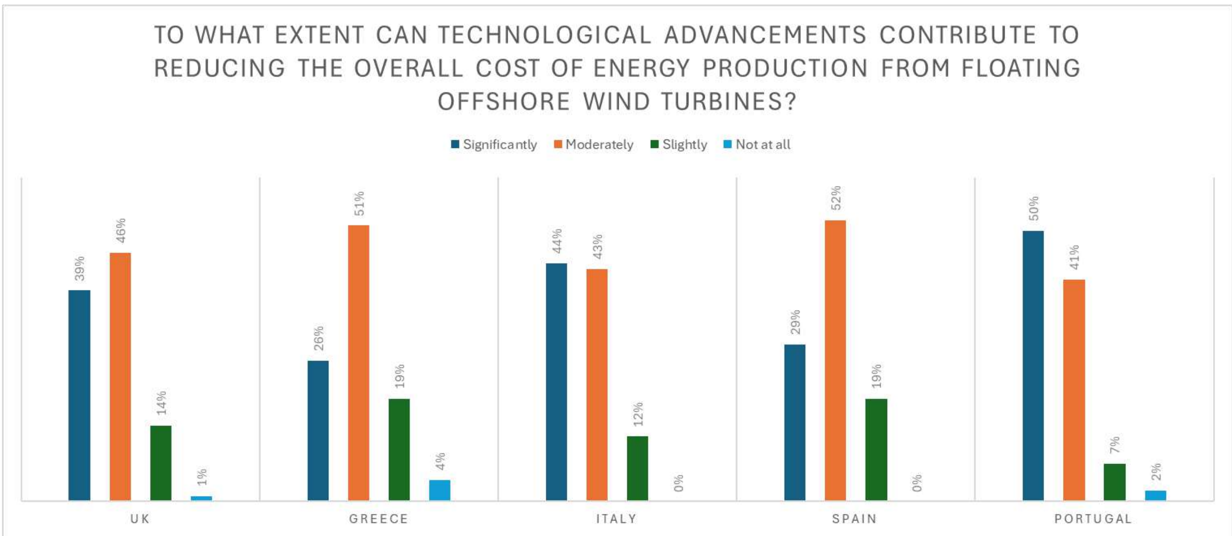
Greece: The optimisation of installation and operations emerges as the top priority, with 66% of respondents citing it as essential. Given the archipelago's challenging seas, investments in specialised DP-class vessels, motion-compensated transfer systems, and modular repair platforms will dramatically improve uptime. **Grid reinforcement** follows at 51%, reflecting the need for enhanced island and coastal substations and new dynamic-cable corridors to evacuate power reliably. **Logistics upgrades at ports** (46%) are also vital, encompassing deepening channels, heavy-lift cranes, and modular assembly yards. Meanwhile, **standardisation and modularity of components** scored 36%, showing the value of uniform mooring kits and pre-tested hull modules to reduce bespoke engineering. A small segment (5%) pointed to other needs, indicating strong alignment around these infrastructure improvements. Together, these targeted investments will address Greece's unique logistical, grid-integration, and operational challenges.

Italy: Italian stakeholders seem to prioritise the **optimisation of installation and operations** (64%), highlighting the need for dedicated floating-wind service bases, DP-vessel fleets, and rapid-deployment maintenance systems to navigate Adriatic and Tyrrhenian conditions. **Logistics enhancements at ports** (54%)—including reinforced quays at Taranto and Ravenna, expanded lay-down areas, and integrated rail links—are essential for onshore assembly of large substructure sections. The **standardisation and modularity of components** (52%) also rank highly, with respondents calling for uniform mooring-line interfaces, interchangeable foundation segments, and modular topsides to streamline supply-chain contributions from multiple yards. **Grid reinforcement** (48%) is viewed as necessary to strengthen export corridors and shore-end substations, ensuring that megawatt-scale floating arrays can reliably feed the national network. Only 3% of the respondents cited alternative infrastructures, underscoring consensus on these four priorities. By implementing these improvements, Italy can accelerate floating offshore wind development and foster a competitive domestic supply chain.

