



Retrofitting towards climate neutrality

**D6.6 First report on Knowledge management
and Exploitation plan of project's results
including Business Plan**

Programme: HORIZON EUROPE

Grant agreement number: 101096522

Project acronym: Green Marine

Project title: Retrofitting towards climate neutrality

Prepared by: SMP and BX

Date: 31/01/2025

Report version: v2.0



Funded by the
European Union

Funding acknowledgement

Green Marine is funded by the European Union funding from the European Union's Horizon Europe research and innovation program under grant agreement No. 101096522. UK participants in Horizon Europe Project Green Marine are supported by UKRI grant numbers 10064539 (University of Strathclyde), 10068477 (CalMac Ltd) and 10064666 (CCM).

Disclaimer: The views expressed in this deliverable are those of the authors and are disclosed in a non-reliance basis and for information purposes only. The authors, the **Green Marine** consortium and partner employees and directors do not express or implied representation and/or warranty as to the accuracy and completion of the information set out in this report (including in any opinion, estimate, forecast and/or projection disclosed herein) and shall have no liability to the readers for any reliance placed on this report. The readers will rely solely upon their own independent investigation and evaluation of the information provided herein. Finally, this deliverable is based in information, legislation and data available as at the date of its creation and the authors shall have no responsibility for updating the information contained in this report and for correcting any inaccuracies in it, which may become apparent. The content of this deliverable does not reflect the official opinion of the European Union.

HISTORY OF CHANGES		
Version	Publication Date	Changes
1.0	[27/08/2024]	First draft
1.1	[14/01/2025]	Input WPS/SMP
1.1	[14/01/2025 – 29/01/2025]	Reviews / input by technology providers (SINTEF, CCM, PDM) and review by reviewers on page 4
2.0	[31/01/2025]	Submission

DETAILS	
Grant Agreement No.	101096522
Project acronym	Green Marine
Project full title	Retrofitting towards climate neutrality
Dissemination level	Public
Due date of deliverable	M24
Actual submission date	M24
Deliverable name	First report on Knowledge management and Exploitation plan of project's results including Business Plan.
Type	Report
Status	Final version; v2.0
WP contributing to the deliverable	WP6
Author(s)	Tim Mäkelburg (SMP/WPS)
Other Contributor(s)	Miquel Coelho (PDM), Tobias Bauer (CCM)
Reviewer(s)	Iraklis Lazakis (UoS), George Mallouppas (CMMI), Marius Sandru (SINTEF)
Keywords	Green Marine, Knowledge Management, Exploitation, Business Plan

Table of Contents

1. Introduction.....	6
2. KNOWLEDGE MANAGEMENT PLAN	6
2.1 Introduction.....	6
2.2 Knowledge Management Strategy.....	8
2.2.1 Knowledge Capture	8
2.2.2 Knowledge Storage	8
2.2.3 Knowledge Sharing.....	9
2.2.4 Knowledge Utilization	9
2.3 IP Management.....	9
2.3.1 The IP management strategy includes:.....	9
2.4 Monitoring and Evaluation.....	9
3. EXPLOITATION PLAN	10
4. Business Plan	10
5. CONCLUSIONS.....	10
References	11

1. INTRODUCTION

The main objective of **Green Marine** is to significantly accelerate climate neutrality of water borne transport through retrofitting existing fleets with cost and emission control solutions. To support decision makers retrofitting protocols and a software tool catalogue that gathers knowledge will be developed and validated. We will demonstrate these tools and the innovative solutions aimed at carbon capture mineralization, which also aids in deacidifying our seas; energy savings for HVAC systems through air-reuse; carbon and water capture with membranes, and the use of excess engine heat to produce a syngas to save on fuel consumption. An ultra-sound technology will be tailored to suit vessels allowing air-reuse saving energy for HVAC systems and operated as pre-treatment enhancing a membrane carbon capture process. The Ca/Mg – alkali solvent capture process is capable of removing 75% of the CO₂ from flue gases. All solutions will be demonstrated first on a land-based engine followed by the selection of the most suitable solution for a demonstration on a waterborne vessel. The (land-based) demonstrations will represent the operation of a majority of vessel engines. By developing retrofitting protocols, simulations of the solutions, and data generated at the demonstrations a software catalogue tool will be developed. Through engagement activities this tool will gain more users and more knowledge, its value and effectiveness will increase for all users. The project aims to bring the different solutions to TRL 8. The demonstrations, the software tool catalogue, and the dissemination and exploitation activities ensure that project results will be replicated globally. The consortium consists of 10 partners from 7 countries with 4 research institutes, 1 ship company, which will host a demo as end user and 5 SMEs.

