



## D1.3.2\_ LOCAL WORKSHOPS VALIDATION: Spain · France · Portugal · Ireland

**WP1. Mapping of Stakeholders and priorities for  
maritime decarbonisation**

**Interreg  
Atlantic Area**



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<b>ABSTRACT</b>	This deliverable consolidates the results of the four national stakeholder workshops carried out under WP1 (Task 1.3 – Stakeholder interaction and mapping validation) in Spain, France, Portugal and Ireland. Building on the desktop scoping review (D1.1) and the stakeholder mapping (D1.2), the workshops validated sectoral needs, gaps, challenges and opportunities for maritime decarbonisation in the Atlantic Area along four strategic dimensions: financial ecosystem,

	collaboration and innovation, regulatory and policy alignment, and technology and digital readiness. The report presents the common methodology, country-by-country results, a cross-country comparative analysis and a set of consolidated cross-cutting findings to feed into subsequent SMARTDEC activities.
<b>KEYWORDS</b>	Maritime, Decarbonisation, Atlantic Area, Stakeholders, Workshops, Regional Mapping, Validation, Finance, Innovation, Regulation, Technology

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## Executive Summary

This report consolidates the outcomes of the four national stakeholder workshops carried out under Work Package 1 of the [SMARTDEC project](#) (Task 1.3 — Stakeholder interaction and mapping validation). The workshops were organised between February and April 2026 in Spain, France, Portugal and Ireland, following a common methodology that ensures comparability of results while remaining adaptable to each national context. Building on the desktop scoping review and state-of-the-art analysis ([Deliverable D1.1](#))- Domínguez Chapman, E., & Seco Martin, M. (2024), and as a part of analysis carried out under ([Deliverable D1.3.1](#)), Domínguez Chapman, E., Coppla, J., & Ardanza, N. (2026); the workshops validated, refined and complemented the project’s preliminary diagnosis of maritime decarbonisation in the Atlantic Area.

The workshops were structured around four interrelated strategic dimensions, identified in D1.1 as the main levers and constraints of the decarbonisation transition: (i) financial ecosystem for the green maritime transition; (ii) collaboration for localised and high-impact innovation; (iii) regulatory and policy alignment for decarbonisation; and (iv) technology and digital readiness for a low-carbon maritime sector. For each dimension, stakeholders were invited to identify gaps, needs, challenges and opportunities (the SMARTDEC GNCO analytical grid).

## Key outcomes

- **Stakeholder engagement:** the consolidated workshop programme engaged a diverse set of more than 130 participants across all four countries (Spain, France, Portugal and Ireland), spanning port authorities and operators, maritime transport and logistics, infrastructure and technology providers, energy companies, research and innovation organisations, public authorities and maritime clusters.
- **Convergent diagnosis across countries:** the four strategic dimensions emerged as systemically interdependent rather than isolated. Stakeholders in all countries described maritime decarbonisation as constrained by misalignment between regulatory ambition, infrastructure readiness, financial instruments and information availability, rather than by the absence of technologies.
- **Financial ecosystem:** across countries, stakeholders highlighted that cost-efficiency and access to finance remain the dominant decision drivers. Banks, public investment vehicles and SMEs are not always speaking the same language; risk-sharing instruments, blended finance, public guarantees and simplified access for SMEs are seen as decisive. France notably stood out with mature mechanisms such as Impact Océan Capital (a blended-finance fund supported by Banque des Territoires and ADEME) and BPI France guarantees.
- **Collaboration and innovation:** stakeholders identified a persistent disconnect between research and industry, a limited participation of Atlantic ports in EU R&D projects and a structural “valley of death” between pilot and scaling phases. Territorial consortia, regional living labs and matchmaking platforms (including SMARTDEC itself) were consistently identified as critical enablers.
- **Regulatory and policy alignment:** regulatory fragmentation between international, EU, national and regional levels and slow permitting procedures were broadly seen as major barriers. Stakeholders called for harmonised KPIs, clearer long-term policy signals and targeted incentives (accelerated depreciation, fast-track permitting, green public procurement).

France's upcoming cross-party bill on wind-assisted propulsion was discussed as a relevant national reference.

- **Technology and digital readiness:** the bottleneck identified is not the existence of solutions but their deployment readiness. Onshore Power Supply (OPS) deployment is hampered by limited port-side grid capacity and high local energy costs; alternative fuels face availability and bunkering gaps; and digitalisation is constrained by fragmented data formats, lack of interoperability standards and limited digital skills. Living-lab approaches, smart-grid pilots and standardised digital twins were repeatedly highlighted as practical levers.
- **Cross-cutting findings:** the workshops added at least five strategic insights to the SMARTDEC diagnosis: (1) a structural misalignment between regulatory ambition and infrastructure readiness; (2) energy system constraints as a critical bottleneck for port-side electrification; (3) a persistent “valley of death” between R&D and industrial deployment; (4) institutional and governance constraints limiting the agility of public actors (especially ports); and (5) high investment uncertainty driven by the absence of decision-grade information on technological pathways and future market conditions.

Overall, the national workshops confirm both the relevance of the SMARTDEC approach and the readiness of Atlantic stakeholders to engage. They reinforce SMARTDEC's role as a broker between innovators, end-users, ports and policymakers, and provide a robust evidence base for the consolidated regional mapping and the strategic recommendations to be developed under WP3, WP4 and WP5.

## SMARTDEC Background

“Smart Clusters for Maritime Decarbonisation”, known as SMARTDEC, is an Interreg Atlantic Area project funded by the European Union. The project aims to create and develop a network of Atlantic hubs of the maritime transport sector to provide the tools, knowledge and structures needed for the effective implementation of decarbonisation solutions in maritime transport.

SMARTDEC adopts a quadruple-helix approach in which research and academia, policy-makers, society and industry collaborate to develop common strategies to achieve carbon neutrality in the sector. The project is implemented through several complementary activities: a comprehensive desktop scoping review and state-of-the-art assessment of Atlantic waterborne transport (D1.1), a transnational stakeholder mapping (D1.2), a stakeholder interaction and validation programme (Task 1.3 — this deliverable), the profiling of decarbonisation technologies and innovation matchmaking (WP2), the implementation of the SMARTDEC network and pilot activities (WP3), and the development of strategic recommendations and policy outputs (WP5).

Initiatives such as SMARTDEC aim to address existing gaps by providing a structured collaborative framework in which stakeholders can jointly develop solutions, enhance capacities and lead the long-term transformation of the Atlantic maritime sector. All outputs and results will be available online via the SMARTDEC Community platform (<https://smartdec-community.com>).

## 1. Introduction

This deliverable presents the consolidated results of the four national stakeholder workshops organised under WP1, Task 1.3 — Stakeholder interaction and mapping validation. The workshops constitute a core component of the SMARTDEC methodology: they provide the structured mechanism to validate, refine and complement the project's initial desktop diagnosis (D1.1) and stakeholder mapping (D1.2) with the operational realities, perspectives and priorities of Atlantic maritime stakeholders.

Workshops were organised in each of the four partner countries (Spain, France, Portugal and Ireland), using a common methodological framework but adapted to national contexts (online or in person, plenary or thematic group formats, choice of supporting tools). This combination of shared methodology and contextual adaptation ensures comparability of results across countries while capturing the specificities of each Atlantic territory.

The report is organised as follows. Section 1 introduces the objectives and methodology shared across the four workshops. Section 2 presents the country-by-country accounts of each national session (delivery, participants, format and main results). Section 3 develops a comparative analysis along the four strategic dimensions of the SMARTDEC framework. Section 4 consolidates the cross-cutting findings and lessons learned. Section 5 concludes and outlines how these inputs will feed into the next phases of the project.

## 1.1. Objectives

Each national workshop pursued the same set of objectives, derived from the SMARTDEC methodology defined under [Deliverable D1.3.1](#), Domínguez Chapman, E., Coppla, J., & Ardanza, N. (2026):

- To strengthen the completeness and contextual accuracy of the SMARTDEC baseline diagnosis on maritime decarbonisation in the Atlantic Area.
- To revalidate and refine the needs, gaps, challenges and opportunities identified under D1.1 and D1.2, ensuring that the consolidated analysis genuinely reflects sector realities.
- To identify emerging or previously underrepresented issues, with particular attention to the four strategic dimensions of the SMARTDEC framework (financial, collaboration, regulatory, technological).
- To stimulate stakeholder interaction and cross-sectoral cooperation, both within each country and across the Atlantic network, supporting the consolidation of a durable SMARTDEC stakeholder community.
- To collect a structured evidence base for the strategic recommendations and action plans to be developed under WP5, and to inform the technology profiling and innovation matchmaking activities under WP2 and WP4.

## 1.2. Methodology

### 1.2.1. Common methodological framework

All workshops were designed in line with the common methodology agreed by the SMARTDEC consortium and described in Domínguez Chapman, E., Coppla, J., & Ardanza, N. (2026) — [Methodological report and content structure](#). This framework defines the strategic dimensions, the analytical grid (Gaps – Needs – Challenges – Opportunities, GNCO), the target stakeholder profiles, the KPIs and the reporting templates to be used consistently across countries.

Four strategic dimensions were addressed in each workshop:

- Financial ecosystem for the green maritime transition — barriers and enabling conditions for accessing finance, risk allocation and the suitability of funding instruments, with a specific focus on SMEs and port authorities.

- Collaboration for localised and high-impact innovation — fragmentation of stakeholder interactions, participation of Atlantic actors in EU R&D, and effective mechanisms to bridge research, industry and policy.
- Regulatory and policy alignment for decarbonisation — clarity, coherence and effectiveness of existing regulatory frameworks and incentive structures across governance levels.
- Technology and digital readiness for a low-carbon maritime sector — availability, deployment and integration of low-carbon technologies and the supporting infrastructure and digital systems.

For each dimension, stakeholders were invited to identify structural gaps, operational and strategic needs, implementation challenges and potential opportunities. This GNCO grid acted as the common analytical backbone of all workshops and enabled direct comparability of results between countries.

### 1.2.2. Workshop preparation and invitations

Each national partner team was responsible for preparing and delivering its workshop. Preparation activities included the definition of the agenda, the design of supporting materials (presentations, scripts, moderation guides, registration forms), the identification of guest speakers and the dissemination of invitations through institutional and stakeholder networks. Communication channels included direct email, LinkedIn, project social media, partner websites and the SMARTDEC project website, complemented by dedicated press releases per country.

Targeted invitations were sent to the stakeholder categories identified under D1.2: port authorities and operators; logistics and maritime transport companies; shipbuilders and ship-repair operators; infrastructure providers (onshore power supply, cold ironing, bunkering); regulatory authorities at local, national and EU levels; research, technology and innovation organisations; and other relevant maritime stakeholders (digitalisation, finance, advisory bodies).

### 1.2.3. Workshop delivery formats

Within the shared framework, each country adapted the delivery format to its context:

- Spain (CMMA & Bilbao PortLab) — online workshop with four parallel thematic breakout rooms, each addressing one strategic dimension.
- France (ATP & PMBA) — in-person workshop hosted within the Ocean B2B event in Lorient, on the 12<sup>th</sup> of February 2026, with four moderated thematic tables and four expert speakers contextualising each dimension.
- Portugal (UAveiro & Fórum Oceano) — online workshop with a single plenary discussion complemented by a structured post-workshop questionnaire to deepen data collection.
- Ireland (IMDO) — workshop organised by the Irish Maritime Development Office — in-person session hosted at the Conrad Hotel in Dublin on 30 April 2026, held in conjunction with the launch of the Irish Maritime Transport Economist publication. The workshop adopted a semi-structured interview and discussion format, ensuring transnational coherence while adapting to the event context. Data collection relied on standardised reporting templates applied across all four thematic dimensions.

Data collection relied on a combination of moderated debates, structured note-taking templates, live polling ([Vevox](#)), AI-assisted transcription, paperboards and sticky notes (France) and post-workshop questionnaires (Portugal). All inputs were systematically consolidated under the GNCO grid using the project-level reporting templates, ensuring full traceability of stakeholder contributions and consistency with the SMARTDEC methodological framework.

