



# AWESOME

WATER-ECOSYSTEM-FOOD

## RISK MANAGEMENT PLAN

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## LIST OF ACRONYMS

### Abbreviations

AB:	Advisory Board
CA:	Consortium Agreement
CS:	Case Study
DDP:	Deliverable Development Plan
DoA:	Description of Action (Annex 1 of the Grant Agreement)
EC:	European Commission
GA:	Grant Agreement
GAs:	General Assembly
KPIs:	Key Performance Indicators
MB:	Management Board
Mx:	Month number
PCo:	Project Coordinator
PI(s):	Principal Investigator(s)
PMP:	Project Management Plan
QC:	Quality Control
RMP:	Risk Management Plan
RMR:	Risk Management Register
RP:	Reporting Period
SH(s):	Stakeholder(s)
WEF:	Water Ecosystems Food
WP:	Work Package

## EXECUTIVE SUMMARY

This deliverable describes the Risk Management Plan of the AWESOME project with the aim to assess potential risks and obstacles, along with correspondent mitigation measures, to support the project partners in dealing with undesired problems related to the research activities or the management of the tasks. The risk ownership is established through the role and responsibilities within the consortium. Specifically, the AWESOME Grant Agreement and Consortium Agreement take precedence over this document, which does not replace by any means the contractual obligations among partners, and between partners and the PRIMA Foundation.

## 1. INTRODUCTION

In a project of this size, duration and complexity, risk management and contingency planning is important to ensure that the project strategy, operations, outcomes, and budget remain on track. Risks can arise from e.g. unexpected technical difficulties, poor communication or cooperation between the partners, resource shortage by the partners, objectives not achievable in terms of budget or feasibility, partners leaving the consortium, human operational errors. In this particular period of time, the risks related to the impacts of the current COVID-19 pandemic (or a potential further one) need to be identified and timely managed.

This deliverable (D1.2) represents the Risk assessment and Management Plan (RMP) of the AWESOME project and has the aim to support the project partners to deal with potential obstacles and unexpected problems related to the research activities or the management of the tasks within the project. This document identifies and evaluates the risk of occurrence of adverse situations, which can negatively affect the outcomes of the AWESOME project, and proposes a contingency plan along with mitigation measures to address the issues eventually raising during the project. The purpose is to anticipate possible uncertainties and delays, ensuring a smooth and successful implementation of the project's objectives. The general types of risks, examples for specific risks and their mitigation covered in the risk management process, are introduced and summarized in Table 1 – taken from Table 3.2b of the Description of Action (DoA).

**Table 1** – Critical risks for implementation as in the DoA.

Description of risk (indicate level of likelihood: Low/Medium/High)	Work package(s) involved	Proposed risk-mitigation measures
Competence risks: personnel involved or recruited not able to fulfil tasks (LOW)	All	Continuous monitoring by the MB and implementing adjustments within each organisation if necessary
Accessing data for the case study may prove to be a challenge if data collection does not back far enough, if there are data gaps or if data collection was otherwise incomplete (MEDIUM)	2,3,4	Partners are familiar with relevant sources of data for use at European, Mediterranean, national and local levels.
Lack of coordination for model integration (LOW)	2,3,4,5	Continuous communication and feedback between the Coordinator and the consortium partners

Limited response from the stakeholders (LOW)	5,6,7	A robust strategy of engagement with stakeholders will be developed since the beginning of the project. The case study leader is already part of the consortium and AWESOME will also build on his strong connection with local stakeholders. The engagement process envisaging face-to-face meetings require interviewers to reach local actors and the experience of the project team already minimizes this risk.
Operational risks: information and data not shared effectively within the consortium (LOW)	All	The close cooperation of the responsible persons will minimise this risk. Online meetings will be held at short intervals to monitor progress and identify blocking issues as soon as possible.
Time/budget risks: delays in producing expected deliverables (LOW)	All	The high frequency meetings (i.e. monthly) of the MB allows identifying delays, assessing impacts and implementing organisations/budget changes
Impact risks: the proposed solutions do not meet stakeholders requirements (MEDIUM)	4,5,6,7	The involvement of all stakeholders and policy makers from the very beginning will mitigate this risk with dedicated WPs (5-6-7).

The risks of Table 1 and additional ones - that could not be identified in the Grant Agreement (GA) negotiation phase – are described in more detail in this document.

The RMP is structured starting with this general introduction (Section 1), then addressing specific roles and responsibilities in the consortium (Section 2), followed by a description of the main risk management procedures (Section 3), and, finally, by reporting a summary of the specific risks and their mitigation covered in the risk management process (Section 4). The last section gives some concluding remarks (Section 5).