Spain: According to data collected, Spanish stakeholders see the **standardisation and modularity of components** (58%) as the linchpin for capacity building, advocating common designs for hull modules, mooring kits, and connector interfaces to diversify supplier bases across Galicia and the Basque Country. The o**ptimisation of installation and operations** is equally critical (65%), underlining the need for specialised installation vessels, pre-assembly platforms, and efficient maintenance bases to maximize Atlantic weather windows. **Logistics upgrades at ports** (45%)—such as deepening approach channels, adding heavy-lift cranes, and expanding quays in Ferrol and Las Palmas—are also essential. **Grid reinforcement** (38%) is seen as a lower, but still important, priority, with stakeholders urging substation enhancements and new subsea-cable routes to avoid transmission bottlenecks. A small portion of respondents (3%) mentioned other infrastructure, indicating broad agreement around these key enablers. Together, these investments will support scalable, cost-effective floating offshore wind roll-out in Spain.

Portugal: The 81% of respondents highlight the **optimisation of installation and operations** as the foremost infrastructure need, reflecting the importance of establishing offshore service hubs, DP-vessel fleets, and remote-monitoring centers to manage Atlantic conditions efficiently. **Logistics improvements at ports** (57%)—notably at Viana do Castelo and Setúbal—are also critical, requiring deeper berths, upgraded quay cranes, and dedicated lay-down yards for semi-submersible platforms. **Standardization and modularity of components** (46%) rank next, with calls for uniform buoyancy-module specifications and interchangeable mooring lines to streamline procurement and reduce bespoke engineering. **Grid reinforcement** (40%) remains necessary to expand coastal substations and lay new export-cable corridors, ensuring robust power evacuation from offshore clusters. A minor 5% of the respondents cited other infrastructure, confirming alignment on these four pillars. By investing in these areas, Portugal can build a high-capacity supply chain and accelerate its floating offshore wind ambitions.

7.2 Impact of technological advancement on reducing the overall cost of energy production from FOWTs



In the United Kingdom, 85% of respondents believe that technological advancements can reduce the levelised cost of energy (LCOE) from floating offshore wind “significantly” (39%) or “moderately” (46%). This strong endorsement reflects confidence in ongoing R&D—such as larger rotor diameters, advanced composite materials, and digital-twin optimization—to drive down both CAPEX and OPEX. Only 14% of the survey participants see technology’s impact as “slight,” and a mere 1% say “not at all,” indicating broad consensus that innovation will play a pivotal role in closing the cost gap with fixed-bottom wind. UK investors thus expect continued performance improvements and cost declines through economies of scale and learning-curve effects, underpinned by pilots like Hywind Scotland and contracts-for-difference de-risking.

Greek stakeholders are somewhat more cautious: 77% of the respondents' rate technology's cost-reduction potential as "significant" (26%) or "moderate" (51%), while 19% believe that advances in the sector will only "slightly" reduce costs, while the 4% see no benefit. Even though, a low percentage of respondents agrees that technological advancement can significantly contribute the overall cost of energy production from FOW, recognizing existing local challenges—such as adapting technologies to complex island grids and deep-water metocean conditions the high "moderate" margin demonstrates strong belief in improvements in mooring solutions, dynamic-cable reliability, and hull optimisation. For Greece, targeted R&D in anchoring, remote-monitoring, and high-voltage wet-mate connectors is expected to yield meaningful, if incremental, cost savings.

In Italy, 87% of respondents are optimistic that technology will drive down floating offshore wind costs— respectively 44% considering it as "significantly" and 43% as "moderately"—with the remainder seeing only slight impacts. No one selected "not at all," highlighting unanimous faith in engineering progress. Stakeholders point to advances in integrated design tools, digital-twin fatigue modeling, and next-generation dynamic-cable insulation as critical enablers. Italy's mature offshore wind industry, coupled with robust shipyard R&D partnerships, underpins this optimism that continued innovation will unlock bankable LCOE levels for Mediterranean floating projects.

Spanish investors are broadly confident, with 81% of respondents expecting "significant" (29%) or "moderate" (52%) cost reductions through technological advancement. 19% of the participants selecting the "slightly" option reflects caution about supply-chain scale-up and certification timelines for new floaters in the Atlantic, but no one dismisses tech benefits entirely. Key areas include modular hull designs, automated O&M robotics, and grid-interface improvements. Spain's strong R&D ecosystem in the Basque Country and Canary Islands is seen as a springboard for driving costs down toward parity with fixed-bottom wind.