#### 1.2.4. KPIs and impact measurement

The shared methodology defined the following KPIs for each workshop:

- A minimum participation of 15–20 stakeholders ensuring a representative and diverse mix of actors.
- The identification of at least 5 additional needs, gaps, challenges or opportunities not previously captured in D1.1.
- At least 80% of stakeholder feedback collected to be reviewed and incorporated into updated deliverables and recommendations.
- The mobilisation of at least 10 new stakeholders not previously involved in each country, contributing to the expansion of the SMARTDEC network.

As detailed in the country sections, these KPIs were met or exceeded in the workshops delivered to date.

#### 1.2.5. Assessment of Methodological Objectives and KPI Achievement

The regional workshops executed across Spain, France, Portugal, and Ireland successfully met the strategic and operational objectives outlined in the Methodological Report ([Deliverable D1.3.1](#)). In accordance with the project's deployment roadmap, the session designs effectively operationalized the interactive dynamics needed to gather qualitative data from the quadruple helix maritime ecosystem.

*Regarding the specific impact metrics established in D1.3.1 (Section 1.4), the deliverables have achieved the following milestones:*

- **Minimum Attendance secured:** Each regional session successfully engaged a diverse cohort exceeding the target threshold of 15–20 active participants, ensuring deep cross-sectoral representation from port authorities, shipping operators, academia, and policy bodies.
- **Identification of novel insights:** The collaborative interaction systematically uncovered more than the 5 required regional needs, gaps, and structural bottlenecks not previously mapped out in the initial desktop research phase.
- **Stakeholder feedback integration:** Over 80% of the qualitative inputs, qualitative remarks, and core arguments registered by the session rapporteurs have been comprehensively integrated into this synthesis report, directly refining the baseline for subsequent work packages.
- **SMARTDEC Network Expansion:** The regional dynamics successfully onboarded more than 10 new strategic entities per country into the wider SMARTDEC ecosystem, securing their commitment to join the project's online interactive infrastructure.

These quantified milestones confirm that the common methodological framework was not only robust in its conceptual design but also highly effective in its practical execution across the different Atlantic territories. By successfully operationalizing these engagement targets, the project has secured a verified and highly representative qualitative dataset. Consequently, to understand how these global

milestones materialized within each specific regional context, the following section deconstructs the operational delivery, participant distribution, and immediate institutional outcomes achieved by each national partner team.

## 2. National Workshops

This section summarises the delivery of each national workshop: organising partners, date, format, participants and main outcomes. Detailed inputs by strategic dimension are consolidated in Section 3 (comparative analysis).

### 2.1. Spain — CMMA & Bilbao PortLab

<b>Organising partners</b>	Bilbao PortLab (BPL) and Clúster Marítimo-Marino de Andalucía (CMMA)
<b>Date</b>	19 February 2026
<b>Location</b>	Online (videoconference)
<b>Duration</b>	1 hour 30 minutes (10:00 – 11:30)
<b>Working language</b>	Spanish (with English supporting materials)
<b>Format</b>	Plenary opening + four parallel thematic breakout rooms
<b>Participants</b>	25+ Participants in the online videoconference
<b>Supporting tools</b>	Vevox live polling, AI-assisted note-taking, structured moderation scripts
<b>Communication</b>	<a href="#">“SMARTDEC Workshop WP1 — Spain”</a> (SP – Press Release WP1)

Table 1: Spain CMMA & Bilbao Portlab

#### 2.1.1. Delivery

The Spanish workshop was jointly organised by Bilbao PortLab and the Clúster Marítimo-Marino de Andalucía. The session opened with a plenary segment introducing the SMARTDEC project, its objectives and the preliminary findings of the “Deep Desktop Review and State-of-the-Art of Atlantic Waterborne Transportation” (D1.1). Participants were then distributed into four parallel thematic breakout rooms, one per strategic dimension, each moderated by a member of the BPL or CMMA team and supported by Vevox for live input collection and AI-assisted transcription.

The four parallel thematic rooms and their moderators were:

- Financial ecosystem for the green maritime transition — Elizabeth Chapman (CMMA).
- Collaboration for localised innovation and impact — Ane (BPL).
- Regulatory and policy alignment for decarbonisation — Julia (BPL).
- Technology and digital readiness for a low-carbon maritime sector — Natalia Gil (BPL).

A coordinator (Irati, BPL) ensured cross-room coherence from the main plenary room. After 40 minutes of thematic discussion, a 20-minute inspiration segment presented a best-practice case from Aclima (Basque Environment Cluster), focused on how financial and collaborative design can address decarbonisation challenges. The session closed with a 10-minute plenary wrap-up consolidating the main findings from each room.

#### 2.1.2. Participants

Participants represented the target stakeholder categories defined under D1.2: port authorities and operators; logistics and maritime transport companies; shipbuilding and repair; infrastructure providers (onshore power, cold ironing); regulatory and policy bodies; research and innovation organisations; and other relevant maritime actors, including digitalisation and finance specialists. The

online format facilitated participation from across the Spanish Atlantic and Mediterranean ecosystems and from CMMA’s and BPL’s international networks.

### 2.1.3. Main results — Spain

**Financial ecosystem.** Stakeholders described a “translation gap” between what financial institutions look for and what maritime SMEs typically present. Many EU and national funding opportunities remain underused because applicants struggle to align their proposals with the calls’ value chain logic and bankability criteria. SMEs without a dedicated EU-projects expert are at a structural disadvantage and are encouraged to associate with clusters and universities. Participants stressed the need for blended finance and for stronger consortia covering risk and offering a consolidated value proposition. They also pointed out the importance of greater integration — rather than competition — between existing maritime, transport and ocean-impact funds (e.g. EMFAF), and the value of administrative simplification to ease SME participation.

**Collaboration and innovation.** Discussions focused on the practical, rather than declarative, nature of collaboration. Participants highlighted the role of motivation (access to funding, knowledge or local impact), the internal barriers of ports and operators to join EU consortia (administrative complexity, language, consortium size), and the difficulty of measuring tangible innovation outcomes beyond formal deliverables. Recommendations to the EU centred on simplifying consortium logistics, recognising local impact metrics and rewarding genuine cross-sector collaboration.

**Regulatory and policy alignment.** Participants flagged uncertainty about what the sector will be required to deliver in 5–10 years, and the existence of mature technologies that are not deployed due to legal insecurity or absent standards. They identified inconsistencies between EU, national and regional levels, and noted that some policy strands (e.g. emissions reporting) are moving faster than others (e.g. permitting), generating misalignment. Practical recommendations included green clauses in public procurement, accelerated permits and a clearer multilevel governance framework.

**Technology and digital readiness.** The room moderated by Bilbao PortLab focused on what would currently be most critical: technology itself or its implementation. Stakeholders converged on the latter — implementation, internal capabilities and infrastructure are bigger bottlenecks than technological availability. Onshore Power Supply, alternative fuels and IoT/sensor deployments were discussed as illustrative cases. The group called for living-lab approaches at port level, with priority placed on two technologies per port over a three-year horizon, and underlined the need for an EU role not only in R&D but also in deployment phases.

## 2.2. France — ATP & Pôle Mer Bretagne Atlantique

<b>Organising partners</b>	Pôle Mer Bretagne Atlantique (PMBA) and Atlanpole (ATP)
<b>Date</b>	12 February 2026
<b>Location</b>	Lorient Congress Centre, France (hosted within the Ocean B2B event)
<b>Duration</b>	Approximately 2 hours
<b>Working language</b>	French (with bilingual supporting materials)
<b>Format</b>	In-person workshop with four moderated thematic tables
<b>Participants</b>	25 participants representing a broad spectrum of maritime-related sectors
<b>Supporting tools</b>	Paperboards and sticky notes, structured reporting templates, moderation scripts
<b>Communication</b>	SMARTDEC website article and <a href="#">French press release</a>

Table 2: France ATP & Pôle Mer Bretagne Atlantique

### 2.2.1. Delivery

The French workshop was hosted by Pôle Mer Bretagne Atlantique, coordinator of SMARTDEC, together with Atlanpole, on Thursday 12 February 2026 at the Lorient Congress Centre, as a dedicated side event of Ocean B2B. The session aimed to engage regional French stakeholders, present the objectives and progress of SMARTDEC, and validate sector priorities for maritime decarbonisation. It also strengthened dialogue between actors involved in maritime transport, port infrastructure, technology, research and innovation in the Atlantic French region.

Twenty-five participants were welcomed into four thematic tables, each addressing one of the four SMARTDEC strategic dimensions. The session was opened by four expert speakers, who introduced each dimension and framed the discussions:

- Gwenaëlle Benoit (EKIUM) — Decarbonisation technological solutions.
- Frédéric Le Guillou (GO Capital) — Investment perspectives in the maritime sector.
- Corinne Fournier (Banque Populaire Grand Ouest) — Maritime finance and banking.
- Emmanuel-Marie Peton (MEET2050) — Partnerships and ecosystem collaboration.

The discussions were coordinated by a dedicated moderator (Klervi Dalibot, France TV). Each thematic table was guided by a designated moderator and rapporteur, with paperboards and sticky notes used to structure the GNCO analysis. Inputs were collected using the project-level standardised templates.

### 2.2.2. Participants

The 25 participants represented a broad spectrum of maritime-related sectors, including maritime transport and port infrastructure; offshore and naval industries; energy and environment; digital and embedded technologies; data acquisition, instrumentation and engineering; and biotechnology, underwater imaging and aquaculture. A wide range of professional roles was represented, from senior executives and company directors to engineers, researchers, consultants and financial specialists. The session achieved the SMARTDEC KPI of mobilising at least ten new actors not previously involved in the country.

### 2.2.3. Main results — France

**Financial ecosystem.** Discussions highlighted a difficulty in shifting operating expenses to investment expenses, identifying the right financial actors and matching investors’ timeframes with the technology development cycle. Banks asked for clearer guarantee mechanisms to reduce repayment risks; SMEs and developers expressed the need for early-stage funding, access to prototyping facilities and stronger public-private financial instruments. Opportunities revolve around equipment-leasing on ship-charter contracts, ROI tools, long-term investment vehicles and complementary mechanisms such as local crowdfunding campaigns. France stands out for the existence of dedicated mechanisms — notably the public guarantees and grant schemes of BPI France and Impact Océan Capital, a blended-finance fund launched in January 2023 and managed by GO Capital, targeting €70 million, supported by Banque des Territoires (on behalf of the French State) and ADEME, and classified as an Article 9 SFDR impact fund.

**Collaboration and innovation.** Participants pointed to a misalignment between industrial needs and laboratory R&D, a lack of intermediaries between research outputs and industrial uptake, fragmentation of tools and standards across geographies and a still tenuous port–shipowner link. MEET2050, the French institute dedicated to accelerating the decarbonisation of maritime and inland waterway transport, was highlighted as a relevant blueprint: it brings together public authorities, industry, researchers and financiers, develops techno-economic modelling tools, and acts as a trusted third party for comparing low-carbon solutions, including wind-assisted propulsion.

**Regulatory and policy alignment.** Stakeholders described regulatory instability and difficulty in understanding the “rules of the game” as the dominant challenge, while opportunities lay in more

collaborative regulation and less fragmentation of the offer. A specific opportunity was highlighted in the cross-party bill being prepared by the French National Assembly’s Sustainable Development Committee to accelerate the deployment of wind-assisted propulsion: it introduces a legal definition of wind-powered merchant vessels, extends the green accelerated depreciation scheme, re-establishes eligibility for Energy Saving Certificates, anchors a dedicated maritime decarbonisation fund in law, and explicitly promotes retrofitting.

**Technology and digital readiness.** Participants identified two key technological gaps: electrical-vector compatibility with port grids and route optimisation, ammonia and e-fuels. Needs include digital twins for comparative benchmarking, shared experience-feedback (RETEX), structured data obligations, port electrical infrastructure, harmonised tools between ports and structural sail-power capacities. Challenges revolve around treating ships as integrated energy systems, designing tailor-made port solutions and harmonising communication protocols and data quality. Opportunities include fleet-level data pooling, retrofit hybridisation, smart-grid port pilots, and stronger ties between ports, ships and academic labs.

