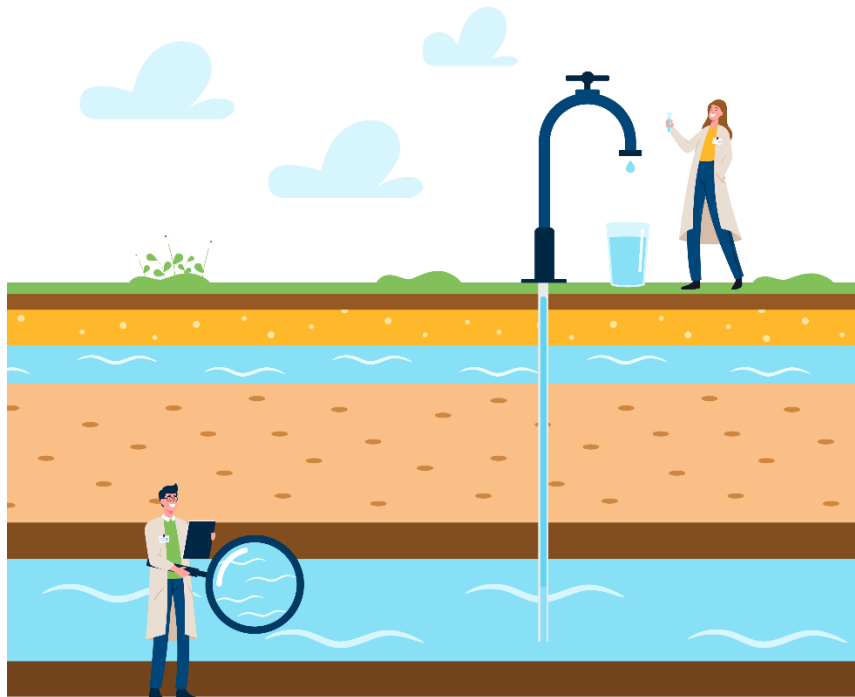


MAR2 PROTECT

D1.1 "PROJECT MANAGEMENT HANDBOOK"

NOVA



GRANT AGREEMENT NUMBER: 101082048

PROJECT ACRONYM: MAR2PROTECT

PROJECT TITLE: “Preventing Groundwater Contamination Related to Global and Climate Change through a Holistic Approach Based on Managed Aquifer Recharge”

PROJECT Duration: 1st December 2022 - 30th November 2026 (48 months)

WEBSITE: <https://mar2protect.eu/>

ABBREVIATION / ACRONYM:

Abbreviation / Acronym	
CA	Consortium Agreement
EU	European Union
WP	Work Package
WPL	Work-Package Leader
WPCo-L	Work Package Co-Leader
GAss	General Assembly
APs	Associated Partners
PMT	Project Management Team
GA	Grant Agreement
EPC	Exploitation Committee
PR	Periodic Report
IR	Internal Report
IRP	Internal Reporting Period
CFS	Certificates on the Financial Statements

Executive Summary

The following document is Deliverable 1.1_Project Handbook of the MAR2PROTECT Project, funded by the European Union's Horizon Europe research and innovation programme under grant agreement Number **101082048**.

This document aims to showcase the different management procedures to be applied during the project's lifetime. The entirety of the content described here is defined, also, in the Consortium Agreement signed by all MAR2PROTECT partners. However, the handbook intends to be a quicker reference guide, for the benefit of all partners.

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05	23/02/2023	NOVA	Final version
06	<i>fill out properly if necessary.</i>		

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1. Management bodies and Organisation

The management bodies established by the Project are responsible for making management decisions, implementing management actions and their interrelation.

The management bodies include:

- The General Assembly (GAss);
- The Coordinator;
- Project Management Team (PMT);
- Work Package Leaders (WPLs);
- The Exploitation Committee (EPC).

1.1 The General Assembly (GAss)

The General Assembly is the ultimate decision-making body of the consortium. It is made up of one representative of each Partner and one representative of each Associated Partner and is chaired by the Coordinator.

The General Assembly is free to act on its own initiative to formulate proposals and take decisions following the procedures set out through the CA. The following duties are part of the GAss's remit:

- To track the progress and results of the project, assuring they meet contractual obligations;
- Identifies risks and defines contingency plans;
- Financial monitoring to obtain timely and complete control of the financial situation of the project; and
- Proposes changes to CA and contracts.

More specifically, the following breakdown of decisions is meant to be taken exclusively by the GAss:

- Decide upon any proposal made by the Project Management Team for the allocation of the Action's budget in accordance with the GA, and review and propose budget reallocations to the Parties;
- Proposals to the Parties for the review and/or amendment of the terms of the Grant Agreement;
- Decide upon material changes to the Action Plan;
- Decide upon proposals from the Project Management Team for the plan for the use and the Dissemination of Results;
- Proposal to the parties for modifications or withdrawals to Attachment 1 of the CA (Background included, as applicable);
- Addition to Attachment 3 of the CA (List of third parties for simplified transfer according to Section 8.3.2 of the CA);
- Proposals to the Parties for the accession of a new Party to the Consortium and approval of the settlement on the conditions of the accession of such a new Party;
- Proposals to the Parties for the withdrawal of a Party from the Consortium and the approval of the settlement on the conditions of the withdrawal;
- Identification of a substantial breach by a Party of its obligations under the CA or the GA;
- Declaration, remedies and termination of a Defaulting Party;
- Proposals to the Funding Authority for a change of the Coordinator if made a Defaulting Party;
- Proposals to the Funding Authority for suspension or termination of all or part of the Action; and
- The appointment – if necessary, of any vacancy to the Project Management Team.