Work Package 6, “Exploitation and Dissemination”, includes the key objective to disseminate, communicate, and exploit the main **Green Marine** results and outcomes. The objectives of WP6 as per the Grant Agreement (GA) are:

- Implement the strategy for knowledge and Intellectual property rights (IPR) management and protection
- Develop the business models and business plans for commercializing the technologies after the project period
- Disseminate project results, initiate joint activities and increase Carbon capture, utilisation and storage (CCUS) awareness and readiness.

2. KNOWLEDGE MANAGEMENT PLAN

2.1 Introduction

The Green Marine project aims to develop sustainable marine technologies to reduce environmental impact and enhance marine biodiversity. Effective knowledge management is

crucial to ensure that the project's findings and innovations are captured, shared, and utilized efficiently.

The basis of knowledge management in Green Marine is a defined internal publication policy that aims to minimise the risk of sensitive information being leaked before measures such as copyright, trademarks and patents are taken.

The consortium includes partners who wish to commercialise the results to build or expand their business. The management of intellectual property has therefore been ongoing throughout the activities of this project. See also Figure 1 ('5 pillars of IP management'), which was also included in the 1st Periodic Report.

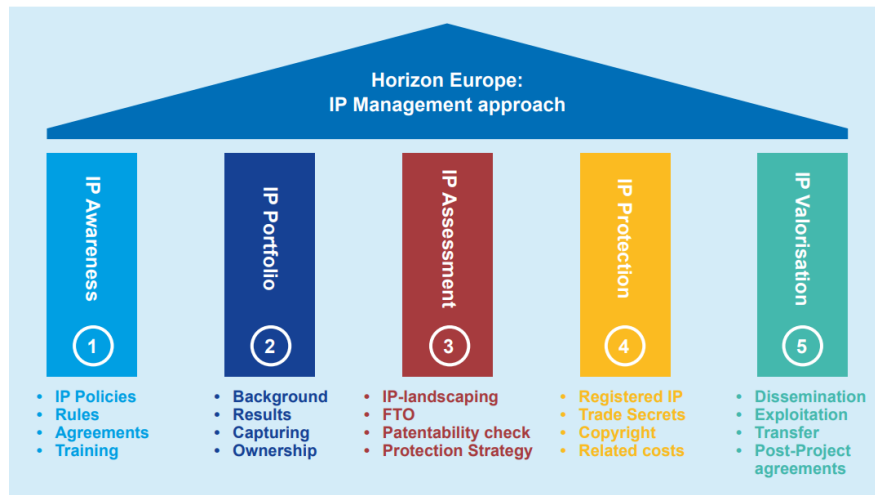


Figure 1. Five pillars of IP management for continuous monitoring. Image reproduced from [1, p. 27].

IP management strategy also includes provisions of the Open Science strategy as discussed in the DoA (see Figure 2).