## 2.3. Portugal — UAveiro & Fórum Oceano

<b>Organising partners</b>	Universidade de Aveiro (UA) and Fórum Oceano (FO)
<b>Date</b>	10 April 2026
<b>Location</b>	Online (videoconference)
<b>Duration</b>	Approximately 2 hours (14:00 – 15:45)
<b>Working language</b>	English / Portuguese
<b>Format</b>	Plenary discussion + post-workshop structured questionnaire
<b>Participants</b>	42 registered participants
<b>Supporting tools</b>	Vevox live polling, online questionnaire, recorded session
<b>Communication</b>	<a href="#">Portuguese press release</a> and SMARTDEC communication channels

Table 3: Portugal UAveiro & Fórum Oceano

### 2.3.1. Delivery

The Portuguese workshop was organised by the University of Aveiro and Fórum Oceano on 10 April 2026, online, with a total duration of approximately 2 hours. It was conducted in English and Portuguese to maximise accessibility. The session followed a structured agenda balancing contextual input, stakeholder engagement and data collection:

- Session A — Presentation and context setting (10 min): introduction to SMARTDEC objectives, scope and progress.
- Session B — Stakeholder inspiration: best practice case (25 min). Guest presentation by Daniel Maré Dias, Vertical Account Manager at Siemens Portugal — Transport, illustrating a real-world maritime decarbonisation initiative including strategy, actors, results and transferability.
- Session C — Stakeholder validation: needs, gaps and challenges (60 min). Moderated plenary discussion structured around the four SMARTDEC dimensions, guided by predefined GNCO questions.
- Session D — Closing reflection (10 min). Open discussion to capture additional insights and the linkages to subsequent SMARTDEC activities.

In contrast to the parallel thematic format adopted in Spain and France, the Portuguese workshop opted for a single plenary discussion involving all participants. This approach favoured a holistic view of challenges and strong cross-sector exposure, at the cost of less depth per individual dimension. To compensate, a structured questionnaire was deployed after the workshop, both to deepen thematic coverage and to extend participation to registered stakeholders who could not attend the live session.

### 2.3.2. Participants

The workshop had 42 registered participants; data was collected from 23 of them through the workshop and questionnaire. The audience covered the main segments of the Portuguese maritime ecosystem: ports and port operators; maritime transport and logistics; shipowners; infrastructure and technology providers (energy, digital, OPS); public authorities; research organisations, universities and innovation centres; and maritime clusters and cross-sector networks.

### 2.3.3. Main results — Portugal

**Financial ecosystem.** Stakeholders described financial constraints not only as a question of capital availability but, more critically, of the design and accessibility of funding mechanisms. Administrative complexity, high resource requirements to engage in calls and a mismatch between funding instruments and maritime needs were highlighted as the main gaps. Needs include simplified, flexible and faster funding mechanisms, stronger public guarantees, and instruments supporting pilot and industrial scaling stages — not only early-stage R&D. Opportunities include green leasing, pay-per-use schemes, performance-based financing and blended-finance mechanisms combining public and private capital.

**Collaboration and innovation.** Participants underlined a persistent disconnect between research and industry, with innovation often driven by academia or large industrial players without sufficient alignment with operational needs. Atlantic ports’ participation in EU R&D remains limited due to resource constraints, bureaucratic complexity and perceived lack of relevance. Stakeholders called for implementation-oriented collaboration platforms, matchmaking mechanisms and clearer pathways to market deployment. Territorial consortia and regional living labs were identified as key enablers, especially to address the “valley of death” between R&D and large-scale deployment.

**Regulatory and policy alignment.** The diagnosis pointed to fragmentation, complexity and lack of operational alignment, rather than the absence of frameworks. Stakeholders flagged inconsistencies between international, EU and national regulations, gaps in frameworks addressing emerging technologies and overlaps generating additional complexity. The most consistent need is for harmonised and interoperable regulatory frameworks (particularly for environmental KPIs and reporting), clearer long-term policy signals, and targeted incentives (tax instruments, accelerated depreciation, fast-tracked permitting, green public procurement).

**Technology and digital readiness.** Stakeholders converged on the idea that the technological transition is constrained less by the availability of solutions than by infrastructure readiness, system integration, interoperability and deployment capacity. OPS, alternative fuels and advanced digital systems remain under-deployed because of infrastructure limitations, lack of standards and integration challenges. Investment is needed in port-side electrification, alternative-fuel supply chains and energy-management systems; digital tools (sensors, data platforms, digital twins) are needed to improve monitoring and optimisation. Opportunities lie in integrated energy and data systems, fleet- and port-level data pooling and the transformation of ports and vessels into living labs.

## 2.4. Ireland — IMDO

<b>Organising partner</b>	Irish Maritime Development Office (IMDO)
<b>Date</b>	30 April 2026
<b>Location</b>	Conrad Hotel, Dublin, Ireland (in conjunction with the Irish Maritime Transport Economist 2026 launch)
<b>Status</b>	Delivered — materials consolidated in this version
<b>Duration</b>	Approximately 2 hours
<b>Working language</b>	English

<b>Format</b>	In-person — semi-structured stakeholder discussions and interviews structured around the four SMARTDEC thematic dimensions
<b>Participants</b>	Over 40 attendees from port authorities, maritime transport and logistics, offshore and naval industries, energy and environment, digital technologies, research and innovation, and public institutions
<b>Speakers</b>	Liam Lacey (Director, IMDO); Daniel Fallen-Bailey (Economist, IMDO); Kate Farrell (Business Development Manager, IMDO); Noel O’Connor (Director, INSIGHT Research Centre, DCU)
<b>Supporting tools</b>	Standardised GNCO reporting templates, structured note-taking
<b>Communication</b>	<a href="#">Irish Press Release</a> and SMARTDEC communication channels

Table 4: Ireland IMDO

### 2.4.1. Delivery

The Irish workshop was hosted by the Irish Maritime Development Office (IMDO) on 30 April 2026 at the Conrad Hotel in Dublin, in conjunction with the launch of the Irish Maritime Transport Economist 2026. This format provided a unique context for stakeholder engagement, bringing together a high-level audience of maritime professionals already focused on the sector’s performance and challenges. The workshop methodology was adapted to a semi-structured interview and discussion approach, ensuring transnational coherence with the common SMARTDEC framework while capitalising on the concentration of senior stakeholders present at the launch event.

The session was opened by four speakers who provided contextual insights supporting the subsequent stakeholder discussions: Liam Lacey (Director, IMDO), who presented a general overview of Ireland’s maritime sector; Daniel Fallen-Bailey (Economist, IMDO), who addressed the performance of Ireland’s maritime transport sector in 2025 including decarbonisation progress; Kate Farrell (Business Development Manager, IMDO), who outlined key challenges for Ireland’s maritime sector and available support from SMARTDEC and other initiatives; and Noel O’Connor (Director, INSIGHT Research Centre, Dublin City University), who presented opportunities for digitalisation in maritime transport.

Inputs were collected using the standardised GNCO reporting templates applied consistently across all four national workshops, ensuring full comparability of results. The discussions were structured around the four thematic dimensions of the SMARTDEC framework.

### 2.4.2. Participants

With over 40 attendees, the Irish workshop exceeded the minimum KPI threshold of 15–20 participants. The audience represented a broad spectrum of Ireland’s maritime ecosystem, including: port authorities and operators; maritime transport and logistics (in particular shipping companies); offshore and naval industries; energy and environment; digital and embedded technologies; data acquisition, instrumentation and engineering; and research organisations. A wide range of professional roles were represented, from senior executives and company directors to engineers, researchers, consultants and financial specialists. The workshop also successfully onboarded more than 10 new stakeholders into the SMARTDEC network.

### 2.4.3. Main results — Ireland

**Financial ecosystem.** Irish stakeholders identified access to green shipping finance as a structural challenge, highlighting fragmented regulatory frameworks that create uncertainty for investors, and the difficulty of mobilising national funding in a coordinated manner. Key needs include ring-fencing ETS penalty revenues for maritime decarbonisation, coordinating national funding to leverage EU

instruments (in particular the ZEWT partnership), and establishing clearer pathways for SMEs to access blended-finance mechanisms. Grid limitations for OPS deployment and the high cost of electricity in certain ports were flagged as challenges affecting the business case for electrification. Opportunities highlighted include new CEF funding for green shipping lanes and decarbonisation projects, a new EIB programme supporting the goals of the EU Ports Strategy, and the potential for job creation associated with the transition.

**Collaboration and innovation.** A key gap identified was the limited awareness of different research activities underway in Ireland and the fragmentation of national efforts. Stakeholders emphasised the need to coordinate limited national funding, increase the engagement of key stakeholders in research activities, and develop dedicated funding programmes for maritime decarbonisation R&D. Challenges include divergent national priorities and uncertainty about outcomes and return on investment. Opportunities highlighted include the potential for ports to act as hubs for recharging heavy goods vehicles for hinterland connectivity, and the capacity of OPS deployment requirements to provide balancing loads that help address grid limitations.

**Regulatory and policy alignment.** Irish participants flagged uncertainty around the IMO’s net-zero framework and the risk of isolated regulation in Europe as a primary gap. The lack of globally harmonised maritime decarbonisation regulation was seen as creating an uneven playing field, particularly regarding the interaction between the EU ETS and countries outside the EU. Integration of Transmission System Operators (TSOs) into OPS planning was identified as a key regulatory need. The scalability of alternative fuels — in particular methanol — as a challenge for the successful implementation of FuelEU Maritime was prominently raised. Relevant policy opportunities include forthcoming European Maritime Days (EMD) workshops on Green Shipping Corridors and the anticipated CEF Reflow call (expected July 2026) to support the development of green shipping lanes in line with the EU Ports Strategy.

**Technology and digital readiness.** Stakeholders identified fuel supply gaps and OPS infrastructure limitations as primary technological bottlenecks, consistent with findings from Spain, France and Portugal. Data quality and digital maturity were highlighted as foundational prerequisites: obtaining high-quality data was described as the essential first step in any digitalisation pathway. Digital leadership in ports was identified as critical to creating a clear pathway forward, with a portfolio approach to smaller projects recommended to build confidence and momentum. Challenges include institutional reluctance from ports to engage with new systems and limited understanding among policymakers of the implications of emerging technologies. The expansion of the INSIGHT digital research centre (Dublin City University) was highlighted as a key national asset for supporting maritime technology innovation, while new digital technologies — particularly artificial intelligence — were identified as offering significant potential gains for operational efficiency and decarbonisation.

#### 2.4.4. Key findings — New insights not previously captured in D1.1

The Irish workshop identified at least five needs, gaps, challenges or opportunities not previously captured in D1.1:

- **OPS Working Group for Irish Ports.** The Irish Department of Transport has established a dedicated Onshore Power Supply for Irish Ports Working Group to oversee the delivery of OPS requirements under the EU’s Alternative Fuels Infrastructure Regulation (AFIR). This national institutional mechanism is a significant development not captured in D1.1.
- **Expansion of Green Shipping Corridors initiative.** Stakeholders involved in Ireland’s initial Green Shipping Corridor (GSC) studies are extending their research to additional routes, with new SEAI-funded research to build on the experience and knowledge gained from the initial studies.

- **CEF Reflow call for Green Shipping lanes.** The Irish Department of Transport has been notified that the CEF Reflow call, anticipated in July 2026, will provide targeted support for the development of green shipping lanes in line with the goals of the EU Ports Strategy. This represents a concrete, time-bound funding opportunity for Atlantic Area partners.
- **INSIGHT Research Centre expansion.** The INSIGHT digital research centre in Ireland is being expanded and is well-placed to support the development of technological innovations for maritime transport, including AI-driven solutions for operational efficiency and decarbonisation.
- **UK Clean Maritime Demonstration programme.** The United Kingdom has launched the next stage of its Clean Maritime Demonstration Programme and expressed interest in collaborating with other countries on implementing the technologies identified as solutions for Green Shipping Corridors. This cross-border dimension offers a significant opportunity for Atlantic Area countries, particularly Ireland given its geographic proximity and maritime links with the UK.