## 2. SPECIFIC ROLES AND RESPONSIBILITIES

### 2.1 RISK MANAGEMENT

In the implementation of the AWESOME project, Work Package (WP) 1 has the responsibility of ensuring the quality and punctuality of scientific outputs, undertaking the risk management of the project, monitoring the progress of the planned activities, and anticipating as well as addressing potential issues. Together with the Management Board (MB), WP1 will identify and monitor technical and management risks as well as any other issues that might affect the project progress towards its objectives, in order to implement mitigation actions as early as possible. Nevertheless, each partner has the responsibility to report immediately to their respective WP leaders and to the Project Coordinator (PCo) of any risky situation that may arise and may affect the project objectives or their successful completion. Any change in the time schedule of the deliverables or in the allocated budget must be reported to the corresponding WP Leader or to the PCo. In case of problems or delays, the MB will discuss about the necessary actions for avoiding them or for establishing mitigation plans to reduce the impact of the occurring risk. Responses may include

strengthened supervision, adjustments to project strategy, changes to implementation arrangements, and changes in budget allocations. The PCo is ultimately responsible to keep the oversight of the entire project against deliverables, milestones and Key Performance Indicators (KPIs), and to apply risk management procedures whenever needed.

## 2.2 CONFLICT RESOLUTION PROCEDURES

According to the DoA, each WP is expected to follow the instructions of the overall AWESOME coordinating tasks. Within each WP, the internal management will attempt to resolve any conflict. Each WP leader may call upon the MB for assistance. In case of conflicts between WPs, it is expected that first attempts will be to solve any problems bilaterally. In the exceptional case that conflicts cannot be solved at the WP level, the MB may be called upon by the respective WP leaders and asked to solve the conflict. The MB will be in charge of ensuring that all pending conflicts are resolved within reasonable time frames. In very serious cases, for example when a decision is appealed to the General Assembly (GAs), the GAs decision is then final and binding on all management bodies, as explained in detail in §6.5 of the Project Management Plan (PMP).

## 3. RISK MANAGEMENT PROCEDURE

The risk management procedure includes risk identification, risk analysis, response planning, and monitoring and control (as schematized in Figure 1).



**Figure 1** – Risk management process

As requested in the Annex 7 of the GA, the Risk Management Register (RMR) has to be submitted by the PCo at each reporting period (M21 and M42), following the outline shown in Table 2. The RMR will be maintained and will be used to record all possible risks of the project and any subsequent measures or actions required. Therefore, WP leaders and the Case Study (CS) leader are

asked to provide an update on progress and eventual risks to progress (if applicable) at the monthly MB meetings and propose contingency plans where necessary to address any specific identified risks. To this end, the RMR will be stored in the AWESOME project repository (<https://131.175.15.9/cgi-bin/>, under the directory “AWESOME\_public/Deliverable/D1.2/”).

**Table 2** – Critical implementation risks and mitigation actions

Risk number	Description of risk	WP concerned	Proposed risk mitigation measures	Current status <sup>1</sup>						
				Were the risk mitigation measures applied? Y/N	Did the risk Materialise? Y/N	Comments				
1		WP1								
2		WP1								
x										
N <sup>2</sup>										

### 3.1 RISK IDENTIFICATION

Risk identification will be continuously performed during the implementation of the AWESOME project, with an emphasis on identifying risks as early as possible so effective response planning and subsequent monitoring can take place. Risk Identification will be performed within WPs. WP and CS leaders will report new possible or eventual risks and suggestions for the risk priority to the MB, which will agree on the final risk priority as well as on the respective response strategy. Identified risks will be included into the RMR (Table 2).

### 3.2 RISK ANALYSIS

After a risk or group of risks has been identified and documented, it is important to assess the probability that the risk may occur and if it occurs, the size of the possible impact. The exposure to a given risk is attributed using a risk matrix (Figure 2), with the following meaning:

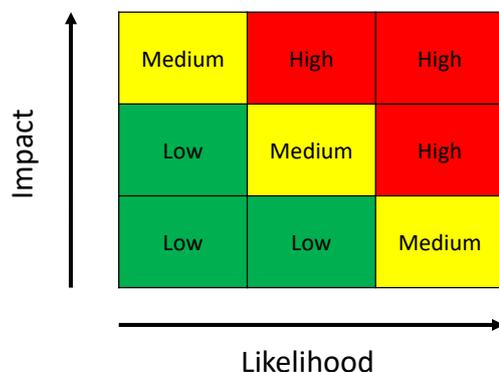
- Low: very unlikely, but not impossible;
- Medium: Quite possible;
- High: more likely to happen than not.