1.2 The Coordinator

The coordinator is the intermediary between the consortium and the funding authority (i.e. the European Commission), as well as performs all tasks assigned to it, as per the contents of the Grant Agreement and of the Consortium Agreement.

In particular, the Coordinator shall:

- Monitor compliance of the Partners (and APs) in line with their obligations as set out in the GA and CA;
- Keep the address list of Partners and other contact persons updated and available;
- Collect, review and submit reports, deliverables (including relevant financial statements) as well as any specific documents requested by the EC;
- Prepare agendas and chair the General Assembly meetings, propose decisions and draft the necessary meeting minutes, as well as the relevant action plan to follow through;
- Transmit, promptly, documents and information connected with the Project to any partners;
- Administer, and distribute the pre-financing from the European Commission;
- Provide, upon request, the Partners with official copies or originals of documents that are in the sole possession of the Coordinator when such copies or originals are necessary for the Partners.

1.3 Project Management Team (PMT)

The Project Management Team (PMT) will support the Coordinator with managerial, organisational and support duties. This PMT is composed of the Coordinator, the Scientific Coordinator, the Exploitation Manager, the Project Manager, the WPs leaders, and the Demo site leaders. The Coordinator shall chair all meetings of the Project Management Team unless decided otherwise.

The PMT shall be responsible for:

- Assisting the Coordinator with the day-to-day management of the project implementation;
- Collecting internal periodic (six-monthly) scientific and financial reports from the consortium;
- Examining the collected reports and assessing compliance with the work plan. If necessary, propose modifications or adjustments to be submitted to the General Assembly; and
- Reporting the collected information of the General Assembly.

1.4 Work Package Leaders

Each Work Package is led by the Work Package Leader (WPL) with the collaboration of the Work Package Co-Leader (WPCo-L), responsible for making the day-to-day technical and management decisions that have an impact on their respective Work Packages. The WP Leader’s responsibilities include:

- Leading and coordinating the task activities involved in the WP, through Task Leaders;
- Initial quality check of the WP work, deliverables and milestones;
- Handling resource/skills balance within the WP subject to agreement of the GA;
- Examining the internal periodic (six-monthly) scientific and financial reports and assessing compliance with the work plan. If necessary, propose modifications or adjustments;
- Highlighting to the PMT, any potential threats to the technical implementation of the project (at the WP level); and
- Reporting progress to the GA, raising amendments, issues and red flags as needed.

The following table outlines the individual WP leaders and co-leaders:

Table 1. The individual WP leaders and co-leaders.

WP#	WP Leader	WP Co-Leader
WP1	Ana B. Pereiro / anab@fct.unl.pt	Dario Frascari / dario.frascari@unibo.it
WP2	João M. M. Araújo / jmmmda@fct.unl.pt	Sergio Salinas / s.salinas@un-ihe.org
WP3	Rogério Nunes Nogueira / rnogueira@av.it.pt	Sergio Salinas / s.salinas@un-ihe.org
WP4	Manuel Argamasilla & Sara Espinosa / manuel.argamasilla@cetaqua.com & sara.espinosa@cetaqua.com	Vittorio Di Federico / vittorio.difederico@unibo.it
WP5	Dario Frascari / dario.frascari@unibo.it	Atef Jaouani / ajaouani@yahoo.fr
WP6	Uta Wehn / u.wehn@un-ihe.org	Jolanta Dvarioniene / jolanta.dvarioniene@ktu.lt
WP7	Tamara Rodríguez / trodriguez@feuga.es	Beatriz Morales Jiménez / b.morales@cetaqua.com

1.5 The Exploitation Committee (EPC)

The Exploitation Committee is composed of the Coordination, the Scientific Coordinator, the Exploitation Manager and the WP leaders.

The EPC is responsible for:

- Receiving communications of all project results from the partners; and
- Assisting the partners to define their IPR strategies, for the jointly owned project results, or in any other circumstances where a partner would require similar assistance.

1.6 Community of Practice and International Advisory Board

During the project, two different groups of stakeholders will be set up: a Community of Practice (CoP) and an International Advisory Board (IAB).

The international Community of Practice (CoP) will include representatives of NON-EU institutions with high impact and expertise in groundwater protection and climate change, to exchange experiences, solutions, and policy approaches in the field of climate change / global change impact on groundwater between project partners and experts coming from different continents and therefore

different climatic & social contexts. The CoP will bring their expertise to the addressed technical challenges, increase interaction with policymakers and finally upscale the results at the EU and international levels. CoP members will meet 8 times during the project (at least 2 times per year) through virtual workshops.

The CoP will be composed by:

- Mexico: UNAM - Adriana Palma Nava - MAR Analysis Group coordinator in UNAM Water Network & of LatinMAR Community of Practice IAH-MAR;
- Near East and North Africa: FAO Regional Office for Near East and North Africa - Mohamed Al Hamdi - Expert in groundwater quality, climate change and policy maker;
- Singapore: Singapore Water Association (SWA), Nat. The University of Singapore and International Water Association - Ng How Yong - Expert in wastewater treatment and seawater desalination & policy maker;
- China: Institute of Soil Science, Chinese Academy of Sciences - Xin Song - Expert in modelling of contaminant transport in groundwater & groundwater remediation;
- USA: Oregon State University - Lewis Semprini - Expert in wastewater treatment and groundwater modelling;
- USA: Texas Tech University - Danny Reible - Expert in monitoring and modelling of contaminant transport in groundwater;
- South Korea: Sejong University - Andrew Maeng - Expert in MAR, water treatment/management;
- Australia: Australian Centre for Water & Environmental Biotechnology, the University of Queensland - Zhiguo Yuan AM - Expert in advanced water management.