### 3. Comparative Analysis by Strategic Dimension

This section consolidates the inputs gathered in the national workshops along the four SMARTDEC strategic dimensions. For each dimension, a synthesis of the convergent diagnosis is followed by a comparative GNCO table summarising the most relevant gaps, needs, challenges and opportunities flagged across countries.

#### 3.1. Financial Ecosystem for the Green Maritime Transition

The financial dimension was discussed in all four workshops and emerged as one of the most pressing decarbonisation barriers. Across countries, stakeholders concur that cost-efficiency remains the dominant decision driver and that the bottleneck is less the absolute volume of available finance than its design, accessibility and alignment with the operational realities of maritime SMEs and port authorities. France and Spain pointed in particular to a “translation gap” between what banks and investors expect and what maritime SMEs are able to present; Portugal emphasised that funding instruments do not adequately reflect the long investment cycles and risk profiles of maritime assets; Ireland highlighted the additional challenge of fragmented regulatory frameworks creating investor uncertainty and the need for ring-fenced ETS revenues to fund the maritime transition.

A common diagnosis is the need to move from isolated grants towards blended-finance and risk-sharing instruments, with stronger public guarantees, simplified procedures for SMEs and the integration of pilot- and industrial-scaling stages into financing logics. France stands out with mature mechanisms such as Impact Océan Capital (Article 9 SFDR fund managed by GO Capital and supported by Banque des Territoires and ADEME) and BPI France guarantees, which were repeatedly cited as relevant references for the Atlantic ecosystem.

Gaps	Needs	Challenges	Opportunities
Mismatch between maritime SMEs’ proposals and bankability criteria (ES, FR). Long investment cycles and risk profiles of maritime assets not reflected in mainstream funding	Simplified, flexible and faster funding mechanisms (PT, ES). Stronger public guarantees and public-private financial instruments to reduce risk (FR, PT, ES). Early-stage funding aligned across EU countries	High upfront costs vs. unclear ROI and long asset lifecycles (PT, FR). Aligning investment decisions with long-term uncertainty on technologies and fuels (PT). Reconciling the “conservative” naval	Blended-finance vehicles, green leasing, pay-per-use, performance-based financing (PT, FR). Equipment leasing on ship-charter contracts; reward-based or refund-based instruments (FR).

Gaps	Needs	Challenges	Opportunities
(PT). Administrative complexity and high resource requirements to engage in EU calls (PT, ES). Difficulty in identifying the right financial actors and aligning their timeframes with technology development (FR). Underused EU/national funding opportunities due to poor matching with calls' value-chain logic (ES). Difficult access to green shipping finance for SMEs and port operators (IRL). Fragmented regulatory frameworks creating investor uncertainty (IRL). Limited coordination of national funding to leverage EU instruments (IRL).	and access to prototyping facilities (FR). Instruments supporting pilot deployment and industrial scaling, not only early-stage R&D (PT). ROI tools and clearer cost/benefit communication for end-users (FR). Ring-fencing of ETS penalty revenues for maritime decarbonisation (IRL). Coordination of national funding to leverage EU instruments, in particular the ZEWT partnership (IRL). Clearer access pathways to blended finance for maritime SMEs and port authorities (IRL).	sector with innovation investments (FR). SMEs at structural disadvantage without dedicated EU-project expertise (ES). Risk of competition between maritime, transport and ocean funds rather than integration (ES). Grid capacity limits delaying OPS deployment and weakening the electrification business case (IRL). High electricity costs in some ports undermining ROI (IRL). Limited availability of green methanol and other alternative fuels (IRL). High upfront investment costs for green technologies for SMEs (IRL).	Reference national schemes: Impact Océan Capital, BPI France guarantees, ADEME (FR). Greater integration between EMFAF, ocean impact funds and maritime decarbonisation instruments (ES). Local crowdfunding and citizen-investment campaigns to mobilise communities (FR). New CEF funding for decarbonisation projects and green shipping lanes (IRL). New EIB programme supporting the EU Ports Strategy goals (IRL). Job creation opportunities associated with the maritime energy transition (IRL).

Table 5: Financial and Economic Viability

### 3.2. Collaboration for Localised and High-Impact Innovation

The collaboration dimension is characterised by a persistent gap between research and industry, between innovators and end-users, and between ports and their value chains. All four workshops described Atlantic ports' participation in EU R&D projects on decarbonisation as currently limited, mainly due to capacity constraints, bureaucratic complexity and the perceived irrelevance of solutions designed for large-scale global shipping contexts. Across countries, stakeholders called for collaboration mechanisms that move beyond declarative commitments and produce tangible outcomes.

Territorial consortia and regional living labs were systematically identified as key enablers — environments where co-creation, testing and validation of solutions can take place in real conditions, supporting the alignment of stakeholder priorities and the replication of successful experiences. France illustrated this with MEET2050, a national institute acting as a trusted third party between public policy, industrial innovation and large-scale deployment; Spain and Portugal stressed the role of clusters and matchmaking platforms; the SMARTDEC platform itself was repeatedly cited as a relevant cross-Atlantic enabler.

Gaps	Needs	Challenges	Opportunities
<p>Limited participation of Atlantic ports and operators in EU R&amp;D on decarbonisation (PT, ES, FR).</p> <p>Disconnect between academic/industrial R&amp;D and operational needs (PT, FR).</p> <p>Fragmentation of tools, standards and engineering interfaces across geographies (FR). Tenuous link between ports and shipowners; lack of intermediaries (FR).</p> <p>Innovation initiatives driven by large players, with limited relevance for smaller ports (PT).</p> <p>Limited awareness among Irish maritime stakeholders of national and EU research activities in maritime decarbonisation (IRL).</p> <p>Fragmented national funding with insufficient coordination (IRL).</p>	<p>Implementation-oriented collaboration platforms and matchmaking mechanisms (PT, ES).</p> <p>Place-based, multi-sector regional innovation platforms (PT). Tools and organisations bridging laboratory R&amp;D with industrial needs (FR).</p> <p>Clearer certification pathways and market-deployment routes (PT, FR).</p> <p>Cluster-led support to consortium building, especially for SMEs (ES).</p> <p>Coordination of limited national funding to maximise leverage from EU instruments (IRL).</p> <p>Mechanisms to engage key stakeholders more actively in decarbonisation R&amp;D (IRL). Dedicated funding programmes for maritime decarbonisation research (IRL).</p>	<p>Moving from declarative collaboration to tangible outcomes (PT, ES, FR). Bridging the “valley of death” between R&amp;D and market deployment (PT).</p> <p>Aligning incentives and reducing complexity of multi-stakeholder cooperation (PT).</p> <p>Internal barriers of ports/operators to join EU consortia (administrative, language, scale) (ES).</p> <p>Measuring innovation impact beyond deliverables — local impact metrics (ES, FR).</p> <p>Divergent national priorities creating obstacles to coordinated action (IRL). Uncertainty about outcomes and return on investment limiting private sector engagement in collaborative projects (IRL).</p>	<p>Territorial consortia and regional living labs as drivers of co-creation (PT, FR).</p> <p>MEET2050 as a blueprint of a trusted-third-party institute for decarbonisation (FR).</p> <p>SMARTDEC platform and Atlantic clusters as matchmaking enablers (cross-country).</p> <p>Living-lab port pilots combining ports, operators, technology providers and academia (PT, ES).</p> <p>Replication of successful pilots across regions with shared performance evidence (PT).</p> <p>Ports as hubs for recharging heavy goods vehicles for hinterland connectivity, linking maritime and land transport decarbonisation (IRL).</p> <p>OPS deployment requirements providing balancing loads to help address grid limitations (IRL).</p>

Table 6: Innovation Ecosystem Matrix

### 3.3. Regulatory and Policy Alignment for Decarbonisation

The regulatory dimension was diagnosed as fragmented, complex and sometimes inconsistent across governance levels, rather than absent. Portugal and Spain explicitly pointed to overlaps between international, EU and national regulations creating additional complexity instead of clarity; France described regulatory instability and difficulty in understanding the “rules of the game”. Ireland added a transatlantic dimension, raising concerns about IMO framework uncertainty and the risk of isolated EU regulation creating an uneven playing field for non-EU countries. All four countries flagged the misalignment between the pace of regulatory developments (often faster) and the actual readiness of supporting infrastructure (often slower), with permitting procedures still designed for traditional models in many cases.

Across countries, the strongest needs are for harmonised and interoperable frameworks (particularly for environmental KPIs), clearer long-term policy signals to reduce investment uncertainty, and targeted incentives (accelerated depreciation, fast-tracked permitting, green public procurement, green clauses). France highlighted as a relevant near-term opportunity the cross-party bill on wind-assisted propulsion under preparation by the French National Assembly, which provides a legal definition of wind-powered merchant vessels, extends the green accelerated depreciation scheme, re-establishes Energy Saving Certificates eligibility and anchors a dedicated maritime decarbonisation fund.

Gaps	Needs	Challenges	Opportunities
<p>Inconsistencies between international, EU and national regulatory levels (PT, ES). Gaps in frameworks addressing emerging technologies (PT). Slow and complex permitting procedures, designed for traditional models (PT, ES). Mature technologies not deployed due to legal insecurity or absent standards (ES). Operational dimension of regulation not sufficiently developed (FR). Uncertainty around the IMO net-zero framework and risk of isolated EU regulation creating an uneven playing field for non-EU countries (IRL). Lack of globally harmonised maritime decarbonisation regulation (IRL).</p>	<p>Harmonised and interoperable frameworks for environmental KPIs and reporting (PT, ES). Clearer long-term policy signals to reduce investment uncertainty (PT, ES, FR). Regulatory standardisation of environmental performance indicators in the maritime sector (FR). Coordination mechanisms across governance levels (PT, ES). Operational guidance, not only objectives, in EU/national legislation (FR). Clarity on ensuring a level playing field regarding the EU ETS for countries outside the EU (IRL). Integration of Transmission System Operators (TSOs) into OPS planning and regulation (IRL).</p>	<p>Regulatory fragmentation across regions, nations and EU (PT, ES, FR). Misalignment between regulatory ambition and infrastructure readiness (PT, ES). Different speeds across policy strands (emissions, permitting, procurement) generating uncertainty (ES). Reconciling competitive pressure with stricter EU regulation than other regions (FR, PT). Avoiding that excessive regulation lengthens funding cycles (FR). Scalability of alternative fuels — in particular methanol — as a challenge for the successful implementation of FuelEU Maritime (IRL). Addressing the dark/shadow fleet and enforcement gaps in international regulation (IRL).</p>	<p>Tax incentives, accelerated depreciation and fast-tracked permitting (PT, ES, FR). Green public procurement and green clauses in port contracts (ES, PT). Cross-party bill on wind-assisted propulsion as a national near-term opportunity (FR). Carbon-based incentives to drive market adoption of low-carbon solutions (PT). Coordinated EU/national/regional roadmaps with clear milestones (ES, PT). Upcoming European Maritime Days (EMD) workshops on Green Shipping Corridors as a key part of the TEN-T policy delivery mechanism (IRL). Anticipated CEF Reflow call (expected July 2026) to support the development of green shipping lanes in line with the EU Ports Strategy (IRL).</p>

Table 7: Regulatory and Policy Frameworks

### 3.4. Technology and Digital Readiness for a Low-Carbon Maritime Sector

Across all four workshops, stakeholders converged on a key insight: the dominant bottleneck is not the existence of decarbonisation technologies, but their deployment readiness. Onshore Power Supply, alternative fuels, sensors and digital tools are increasingly mature, yet face barriers linked to infrastructure (port-side grid capacity, bunkering), standards (interoperability, KPIs), capabilities (digital skills) and economics (high local energy costs, asymmetric return on investment).

Portugal articulated this most explicitly: vessels are increasingly being equipped to connect to OPS, but many ports lack the necessary grid capacity, and high energy costs in port environments weaken the business case for electrification. France raised similar concerns regarding electrical-vector compatibility and called for digital twins and shared experience feedback (RETEX). Spain’s technology room (moderated by Bilbao PortLab) emphasised that the real challenge is implementation, internal capabilities and prioritisation — recommending each port to focus on a small number of technologies over a three-year horizon. Living-lab approaches, smart-grid pilots and standardised digital twins were repeatedly highlighted as practical levers.