In response to each newly identified risk, the MB will attribute the probability it could become a problem (Low/Medium/High).

<sup>1</sup> At each period beneficiaries should give an update on the current status and indicate new mitigation measures, where necessary.

<sup>2</sup> Newly identified risks may be added as applicable.

The results of risk analysis will be included into the RMR.



**Figure 2** – Risk matrix to assess the level of risk exposure

### 3.3 RESPONSE PLANNING

During risk response planning, strategies and plans will be developed to minimise the effects of the risk to a point where it can be controlled and managed. During response planning, higher priority risks will receive more attention than lower priority risks. Every risk that poses a threat will be assigned to a responsible party during response planning.

The following strategies will be taken (depending on the risk category):

- For high and medium - priority risks: Mitigation. Risk mitigation involves reducing the probability and/or the impact of a risk. Taking early and proactive action against a risk is often more effective than attempting to repair the damage a realised risk has caused. Contingency planning is an example of risk mitigation.
- For low-priority risks: Acceptance. The acceptance approach is often taken as a risk strategy since it is very difficult to plan responses for every identified risk. Risk acceptance should normally only be utilised for low-priority risks. Risk acceptance can be passive, where no action is taken at all, or active. The most common active approach to risk acceptance is to develop a cost and/or schedule revision to accommodate known (or unknown) threats. Adopting a risk acceptance approach determines that the risk should be monitored.

The results of response planning will be included into the RMR.

### 3.4 RISK MONITORING AND CONTROL

Each WP Leader is responsible for the risk management within their WP and the CS Leader respectively for the Case Study. Each project partner is highly encouraged to communicate and discuss any (possible) risk and response planning with their WP Leader. It is the responsibility of all AWESOME partners to communicate the PCo about the status and effectiveness of each risk and mitigation plan in order to update the RMR and assess the relevance of the tools. Risk exposure will

be continuously re-evaluated and modified accordingly and the results of monitoring and control will be documented.

The partners already performed a risk analysis jointly during proposal preparation (DoA, Table 1). Though, additional risks have been identified afterwards. All the identified risks will be described in higher detail in the following Section 4.

## 4. IDENTIFIED RISKS AND MITIGATION MEASURES

### 4.1 RISK #1: COMPETENCE RISK

The DoA identified as competence risks those related to the involvement and/or recruitment of personnel that is not able to fulfil the assigned tasks. The probability level of incurring in such risk was estimated as low at the beginning of the project. Based on the composition and operation of the consortium, this risk can be confirmed to be low. The measures that allow to counteract this risk consists of the measures already foreseen in the PMP (i.e. MB meeting, WP progress monitoring through WP leaders, milestone achievement controls, QC measure adopted for the deliverable development). At the end, it is responsibility of each WP leader to detect eventual difficulties and competence lacks within each WP and promptly discuss about it with the MB, in order to find a contingency measure. Finally, the renowned members of the Advisory Board can be considered a further measure to back up competence lacks in the team, in the unlikely occurrence they might arise.

### 4.2 RISK #2: DATA RISK

As written in the DoA, accessing data for the case study may prove to be a challenge if data collection does not back far enough, if there are data gaps or if data collection is otherwise incomplete. The probability of occurrence of this risk is estimated as medium. Indeed, there are some factors that might add complexity to data access and collection. One can arise by limited collaboration with the stakeholders (SHs), who collect and hold data, or by delays in the identification of the key actors in the study area. The process of developing trust, willingness of collaboration from the side of the SHs might be longer than expected. Another significant factor concerns the quality of the available data (e.g. consistency, extent, eventual data gaps), which might be not particularly high. Also, the fact that the Nile River basin is a transboundary basin, can increase complexity because of the different water management governing bodies and institutions.

Despite the potential obstacles previously mentioned, the AWESOME partners are very familiar with the relevant sources of data for use at European, Mediterranean, national and local levels, mainly because of the experience gained during the implementation of previous projects around the study area. Partners will also work with multiple data acquisition options and consider arrangements e.g. through in-kind contributions and co-authorships. Besides, the CS Leader and its company are based there, together with consolidated connections. Further, global datasets of the main hydrometeorological and socio-economic variables are available online as open source. Finally, one of the members of the AWESOME Advisory Board (AB) works for the National Research Center in

Cairo, Egypt, comprising the Nile Research Institute, and can extensively support the partners in accessing useful data, in case of need. Last but not least, WP1 is working already on the data management plan (deliverable D1.3), while WP6 on the stakeholder mapping and outreach; therefore, the AWESOME team is confident to have established all the conditions to smoothly counteract the data-related risks.

