JPI Oceans Knowledge Hub
European Marinas Network

Implementation Plan
Date: September 2025

Lead country: Greece and Italy
Supporting/participating countries: Germany and Croatia (TBC), Greece and Italy

This document sets out the implementation of the JPI Oceans Knowledge Hub on the European Marinas Network.

Executive summary

The European Marinas Network Knowledge Hub aims to establish marinas as data collection points for environmental monitoring and science engagement. This implementation plan outlines the two-phase approach to create a sustainable network of marinas equipped with standardised sensors for climate-related data collection. Beginning with pilot sites in participating marinas in late 2025, the initiative will expand to additional sites in the coming years, with the possibility to extend to other parameters related to water quality and collaborating with EMODnet for data management. This implementation plan addresses timeline, implementing milestones, technical specifications, marina engagement, and communication strategies while acknowledging the need to reframe marinas as accessible hubs for ocean science and community engagement rather than exclusive spaces for leisure vessels.

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1. Scope

1.1 Background

Marine ecosystems are highly affected by climate change with impact to a variety of economic sectors and services that the ecosystems provide to humans. Increase of sea surface temperature (SST), sea-level rise, acidification, climatic and environmental changes, and changes in the water cycle are among the main factors severely affecting the world's marine environments with consequents impact on biodiversity. Such events, exacerbated by climate change, pose a severe threat to the marine environment and related biodiversity, society and economy too. Maritime infrastructures, i.e., marinas, are affected by climate change and extreme events (including heavy rain events, flooding, increase of SST, high waves, etc.). Moreover, to understand and tackle the impacts of human activities on the marine environment in the frame of the EU directives to achieve Good Environmental Status (GES), monitoring strategies and tools should be considered. To this end, it is necessary to conduct research and monitoring of the marine environments with broad coverage.

European waters host approximately 6 million boats and over 10,000 inland and coastal marinas, making the recreational boating industry a significant contributor to the blue economy and environmental dynamics. Marinas operate in increasingly competitive environments where environmental performance has become a distinctive selling point.

While marinas can exert pressure on aquatic systems through boat traffic and human related activities, they also serve as positive catalysts for their surroundings, as their infrastructure provides an exceptional foundation for establishing ocean observing systems at key coastal points where environmental data is often lacking. This positioning makes marinas strategic candidates for cost-effective deployment of monitoring technologies to address significant data gaps in coastal and nearshore environments. This infrastructure-based approach offers scalable solutions for ocean observing to address data deficiencies and promote sustainable practices within the marina sector.

1.2 Observation gap and opportunity

A significant research challenge exists as satellite measurements cannot effectively capture all coastal data, where marinas are located, creating blind spots in coastal monitoring systems. The European Marinas Network addresses this gap by establishing *in-situ* monitoring from marina facilities, leveraging pre-established coastal infrastructure to provide valuable data that complement existing observation systems.

1.3 Transforming perception

A broader scope of this initiative is to transform the perception of marinas from exclusive spaces for the well-off to accessible hubs for science, where society can engage with ocean science and environmental monitoring. This shift in perception will benefit marina operators by enhancing their community value while contributing to scientific understanding of coastal environments and connected threats.

2. Objectives and outcomes

2.1 Main objectives

The Knowledge Hub will focus on developing a data-based understanding of socio-environmental conditions within and around marinas in Europe by:

1. Establishing a network of selected marinas to participate in coordinated and synergic environmental monitoring and data collection
2. Developing guidelines for marinas on using standardised, low-cost sensor packages to measure oceanographic and environmental variables
3. Promoting and enabling marinas to become focal points for harmonised data generation and collection

2.2 Complementary objectives

The Knowledge Hub will also pursue complementary objectives in education and science-policy impact:

1. **Education and engagement:**
   a. Engaging marina users in environmental monitoring and data collection activities
   b. Strengthening awareness on the environmental issues and promoting a citizen science approach, including educational resources to increase ocean literacy
   c. Establish knowledge-sharing platforms for sustainability best practices amongst marina users
2. **Policy impact:**
   a. Supporting implementation of EU directives such as the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD)
   b. Serving as validation partner for scientific initiatives, e.g. European Earth Observation Missions and upcoming relevant EU Horizon projects
   c. Providing data useful for maritime spatial planning and sustainable coastal management