Gaps	Needs	Challenges	Opportunities
Under-deployment of OPS, alternative fuels and advanced digital systems (PT, FR, ES). Limited port-side grid capacity for large-scale electrification (PT, FR). Two electrical-vector gaps: large-power compatibility and grid compatibility (FR). Fragmented IT systems, lack of standardised data formats (PT). Mature technologies not implemented due to non-technical barriers (ES). Fuel supply gaps for alternative fuels (particularly green methanol) limiting adoption of FuelEU Maritime pathways (IRL). OPS infrastructure gaps in Irish ports (IRL). Limited data quality and digital maturity as foundational barriers	Substantial investment in port electrification and alternative-fuel supply chains (PT, FR). Digital twins for comparative benchmarking and shared experience feedback (RETEX) (FR). Common data and reporting frameworks (sensors, PLCs, access rights to data) (FR, PT). Harmonised tools and protocols between ports (FR, PT). Strengthened internal capabilities (digital skills, project management) at ports (ES, PT). Digital leadership in ports to establish a clear decarbonisation pathway (IRL). Portfolio approach with smaller projects to build confidence and momentum (IRL). Digital maturity assessments for ports as starting point for	Treating the ship as a global energy system on which design loops can be run (FR). Energy optimisation while waiting for technology maturity (FR). Lack of standardised solutions — each port has its own system (FR). High investment costs and limited digital skills in many port environments (PT). Implementation, not technology itself, is the main bottleneck (ES, PT). Institutional reluctance from ports to engage with new digital systems and technologies (IRL). Limited understanding among policymakers of the implications of new and emerging technologies for maritime decarbonisation (IRL).	Living-lab ports and vessels for the testing and integration of green/digital solutions (PT, ES, FR). Fleet- and port-level data pooling and integrated energy + data systems (PT, FR). Smart-grid port pilots and local energy production (FR). Retrofit hybridisation as a fast-track decarbonisation pathway (FR). Stronger ties between ports, ships and academic labs to accelerate deployment (FR, ES). New digital technologies — particularly AI — offering significant efficiency gains and decarbonisation potential in maritime operations (IRL). Expansion of the INSIGHT digital research centre (DCU) as a national asset for

Gaps	Needs	Challenges	Opportunities
to the digitalisation journey (IRL).	strategic planning (IRL). Expansion of AI applications for operational efficiency gains (IRL).		maritime technology innovation (IRL).

*Table 8: Technological Readiness and Port Infrastructure*

## 4. Cross-cutting Findings and Lessons Learned

Building on the comparative analysis, this section consolidates the cross-cutting findings that emerged from the national workshops and that complement the SMARTDEC diagnosis carried out under D1.1. These findings reflect the systemic interaction between the four strategic dimensions and the specificities of the Atlantic context.

### 4.1. Empirical Validation and Strategic Alignment with Deliverable D1.1

The qualitative outcomes derived from the four national workshops offer a critical empirical validation of the theoretical baseline established in Deliverable D1.1. Rather than replacing the initial findings, the stakeholder interaction served to ground, weigh, and contextualize the macro-level data against the daily operational realities of the Atlantic maritime ecosystem.

#### 4.1.1 Points of Convergence (Where Stakeholders Confirmed the Theory)

- **The Regulatory Bottleneck:** Stakeholders heavily corroborated the conclusions of D1.1 regarding regulatory fragmentation. The dialogue across all regional tables confirmed that conflicting municipal, national, and European frameworks create a climate of uncertainty that actively paralyzes private investments in alternative fuel infrastructures.
- **The Capital Expenditure (CAPEX) Barrier:** In alignment with the financial risks highlighted in D1.1, smaller maritime operators and medium-sized ports emphasized that the prohibitively high upfront costs of green retrofitting and alternative bunkering facilities severely threaten their market competitiveness.
- **Infrastructural Deficits:** The localized sessions validated the structural gaps identified in desktop research, noting that the uneven deployment of Onshore Power Supply (OPS) and alternative supply networks remains a primary operational obstacle across the Atlantic Area.

#### 4.1.2 Points of Divergence and New Discovered Insights (Where Reality Expanded the Theory)

- **The Human Element & Talent Shortage:** While Deliverable D1.1 approached decarbonization primarily through technological, infrastructural, and regulatory lenses, the workshops brought to light a critical, underrepresented dimension: the acute lack of specialized skills and generational renewal. Stakeholders unreservedly argued that funding green vessels is futile if the workforce lacks the training to operate, handle, and maintain low-carbon systems safely.
- **Asymmetry of Port Scaling:** The initial desktop review suggested standardized decarbonization pathways. However, the empirical feedback revealed that these solutions are often designed for major tier-1 transport hubs. Stakeholders from smaller and medium-sized Atlantic ports highlighted that they lack the space, technical grid capacity, or human resources to implement models like "Living Labs" without tailor-made external support.
- **The Funding-Process Gap:** While D1.1 emphasized the lack of dedicated financial instruments, stakeholders clarified that the problem is often not the lack of funds, but the administrative complexity and slow processing times required to access them, which inherently disqualifies flexible SMEs.

This empirical calibration indicates that the decarbonisation challenges in the Atlantic Area extend far beyond mere theoretical or macro-level metrics. The friction between existing desktop hypotheses and live stakeholder insights highlights a series of deeply rooted systemic bottlenecks. To properly address these complexities, the subsequent subsections deconstruct these findings into specific cross-cutting thematic areas, analysing how these regulatory, infrastructural, and financial misalignments operate simultaneously to condition the green transition of the maritime value chain.

## 4.2. Structural misalignment between regulatory ambition and infrastructure readiness

A central finding, articulated explicitly in the Portuguese workshop and echoed in Spain, France and Ireland, is the growing disconnect between the pace of regulatory developments and the actual readiness of supporting infrastructure. Regulatory frameworks and emission targets are advancing — sometimes ahead of schedule — while port infrastructure and energy systems are not evolving at the same speed. The OPS case is illustrative: vessels are increasingly compliant, but many ports lack the grid capacity to receive them, and high port-side energy costs further weaken the business case. As a result, compliance pathways may exist in principle, but remain constrained in practice by economic and operational limitations.

## 4.3. Energy system constraints as a critical bottleneck for port-side electrification and alternative fuel supply

Maritime decarbonisation is constrained not only at vessel or port level but by broader energy system limitations: insufficient grid capacity to support large-scale electrification, limited local energy production within port areas, and weak integration between energy, logistics and port operations. The Irish workshop reinforced this finding, identifying grid capacity limitations as a primary barrier to OPS deployment and noting the potential for OPS infrastructure to provide grid balancing loads — a cross-sectoral opportunity highlighted as unique to the Irish context. Complementing this view, the French workshop highlighted a more systemic global constraint: the absolute scarcity of available clean energy required to scale up alternative low-carbon maritime fuels. Generating the immense amount of green electricity needed for e-fuels (such as hydrogen, methanol, and ammonia) presents a colossal challenge, mirroring the land-availability conflicts faced by biofuels competing with food production. Consequently, stakeholders stressed that a critical, unresolved question remains: how to ensure the maritime sector is given adequate priority in the allocation of green electricity and alternative fuels when competing against other hard-to-abate sectors like aviation, land mobility, and heavy industry. Strategies focused narrowly on electrification risk overlooking these systemic dependencies. A more integrated approach — combining grid reinforcement, local renewable energy generation, smart-grid port pilots and coordinated logistics — is required to enable effective decarbonisation in Atlantic ports.

## 4.4. Persistent “valley of death” between R&D and industrial deployment

A recurring finding across stakeholder inputs is the absence of effective mechanisms to bridge the gap between research and large-scale implementation. Early-stage R&D is relatively well supported, and large industrial projects can independently access financing, but mid-stage innovation — at pilot or semi-industrial scale — remains significantly underfunded and hindered by a critical shortage of accessible testing infrastructure. This creates a structural “valley of death” in which promising solutions fail to reach the market. This gap is reinforced by the operational and commercial challenges of deploying innovations within existing vessels or port infrastructures, where confidentiality concerns and tight commercial schedules often restrict testing. Furthermore, the situation is exacerbated by the

limited availability of risk-sharing financial instruments (with the partial exception of France via Impact Océan Capital and BPI France) and a lack of clear pathways for scaling and commercialisation.

#### 4.5. Institutional and governance constraints limit collaboration and innovation capacity

Stakeholders, particularly in Portugal, identified significant limitations within existing governance and institutional frameworks, especially for public-sector actors such as ports and regulatory bodies. Administrative rigidity, public procurement rules, limited flexibility to recruit specialised technical personnel and constraints on engaging in multi-stakeholder innovation initiatives reduce the ability of key actors to participate effectively in dynamic, resource-intensive processes. Collaboration platforms and networks exist, but their impact is limited by the capacity of these actors to engage in them.

#### 4.6. High investment uncertainty driven by lack of decision-grade information

Across countries, a critical barrier to investment is the lack of reliable and actionable information on future technological pathways, market conditions and regulatory developments. Stakeholders reported difficulty in making long-term investment decisions due to uncertainty regarding the viability of alternative fuels, the lack of standardised data and performance benchmarks, and the limited availability of validated real-world evidence on emerging technologies. This uncertainty is particularly problematic given the long lifespan of maritime assets, which require stable and predictable conditions to justify capital allocation.

#### 4.7. Structural specificities of Atlantic regions

Stakeholders also flagged structural specificities that must be considered when designing instruments for the Atlantic Area: the relatively small scale of national maritime sectors (notably highlighted by Portugal and Ireland), reduced economies of scale compared to larger international operators, heterogeneous port and fleet typologies, and the consequent need for solutions and policies tailored to mid-size operations rather than transposed from global mainstream contexts. This reinforces the value of cross-Atlantic learning enabled by SMARTDEC.

#### 4.8. Lessons learned on workshop methodology

The implementation of the national workshops also generated practical methodological insights for SMARTDEC and for similar stakeholder-engagement processes:

- Parallel thematic rooms (Spain, France) maximise depth per dimension, but require strong cross-room coordination to consolidate results. Plenary formats (Portugal) favour systemic dialogue but need complementary mechanisms (e.g. post-workshop questionnaires) to ensure depth.
- Hybrid engagement models combining synchronous discussion with asynchronous structured input significantly improve both data coverage and quality, especially when stakeholders cannot all attend live.
- In-person formats embedded in larger sector events (e.g. Ocean B2B in France) facilitate the mobilisation of new actors and increase the visibility of the SMARTDEC initiative.
- Common GNCO templates and reporting tools, defined at consortium level, are essential to enable comparability across countries and meaningful cross-Atlantic synthesis.
- The Irish workshop demonstrated the potential of embedding SMARTDEC stakeholder engagement within high-profile national sectoral events (the Irish Maritime Transport Economist launch). This format facilitated access to senior decision-makers who might not have

attended a standalone project workshop, and suggests a scalable model for future engagement activities.

- Live polling (Vevox), AI-assisted note-taking, paperboards and structured rapporteur templates all proved useful in different contexts; their selection should be matched to the chosen format rather than imposed uniformly.

## 5. Conclusions

The four national stakeholder workshops carried out under WP1 Task 1.3 — in Spain, France, Portugal and Ireland — provide a robust evidence base for the SMARTDEC project. They confirm a maritime sector that is ambitious in its decarbonisation objectives and pragmatic in its approach to innovation uptake. The need to reduce emissions is widely acknowledged across the Atlantic Area, yet the pathway to adoption is conditioned by economic realities, infrastructure limitations and governance complexity.

The workshops confirm that technological potential alone is insufficient: innovations must demonstrate measurable performance gains, scalability and an attractive return on investment to gain traction in a competitive and risk-averse industry. They also confirm that the decarbonisation challenge is systemic and interdependent: financial, regulatory, technological and organisational constraints are closely linked, generating cumulative effects that slow down implementation. Addressing these interdependencies — rather than acting on isolated dimensions — will be critical to accelerating maritime decarbonisation in the Atlantic Area.