The International Advisory Board (IAB) will include EU experts with high expertise in GW protection & CC, that will follow up on the global project objectives/results to provide practical recommendations to project partners. They will also be part of the dissemination channels of project

results. They will meet with the project consortium once a year, mainly virtually.

IAB will be composed by:

- Portugal: Agência Portuguesa do Ambiente - Paula Viana - Expert in water resources and the qualitative of water & policy maker;
- Portugal: ZERO - Associação Sistema Terrestre Sustentável (NGO) - Francisco Ferreira - Expert in climate change and global change;
- Netherland: Delft University of Technology & IWA - Mark van Loosdrecht - Expert in environmental biotechnology for water treatment;
- Netherland: WETSUS - Alan Werker - Expert in sustainable water technology;
- Italy: Ecochem Lab - Mariano Farina - Expert in groundwater monitoring and aquifer recharge.

They will both be steered by the General Assembly and shall assist and facilitate its decisions.

The Coordinator will ensure that a non-disclosure agreement is executed between all Parties and each CoP and IAB member.

By way of exception to Section 6.4.4 of the CA, the Parties hereby mandate the Coordinator to execute, in their name and on their behalf, a non-disclosure agreement (hereafter "NDA") with each member of the CoP and of each member of the IAB, to protect Confidential Information disclosed by any of the Parties to any member of the CoP or the IAB. The NDA for the CoP and IAB members is enclosed in Attachment 5 of the CA. The mandate of the Coordinator comprises solely the execution of the NDA in Attachment 5 of the CA.

The Coordinator shall write the minutes of the CoP and IAB meetings and submit them to the General Assembly. The CoP and IAB members shall be allowed to participate in General Assembly meetings upon invitation but have not any voting rights.

2 Management Information and Procedures

The scale of the MAR2PROTECT project requires specific mechanisms to ensure coordination between partners, to successfully achieve the project’s objectives. This will be based on the following, recurring, events:

- **General Assembly Meetings** – To be held, at least, every six months and also any extraordinary meetings, at the written, duly justified, request of any partner. These will be held to discuss major advances and progress of the project, across all WPs. If, and when, needed, more specific “per-WP” sessions will be held.
- **Monthly Management Team Meetings** – These are held by the PMT, on a fixed date every month, and will serve for a status review of each WP, the overall project status and discussing any potential issues or difficulties.

2.1 Representation in meetings

Any Member:

- Should be present or represented at any meeting;
- May appoint a substitute or a proxy to attend and vote at any meeting; and
- Shall participate cooperatively in the meetings.

The appointment of a substitute or a proxy must make in writing, and it must include: (i) the identification of the representing and represented Member; and (ii) an express mention of the voting intention for each item of deliberation provided for in the agenda.

The written mandate should be made available to all Members attending the meeting and delivered to the chairperson so that it keeps a record of the appointments.

2.2 Preparation and organisation of meetings

2.3 Convening meetings

The chairperson shall convene the Project General meeting of the General Assembly at least once every six months and shall also convene extraordinary meetings at any time upon written request of any Member.

2.4 Notice of a meeting

The chairperson shall give written notice of a meeting to each Member as soon as possible and no later than 30 calendar days preceding an ordinary meeting and 10 calendar days preceding an extraordinary meeting.

2.5 Sending the agenda

The chairperson shall prepare and send each Member an agenda no later than 14 calendar days preceding the meeting, or 7 calendar days before an extraordinary meeting.

2.6 Adding agenda items

Any agenda item requiring a decision by the Members must be identified as such on the agenda.

Any Member may add an item to the original agenda by written notice to all of the other Members no later than 7 calendar days preceding the meeting and 2 days preceding an extraordinary meeting.

During a meeting of the General Assembly, the Members present or represented can unanimously agree to add a new item to the original agenda.

3 Decision Process

3.1 Voting rules and quorum

The General Assembly shall not deliberate and decide validly in meetings unless two-thirds (2/3) of its Members are present or represented (quorum).

If the quorum is not reached, the chairperson of the General Assembly shall convene another ordinary meeting within 15 calendar days. If in this meeting the quorum is not reached once more, the chairperson shall convene an extraordinary meeting which shall be entitled to decide even if less than the quorum of Members is present or represented.

Each Member present or represented in the meeting shall have one vote.

A Party may not vote on its identification by the General Assembly to be in Substantial breach and on its declaration to be a Defaulting Party nor shall their presence account for the necessary quorum. A Party which the General Assembly has declared according to Section 4.2 to be a Defaulting Party may not vote, nor shall their presence account for the necessary quorum.

The Coordinator may not vote on decisions regarding a proposal to the Granting Authority for a change of the Coordinator.

Decisions shall be taken by a majority of two-thirds (2/3) of the votes cast.

3.2 Veto rights

A Partner which can show that its own work, time for performance, costs, liabilities, intellectual property rights or other legitimate interests would be severely affected by a decision of the General Assembly may exercise a veto concerning the corresponding decision or relevant part of the decision.

The exercise of the veto shall be supported by a written justification by the Partner exercising a such veto. The written justification will be made available to all Partners.

When the decision is foreseen on the original agenda, a Partner may only veto such a decision during the meeting.

In case of the exercise of veto, the Parties shall make every effort to resolve the matter which occasioned the veto to the general satisfaction of all Parties within 15 calendar days.

If the Parties cannot reach an agreement to solve the matter which occasioned the veto, the Coordinator will take the matter into consideration of the Project Officer to mediate an agreement between

all Parties within 15 calendar days following the abovementioned period.