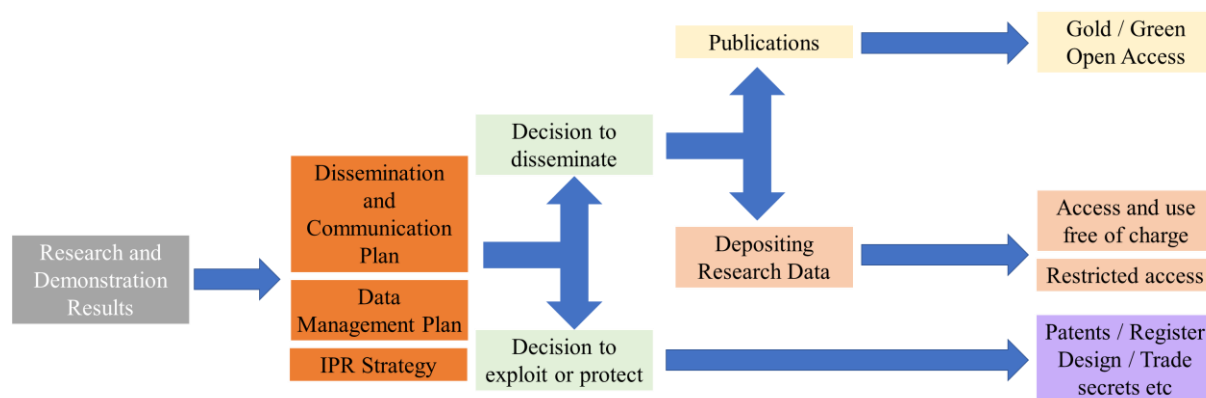


Figure 2. Open science strategy in relation to Green Marine methodology.

In addition, D7.2 'Project Management Handbook including draft Data Management Plan' (Section 4.3.4), which was presented in M3, describes the risk minimisation of classified information. Accordingly, all knowledge generated during the project is checked for novelty and

patentability by the IPR manager and relevant partners in order to determine the appropriate IPR strategy. Publications must be reported 45 days in advance and objections can be raised within 30 days. Objections must be justified and may result in changes or delays in publication. Consent to the use of results or background information from other parties must be obtained in writing.

D6.1 'Initial Dissemination and Communication Plan' in section 2.5 (submitted on M3) and updated D6.2 'Second revision of Dissemination and Communication Plan' (submitted on M24), provides a step-by-step procedure for obtaining release/authorisation for the presentation of results in connection with Green Marine in journals, conferences, exhibitions, etc. This provides a clear reference to the use of results and background information from other parties and makes a clear reference to the protection of intellectual property to protect results and/or technologies with commercial value. Thus, project results should be disseminated by appropriate means, whereby confidential information that has commercial value or is patentable may not be disclosed. Publications must be shared with the consortium for feedback at least two weeks prior to publication. Partners will be consulted to ensure that there is agreement on what information can be disclosed and how long confidentiality obligations apply.

D6.1 'Initial Dissemination and Communication Plan' (section 2.3.14) and updated D6.2 'Second revision of Dissemination and Communication Plan' also provide a publication strategy. According to this, EU funding must be reported and the EU emblem displayed visibly when scientific articles are produced for conferences, journals and magazines within the framework of Green Marine. Articles must be published in open access journals and accepted manuscripts will be available in the consortium's internal document repository and publicly on the project website. The WP6 leader will coordinate the participation of the project partners in international events and the submission of articles to avoid duplication of resources. All partners must consider the release authorisation for patentable data/ideas by the IPR and DECM manager in collaboration with the PCC.

2.2 Knowledge Management Strategy

The following strategy is being pursued within the Green Marine project:

2.2.1 Knowledge Capture

Documentation: All project activities, findings, and innovations are documented in detailed reports, technical papers, and presentations.

Meetings and Workshops: Regular meetings and workshops are held to discuss progress, share insights, and capture tacit knowledge from team members.

Surveys and Interviews: Surveys and interviews are conducted with project participants to gather additional insights and feedback.

2.2.2 Knowledge Storage

Central Repository: A secure, centralized digital repository (MS SharePoint/MS Teams) has been established to store all project-related documents, data, and multimedia content.

Version Control: Version control systems are used to manage document revisions and ensure that the latest versions are always accessible.