Portugal leads in tech optimism, with 50% of respondents believing that advancements will "significantly" lower LCOE, and 41% considering a moderate impact. Only 7% expect "slight" impacts, and 2% "not at all." This reflects strong confidence in nascent projects like WindFloat Atlantic and the anticipated benefits of continued learning-curve effects in hull fabrication, mooring optimisation, and digital-twin O&M strategies. For Portugal, a robust national R&D strategy and deep-water test sites are expected to translate into meaningful cost declines, cementing floating offshore wind competitiveness on the Iberian Atlantic coast.

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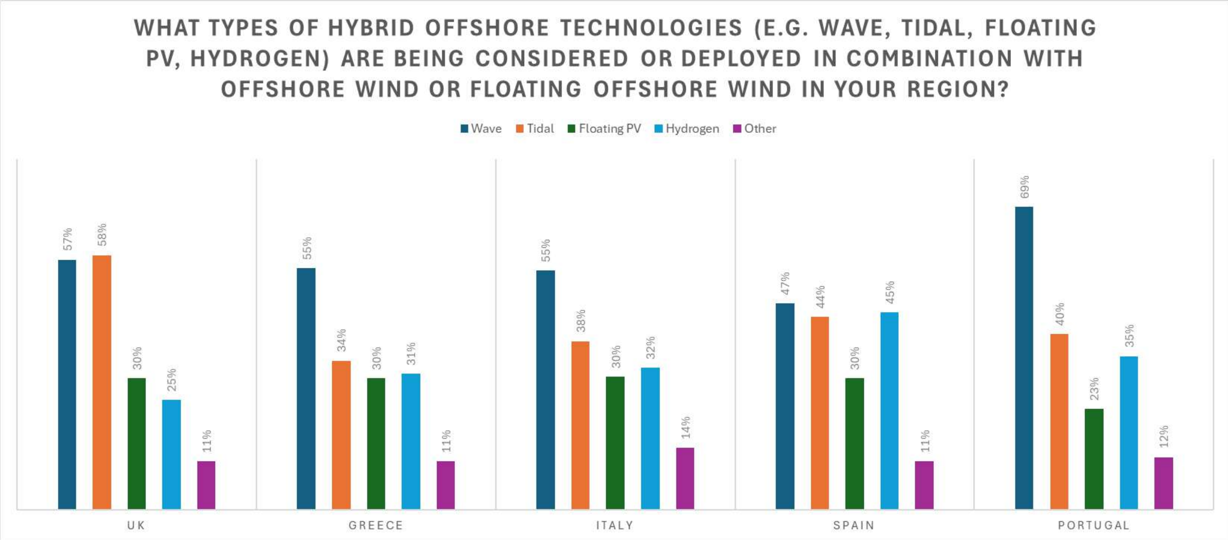
6. Potential for Hybrid Offshore Solutions



In the United Kingdom, hybrid offshore concepts focus primarily on **tidal** and **wave energy,** alongside floating offshore wind. Survey data show that **58%** of stakeholders are exploring tidal technologies—leveraging predictable tidal currents in locations such as the Pentland Firth—and **57%** consider wave devices, often co-located to share subsea infrastructure. **Floating PV** attracts interest from **30%** of the respondents, particularly for sheltered embayment or port-side pontoons integrated with wind turbine foundations. Less widespread—but growing—interest in **offshore hydrogen production** is reported by **25%**, as pilot electrolyzer installations near wind farms could supply the maritime industry with "green" hydrogen. A smaller group (11%) mentions "other" hybrid technologies, including underwater compressed-air energy storage and biofuels derived from algal reactors. UK developers view these hybrid configurations as pathways to maximise renewable yield, reduce levelised cost of energy by sharing mooring and electrical systems, and improve grid flexibility through multi-vector output.

In Greece, **wave** and **tidal** technologies garner significant consideration, with **55%** of respondents noting wave-energy devices and **34%** pointing to tidal current turbines. The emphasis on wave devices reflects Greece's extensive coastlines and seasonal wave climates, ideal for oscillating water-column and point-absorber systems. **Floating PV** is on the radar for **30%** of the respondents, leveraging existing floating offshore wind moorings in sheltered gulfs to mount bifacial solar panels. Interest in **offshore hydrogen** stands at **31%**, driven by plans to co-locate electrolyzers at wind-hydrogen pilot clusters in Crete and mainland ports. A minority (11%) cite other hybrid tecnologies, such as anchored wave hub platforms combined with aquaculture. Greek stakeholders see these integrated approaches as a means to optimize sparse grid connections, diversify revenue streams, and capitalize on EU Recovery and Resilience Facility funds earmarked for multi-vector marine energy hubs.