A Partner may neither veto decisions relating to its identification to be in Breach of its obligations nor to its identification as a Defaulting Party. The Defaulting Partner may not veto decisions relating to its participation and termination in the consortium or the consequences them.

A Partner requesting to leave the consortium may not veto decisions relating thereto.

3.3 Minutes of meetings

The chairperson shall produce minutes of each meeting which shall be the formal record of all decisions taken. He/she shall send draft minutes to all Members within 10 calendar days of the meeting.

The minutes shall be considered as accepted if, within 15 calendar days from receipt, no Party has sent an objection to the chairperson concerning the accuracy of the draft minutes by written notice.

The chairperson shall send the accepted minutes to all the Members, and to the Coordinator, who shall retain copies of them.

4 Communication and Document Management

The project has set up a global mailing list for issues affecting multiple WP and for other issues requiring global communication. There are additional mailing lists for WPs, legal, admin and PMT-specific topics, that will be deployed accordingly.

All the information related to the project, including all draft deliverables, the final deliverables, the shared documentation, the source code, the meeting reports, the updated project timetable, and so on, will be normalised in a common format according to defined templates to maintain homogeneity in the project and will be stored in a common central facility. To keep control and confidentiality of the storage, the project will not adopt common cloud-based public services but will deploy its own storage facility, in the form of an SVN server, inside the coordinator's premises (SharePoint). Access will be restricted to the project members (eventually with further access control restrictions for documentation strictly restricted). Centralized maintenance and housekeeping of all the project documentation will be guaranteed by the Project Coordinator, and by the WP leader for the internal WP

documentation. Documents will be organized in sub-folders related to project activities or information, as well as dedicated folders for General Information, Deliverables, Milestones, Relevant dates, Meetings, Work Packages and Tasks. The choice of SVN will also provide a convenient platform for collaborative software development over the same storage facility.

The deliverables and milestones will be managed and released under the responsibility of the lead partner, after a well-defined review procedure. This review procedure will be carried out as follows:

Deliverables:

- 1) 45 Days before the deliverable deadline, the coordination team will send a reminder to the lead partner to remember the deadline;
- 2) 40 Days before the deadline, the lead partner will send the structure/table of contents to the coordinator, the scientific coordinator and the corresponding WP leader;
- 3) The coordinator, the scientific coordinator and the corresponding WP leader will review and propose the necessary changes in the following 5 working days (if applicable);
- 4) 20 Days before the deadline, the lead partner will send the complete deliverable for the review of the coordinator, the scientific coordinator and the corresponding WP leader;
- 5) The coordinator, the scientific coordinator and the corresponding WP leader will review and propose the necessary changes in the following 5 working days (if applicable);
- 6) Before or on the deadline, the lead partner will send the last version to the coordinator and the deliverable will be incorporated into the portal by the coordinator.

Milestones:

- 1) 40 Days before the milestone deadline, the coordination team will send a reminder to the lead partner to remember the deadline;
- 2) 15 Days before the deadline, the lead partner will send the milestone for review by the coordinator, the scientific coordinator and the corresponding WP leader;
- 3) The coordinator, the scientific coordinator and the corresponding WP leader will review and propose the necessary changes in the following 5 working days (if applicable);

4) The milestones with the corresponding modifications will be included in the corresponding deliverable, as indicated in the milestones list table if the milestone lead partner is the lead partner of the deliverable. If the milestone lead partner is not the leader of the deliverable, the milestone lead partner must send it to the lead partner of the deliverable by the deadline of the milestone.

4.1 Dissemination of Results

During the Project and for a period of 1 year after the end of the Project, the dissemination of own Results by one or several Parties, including but not restricted to publications and presentations, shall be governed by the procedure of Article 17.4 of the Grant Agreement and its Annex 5, Section Dissemination, subject to the following provisions.

Prior notice of any planned publication shall be given, including a copy of the proposed publication, to the other Parties and the Exploitation Committee.

The communication of scientific publications will be carried out to the Consortium and the Exploitation Committee with 30 days' notice to evaluate if any information /results disclosure could injure a patent prosecution of confidential information agreements. Any objection to the planned publication shall be made following the Grant Agreement in writing to the Coordinator and to the Party or Parties proposing the dissemination within 15 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

All data presented orally or as posters in scientific conferences and used to produce communication material will be communicated to the Consortium and the Exploitation Committee with 15 days' notice to evaluate if any information /results disclosure could injure a patent prosecution of confidential information agreements. Any objection to the planned publication shall be made following the Grant Agreement in writing to the Coordinator and to the Party or Parties proposing the dissemination within 8 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

The below table summarizes the different options:

Table 2. The types of publications to communicate before the publication.

Type of Publication	Notice Required
Scientific Papers	30 days
Conference Proceedings	15 days
Website news items	15 days
Social Media Posts	15 days ¹

The consortium may decide that some data, including pieces of information, materials and knowledge, should not be made openly available before IP rights protection or access is clarified. The Exploitation Committee shall be responsible for the dissemination, communication and exploitation activities of the MAR2PROTECT project.