At the same time, the workshops highlight a strong appetite for cooperation and knowledge exchange. Stakeholders repeatedly stressed the value of pilot projects, territorial consortia, regional living labs, interoperability standards and transparent communication across the value chain. The role of ports as strategic enablers — providing infrastructure, anchoring testbeds and reducing risk for first movers — emerged consistently, reinforcing the need to integrate ports and regional innovation agencies more systematically into decarbonisation initiatives.

The findings reported in this deliverable complete the iterative loop initiated by the theoretical framework of D1.1 and the methodological guidelines of D1.3.1. By successfully transitioning from desktop research to empirical stakeholder co-creation, this data will feed directly into subsequent SMARTDEC activities: the definitive refinement of the consolidated regional mapping and the completion of Deliverable D1.2 (Stakeholders' Mapping and Assessment of Sector Priorities); technology profiling and innovation matchmaking under WP2 (D2.2 to D2.5); pilot definition and deployment under WP3 and WP4; and the strategic recommendations and action plans to be developed under WP5. Grounding these upcoming work packages in the dual validation of desk theory and live stakeholder expertise firmly confirms the role of SMARTDEC as a robust broker, facilitator, and accelerator of maritime decarbonisation across the Atlantic Area.

Furthermore, the insights gathered from the national workshops underline a shared reality between peripheral and island regions, such as Ireland and Portugal. Their unique geopolitical perspective reinforces the urgent need for tailored, scalable solutions for medium-sized ports, ensuring they are not left behind by the high infrastructure and grid requirements of global maritime hubs.

## 6. Appendices

### 6.1 Appendix I — Common methodological framework

All four national workshops were structured around the SMARTDEC strategic dimensions and the GNCO analytical grid. The table below summarises the dimensions, the lead questions and the stakeholder categories targeted.

Strategic dimension	Lead GNCO questions	Primary stakeholder categories
Financial ecosystem for the green maritime transition	Gaps: what limitations prevent Atlantic actors from accessing available financing for clean technologies? Needs: what features should financial instruments incorporate to meet the needs of SMEs and port authorities? Challenges: how can smaller players overcome high initial investments without compromising competitiveness? Opportunities: what innovative financial models could accelerate investment in maritime decarbonisation?	Banks, public investment vehicles, financial intermediaries. Port authorities and operators. Maritime SMEs and technology developers. Public authorities and policy-makers.
Collaboration for localised and high-impact innovation	Gaps: why is the participation of Atlantic ports and operators in EU R&D projects limited? Needs: what networks/platforms could support solutions tailored to the Atlantic ecosystem? Challenges: how can collaboration move beyond declarative commitments to tangible results? Opportunities: what role can territorial consortia and regional living labs play?	Ports and port operators. Maritime clusters and innovation agencies. Universities, RTOs, innovation centres. Technology providers and SMEs.
Regulatory and policy alignment for decarbonisation	Gaps: what regulatory gaps hinder the integration of green technologies in Atlantic ports and fleets? Needs: what regulatory frameworks are needed to standardise environmental performance indicators? Challenges: how can fragmentation between regional, national and EU policies be reduced? Opportunities: what tax incentives, accelerated procedures or green clauses could boost investment?	Regulatory authorities (EU, national, regional, local). Port authorities and operators. Industry associations and clusters. Legal advisors and policy researchers.
Technology and digital readiness for a low-carbon maritime sector	Gaps: what key technologies (OPS, alternative fuels, sensors) are not yet deployed and why? Needs: what infrastructure and technological services are urgently required by Atlantic ports? Challenges: what difficulties do ports/operators face in digitalising operations sustainably? Opportunities: how can ports and ships become “living labs” to test green and digital solutions?	Technology providers (energy, digital, OPS, fuels). Ports and shipping companies. Engineering and R&D actors. Public bodies supporting infrastructure investment.

Table 9: Methodological Framework

## 7. Annexes

### Annex I – Dissemination Activities, Press Releases, and Media Outreach



Figure 1: Save-the-Date Invitation Template and Localized Adaptation Examples

**TALLER: INTERACCIÓN ENTRE LAS PARTES INTERESADAS Y VALIDACIÓN DEL MAPEO**

19 DE FEBRERO 10:00-11:30 ONLINE

**REGISTER**

TIME	TEMA	FORMATO
10:00 - 10:15	Presentación e Introducción Contextual	-sesión plenaria de apertura -resumen del proyecto SMARTDEC
10:15 - 11:00	Validación de las partes interesadas: Necesidades, brechas, desafíos y oportunidades	División en salas de trabajo
11:00 - 11:20	Stakeholder inspiration – Buenas Prácticas y Perspectiva Estratégica	Caso local, estrategia, colaboración, impacto, escalabilidad.
11:20 - 11:30	Preguntas y respuestas plenarias y reflexión de clausura	Resumen, retroalimentación, discusión, reflexión, metodología, cierre.

**REGISTER**

Figure 2: Save the Date and registration link - Workshop Spain

Figure 3: Template Agenda Workshop Spain

Figure 4: Save the Date and registration link - Workshop France



Figure 5: Detailed French Workshop Agenda and Promotional Flyer



Figure 6: Save the Date and registration link - Workshop Portugal

**SMARTDEC**  
Smart Clusters for Maritime Decarbonisation

**WORKSHOP: INTERNATIONAL STAKEHOLDERS AND MAPPING VALIDATION**

**30th of April ONSITE** **REGISTER**

**30 Apr SMARTDEC Irish Local Workshop – Stakeholder Mapping Validation**

April 30, 2026 11:00 AM - 12:30 PM CEST  
Conrad Hotel  
Dublin, Ireland  
[Add to calendar](#)

**How to contact the organizer**  
IMDO

**Categories**  
On-site event

**Share event**  
[Share event](#)

**Date:** 30 April 2026

The SMARTDEC Irish Local Workshop will bring together representatives from ports, shipping and logistics companies, public authorities, research organisations and other maritime stakeholders to discuss the opportunities associated with maritime decarbonisation in Ireland, the Atlantic Area.

Figure 7: Save the Date and registration link - Workshop Ireland

**SMARTDEC STAKEHOLDER WORKSHOP**

**SMARTDEC** **Interreg Atlantic Area** **Co-funded by the European Union**

**SMARTDEC\_ Stakeholders interaction and mapping validation\_ Workshops**

**Description:**  
SMARTDEC - Smart Clusters for Maritime Decarbonisation  
Stakeholders Workshop: Methodological report and content structure of the stakeholders international and mapping validation.  
SMARTDEC kindly invites you to participate in a workshop aimed at validating the gaps, needs, challenges, and opportunities identified in "Methodological report and content structure of the stakeholders international & mapping validation".

**Date:**  
**Time:**  
**Location:** online or in person (to be specified)  
We look forward to your valuable participation.

SMARTDEC is a European Project that aims to create and develop an Atlantic network of the maritime transport sector to provide the tools, knowledge, and structure needed to rapidly meet the challenge of reducing the polluting emissions of the waterborne transportation in the Atlantic Area (AA).

This joint initiative gathers key actors from different regions in Ireland, France, Portugal & Spain that will be organized as hubs with a quadruple helix approach in which research & academia, policy makers, society and the industry (clusters, SMEs & start-ups) will collaborate to develop common strategies to achieve the decarbonisation of the maritime transport sector. SMARTDEC will boost the innovation capacity of decarbonisation of the maritime transport sector by promoting the adoption of promising technological solutions currently available and validated to match with relevant end-users.

Learn more about SMARTDEC at <https://smartdec.eu/>

**General Data Protection Regulation (GDPR) Notice:**  
In accordance with Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 (General Data Protection Regulation), the personal data provided via this form will be processed solely for the purpose of managing participation in the SMARTDEC WF1 national workshop series. The data will be handled with the utmost confidentiality and stored securely. No data will be shared with third parties. Participants have the right to access, rectify, restrict, erase, and object to the processing of their personal data at any time. For any data-related inquiries, or if you do not consent to the use of your image for dissemination purposes (e.g., event photography), please contact: [smartdec@eclemar.be](mailto:smartdec@eclemar.be).

By completing this form, you confirm that you have read and understood this policy and consent to the stated terms.

Correo \*  
Correo válido

What type of organisation do you work for?  
 SME/Startup/Startup  
 Large Industry/Company (>250 employees)  
 Academic/R&D  
 NGO or civil society organisation  
 Public Administration  
 Public Company  
 Maritime transport operator  
 Port authority  
 Private company  
 Other

If you reply otherwise, please specify  
 Descripción (opcional)

Which thematic area best matches your expertise and contribution to the workshop discussions? (This information will be used to assign participants to the thematic working groups.)  
 Financial Ecosystem from Green Maritime Transition  
 Collaboration for Localised Innovation and Impact  
 Regulatory and Policy Alignment for Decarbonisation  
 Technology & Digital Enabling for a Low-Carbon Maritime Sector  
 Other

If you reply other, please specify  
 Descripción (opcional)

Figure 8: Registration Form for the SMARTDEC National Workshop Series

[Find the link to the registration form here](#)

The image shows a LinkedIn post from the account 'Bilbao PortLab' (2,056 followers). The post is in Spanish and promotes a 'SMARTDEC Stakeholder Workshop' on February 19th at 10:00 AM online. The main text in Spanish reads: 'Desde Bilbao PortLab y Clúster Marítimo-Marino de Andalucía (CMMA) os invitamos a participar en el SMARTDEC Stakeholder Workshop, enmarcado en el proyecto europeo SMARTDEC Project, cofinanciado por el programa Interreg Atlantic Area'. It details the workshop's purpose: to validate preliminary findings of a sector analysis 'Deep Desktop Review and State-of-the-Art of Atlantic Waterborne Transportation' to identify needs, gaps, and challenges for sustainable maritime transport. It mentions the SMARTDEC project's quintuple helix model involving stakeholders from Ireland, France, Portugal, and Spain. A registration link is provided: <https://lnkd.in/e8NyNXC2>. The post includes a 'REGISTER' button in the top image and a 'SAVE THE DATE' icon. The bottom of the post features several hashtags: #BilbaoPortLab, #innovacion, #portsofthefuture, #ecosistemadeinnovación, #colaboración, #cocreacion, #proactividad, #facilitaciónparainnovación, and #ports40.

Figure 7: LinkedIn post promoting the Spanish National Workshop registration

[Access this LinkedIn post here](#)



## SMARTDEC workshop in Spain strengthens stakeholder insights on maritime decarbonisation

Spain - 19 February 2026

As part of its stakeholder engagement activities, the SMARTDEC project organised a national workshop in Spain to gather stakeholder input on maritime decarbonisation challenges and priorities across the Atlantic Area.

The workshop was organised online by Bilbao PortLab and the Cluster Marítimo-Marino de Andalucía (CMMA), which leads SMARTDEC Work Package 1 dedicated to stakeholder mapping and the identification of maritime transport decarbonisation priorities. The session followed a common methodology shared across all SMARTDEC partner countries.

### Engaging stakeholders across the maritime ecosystem

The workshop brought together a broad range of stakeholders from across the maritime ecosystem, including port authorities, engineering and consulting firms, technology providers, research organisations, clusters and public institutions. The session aimed to collect stakeholder input and support the validation of findings from SMARTDEC's ongoing sectoral analysis.

### Discussions focused on four thematic areas

Participants contributed through moderated discussions structured around four key themes:

- Financial ecosystem for the green maritime transition
- Collaboration for localised innovation and impact
- Regulatory and policy alignment for decarbonisation
- Technological and digital readiness for a low-carbon maritime sector

These discussions enabled stakeholders to identify and discuss needs, barriers, challenges and opportunities across the maritime value chain.

### Key insights from stakeholder exchanges

Several topics were highlighted during the discussions. Access to financing was identified as a challenge, particularly for SMEs that face difficulties accessing European funding programmes and responding to complex funding calls. Participants also highlighted the importance of collaboration through clusters, innovation networks and pilot projects supporting the development and deployment of solutions. Discussions addressed regulatory complexity and the lack of alignment between policy levels. Stakeholders also identified technological and digital challenges, including data fragmentation, limited standardisation and the need for testing environments to support innovation.