Italian developers show balanced interest in **wave**, **tidal**, and **hydrogen** integration. The interest for both **wave (55%)** and **tidal (38%)** indicate the willingness to explore devices suited to the Adriatic's moderate wave heights and the Strait of Messina's strong currents. **Hydrogen** receives support from **32%** of the respondents, with pilot projects in Sicily proposing electrolyzers powered by floating turbines to fuel heavy-industry clusters. **Floating PV** appears in **30%** of responses, mainly in sheltered harbor basins or

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lagoons co-moored with wind platforms to leverage shared grid connections. Other technologies, cited by **14%**, include ocean thermal energy conversion and salinity-gradient cells. Italy's multi-vector strategy aims to reduce grid-evacuation costs, maximise marine-area utilisation, and tap into National Recovery and Resilience Plan funds for hydrogen and hybrid-renewable demonstration projects.

In Spain, **hydrogen** integration leads at **45%**, reflecting the Iberian Peninsula's strong interest in green-hydrogen export via floating wind–electrolyzer platforms in the Canary Islands and Galicia. **Wave** hybrids are noted by **47%**, with point absorbers and attenuator arrays under study for Atlantic façade sites. **Tidal** technology is considered by **44%**, chiefly for pilot deployments in the Basque Country where strong tidal currents exist. **Floating PV** remains at **30%**, often paired with near-shore wind projects to maximize CAPEX efficiency. A smaller share (**11%**) mentions other approaches, such as integrated aquaculture cages. Spain's hybrid focus aligns with its ambition to develop value-added hydrogen chains and optimize renewable generation profiles by combining intermittent wind with complementary wave or solar input.

Portuguese stakeholders show the strongest interest in **wave** energy, with **69%** citing it as a hybrid technology to be combined with floating offshore wind. This emphasis stems from Portugal's powerful Atlantic swells, making oscillating water-column devices and point absorbers a natural fit. **Tidal** energy appears in 40**%** of responses, particularly where fjord-like rias provide predictable currents. **Hydrogen** integration is considered by **35%**, leveraging floating-wind output to drive electrolyzers for maritime and industrial decarbonization. **Floating PV** is less prominent at **23%**, though pilot studies in sheltered coastal bays are underway. Other hybrid offshore technologies—mentioned by the **12%** of the respondents—include offshore wind–wave combinations with battery-storage platforms. Portugal's hybrid strategy is centred on maximising the high-capacity factors of wave energy and leveraging shared infrastructure to create diversified, dispatchable renewable clusters capable of supplying green hydrogen and grid-stabilising services.

8. CONCLUSIONS

Collectively, the findings presented in **Deliverable D3.4** highlight both the complexities and immense promise of **Floating Offshore Wind Technology (FOWT)** as a critical component of Europe's path to net-zero emissions. Each MARINEWIND Lab is characterized by unique policy contexts, stakeholder sentiments, and technological competencies that shape how FOWT might expand at scale. However, several overarching themes emerge clearly.

1. **Regulatory frameworks**
   Stakeholders across all five countries identify lengthy and multi-layered permitting systems as a primary hindrance to timely offshore wind rollouts. While governments have taken steps to clarify or expedite consent through maritime spatial plans, consolidated licensing procedures, or regionally tailored frameworks, significant gaps in coordination persist. This scenario underscores the need for dedicated coordination bodies to harmonise approvals and reduces both administrative costs and project timelines.

2. **Stakeholder Engagement and Social Acceptance**

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Public awareness and acceptance of floating offshore wind technology remain uneven, often tied to prior experiences with onshore wind or broader energy infrastructure. Yet where outreach efforts have been proactive, offering transparent benefit-sharing models or co-creation workshops, local communities typically respond with higher trust and cooperation. Early, inclusive engagement and clear communication of both socioeconomic advantages and any potential environmental impacts consistently stand out as strategies to foster constructive relationships and reduce social conflict.