The procedure to follow prior results divulgation is described with the following scheme:

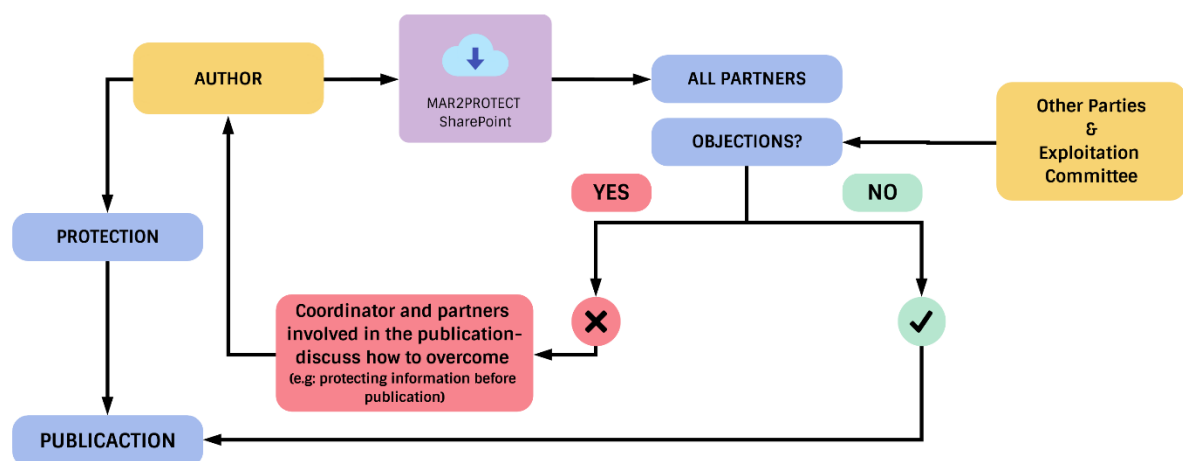


Figure 1. The procedure to follow prior results divulgation.

An objection is justified if:

- The protection of the objecting Party's Results or Background would be adversely affected, or

¹ Only in those cases where actual scientific data would be shared.

- The objecting Party's legitimate interests concerning its Results or Background would be significantly harmed, or
- The proposed publication includes Confidential Information of the objecting Party.

The objection must include a precise request for necessary modifications.

If an objection has been raised the involved Parties shall discuss how to overcome the justified grounds for the objection on a timely basis (for example by amendment to the planned publication and/or by protecting information before publication) and the objecting Party shall not unreasonably continue the opposition if appropriate measures are taken following the discussion.

The objecting Party can request a publication delay of not more than 90 calendar days from the time it raises such an objection. After 90 calendar days, the publication is permitted, provided that the objections of the objecting Party have been addressed.

4.2 Open Access to Scientific Publications

Each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results.

In particular, it must:

- As soon as possible and at the latest on publication, deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication in a repository for scientific publications;

Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.

- The final version of each paper must be deposited and made immediately available through the selected repository.
- Ensure open access — via the repository — to the bibliographic metadata that identifies the deposited publication.

The scientific publications and the bibliographic metadata must be in a standard format and must include all the following: the terms "European Union (EU)" and "Horizon Europe"; the name of the action, acronym and grant number; the publication date, and length of embargo period if applicable, and a persistent identifier.

4.3 Information on EU Funding

Unless the Commission requests or agrees otherwise or unless it is impossible, any dissemination of results (in any form, including electronic) must:

1. display the EU emblem and
2. include the following text:

"Funded by the European Union from the Horizon Europe research and innovation programme under the grant agreement No GA 101082048. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them."

When displayed together with another logo, the EU emblem must have appropriate prominence. For the purposes of their obligations under this Article, the beneficiaries may use the EU emblem without first obtaining approval from the Commission.

This does not however give them the right to exclusive use.

Moreover, they may not appropriate the EU emblem or any similar trademark or logo, either by registration or by any other means. Disclaimer excluding Commission responsibility.

Any dissemination of results must indicate that it reflects only the author's view and that the Commission is not responsible for any use that may be made of the information it contains.

5 Reporting

5.1 Periodic Reports (per EC Requirements – Art. 21 of the Grant Agreement)

The prefinancing and periodic reports (PR) include technical and financial parts.

The technical part includes an overview of the action implementation according to the GA. It must be prepared using the template available in the Portal Periodic Reporting tool.

The financial part of the additional prefinancing report includes a statement on the use of the previous prefinancing payment. The financial part of the periodic report includes:

- The financial statements (individual and consolidated; for all beneficiaries/affiliated entities);
- The explanation of the use of resources (or detailed cost reporting table, if required) indicating the corresponding WP and the corresponding Task;
- The certificates on the financial statements (CFS) (if required).

The financial statements must detail the eligible costs and contributions for each budget category.

All eligible costs and contributions incurred should be declared, even if they exceed the amounts indicated in the estimated budget.

Amounts that are not declared in the individual financial statements will not be considered by the granting authority.

The Periodic Reporting schedule is the following:

Table 3 *The Periodic Reporting schedule.*

PR No	Month from	Month to	Deadline
1	1	18	60 days after the end of the reporting period
2	19	36	60 days after the end of the reporting period
3	37	48	60 days after the end of the reporting period

5.2 Internal Reporting Procedures

The MAR2PROTECT project, considering the complexities of its technical and financial implementation, will set up an internal reporting stage, to complement and allow for more efficient preparation of the periodic reports to the EC.

These will occur every 6 months, for each Partner, covering both the technical/scientific components of the project.

Each Partner must submit their internal report (IR) to the PMT and WP leader no later than 10 calendar days after the end of each internal reporting period. The Internal Reporting deadlines may be found in the table below. 40 calendar days before the end of the internal reporting period, the Coordinator team will send a reminder to the Partners. 10 calendar days before the deadline for the IR submission, Partners who have not submitted the IR will be reminded once more by the Coordinator team.

The reports will be assessed by the Project Management Team (PMT) and WP leader and comments on them may be expected by the Partners 15 calendar days after submission.

