merlin

# Deliverable 7.3 - Risk Management Plan-M6

Co-funded by
the European Union

LIFE23-CCM-ES-LIFE
MERLIN 101158094

# Risk Management Plan - M6

## D7.3 Risk Management Plan-M6


### Summary

This deliverable presents the Risk Management Plan, a comprehensive approach to identify, analyze, monitor and control internal and external risks that could impact the project's progress and objectives. The plan not only identifies potential risks but also outlines preventive and corrective actions to mitigate them. As risks can arise at any time during the project's lifespan and are not always predictable, risk management is an ongoing process that spans the entire project duration. The ultimate goal of the Risk Management Plan is to minimize the probability and impact of adverse events by providing a structured risk identification procedure and a tailored risk prevention strategy, thereby ensuring that risks are avoided or minimized throughout the project's lifetime.


| **Deliverable number** | **Work package** |
|---|---|
| D7.3 | WP7 |
| **Lead beneficiary** | **Deliverable author(s)** |
| CETAQUA | Marcel Vilaplana (CETAQUA) |
| **Quality assurance** | |
| Alicia González | CETAQUA Galicia |
| **Planned delivery date** | **Actual delivery date** |
| 28/02/2025 | 07/03/2025 (v1.0)<br>26/05/2026 (Updated version v2.0) |
| Dissemination level | • PU = Public |


*LIFE MERLIN is a European project co-funded by the LIFE Programme (LIFE23-CCM- ES-LIFE MERLIN 101158094), the European Union's funding instrument for the environment and climate action. The general objective of LIFE is to contribute to the implementation, updating, and development of EU policy and legislation on environment and climate through the co-financing of projects with European added value. The opinions and views expressed are solely those of the author(s) and do not necessarily reflect those of the European Commission or CINEA. Neither the European Commission nor the granting authority can be held responsible for them.*

# Table of contents

# List of Figures

# List of Tables

## List of Acronyms and Abbreviations

PO: Project Officer

RMP: Risk Management Plan

RMR: Risk Management Register

WP: Work Package

WPL: Work Package Leader

## Executive summary

This deliverable presents the Risk Management Plan, a comprehensive approach to identify, analyze, monitor and control internal and external risks that could impact the project's progress and objectives. The plan not only identifies potential risks but also outlines preventive and corrective actions to mitigate them. As risks can arise at any time during the project's lifespan and are not always predictable, risk management is an ongoing process that spans the entire project duration. The ultimate goal of the Risk Management Plan is to minimize the probability and impact of adverse events by providing a structured risk identification procedure and a tailored risk prevention strategy, thereby ensuring that risks are avoided or minimized throughout the project's lifetime.

# 1. Objectives

Risk management is a crucial process that identifies, analyzes, monitors, and controls internal and external risks that could impact the project's progress and objectives. This process not only identifies potential risks but also outlines preventive and corrective actions to mitigate them. As risks can arise at any time during the project's lifespan and are not always predictable, risk management is an ongoing process that spans the entire project duration.

The Risk Management Plan (RMP) is designed to minimize the probability and impact of adverse events by providing a structured risk identification procedure and a tailored risk prevention strategy. The project consortium has developed a comprehensive list of risks and proposed mitigation actions to monitor and minimize project risks. This list, which is part of the Grant Agreement, includes major perceived risks related to the project work plan, their probability and impact, and a description of mitigation measures.

The RMP is a dynamic and continuous document that will be updated throughout the project's lifetime. Revised versions of this document will be published as Deliverable 7.4 (Risk Management Plan-M24) and Deliverable 7.5 (Risk Management Plan-M48).

# 2. Risk Management Procedure

## 2.1. Process

A standardized management process to identify, monitor and mitigate risks linked to the project has been used (Figure 1).

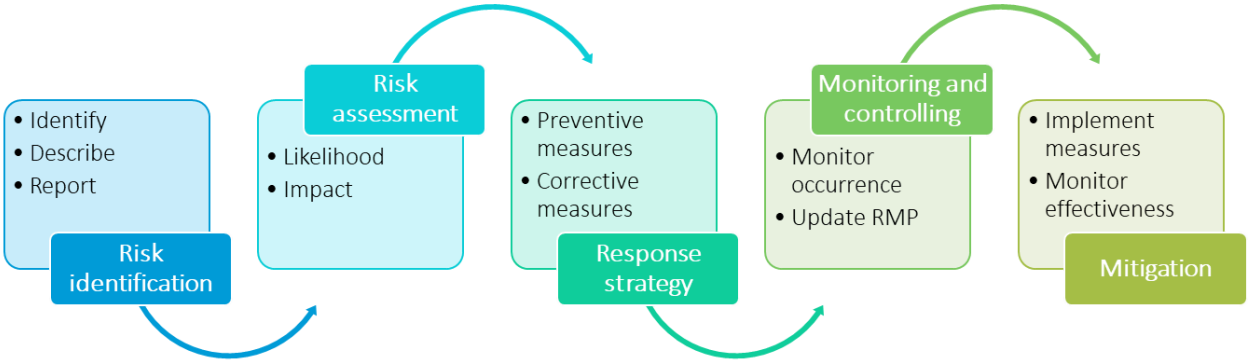


Figure 1. Standardized management process for risk assessment

## 2.2. Risk Identification

The risk identification process is an ongoing activity that spans the entire project lifetime. It involves identifying internal or external issues that could impact the project progress towards its objectives. When a risk is identified, it is described in terms of its nature and potential consequences, and reported to the relevant Work Package (WP) leader or the Project Management Team, depending on its strategic level. The WP leader is responsible for notifying the Project Coordinator of any new risks identified.