2.3 Measurable outcomes

By its conclusion, the Knowledge Hub aims to deliver:

1. An operational network of minimum 12 pilot marinas’ monitoring stations (minimum 3 per Country participating in the Joint Action)

2. Standardised protocols for sensor deployment, maintenance, calibration and data collection in marinas' environments
3. An operational real-time data visualisation tool
4. An operational data repository integrated with EMODnet
5. A "Marinas for Ocean Science" recognition system for participating facilities
6. Educational materials to enhance capacity amongst marina operators and users in scientific data collection and ocean literacy
7. Policy impact event, for instance a hackathon for data usage or visualisation, if applicable with a focus on business model development.

3. Implementation

3.1 Conceptual approach

The initiative will be framed as a proof of concept, demonstrating how marinas can serve as monitoring platforms and climate change and water quality observatories. This framework positions marinas as "observation platforms for climate change and ocean health" (for short "Marinas for Ocean Science") at the frontline of informing and therefore strengthening coastal communities through scientific engagement.

3.2 Implementation structure

The Knowledge Hub will be implemented through three dedicated task groups:

Task Group 1: Marina network development

- Focus: Establishing the marinas network and maintaining relationships with operators of the selected marinas
- Activities: Marina recruitment, highlight the particularity of each marina, engagement strategy, MoU development
- Proposed Leads: Eirini-Asimina Stamatopoulou (coordination unit – Greece) and Philip Easthill from European Boating Industry (EBI), Alvaro Ramirez (EBI) in CC (representative from a marina network). Task group members are being appointed.

Task Group 2: Sensor deployment and data collection

- Focus: Technical and scientific expertise
- Activities: Sensor selection through a predefined sensor pool with exact models and specifications, data collection protocols, quality control protocols, sensor maintenance protocols, science to science (s2s) communication, involving local companies. Pilot sensors could include monitoring of climate and extreme events – with sensors measuring

temperature, sea level and wave height. This pilot scheme could be expanded in the future to other sensors, i.e related to environmental quality and pollution.

- Proposed Leads: Francesca Coccon (coordination unit – Italy) and Esther Rickert from SOOP (representatives from sensor networks). Task group members are being appointed.

Task Group 3: Data management and dissemination

- Focus: Data visualisation and data repository, including integration with EMODnet
- Activities: Database development, dashboard creation, data quality control, real-time visualisation and communication activities.
- Proposed Leads: Aleka Pavlidou (coordination unit – Greece) and Melanie Symes from TransEurope Marinas (comms/dissemination expert from a marina network). Task group members are being appointed.

3.3 Two-phased implementation

The implementation of the European Marinas Network Knowledge Hub will be structured in two distinct phases. The first phase focuses on piloting and testing, beginning with the preparation of governance structures, marina agreements on sensor procurement, initiative recognition, and technical planning, followed by the initial deployment and evaluation of pilot activities. This stage will allow the consortium to validate approaches, strengthen collaboration among partners, and identify any necessary adjustments before wider rollout. The second phase will build on these foundations through expansion and consolidation. During this period, the marina network will grow, sensor deployment will be scaled up and data management and dissemination activities will be refined. The phase will conclude with the delivery of consolidated outputs, including the collected data, recommendations and long-term sustainability measures for the Knowledge Hub.

4. Timeline with milestones

- **Phase 1:**
    - **Pilot preparation (Sep–Dec 2025).** Finalise governance and initiative recognition, MoUs, nominate expert group leads, begin sensor procurement.
    - **Pilot Deployment & evaluation (Jan–Dec 2026).** Install initial sensors, test data flows, early outputs.
    - **Expansion & repeat of the pilot phase (Jan–Dec 2027).** Involve more marinas, refine process, expand dissemination.
- **Phase 2: Consolidation & outputs (Jan–Dec 2028)**
    - Scale up across more marinas and type of data collected.
    - Long-term integration, policy alignment, final reporting, handover.