Table 4 *The Internal Reporting Period schedule.*

Report to the CO	Month	Internal Reporting Period		Internal Reporting Deadline
		Start	End	
1	6	01/12/2022	31/05/2023	10/06/2023
2	12	01/06/2023	30/11/2023	10/12/2023
3	18	01/12/2023	31/05/2024	10/06/2024
4	24	01/06/2024	30/11/2024	10/12/2024
5	30	01/12/2024	31/05/2025	10/06/2025
6	36	01/06/2025	30/11/2025	10/12/2025
7	42	01/12/2025	31/05/2026	10/06/2026
8	48	01/06/2026	30/11/2026	10/12/2026

In case the PMT has any questions regarding the internal report submitted, the Partners may be inquired for further clarifications. In such case, the time for the PMT to comment on the report sent is suspended and shall restart after the Partner’s answer. To ensure a swift analysis of the report, Partners must reply to said questions in 10 calendar days unless another deadline is agreed upon.

These reports will help the Coordinator and the Project Management Team to stay ahead of any potential issues that might arise, from a scientific point of view, as well as to identify any financial challenges that may arise, in terms of partner commitment and spending.

Failure to submit the internal reports on time or to answer the questions of the PMT may jeopardise the project’s progress.

In accordance with Article 7.1.1 of the CA, the reports will also assist the Coordinator, to assess the disbursement of prefinancing, as the project progresses.

The general template for both reports is included as annexes to the Project Handbook for consulting. 40 calendar days before the end of the internal reporting period, along with the reminder to the Partners to submit the IR, templates prefilled for each partner and the internal reporting period will be sent. These are the templates that must be worked on.

6 Specific Objectives, Project Results, Deliverables, and Key Performance Indicators

The overall goal of the MAR2PROTECT project is articulated in 9 specific objectives (SO) and 21 project results (PR), illustrated below along with their technologies (TEC), deliverables (D), Work Package (WP), and Key Performance Indicators (KPIs), as follow:

Table 5 The output Key Performance Indicators for each WP to monitor the quality of deliverables.

Specific Objectives (SO), Project Results (PR) & corresponding Technologies (TEC) Deliverables (D), Work Package (WP), and Key Performance Indicators (KPIs)

SO1 - To prevent MAR-related GW contamination through the development of 9 cost-efficient technologies for the removal and subsequent (bio)degradation of salinity and emerging micropollutants from WW and SW before their use for MAR, leading to a >95% removal and >70 % (bio)degradation of pharmaceuticals, pesticides, PFAS, nutrients and salinity, validated at TRL4 in lab scale pilot plants and at TRL5 in the demo sites.

PR1 - Innovative adsorption, membrane separation, (bio)degradation and phytoremediation technologies for pollutants in WW and SW: **TEC 1-5; D2.1-2.4, D5.2-5.4; WP2 & WP5.**

KPI 1.1 - % Pollutant removal in real environments. Target: $\geq 95\%$ for at least 3 groups of pollutants;

KPI 1.2 - % Pollutant (bio)degradation or phytoremediation in real environments. Target: $\geq 70\%$ for at least 2 groups of pollutants;

KPI 1.3 - Estimated cost of the treatment technologies. Target: 25% reduction in cost (€/m³) for at least 2 technologies;

KPI 1.4 - No. of groups of pollutants removed/biodegraded. Target: 5.

SO2 - To prevent GW diffuse pollution from agriculture through the development of the innovative FERT-ROOT technology based on maximizing the retention of fertilizers in the root zone.

PR2 - Innovative FERT-ROOT technology aimed at maximizing the retention of fertilizers in the roots of vegetables, fruit trees and wheat: **TEC 6, D2.5-2.6, D5.2, D5.4, WP2 & WP5.**

KPI 2.1 - % decrease in fertilizer leaching towards the underlying aquifer in wheat cultivation. Target: $\geq 50\%$.

SO3 - To develop and validate innovative real-time integrated sensing systems and innovative analytical methods inter-connected through the GW-PREV freely accessible IoT platform for the monitoring of pollutants, generating a better understanding of pollution sources and pathways in GW.

PR3.1 - Innovative real-time integrated sensing systems and innovative analytical methods inter-connected through an IoT platform, for the monitoring of pollutants in real environments: **TEC7-9; D3.1-3.4; WP3;**

PR3.2 - GW-PREV freely accessible IoT platform with 1 section for each demo site: **D3.4-3.6; WP3.**

KPI 3.1 - Limit of detection of key pollutants attained with real-time integrated sensing systems. Target: ≤ 5 ng/L for PFAS, ≤ 1 μ g/L for pesticides & herbicides, ≤ 0.1 μ g/L for pharmaceuticals;

KPI 3.2 - No. of demo sites in which real-time integrated sensing systems and analytical methods will be implemented at TRL5 (target: ≥ 5) with data points collected >100 per demo site.

SO4 - To predict the impacts of global and climate change on GW quality in a specific context with the innovative REACH - gRoundwatErquAlityCHange - tool.

PR4 - REACH tool to predict the impacts of global and climate change on groundwater quality in a specific context, considering diffuse and points sources of contamination: **TEC10; D4.3; WP4.**

KPI 4.1 - No. of demo sites for which predictions of GC/CC impact on GW quality will be produced through the REACH tool. Target: ≥ 4 ;

KPI 4.2 - Reduction in the prediction of GC/CC impact on GW quality. Target: $\geq 15\%$.