### Supporting SMARTDEC's future work

The information gathered during the workshop will contribute to SMARTDEC's stakeholder mapping activities and support the development of a project deliverable synthesising stakeholder input and identifying priorities for maritime transport decarbonisation.

### About SMARTDEC

SMARTDEC (Smart Clusters for Maritime Decarbonisation) is a European project funded by the Interreg Atlantic Area Programme. The project supports maritime decarbonisation by strengthening cooperation between industry, research organisations, policymakers and other stakeholders across the Atlantic Area.

More information: <https://smartdec.eu>

### Contacts:

SMARTDEC Project CMMA Team: [internationalprojects@cmma.eu](mailto:internationalprojects@cmma.eu)  
 SMARTDEC Project Bilbao Port Lab Team: [julia.coppla@bilbaoportlab.eus](mailto:julia.coppla@bilbaoportlab.eus)  
 SMARTDEC Project Team: [smartdec@polemer-ba.com](mailto:smartdec@polemer-ba.com)



Figure 8: Official SMARTDEC Press Release for the Spanish National Workshop

## L'atelier SMARTDEC à Lorient mobilise les acteurs maritimes autour de la décarbonation

**Lorient, France – 12 février 2026**

Organisé le jeudi 12 février au Palais des Congrès de Lorient, dans le cadre de l'événement Ocean BtoB, l'atelier français du projet européen SMARTDEC a réuni plus de 30 participants afin d'échanger sur les défis, besoins et opportunités liés à la décarbonation du transport maritime.

L'atelier était coorganisé par le Pôle Mer Bretagne Atlantique, coordinateur du projet SMARTDEC, et Atlanpole. Il s'inscrit dans les activités d'interaction avec les parties prenantes et de cartographie des acteurs du projet, qui prévoient l'organisation d'un atelier dans chaque pays partenaire.

La session visait à mobiliser les acteurs régionaux, à présenter les objectifs et activités du projet SMARTDEC, ainsi qu'à contribuer à l'identification et à la validation des priorités du secteur en matière de décarbonation maritime. Elle a également permis de renforcer les échanges entre acteurs du transport maritime, des infrastructures portuaires, des technologies, de la recherche et de l'innovation.

Les participants représentaient un large éventail d'organisations : autorités portuaires, entreprises du transport et de la logistique maritime, fournisseurs de technologies et d'infrastructures, organismes de recherche et d'innovation, institutions publiques et privées, ainsi que structures d'accompagnement.

**L'atelier a débuté par des interventions introductives de quatre intervenants :**

- Gwenaëlle Benoit (EKIUM) - Solutions de décarbonation
- Frédéric Le Guillou (GO Capital) - Perspectives d'investissement
- Corinne Fournier (Banque Populaire Grand Ouest) - Financement maritime
- Emmanuel-Marie Peton (MEET2050) - Partenariats et collaboration

**Les participants ont ensuite pris part à une session de travail collective (1h45), structurée autour de quatre thématiques :**

- Ecosystème financier pour la transition maritime verte
- Collaboration pour une innovation locale à fort impact
- Alignement réglementaire et politiques publiques
- Technologies et maturité numérique pour un secteur maritime bas carbone

Au cours de ces échanges, les participants ont identifié des manques, des besoins, des défis et des opportunités. Les contributions ont été collectées et documentées dans le cadre du projet SMARTDEC.

Les informations recueillies lors de cet atelier alimenteront la cartographie du secteur. Elles contribueront à un livrable du projet à l'échelle de l'Espace

**À propos de SMARTDEC**  
 SMARTDEC est un projet européen financé par le programme Interreg décarbonation du transport maritime en renforçant la coopération entre les pays partenaires.  
 Plus d'informations: <https://smartdec.eu/>

**Contact**  
 Pour plus d'informations merci de contacter l'équipe SMARTDEC: [smartdec@cpmer-ba.com](mailto:smartdec@cpmer-ba.com)



Figure 9: Official SMARTDEC Press Release for the French National Workshop in French and English

## SMARTDEC workshop in France gathers maritime stakeholders to address decarbonisation challenges

**Lorient, France – 12 February 2026**

Held on Thursday 12 February at the Lorient Congress Centre during Ocean BtoB, the SMARTDEC French stakeholder workshop brought together more than 30 participants to discuss challenges, needs and opportunities related to maritime decarbonisation.

The workshop was hosted by Pôle Mer Bretagne Atlantique, coordinator of the SMARTDEC project, together with Atlanpole. It forms part of the project's stakeholder interaction and mapping activities, which include one local workshop in each partner country.

The session aimed to engage regional stakeholders, present the objectives and activities of the SMARTDEC project, and support the identification and validation of sector priorities linked to maritime decarbonisation. It also contributed to strengthening dialogue among actors involved in maritime transport, port infrastructures, technology, research and innovation.

Participants represented a wide range of organisations, including port authorities, maritime and logistics companies, infrastructure and technology providers, research and innovation organisations, public and private institutions, and advisory bodies.

**The workshop included introductory contributions from four speakers:**

- Gwenaëlle Benoit (EKIUM) - Decarbonisation solutions
- Frédéric Le Guillou (GO Capital) - Investment perspectives
- Corinne Fournier (Banque Populaire Grand Ouest) - Maritime finance
- Emmanuel-Marie Peton (MEET2050) - Partnerships and ecosystem collaboration

**Participants then took part in a facilitated group session (1 hour 45 minutes), structured around four key themes:**

- Financial ecosystem for the green maritime transition
- Collaboration for localised and high-impact innovation
- Regulatory and policy alignment for decarbonisation
- Technologies and digital readiness for a low-carbon maritime sector

During these discussions, participants identified gaps, needs, challenges and opportunities. Inputs were collected and documented as part of the SMARTDEC project activities.

The information gathered during the French workshop will contribute to stakeholder mapping and the assessment of sector priorities. This work will feed into a project deliverable developed at Atlantic Area level.

**About SMARTDEC**  
 SMARTDEC is a European project funded by the Interreg Atlantic Area programme, support maritime decarbonisation by strengthening cooperation between stakeholders.  
 More information: <https://smartdec.eu/>

**Contact**  
 For more information, please contact:  
 SMARTDEC Project team: [smartdec@cpmer-ba.com](mailto:smartdec@cpmer-ba.com)



## SMARTDEC Portuguese Stakeholders' workshop advances dialogue on maritime decarbonisation pathways

**Portugal – 10 April 2026**

On 10 April 2026, a new SMARTDEC Portuguese stakeholder workshop was held, bringing together key actors from across the maritime sector to exchange perspectives on the transition toward decarbonisation.

The workshop was organised by the University of Aveiro and Forum Oceano as part of the SMARTDEC project's ongoing stakeholder engagement and mapping activities, which include dedicated workshops in each partner country.

The session aimed to present the project's objectives and progress, while actively engaging national stakeholders in identifying sector priorities related to maritime decarbonisation. It also served to reinforce dialogue and knowledge exchange among organisations operating across maritime transport, port infrastructure, technology development, and research and innovation.

Participants reflected a broad cross-section of the maritime ecosystem, including representatives from industry, public authorities, research organisations, and innovation networks.

A central highlight of the workshop was the guest presentation by Daniel Maré Dias, Vertical Account Manager at Siemens Portugal – Transport (Air, Rail, Land, and Sea). Drawing on real-world cases, he presented concrete maritime decarbonisation initiatives, outlining Siemens strategic framework, key stakeholders involved, measurable outcomes, and the main lessons learned. The presentation also addressed the initiatives' potential for replication and transferability across different operational and geographic contexts.

The workshop featured a structured, collective discussion covering four priority themes:

- Financial ecosystem for the green maritime transition
- Collaboration for localised and high-impact innovation
- Regulatory and policy alignment for decarbonisation
- Technologies and digital readiness for a low-carbon maritime sector

During these discussions, participants identified gaps, needs, challenges, and opportunities. Inputs were collected and documented as part of the SMARTDEC project activities. The insights gathered during the session will contribute to the SMARTDEC project's stakeholder mapping and priority assessment activities at Atlantic Area level, supporting the development of future project outputs and recommendations.

**About SMARTDEC**  
 SMARTDEC is a European project funded by the Interreg Atlantic Area programme. It aims to accelerate maritime decarbonisation by strengthening cooperation, knowledge sharing, and strategic alignment among stakeholders.  
*More information:* <https://smartdec.eu/>

**Contact**  
 For more information, please contact:  
 SMARTDEC Project UA Team: [helena.vieira@ua.pt](mailto:helena.vieira@ua.pt)  
 SMARTDEC Project Team: [smartdec@polemer-ba.com](mailto:smartdec@polemer-ba.com)

Figure 10: Official SMARTDEC Press Release for the Portuguese National Workshop



## SMARTDEC workshop in Ireland brings together maritime stakeholders to support decarbonisation efforts

Dublin, Ireland - 30 April 2026

Held on 30 April 2026 at the Conrad Hotel in Dublin, alongside the launch of the Irish Maritime Transport Economist, the SMARTDEC Irish stakeholder workshop brought together more than 40 participants to discuss challenges, needs and opportunities related to maritime decarbonisation.

The workshop was organised by the Irish Maritime Development Office (IMDO) as part of SMARTDEC's stakeholder engagement and mapping activities. It forms part of a series of national workshops taking place across the Atlantic partner countries.

### Bringing together Ireland's maritime stakeholders

The event gathered representatives from ports, maritime transport and logistics companies, infrastructure providers, research organisations, public authorities and industry bodies.

The event was attended by Sean Canney, Minister of State at Ireland's Department of Transport, who addressed participants during the launch event. Officials from the Department of Transport and representatives from companies and research centres involved in maritime transport and related sectors also took part.

### Presentations and stakeholder exchanges

Presentations were delivered by Liam Lacey, Daniel Fallen-Bailey and Kate Farrell from IMDO, as well as Professor Noel O'Connor from the INSIGHT Research Centre. The speakers addressed topics including the performance of Ireland's maritime transport sector, current decarbonisation challenges, available support initiatives and opportunities linked to digitalisation.

Discussions were structured around four key themes:

- Financial ecosystem for the green maritime transition
- Collaboration for localised and high-impact innovation
- Regulatory and policy alignment for decarbonisation
- Technologies and digital readiness for a low-carbon maritime sector

### Key topics identified

Participants highlighted several topics relevant to the Irish maritime sector, including the establishment of the Onshore Power Supply for Irish Ports Working Group, ongoing work related to Green Shipping Corridors, future European funding opportunities for green shipping projects and the role of digital innovation in supporting maritime decarbonisation.

The information gathered during the workshop will contribute to SMARTDEC's stakeholder mapping activities and support the development of future project recommendations.

### About SMARTDEC

SMARTDEC (Smart Clusters for Maritime Decarbonisation) is a European project funded by the Interreg Atlantic Area Programme. The project supports maritime decarbonisation by strengthening cooperation between industry, research organisations, policymakers and other stakeholders across the Atlantic Area.

More information: <https://smartdec.eu>

### Contacts:

SMARTDEC Project IMDO Team: [paul.brewster@Marine.ie](mailto:paul.brewster@Marine.ie)

SMARTDEC Project Team: [smartdec@polemer-ba.com](mailto:smartdec@polemer-ba.com)



Figure 11: Official SMARTDEC Press Release for the Irish National Workshop

# Local Workshop – Stakeholder Mapping Validation (Online)

19 DE FEBRERO  
10:00 - 11:30  
ONLINE

**REGISTER**

The SMARTDEC Spanish Local Workshop, organised by Bilbao PortLab and CMMA, will focus on validating preliminary sectoral analysis results and identifying key needs and challenges for maritime decarbonisation within the Atlantic Area.

[Home](#) > [Events](#) > SMARTDEC Spanish Local Workshop – Stakeholder Mapping Validation (Online)

### Details

**Online**  
19 February 2026 – 10:00 CET

The SMARTDEC Spanish Local Workshop, organised by our Spanish partners Bilbao PortLab and Clúster Marítimo-Marino de Andalucía (CMMA), will be held online on 19 February 2026 at 10:00 CET.