To facilitate risk identification, the following tools and techniques will be employed:

- Analysis of actual vs. planned deliverable status
- Analysis of WP schedules and scopes
- Regular communication between WP leaders and task leaders
- Regular communication between the Project Management Team and WP leaders

## 2.3. Risk Assessment

The risk assessment step involves evaluating the exposure to a given risk. This is achieved by using the risk matrix in Figure 2, a standard qualitative risk management tool widely employed in project management and similar projects (https://www.project-management-skills.com/qualitative-risk-analysis.html).

For each identified risk, the Project Management Team, in collaboration with the Work Package leaders, will estimate two key factors: the probability of the risk materializing (classified as Low, Medium, or High) and the potential impact of the risk if it occurs (also classified as Low, Medium, or High).

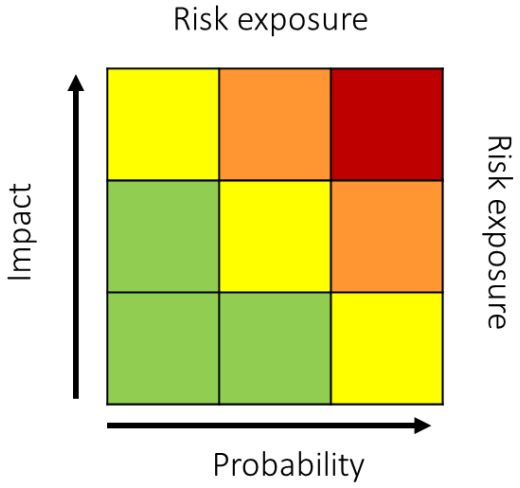


Figure 2. Standardized process for risk assessment

## 2.4. Response Strategy

Once risks have been identified and assessed, response strategies are developed to mitigate their impact. These strategies consist of two key components: preventive measures and corrective actions.

The primary objective of preventive measures is to reduce the likelihood of a risk occurring. All preventive measures are carefully defined and documented in the Risk Management Register (RMR). On the other hand, corrective actions are designed to minimize the impact on the project in the event of a risk materializing. These measures

ensure that the project can still achieve its objectives despite the consequences of the risk.

### 2.5. Monitoring, controlling and mitigation

The risk monitoring process is an ongoing activity that spans the entire project lifetime. To facilitate this process, a Risk Management Register (RMR) has been established, which documents all identified risks, risk assessments, and response strategies in a risk table. The RMR is conveniently accessible to all partners through the shared workspace in Google Drive, serving as the foundation for monitoring and controlling each identified risk.

## 3. Roles and responsibilities

### 3.1. Consortium partners

Risk management is a shared responsibility among all consortium partners. Each partner is accountable for promptly reporting any situation that may impact the project's progress and objectives to their respective Work Package Leader (WPL). This includes any changes to the timeline of deliverables or allocated budget, which must be communicated to the WPL without delay. The WPL will then notify the Project Coordinator, and if necessary, escalate the issue to the Project Officer (PO) for further action.

### 3.2. Work Package Leaders

The Work Package Leaders (WPLs) play a crucial role in the project, responsible for coordinating and monitoring activities within their respective work packages. Additionally, they ensure synchronization between task leaders within their work package and support the Project Coordinator in coordinating horizontal activities across work packages. As the first level of the risk management process, WPLs are accountable for identifying and managing risks within their work package. They are also responsible for reporting new risks and changes in the situation concerning identified risks to the Project Coordinator.

The Work Package Leaders and partners in charge of the work packages are defined in Table 1, along with their contact person..

Table 1. WP leaders and contact person

| WP | Partner | Contact Person |
|---|---|---|
| WP1 | CETAQUA | Marcel Vilaplana |
| WP2 | CREATECH | Lynne Bouchy |
| WP3 | AMAEM | Ignacio Casals |
| WP4 | ACES | Júlia Soler |
| WP5 | CETAQUA | Marcel Vilaplana |
| WP6 | CETAQUA | Marcel Vilaplana |
| WP7 | CETAQUA | Marcel Vilaplana |

# 4. Risk Management Register

The following table lists the risks identified by the Consortium up until the signature of the agreement on the Grant Agreement. Additionally the table includes the following information impact, probability and mitigation measures envisaged by the project partners linked to the identified risks.