4.1 Phase 1 (Pilot phase 2025-2026)

September 2025:

- Expert leads appointed for each task group
- Memorandum of Understanding drafted to formalise marinas' commitment
- Implementation plan finalised
- The Steering Committee approves the Implementation plan and ToR

October 2025:

- Creation of the "Marinas for Ocean Science" recognition program. This will give recognition to the early adopters, building on the Blue Flag system, but not as stringent.
- Data visualisation and data repository architecture initiated with the initial set up being SOOP data visualisation interface with added explanations regarding the data being collected, and EMODnet used as data repository
- Contacts with EMODnet are strengthened
- Funding mechanisms further explored
- Events:
    - 15-16 October: ToR approval at JPI Oceans 34th Management Board meeting in Rhodes, Greece
    - 15-17 October: Participation and speaking/comms opportunity at the ICOMIA World Marinas Conference, Venice, Italy
        - SOOP sensor deployed in Marina Certosa

November-December 2025:

- Funding mechanism approved by the Steering Committee
- Data visualisation and data repository architecture finalised
- Guidelines for pilot marinas developed with
    - Data collection
    - Data transmission to repository
    - Sensor maintenance
    - Rationale for action
    - Benefits for marinas
    - MoU
    - Sustainability guidelines
- Pilot marinas formally confirmed through MoU signing

January-March 2026:

- Events:
    - 17-25 January: Blue Innovation Dock / Boot Düsseldorf, Germany
    - 26-27 February: 5th Panhellenic Yachting Congress, Athens, Greece
    - March: JPI Oceans 35th Management Board meeting
- Formal establishment of "Marinas for Ocean Science" recognition program
- Sensor procurement and testing completed, with sensors deployed to pilot marinas
- Real-time dashboard and data repository launched
- Continuous data collection initiated
- Technical support protocols activated for participating marinas

April-June 2026:

- Continuous data collection
- Stakeholder engagement events and educational material preparation. Ideas include ocean literacy brochures, a hackathon or data utilisation demonstration event, and knowledge transfer activities.
- First evaluation survey preparation

June-September 2026:

- Continuous data collection
- Stakeholder engagement events and educational material distribution
- First evaluation survey distribution for stakeholder feedback collection (June-August)

September-October 2026:

- Events:
  - September: Monaco Yacht Show
  - October: JPI Oceans 36th Management Board meeting
- First evaluation survey results analysis
- Protocol refinement based on operational experience
- Short evaluation report preparation with points for improvement to present at JPI Oceans 36th Management Board meeting

4.2 Transition period and repeat of pilot phase (2027)

November-December 2026:

- Launch of open call for additional marina participation
- If marinas wish to collect further data types: enhanced sensor package procurement based on pilot feedback and protocol and platform optimisation for new data to be collected

January-April 2027:

- Events:
  - January: Blue Innovation Dock / Boot Düsseldorf, Germany
  - February: 6th Panhellenic Yachting Congress, Greece
  - March: JPI Oceans 37th Management Board meeting
- Selection of additional participating marinas
- (New) sensors deployed in new marinas
- Stakeholder engagement events and educational material preparation
- Second evaluation survey preparation
- Data collection initiated
- Technical support provided to participating marinas

June-August 2027:

- Continuous data collection
- Stakeholder engagement events and educational material distribution
- Second evaluation survey distribution for stakeholder feedback collection

September 2027:

- Second evaluation survey results analysis
- Protocol refinement based on operational experience
- Pilot phase evaluation report preparation

October 2027:

- Events:
  - September: Monaco Yacht Show
  - October: JPI Oceans 38th Management Board meeting
- Pilot phase evaluation report presented at JPI Oceans 38th Management Board meeting

4.3 Phase 2 (Expansion phase – from 2028)

Winter 2028

- Events:
  - January: Blue Innovation Dock / Boot Düsseldorf, Germany
  - February: 7th Panhellenic Yachting Congress, Greece
  - March: JPI Oceans 39th Management Board meeting
- Participation in HE projects as ground-truthing partners for future Earth Observation missions on coastal mapping such as the Copernicus Hyperspectral Imaging Mission CHIME (launch planned in 2029).
- Preparation of new sensors (e.g., chlorophyll data)
- Further integration with EMODnet

April 2028:

- Deployment of sensors in new locations
- Updated guidelines based on new data

Summer 2028:

- Full network operation and comprehensive data collection
- Societal engagement events