#### **4.3 RISK #3: LACK OF COORDINATION FOR MODEL INTEGRATION**

The lack of coordination for model integration in the AWESOME project is still considered a low-priority risk, as in the DoA. In fact, there are several measures which have been embraced since the beginning of the project to mitigate this risk. The monthly MB meetings allow a frequent interaction among partners as well as continuous flow of communication and updates. Parallel meetings concerning specific WP, CS, milestones (such as the website) and deliverables have already begun since the AWESOME kick-off meeting last May 22. A modeling working group, consisting of WP2-3-4 leaders has been established and the first meeting focusing on model integration (WP2-3-4) and data management is already planned for next September 10. Further, the first deliverable (PMP) – was promptly shared among partners by WP1, being an additional tool to ensure a smooth project coordination, quality control and good communication.

#### **4.4 RISK #4: LIMITED RESPONSE FROM STAKEHOLDERS**

The low-level risk concerning a limited response from the stakeholders (SHs) reported in the DoA is a risk that still need to be taken into account for the reasons explained in section 4.2 of this document. The lack of SHs involvement might occur because of low interest by the SHs in being involved in the project and/or due to a low commitment by project partners in networking with them (not effective outreach plan). Concerning the first point, the lack of clarity/knowledge about the benefits for SH institutions deriving from supporting AWESOME can be one of the blocking obstacles. In this sense, the organisation of SH-oriented events (also in form of Webinars) can be a good mitigation measure to counteract this eventuality. Also, a robust strategy of engagement with stakeholders is being developed since the beginning of the project. In fact, an updated SH mapping will be delivered by WP6 (Stakeholder Engagement and Interaction) and discussed internally before the end of September, to start afterwards with SH networking and involvement actions. The CS leader is part of the consortium since the GA negotiation phase and AWESOME will also build on his strong connection with local stakeholders. The engagement process envisaging face-to-face meetings require interviewers to reach local actors and the experience of the project team already minimizes this risk. Additionally, communication actions on social media and press release started since the very beginning of the project, initiated by WP7 (Communication, Dissemination and Outreach), which is also preparing deliverable D7.1, entitled Multi-stakeholder Outreach Plan due for the end of October. Finally, the multifaceted AB composed my members coming not only from academia, but also from renowned institution in the study area and MENA Region can support the AWESOME team in establishing a valuable interaction and commitment with the SHs.

#### **4.5 RISK #5: OPERATIONAL RISK**

The DoA identified as operational risk the lack of effective information and data sharing within the consortium. The probability of occurrence of this risk was estimated as low and is still considered

so. Indeed, a close communication among the partners, the periodic exchange at the monthly MB meetings – established as additional management measure to improve the exchange of information across the consortium, and the use of an internal repository for data and documentation, are effective measures to mitigate potential risks related to low information exchange within the consortium. Further, a specific operational measure is adopted for the elaboration of deliverables, as agreed among the PIs already during the kick-off meeting and as written in the PMP, in order to ensure Quality Control (QC). The measure consists in the production of the Deliverable Development Plan (DDP), to be finalised at least 60 days before the contractual date of the deliverable, and in the consequent internal submission of the deliverable at least 30 days before the contractual date of the deliverable. Two reviewers have been chosen among the partners for each deliverable, in order to revise the document before the final check and decision of the PCo. Previous quality check by the WP leader responsible for the deliverable is implicit.

#### **4.6 RISK #6: TIME AND BUDGET RISK**

The risk related to time and budget management – e.g. with respect to completing work within stipulated deadlines, delays in producing expected deliverables – is counteracted through the implemented management measures discussed in the PMP. In particular, among these, the internal periodic reporting due every six-months is used to verify the advancement of work and the corresponding use of resources. These reports allow WP leaders to identify deviations from the agreed project schedule (GANNT, shown in Figure 4 of DoA) and, thus, call the MB to act and implement specific countermeasures. In addition to the controlling measures foreseen in the PMP, the scheduled monthly MB meetings are an additional tool to reduce the probability of untimely identification of delays, and to intensify the assessment of potential impacts of such delays, as well as to offer regular opportunities to update partners and discuss eventual organisation and budget changes.

#### **4.7 RISK #7: IMPACT RISK**

The impact risks identified in the DoA concern the failure to meet the SHs expectation through the selected development pathways. There is no need to define specific additional measures to counteract this risk, because the project is implicitly designed to mitigate it, as stakeholders are expected to actively contribute to the design of the development pathways and are being involved from the very beginning of the project with dedicated WPs (5-6-7). Also, the CS Leader is a SH himself and, together with some members of the AB, constitutes a significant contact point for the project team, to ensure that the project achieves its objectives and meet SHs expectations as well.