Table 2. List of risks identified in the Grant Agreement and mitigation measures proposed

| WP | Description | Impact | Likelihood | Risk Mitigation | End Month |
|---|---|---|---|---|---|
| WP1 | Prototypes do not comply with specifications as per the tender specs document | High | Low | Site Acceptance Tests and Factory Acceptance Tests performed will be supervised by CET, AMA and EMU personnel. Binding contract signed after awarding the public tender. | M27 |
| WP1 | Delays in engineering/public tender/construction/implementation | Medium | Medium | Sufficient time has been allocated for these stages, with some contingencies allowing for a certain amount of delay. Continuous monitoring of the project progress in WP1. | M24 |
| WP1 | Demonstration plants cost more than estimated | High | Low | The capacity of the plants could be slightly scaled down in order to keep the costs in balance. Great effort has been devoted to the estimation of the budget and the prototype CAPEX has been estimated with budgeted quotations. | M12 |
| WP2 | Enzymatic Hydrolysis of sludge does not boost biogas production as much as expected | Medium | Medium | Enzymatic Hydrolysis has been already tested in ENZYWASTE at a representative scale (starting TRL at LIFE MERLIN of 6), combination with co-digestion will create a biogas production synergy | M36 |
| WP2 | Co-substrate properties greatly fluctuate | Medium | Medium | WP2 lasts for three years, allowing for the detection and characterization of the fluctuations of the co-substrate as well as the study of the impact on AD | M36 |
| WP2 | Pre-treatment causes the deterioration of the digestate quality | Medium | Low | WP2 includes the continuous co-digestion tests to study inhibition processes derived from the co-digestion and pre-treatment. The quality of the digestate will be analysed before the full-scale implementation and moreover, different co-substrates will be tested | M24 |
| WP2 | Low co-substrate availability in the area | Medium | Low | Building a portfolio with an extended radius will still allow working on the digital tool, although the economic viability will have to be re-assessed. Several co-substrate suppliers have already been identified by the sites. | M18 |

| | | | | | |
|---|---|---|---|---|---|
| WP3 | Full-scale anaerobic digester is inhibited due to overload of co-substrate | High | Low | HAZard and OPerability study carried out at WP1, digital tool extensively tested in WP2 and WP3, continuous co-digestion tests in WP2 to validate potential AD inhibition | M36 |
| WP3 | Digestate solids content does not decrease significantly | Low | Low | The main benefit is still biogas production enhancement and maximization of electricity production. Past work on Enzymatic Hydrolysis shows digestate solid content reduction. | M24 |
| WP3 | One of the demonstration sites performs significantly better than the other | Medium | Medium | LIFE MERLIN will be demonstrated in two sites. Although there is some variability in sludge characteristics and co-substrate availability the results on one single site would allow scale-up and replication of the technological solution albeit with a narrower operational window (co-substrate types and sludge characteristics) | M48 |
| WP3 | Saponifier usage leads to operational issues such as foaming or accumulation of saponifier in rising concentrations in the liquid recirculation of the digestate de-hydration and impacting the biological reactor at the WWTP. | High | Low | HAZard and OPerability executed in WP1. Saponifier dosages will be increased steadily, starting with very low dosages. Sludge and digestate periodically sampled, biogas condensate sampled. Concentration of saponifier in digestate and liquid recirculation measured at startup.<br>Several saponifiers available. | M36 |
| WP3 | Co-substrate supply suddenly stops | High | Low | Co-substrate potential suppliers on ice-cream and candy manufacturing residues have signed support letters. In WP2, a portfolio of available co-substrates will be created, and several will be tested for co-digestion | M48 |
| WP4 | Failure to agree on a business model for commercial exploitation | High | Low | Similar projects executed in the past within the Agbar/Veolia environment and transferability and business model have always been a great success. Several business models have been pre-identified before the operation at demo-scale. | M48 |

| | | | | | |
|---|---|---|---|---|---|
| WP6 | Lack of interest from third parties | Medium | Medium | Efforts in communication and dissemination to gather interest in the technologies. Capitalizing on the side benefit of digestate management, since it is becoming more and more of a key issue. Key stakeholders such as the EBA and AVEBIOM have already shown support (signed support letters). | M48 |
| WP6 | Project publications (papers, public documents, etc.) not downloaded or cited | Low | Medium | LIFE MERLIN dissemination efforts will include the identification of prestigious journals and conferences falling within the scope of the project. Also, open access publishing will be considered to maximize the impact of the project results. | M48 |
| WP7 | Partner drops from consortium or loses interest in project | Medium | Low | All partners' interests have been thoroughly discussed, routine consortium meetings to ensure that partners are aligned, all partners are part of the Agbar/Veolia group and have the same major environmental target. Despite the mentioned mitigations, if a partner drops the consortium, the first option is splitting the remaining tasks linked to that partner among the remaining partners. If that is not possible due to lack of expertise from the remaining partners on specific tasks, the consortium will look for a new partner with the needed capabilities. | M48 |
| WP7 | Competent authorities do not give permission for the implementation of the LIFE MERLIN technological solution. | High | Low | Support letter received from both ESAMUR, Mancomunitat de L'Acantí, Alicante City Hall and EPSAR. | M12 |

merlin

CETAQUA
WATER TECHNOLOGY CENTRE

AQUAMBIENTE
Circular Economy Solutions

AGUAS DE ALICANTE

AGUAS DE MURCIA

Createch
intelligent control solutions 360°

Life