August-September 2028:

- Final Knowledge Hub output preparation

October 2028:

- Events:
  - September: Monaco Yacht Show
  - October: JPI Oceans 40th Management Board meeting
- Final output submission presented at JPI Oceans 40th Management Board meeting
- Recommendations for long-term implementation
- Transition to self-sustaining operational model

4.4 Events

Event title	Date and Location
Blue Innovation Dock / Boot Düsseldorf	January (recurring)
Panhellenic Yachting Congress	February (recurring)
JPI Oceans Management Board meetings	March and October (recurring)
Monaco Yacht Show	September (recurring)
ICOMIA World Marinas Conference	October 2025

5. Training and support

Training materials and guidelines will be developed for:

- Marina staff responsible for sensor monitoring and care
- Data collection and quality control procedures
- Basic troubleshooting of equipment
- Data visualisation dashboard utilisation and interpretation

A helpdesk function (even if minimal, e.g. an email support line or bilateral check-ins with marinas) can be set up for participating marinas. Without it, small operators may struggle with troubleshooting and disengage.

6. Communication and outreach

6.1 Communication strategy

A comprehensive communication strategy will address:

- Reframing marinas as accessible hubs for science improving ocean forecasts and real-time flow of data and information
- Highlighting benefits of participation
- Showcasing "Marinas for Ocean Science" and participants
- Enabling marina operators to become ocean literate and to communicate the scientific significance of the network to broader audiences
- Community engagement through citizen science
- Environmental stewardship in the marina industry

6.2 Outreach activities

Planned outreach activities include:

- Presence at key industry events
- Educational materials for marina visitors
- Real-time data displays at marina entrances
- Media engagement on environmental monitoring
- Hackathon event to promote open data utilisation
- Workshops for societal engagement

6.3 Knowledge sharing

Mechanisms for knowledge sharing will include:

- Virtual meetings for marina participants
- Best practices documentation
- Case studies of successful implementations
- Peer learning opportunities among marinas

7. Budget and resources

In the pilot phase, participation will be limited to marinas willing and able to cover the costs of purchasing and installing standardised sensor packages, with each SOOP sensor costing circa €1,300 depending on production quantity. Marinas are expected to contribute an approximate total of €5,000 to cover all related expenses, including procurement, shipping, and installation of sensor packages; development and maintenance of supporting infrastructure, such as the data repository, dashboard, and EMODnet integration; communication, outreach, and training activities; as well as technical support for participating marinas. These costs will be borne directly by the marinas themselves or, where appropriate, in collaboration with national JPI Oceans Management Board members to ensure fairness at the national level. Early adopters will benefit from access to the wider network, increased visibility, and recognition as leaders in “marinas for ocean science”.

While this pioneering group of marinas drives the start of the initiative, Task Group 1 will explore longer-term funding options for the development and maintenance of this Joint Action and will ensure that a clear process is established so that future marinas can join the initiative smoothly. Potential avenues include participation in Horizon Europe infrastructure calls, philanthropic support, industry sponsorships, partnerships with private sector companies, and platforms such as Ocean Matcher to assist marinas unable to finance sensors independently. Cost-efficiency mechanisms, such as equipment rental or leasing models in partnership with SOOP and other providers, will also be considered to reduce upfront expenses.

8. Monitoring and evaluation

8.1 Key Performance Indicators (KPIs)

Network development:

- Number of marinas formally engaged (3x marinas per participating country in the pilot phase, triplicated in the expansion phase)
- Geographic distribution of participating marinas
- Diversity of marina types and sizes

Technical implementation:

- Sensor performance
- Data completeness and data quality metrics
- User satisfaction via survey

Impact metrics:

- Data utilisation by scientific community (EMODnet)
- Media coverage and/or public engagement at events
- Data visualisation platform traffic
- Policy influence

8.2 Evaluation process

The Knowledge Hub will implement a structured evaluation process:

- Mid-point evaluation after pilot phase (Autumn 2027)
- Final evaluation at project conclusion (Autumn 2028)

8.3 Reporting

Regular reporting will include:

- Annual progress update to the JPI Oceans Management Board
- Final comprehensive output at project conclusion

Appendices

A. Expert group members

B. Participating marinas

C. Governance structure