3. **Environmental Stewardship**
   While FOWT is widely perceived as a valuable tool for cutting emissions, stakeholder concerns about ecological risks, such as habitat disturbance and conflicts with marine activities, remain salient. This highlights the importance of rigorous Environmental Impact Assessments (EIAs), well-designed monitoring programs, and ongoing data transparency to ensure that floating offshore wind farms integrate seamlessly with marine ecosystems.

4. **Financial Viability and Market Development**
   High capital expenditure (CAPEX), evolving regulatory schemes, and modest readiness in local supply chains dampen investment confidence in floating wind across many regions. Nevertheless, the report also highlights emerging policy instruments, such as feed-in tariffs, Contracts for Difference, or specialized public funding, for de-risking large-scale FOWT projects. The convergence of stable financing frameworks, supportive policy signals, and technological advancements in mooring systems and platform designs will be paramount to driving cost competitiveness and market acceptance.

5. **Techno-Economic Maturity**
   From scaling turbine sizes to improving substructure materials, stakeholders see multiple avenues for reducing costs and increasing operational reliability. Pilot projects and demonstration-scale installations, accompanied by robust R&D collaborations, are consistently viewed as the best channels for validating FOWT's deeper-water capabilities. Achieving significant cost reductions will also hinge on standardized components, industrial synergies, and shared lessons learned across all five MARINEWIND Labs.

In sum, **D3.4** paints a dynamic and evolving picture of how FOWT can unlock its full potential in Europe. By showcasing successful strategies for policy making, stakeholder collaboration, robust EIAs, and cost management, this deliverable offers a blueprint for overcoming current barriers and leveraging existing enablers. Ultimately, the shared insights and recommendations herein serve as a roadmap for governments, developers, investors, and researchers alike, guiding them toward the coordinated actions necessary to transform floating offshore wind from a promising innovation into a mainstream cornerstone of the European energy transition.

Area	Barriers	Enablers
Consenting Process	Complexity & length of consenting procedures	One-stop shop coordination body for planning & permits

	Fragmented, overlapping jurisdictional requirements	Clear, unified maritime spatial plans with dedicated FOWT zones
	Lack of designated offshore development zones	Single licensing authority or fast-track for floating wind
	Unclear or incomplete marine spatial planning frameworks	Centralized digital permitting portal
Social Acceptance	Loss of fishing grounds & gear-entanglement fears	Local electricity-rate discounts or community funds
	Restrictions on fishermen's flexibility and operability	Employment creation & specialized training programmes
	Underwater noise impacts on coastal resorts and hotels	Development of a regional Floating Offshore Wind Technology (FOWT) supply chain and local content
	Visual/aesthetic concerns & possible real-estate value loss	Artificial reef effects & marine-protected-area benefits
Environmental Impact	Underwater noise during construction & operation	Net greenhouse-gas emission reductions
	Electromagnetic fields from export cables	Mitigation of broader climate-change effects
	Seabed integrity disturbance (mooring, cable-laying)	Preservation of onshore land resources via offshore sitting
	Bird-collision and avian disturbance	Creation of de-facto marine protected areas around turbine zones
Financial Analysis	Lack of funding & high upfront CAPEX	Government financial support (grants, concessional loans, favourable Contracts for Difference)
	Insufficient government support or incentives	State–financial-institution collaboration (loan guarantees, green bonds)
	High manufacturing costs (turbines & floaters)	Original Equipment Manufacturers (OEM) financing reforms and performance warranties
	High operating & maintenance costs offshore	Policy incentives to lower levelized cost of energy (tax credits, tailored auction mechanisms)
Market Analysis	Unfavourable regulatory environment & political uncertainty	Clear and consistent policy incentives, subsidies, and regulatory frameworks

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	Grid-connection challenges	Stable, predictable long-term commitments (e.g., multi-year auction calendars)
	Insufficient port and installation infrastructure	Adequate onshore/offshore grid and port infrastructure investment
	High levels of marine-traffic conflicts (shipping, fishing)	Manufacturing and supply-chain infrastructure development
Techno-Economic	Structural stability & integrity of floating turbines	Upgraded port facilities and heavy-lift logistics
	Anchoring and mooring system reliability	Reinforced transmission corridors and substations
	Transmission of electricity to shore (dynamic cables)	Standardisation and modularity of floaters and turbine components
	Maintenance and O&M accessibility in remote offshore locations	Optimized installation and Operation and Maintenance (O&M) procedures (e.g., plug-and-play moorings)

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