SO5 - To develop GW management strategies through the development of a DSS, based on AI techniques, enabling decision makers to: i) identify suitable areas for MAR projects; ii) perform a cost-effective design of MAR projects; iii) develop MAR-based risk assessment and mitigation measures, considering GC/CC scenarios; iv) visualize in a user-friendly interface the outputs of all the MAR-related activities.

PR5.1 - Innovative open-source modelling tools for assessing salinity intrusion and the yield of MAR strategies, DRONE and RAINREC: **TEC11; D4.5; WP4;**

PR5.2 - Model-Based M-AI-R DSS for MAR in a CC and GC perspective: **TEC12; D4.1-4.2; D4.4, D4.6; WP4.**

KPI 5 - No. of demo sites in which the M-AI-R DSS will be implemented. Target: ≥ 4 .

SO6 - To increase the active role of societal actors in the prevention of water contamination and GW management from a CC/GC perspective, through the development of suitable engagement approaches for different socio-political, climatic and economic settings to support changes in daily practices.

PR6.1 - Living Labs aimed at involving civil society groups in the prevention of water contamination: **D6.1-6.2; WP6;**

PR6.2 - Distinct societal engagement activities to reduce water contamination, co-designed and implemented with multiple stakeholders: **D6.2; WP6;**

PR6.3 - 8 Community of Practice insights captured and shared: **D6.2; WP6.**

KPI 6.1 - No./type of engagement activities co-designed in LivingLabs aimed at involving civil society groups in the prevention of GW contamination. Target: ≥ 21 ;

KPI 6.2 - No./type of societal engagement actions implemented aimed at decreasing the impact of daily behaviours on GW contamination. Target: ≥ 14 ;

KPI 6.3 - No. of citizens/civil society organisations involved in societal engagement activities. Target: ≥ 100 per demo site.

SO7 - To integrate and validate the MAR2PROTECT technologies and societal engagement actions in 5 demo sites across the EU and 2 outside the EU representing different climate conditions, social contexts and MAR types.

PR7.1 - Implementation of the MAR2PROTECT integrated social-technical approach in the LivingLabs and the demo sites: **D5.2-5.4, D6.2; WP5 & WP6;**

PR7.2 - MAR-based risk mitigation strategies with early warning systems for the project demo sites: **D4.6; WP4.**

PR7.3 - Technologies impact assessed in the context of sustainability using LCA, LCC and S-LCA: **D6.3-D6.4; WP6.**

KPI 7.1 - No. of demo sites where MAR2PROTECT social-technical approach will be implemented in LivingLabs. Target: 7;

KPI 7.2 - % Reduction in at least 3 risk indexes in the project demo sites, thanks to the implementation of MAR-based risk management strategies. Target: $\geq 25\%$.

SO8 - To facilitate the use of the MAR2PROTECT results (solutions, scientific and policy insights) by scientists, authorities, technology developers and policymakers in the prevention of water contamination and GW management from a CC/GC perspective through targeted dissemination activities.

PR8.1 - Open access scientific publications and conference presentations: **D7.3-7.4; WP7;**

PR8.2 - Midterm and final dissemination events: **D7.2-7.4; WP7;**

PR8.3 - Policy recommendations aimed at supporting EU governing bodies in the prevention and management of GW contamination in different environmental and industrial matrices: **D6.6-6.7, D7.3-7.4; WP6 & WP7.**

KPI 8.1 - No. of open-access scientific articles published. Target: ≥ 40 ;

KPI 8.2 - No. of presentations at scientific conferences. Target: ≥ 28 ;

KPI 8.3 - No. of stakeholders attending midterm and final dissemination events. Target: ≥ 100 attendees/event;

KPI 8.4 - No. of participants in the EU parliamentary session. Target: ≥ 15 ;

KPI 8.5 - No. of policy briefs and policymakers reached. Targets: ≥ 6 policy briefs; ≥ 25 policymakers;

KPI 8.6 - No. of events for initiating new policy discussions, disseminating results and raising awareness. Target: 52.

SO9 - To promote the market uptake of the technologies and societal engagement actions by end users through the definition of business models and specific exploitation plans, after performing the IP analysis.

PR9.1 - Selected technologies and tools with the highest replication potential: **D6.5; WP6;**

PR9.2 - Guidelines, training materials and innovations factsheets for the scale-up, replication and adaptation to another context of the selected technologies for MAR implementation and GW protection: **D6.5; WP6;**

PR9.3 - Business models and specific exploitation plans for the most promising technologies: **D7.5; WP7**;

PR9.4 - IPR strategies: **D7.2 & D7.5; WP7**;

PR9.5 - Collaborative activities organised with other research projects within the scope of the topic: **Task 7.3; D7.3-7.4; WP7**.

KPI 9.1 - No. of technologies with high replication potential selected. Target: ≥ 5 ;

KPI 9.2 - No. of guidelines and other training materials produced for the scale-up and replication of the MAR2PROTECT technologies. Target: ≥ 5 ;

KPI 9.3 - No. of business models produced. Target: ≥ 5 ;

KPI 9.4 - No. of IPR strategies developed. Target: ≥ 5 ;

KPI 9.5 - No. of new patents. Target: ≥ 2 ;

KPI 9.6 - No. of collaborative activities organised with other research projects. Target: ≥ 15 .

7 Payments

Transfers will be performed by the Coordinator to the Partners after receipt of payments from the Granting Authority without undue delay.

Partners will be notified of the date and composition of the amount transferred to their bank account.

The prefinancing payment was 2 130 932,94 € and the contribution to the Mutual Insurance Mechanism (199 787,45€) was kept back from this amount and paid to the Mechanism.