This workshop forms part of the series of local workshops being organised under the SMARTDEC project in each partner country. It will focus on validating preliminary findings from the SMARTDEC sectoral analysis and on identifying key needs and challenges for maritime decarbonisation.

### Workshop objectives

- Validate the preliminary results of the SMARTDEC sectoral analysis
- Identify key needs and challenges regarding maritime decarbonisation
- Bring together maritime stakeholders and experts in an interactive online format

Join this interactive SMARTDEC workshop to help shape the future of maritime decarbonisation by sharing insights, challenges and real needs from the sector!

**Registration** is now open: [SMARTDEC WORKSHOP 2026](#)

### Date

February 19, 2026 10:00 am - February 19, 2026 11:45 am

[ADD TO CALENDAR](#)

### Location

Online

Figure 12: Official SMARTDEC Website Publication for the Spanish Local Workshop

The official online publication of the event can be found at the following link

## SMARTDEC French Local Workshop – Stakeholder Mapping validation (Onsite)

The SMARTDEC French Local Workshop will explore solutions for maritime transport decarbonisation in the Atlantic Area.

[Home](#) > [Events](#) > SMARTDEC French Local Workshop – Stakeholder Mapping validation (Onsite)

[REGISTER HERE](#)

### Details

The **SMARTDEC French Local Workshop** will take place as part of **Ocean BtoB**. It will bring together key local stakeholders to exchange views, share experiences and explore concrete solutions for the decarbonisation of maritime transport in the Atlantic Area.

### About the workshop

This **participatory workshop** will create a dedicated space for dialogue and collaboration between:

- companies
- port authorities
- researchers
- policy-makers

Through an interactive approach aligned with the objectives of the **SMARTDEC project**, participants will be invited to identify **practical needs and opportunities** related to:

- financing
- regulation
- technologies
- maritime and port infrastructure

### Organisation

The workshop is organised in France by **Pôle Mer Bretagne Atlantique** and **Atlanpole**, French partners of the SMARTDEC project.

One local workshop will be organised in each SMARTDEC partner country to strengthen territorial engagement and promote knowledge sharing across the Atlantic Area.

### Speakers

- **Gwenaëlle Benoit** – Innovation Leader, Decarbonisation Solutions, EKIU
- **Frédéric Leguillou** – Investment Director, CQ Capital
- **Corinne Fournier** – Maritime Credit Expert, Banque Populaire Grand Ouest
- **Emmanuel-Marie Peton** – Partnerships Manager, MEET 2050

The workshop will be professionally facilitated by **Klervi Dalibot (France TV)**.

### Practical information

- **Date:** 12 February
- **Time:** 15:00 – 16:30
- **Venue:** Palais des Congrès, Lorient, France
- **Event:** Ocean BtoB

### Why attend?

This local workshop will help strengthen cooperation between regional stakeholders and contribute to the development of **concrete pathways towards a more sustainable and resilient maritime transport sector** in the Atlantic Area.

[REGISTER HERE](#)

### Date

February 12, 2026 03:00 pm - February 12, 2026 04:30 pm

[ADD TO CALENDAR](#)


---

### Location

Palais des Congrès, Lorient, France

Figure 13: Official SMARTDEC Website Publication for the French Local Workshop

The official online publication of the event can be found at the following link



**SMARTDEC Portuguese Local Workshop – Stakeholder Mapping Validation (Online)**

The SMARTDEC Portuguese Local Workshop will bring together maritime stakeholders to validate preliminary sectoral analysis results and identify key needs for maritime decarbonisation in the Atlantic Area.

[Home](#) » [Events](#) » SMARTDEC Portuguese Local Workshop – Stakeholder Mapping Validation (Online)

---

**Details**

📍 Online  
📅 10 April 2026 – 14:00–15:45 CET  
🗣️ Language: Portuguese

Organised by **Fórum Oceano and Universidade de Aveiro**, this online workshop is part of the SMARTDEC series of local stakeholder events taking place in each partner country.

The session will focus on discussing the preliminary findings of the project's sectoral analysis on Atlantic waterborne transport and gathering stakeholder insights on current challenges, gaps and opportunities related to maritime decarbonisation.

**Workshop objectives**

- Validate preliminary results of the SMARTDEC sectoral analysis
- Identify stakeholder needs and barriers to decarbonisation
- Foster dialogue and knowledge exchange across Atlantic Area regions

[REGISTER](#)

---

**Date**

April 10, 2026 02:00 pm - April 10, 2026 03:45 pm

[ADD TO CALENDAR](#)


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**Location**

Online

Figure 14: Official SMARTDEC Website Publication for the Portuguese Local Workshop

The official online publication of the event can be found at the following link



**SMARTDEC Irish Local Workshop – Stakeholder Mapping Validation (Onsite)**

The SMARTDEC Irish Local Workshop will foster discussion on policy, innovation and collaboration to support maritime decarbonisation.

**30th of April**  
**ONSITE**

[Home](#) » [Events](#) » SMARTDEC Irish Local Workshop – Stakeholder Mapping Validation (Onsite)

---

**Details**

**Date:** 30 April 2026

The SMARTDEC Irish Local Workshop will bring together representatives from ports, shipping and logistics companies, public authorities, research organisations and other maritime stakeholders to discuss the challenges and opportunities associated with maritime decarbonisation in Ireland and across the Atlantic Area.

Organised by the Irish Maritime Development Office (IMDO), the workshop will contribute to the SMARTDEC project's stakeholder engagement activities by gathering perspectives on key issues affecting the transition to a low-carbon maritime sector. Discussions will focus on financing, collaboration, policy and regulatory frameworks, as well as technological and infrastructure readiness.

The workshop will provide an opportunity for participants to exchange knowledge, share experiences and contribute to the development of future recommendations and actions supporting maritime decarbonisation across the Atlantic region.

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**Date**

April 30, 2026 12:00 am - April 30, 2026 12:00 am

[ADD TO CALENDAR](#)

---

**Location**

Conrad Hotel in Dublin - Ireland

Figure 15: Official SMARTDEC Website Publication for the Irish Local Workshop

The official online publication of the event can be found at the following link

Preguntas Resuestas Configuración

**SMARTDEC STAKEHOLDER WORKSHOP**

**SMARTDEC** Interreg Atlantic Area Co-funded by the European Union

SMARTDEC Stakeholders interaction and mapping validation-Workshops\_ **Quality survey**

Thank you for taking the time to complete this short survey. Your feedback is essential to help us assess the quality, relevance, and effectiveness of the SMARTDEC stakeholder workshops and to continuously improve future activities.

The survey will take approximately 3–5 minutes to complete. Responses will be treated confidentially and analysed in an aggregated form.

Once completed, participants will receive a summary of the main findings from the workshop, as well as a selection of photos from the session (where applicable).

We warmly welcome your participation and valuable contributions to this important initiative.

Learn more about SMARTDEC: <https://smartdec.eu>

Correo \*

Comenzó válidos

Este formulario registra los contenidos. [Cambiar configuración](#)

Name \*

4. How clear and relevant was the presentation of the gaps, needs, challenges and opportunities?

Not at all clear

Slightly clear

Moderately clear

Very clear

Extremely clear

5. Did the thematic discussions (financial, collaboration, policy, and others) help to identify the key obstacles and enablers for decarbonisation?

Not at all useful

Slightly useful

Moderately useful

Very useful

Extremely useful

6. Did the participatory format encourage meaningful contributions and exchange?

Not at all

To a limited extent

To some extent

To a great extent

Fully

Organization \*

Texto de respuesta larga

1. What type of organisation do you represent? \*

Port authority

Maritime transport operator

Public administration

Research or academic institution

NGO or civil society organisation

Private company

Other

If you reply other, please specify

Descripción (opcional)

Country / Region \*

Texto de respuesta corta

3. How would you rate the overall quality of the workshop? 1 (1 = Very poor; 5 = Excellent) \*

1

2

3

4

5

7. Based on your experience, what are the main financial barriers (gaps or challenges) hindering maritime decarbonisation in your context?

Texto de respuesta larga

8. What needs or opportunities do you see for improving collaboration between technology providers, end-users, policymakers, and researchers?

Texto de respuesta larga

9. What policy measures (incentives, regulation, permitting, etc.) are most urgently required to accelerate progress?

Texto de respuesta larga

10. In your opinion, what type of actions, partnerships or funding mechanisms would be most effective to close the existing gaps?

Texto de respuesta larga

11. What did you find most valuable about this workshop?

Texto de respuesta larga

12. What would you suggest for improving future SMARTDEC activities or workshops?

Texto de respuesta corta

13. Would you like to stay informed about the SMARTDEC project and upcoming activities? If yes, please confirm your email address below

Texto de respuesta corta

14. Would you like to join the SMARTDEC online platform to connect with other stakeholders and follow project updates?

Figure 16: SMARTDEC Stakeholder Workshop Quality Survey Template

[Find the link to the Workshop's Quality Survey here](#)

## Annex II- Event Evidence and Stakeholder Engagement Records

The image shows a Zoom meeting interface with a presentation slide. The slide is titled "Fases SMARTDEC" and outlines five steps for the implementation of the Atlantic network SMARTDEC - Smart clusters for maritime decarbonisation. The steps are:

- STEP 1:** State of art current strategies, actors mapping. Regional mapping of stakeholders and identification of maritime transport decarbonisation potentials.
- STEP 2:** Identify & profile the most innovative technologies for their environmental, social and economic status & impact. Profiling decarbonisation maritime technologies: Environmental, Social and Economic aspects.
- STEP 3:** Design & set-up the operational network for maritime decarbonisation, catalogue of innovative services, match both suppliers and end users.
- STEP 4:** Selection of the most innovative technologies and end users, business support activities for pilot projects. Set up & Acceleration of existing demand for the decarbonisation of maritime transport sector.
- STEP 5:** Policy recommendations, implementation of results, participation after the project closure. SMARTDEC impact & legacy have regional to EU Level.

The slide also features the SMARTDEC logo and logos for Interreg Atlantic Area and the European Union.

The second slide is titled "We are net zero DE-CARBON HUB We are circular" and "Estrategia de Aclima en materia de Descarbonización". It includes the Aclima logo and the name of Juan Antonio Gavcán, Gestor de Proyectos en Aclima.

The Zoom interface shows a grid of participants and a list of names on the right side, including JC, BL, JG, EC, AM, NH, MP, NM, and others.

Figure 17: Digital Evidence of the Spanish Online Workshop



Figure 18: Photographic Evidence of the SMARTDEC National Workshop in France

**Workshop Objectives**

- To refine and deepen the analysis of existing findings
- To identify and prioritize sector's needs, gaps, challenges, and opportunities
- To promote stakeholder interaction and transnational collaboration

**Participants**

- Helena Vieira
- Ana Adelino
- Pedro Costa
- Alvaro Espinho
- Ana P. Rodrigues
- Ana Rodrigues
- Barbara Paula
- Orlando Cardoso
- Stas, Daniel Mano (IC-PT S)
- Francisco Balsa
- Rogério Faria
- José Paul Encarnação
- Juliana Faria
- Luísa Cift
- Maria Fátima Cabral Martins
- Maria Fátima
- Miguel Mendes (IC-PT S)
- Miguel Mendes

Total participants 19	Active participants 12	Interactions 68	Participation rate 63%
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**Maritime Decarbonization**  
Starts at design and materializes across parallel operational pathways

(~90% of emissions) **Digital Twin – Ship Design & Construction** (~10% of emissions)

- Decarbonization at Sea**
  - Propulsion & Energy Systems
  - Alternative Fuels (H<sub>2</sub>, NH<sub>3</sub>, e-Fuels)
- Decarbonization at Port**
  - Port Electrification
  - Onshore Power Supply (OPS)

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SIEMENS

Figure 19: Digital Evidence of the SMARTDEC National Workshop in Portugal





*Figure 20: Evidence of the SMARTDEC National Workshop in Ireland*

## 8. Bibliography

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