2.2.3 Knowledge Sharing

Internal Communication: An internal communication platform (MS SharePoint/MS Teams) are used to facilitate real-time collaboration and information sharing among project partners.

Publications: Research findings and innovations will be published in scientific journals, conference proceedings, and industry magazines.

Workshops and Conferences: Project results will be presented at relevant workshops and conferences to engage with the broader scientific and industrial communities.

2.2.4 Knowledge Utilization

Training and Capacity Building: Training sessions and capacity-building activities are organized to ensure that project partners and stakeholders can effectively utilize the knowledge generated.

Exploitation Plan: A detailed exploitation plan will be developed to identify potential applications of project results and strategies for commercialization and dissemination.

2.3 IP Management

Intellectual Property (IP) management is a critical component of the Green Marine project to protect and leverage the innovations and knowledge generated.

WPS/SMP is the IP manager of the Green Marine project. In this function, WPS/SMP has an administrative role, but no advisory or substantive role. Each partner is responsible for its own IP. Potential IP conflicts between individual partners should be settled among themselves.

2.3.1 The IP management strategy includes:

- **Identification of IP:** Regular assessments will be conducted to identify potential IP arising from the project activities.
- **Protection of IP:** Appropriate measures, such as patents, trademarks, and copyrights, will be taken to protect the identified IP by the partners.
- **IP Agreements:** Consortium Agreement is regulating the ownership and use of results and IP generated by a partner alone. Agreements only needs to be established for joint results.
- **Exploitation of IP:** Strategies will be developed to exploit the IP for commercial and non-commercial purposes, ensuring that the project results have a lasting impact.

2.4 Monitoring and Evaluation

Performance Indicators: Key performance indicators (KPIs) will be established to monitor the effectiveness of the knowledge management plan.

Regular Reviews: Regular reviews will be conducted to assess progress and make necessary adjustments to the knowledge management strategy.

3. EXPLOITATION PLAN

The elaboration of a exploitation plan is part of the EU project and therefore cannot restrict the use of intellectual property created or to be created by a participant. Each partner must be free to freely use the results of the exploitation plan with its intellectual property. The EU pays the relevant Partner BX for the preparation of the exploitation plan.

The exploitation plan is further analysed in Deliverable D6.11 '2nd Exploitation Report' to be submitted by M24. The exploitation report is written/prepared by BX.

The report D6.11 '2nd Exploitation Report' is addressed mainly to the suppliers of the consortium's physical and software technologies. The aim of the report is to provide a solid basis for research and development activities and to steer technological development. This is done by outlining the probable exploitation plans for each innovation route.

The report provides an overview of the exploitation prospects for all Green Marine technologies and a list of exploitation results. It then outlines the scope of the subsequent exploitation assessments and distinguishes between five different exploitation roadmaps. As the current technologies have not yet reached the demonstration stage, only first business models are presented without detailed financial analysis.

The exploitation plan covers a summary of the exploitation strategies on a per technological solution route basis. More specifically, five innovation routes are distinguished:

- Carbon Capture Route I - Carbon Capture Machine (led by CCM)
- Carbon Capture Route II - Membrane (led by SINTEF)
- Energy Saving in Ventilation Route - SepaRaptor (led by SMP)
- Energy Harvesting/Thermo Electric Element (led by SMP)
- Software Catalogue Route (led by PDM)

4. BUSINESS PLAN

Information in the business plan – including the business model canvas for each technology/solution – are further provided in Deliverable D6.11 '2nd Exploitation Report' to be submitted by M24. This deliverable is written/prepared by BX.

5. CONCLUSIONS

The knowledge management plan for the Green Marine project is designed to ensure that valuable knowledge is captured, stored, shared, and utilized effectively. By implementing this plan, the project aims to maximize its impact and contribute to the advancement of sustainable marine technologies.

REFERENCES

- [1] European IP helpdesk, “Your Guide to Intellectual Property Management in Horizon Europe,” European Commission.