The prefinancing was distributed to the Partners according to their granted amount:

Table 6. *The prefinancing payment.*

Partner	Prefinancing
1. NOVA	343 146,38 €
2. UNIBO	336 195,56 €
3. FEUGA	157 857,86 €

4. CIIMAR	118 831,39 €
5 CETAQUA	154 172,70 €
5.1 AQUATEC	24 140,83 €
6. IHE DELFT	298 474,48 €
7. IT	173 988,00 €
8. ISSBAT	111 642,30 €
9. KTU	87 114,82 €
10. SU	125 581,16 €

Interim payments will be paid to Partners according to costs accepted by the Granting Authority.

The Coordinator is entitled to withhold any payments due to a Partner identified by the General Assembly to be in Breach of its obligations under the Consortium Agreement or the Grant Agreement.

8 Risk Management

The Coordinator, together with the Scientific Coordinator, and considering the information collected from WPLs, will maintain close monitoring of the risks identified at the proposal stage, as well as identifying potential new ones as the project progresses.

To that effect, a risk assessment table is included below, referencing the same structure as the one prepared at the proposal stage. Furthermore, a risk log and report will be maintained, as part of the management and coordination activities of WP1.

Table 7. Critical risks and risk management strategy.

Likelihood / Severity	Description	WP	Proposed Mitigation Measures
Low / High	Difficulty to reach a consensus between partners on solutions to unexpected events	WP1	The strong coordination team (general coordinator + scientific coordinator, both with coordination experience in H2020) will ensure that agreement on

effective solutions is found in each specific situation

Medium Low	/	Delay in progress, budget issues, wrong cost estimations due to the final configuration of demos and unpredictable materials availability	WP1	Workplan & management structure were designed to dynamically adapt to scheduling and technical mishaps without endangering the project. Also, buffer periods are envisaged
Medium Medium	/	Current or future adverse situations (e.g., COVID.19), affecting the timeline duration and execution of the project	ALL WPs	The consortium has great resources and experience and is aware of these risks (e.g., the current COVID-19 pandemic). Technical readiness will be ensured to enable online workshops for discussion and get the best results
Medium Medium	/	Low pollutant removal capacity of technologies or technologies show a lack of scalability	WP2&5	MAR2PROTECT will select alternative (bio)materials/microorganisms/plants with higher performance. Different technologies will be tested. Only technologies showing effectiveness and scalability will be selected for testing in the demo sites
Low Medium	/	Not enough pollutants detected in surface water or wastewater samples	WP2,3&5	A preliminary quantification of pollutants present in each demo site was made during proposal preparation (section 1.2.1 of the GA). In case of relevant decreases in concentration during project deployment in a specific demo site, alternative demo sites will be identified
Medium Low	/	Data quality loss during data transmission from sensors; sensors are not sufficiently selective and/or sensitive	WP3	Implementation of different standards for sensor networks and datacomms. Development of different sensing layers
Medium Low	/	Sub-optimal efficiencies of the sensors in real operational conditions	WP3	Further sensor testing in the field to identify needed improvements and necessary re-engineering
Low / High		Difficulties in obtaining from demo site leaders all the site characterization data	WP4	Missing data will be obtained from local Environmental Agencies or the literature. WP4 modelling tools will be adapted to operation also with incomplete input data. Additional input

	needed for the WP4 modelling tools		data sources will be evaluated and integrated into the modelling processes. In addition, data augmentation techniques for environmental data will be implemented within the data acquisition pipelines
Low / High	Input data does not reach the required quality metrics	WP4	A data quality framework will be defined and implemented within the scope of WP4. Framework will build upon known quality metrics for heterogeneous data sources and will define MAR2PROTECT compound metrics on top of those
Medium Medium	AI techniques do not provide sufficient performance levels when modelling the key target indicators	WP4	Pure data-driven techniques will be integrated with physical models (e.g., MODFLOW) by implementing a Physics-Informed Machine Learning approach. Such an approach will mitigate risks related to a potential lack of explanatory power in AI models
Medium Medium	User acceptance of the insights and recommendations provided by the M-AI-R DSS is not accomplished	WP4	A specific focus in WP4 will be put into providing interpretable confidence metrics to the outputs of the DSS to enable the traceability of the decision-making process and the understanding of complex insights
Low / High	Legal/administrative difficulties in the implementation of selected technologies in a given demo site (e.g. delay to obtain required authorizations)	WP5	The inclusion in the consortium of the utilities/municipalities that will actually host most pilot plants in the demo sites will allow us to find suitable solutions (e.g. identification of an alternative demo site managed by the same water utility). Furthermore, the consortium has several contacts with other different utilities inside and outside Europe that can minimize the problems with the utilities initially selected for the different demo sites. In case of relevant delays in obtaining the required authorizations for a specific demo plant, this demo plant will be operated at TRL 5, in or near the laboratories of the demo site leader, under operational conditions strictly mimicking those of the actual demo site
Medium Medium	Lack of cooperation of relevant stakeholders, low participation in	WP6	Revise and adjust the engagement methods, as needed per the demonstration site

stakeholder
engagement activities

Medium Medium	/ Incomplete data in the life cycle inventory of specific technologies	WP6	Data will be completed using engineering calculations and literature data
Low Medium	/ Dissemination activities do not reach the targeted groups and results do not have visibility	WP7	MAR2PROTECT will identify further stakeholders and different strategies to reach each target group
Low / High	IPR disagreement	WP7	The CA signed by partners will include specific solutions to IPR disagreement issues. FEUGA will propose alternative IPR strategies until an agreement is reached

9 Annexes

9.1 Template of the Technical Internal Report

9.2 Template of the Financial Internal Report