#### **4.8 RISK #8: SCIENTIFIC RISK**

The scientific risk was not listed in the DoA but it is additionally taken into consideration here, as it concerns the inability of the modelling framework and of the project approach to deliver the expected results. One component of this risk is strongly influenced by other risks (i.e. data related risk presented in section 4.2 of this document) and measures identified to mitigate those risks are considered to be effective here as well.

An additional component of the scientific risk is related to the choice of the appropriate model approaches (i.e. the integrated WEF model framework, innovative technologies at the local scale).

In fact, technical difficulties concerning the integration of economic-engineering models may occur, since they have different structures, processes and languages. At the same time, the correct implementation of the designed interaction with the stakeholders may diverge from the initial expectations. For this risk there is no a priori measure that can be identified and formalised, as it concerns research developments that are intrinsically uncertain when innovation is involved. The consortium, however, includes experts that are knowledgeable about consolidated literature modelling approaches that represent a back-up solution, should the innovation fail to deliver the expected results. This ensures the minimisation of the impact due to this type of scientific risk and warrants an adequate level of achievements that is still in line with the promised results.

#### **4.9 RISK #9: PANDEMICS RISK**

As anticipated in the PMP, an additional risk is the one related to current COVID-19 and potential further pandemics. Since its outbreak approximately in November 2019 in Wuhan, China, it is deeply impacting the whole World since the beginning of 2020. The ongoing global crisis is affecting not only health, but also economics, politics and society. Looking at the schedule of deliverables and milestones, some might be affected by delays, as mentioned in the PMP: e.g., the actual start of WP5 (micro-scale model and pilot plant in the study case area), depending on the European and Egyptian travelling restrictions.

In general, the current COVID-19 and potential further pandemics are capable to alter the priority level (low, medium, high) of other risks. In detail, the AWESOME team may expect an impact on the following risks:

- RISK #2, which concerns data access and collection;
- RISK #4, related to the engagement of SHs, because of the limited possibility of travelling and having a direct contact with them;
- RISK #6, in regard to time and budget risks, since the completion of deliverables might be delayed, or money reallocated, given to the travelling constrains;
- RISK #7, as consequence of the impact on RISK #4 (see above), where the project impact in the study area might be lower than designed during the GA negotiation phase, disappointing SHs' expectations;
- RISK #8, as a consequence of the impact on RISK #2 (data) and on RISK #7, since there might be obstacles in the implementation of the DEMO site and of the integrated WEF model framework.
- Further: participation to conferences and workshops, organization of workshops, summer schools, short courses on site for capacity building, etc.

In order to prevent this and further obstacles, and at least to timely counteract those, a contingency plan is already into action. The consideration of pandemic-related impacts and risks is going to be included in the AWESOME modelling framework and deliverables, while the specific mitigation measures to the risks #1 up to #8 have been already presented in the previous sections.

The MB will closely monitor the development of the project together with the pandemic's evolution, which is largely unknown at the moment, but expected to evolve positively. If this should not be the case, the MB will promptly intervene with mitigation measures, acting from remote – where

possible – and strengthening virtual cooperation among partners; otherwise, reorganizing the internal schedule, leaving as a very last option a delay of the end of the project.

To conclude, there is clearly a high level of uncertainty related to this risk, but the AWESOME team is seriously committed in trying to assess this uncertainty, as described in detail in this section.

## 5. CONCLUDING REMARKS

The AWESOME project represents a combination of novel and well-established processes in a hybrid system, representing an innovative framework aiming to the sustainable utilization of soilless agriculture for food production with low water and energy demand, and minimum environmental impacts. The focus on south Mediterranean countries embeds risks related to the inherent complexity of the investigated questions and of the target study areas. Further, the current pandemic is showing the world that new unexpected shocks may arise, and they should be included in the analyses, especially in regard to future economic, demographic and climate scenarios. Risk management and contingency planning - as explained in the previous sections - is important to ensure that the project strategy, operations, outcomes, and budget remain on track. While the present deliverable outlines the major risks and the relevant mitigation measures, the MB carries the responsibility of addressing risks detected during the project operation, proposing and implementing contingency plans to mitigate them. The support given by the scheduled MB monthly meetings of the PIs and by periodic reporting, prevents already potential deviations from the DoA, and, when impossible, provides the chance to promptly find counteractions, to ensure the achievement of the project goals.