

DELIVERABLE D1.2
Quality and Risk Management Plan



eGROUND WATER

Citizen science and ICT-based enhanced information systems for groundwater assessment, modelling and sustainable participatory management (GA n. 1921).

DELIVERABLE D1.2	QUALITY AND RISK MANAGEMENT PLAN
Related WP	WP1
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Abstract	<p>This document describes the risk management procedure to be followed by eGROUNDWATER, as well as the quality monitoring process of the project's deliverables. Reviewing and taking into account the roles and responsibilities of each partner, this deliverable builds on actions that have been proven successful in previous projects, adapted to the particular features of eGROUNDWATER. Quality and risk management activities will be continuously performed during the project's life, adding new risks and procedures to the list if necessary.</p>

DISSEMINATION LEVEL

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<input type="checkbox"/>	CI	Classified, information as referred to in Commission Decision 2001/844/EC

VERSIONING AND CONTRIBUTING HISTORY

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Executive summary

This document collects and summarizes the outcomes of Task 1.3. Task 1.3 aims at defining, implementing and maintaining a set of quality monitoring and risk assessment activities. In order to support that objective, Task 1.3 is based on the following three actions:

- Supervise the ongoing developments of the project to identify potential issues and risks.
- Trigger risk management and contingency strategies for the identified risks and issues.
- Examine the consistency and coherence of the ongoing procedures between Work Packages and propose potential revisions to the work plan to guarantee the achievement of the objectives.

WP leaders play a key role in this task, as they are responsible of reviewing the progress and results of their corresponding WPs. Deliverable quality assurance will be carried out in two steps, first by each WP leader and a second check made by the project coordinator (PC). WP leaders are also responsible of identifying and reporting to the PC any risk or issue occurring in their WP during the project development. The PC will identify and implement the required contingency measures and strategies in order to correct the identified issues and to minimize risks.

This document identifies risks and proposes a set of procedures and actions to minimize the effect of these risks in the project development. The actions described in this deliverable have been proven successful in previous projects. However, modifications and adaptations to this guideline might be required as the projects unfold. Therefore, this document will be revised when necessary during the lifetime of the project. The consortium will be notified about such changes in due time.

1. Roles and responsibilities

eGROUNDWATER consortium has structured the work plan in seven work packages (WPs), combining research & innovation, project management, dissemination and communication activities.

The structure of WPs and their inter-relations are shown in Figure 1, where task dependencies are shown as continuous arrows (one task cannot start before the end of the other), whereas dashed arrows represent synergies that do not imply dependency.

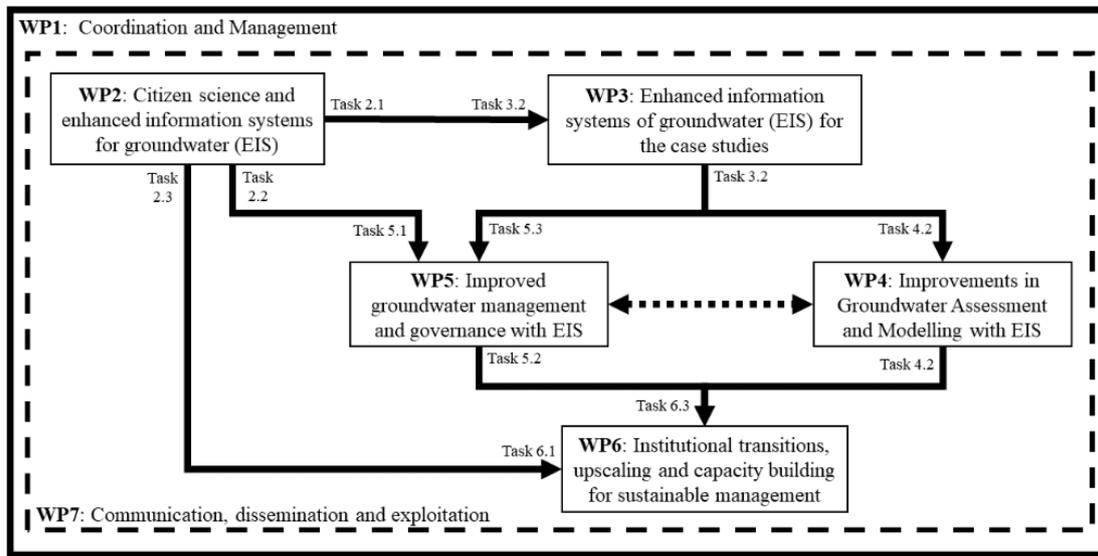


Fig 1. eGROUNDWATER inter-relations among WP.

2. Specific roles and responsibilities per work package

Each work package is led by a participant of the eGROUNDWATER consortium. The leading participant has the responsibility to demonstrate the adequate functioning of the work package during the life cycle.

Each deliverable will be sent to the corresponding WP leader, who will review the information and provide comments and improvements before the PC's second check. These milestone achievements will facilitate the work package's development in terms of quality and time.

The consortium members that lead the specific work packages and deliverables are detailed as follows:

WP1 and WP7: Universitat Politècnica de València UPV

WPs goal: Coordination and Management (WP1), and communication, dissemination and exploitation (WP7).

Deliverables led by UPV:

D1.1 Data Management Plan [m6] [24, 36 and 48].

D1.2 Quality and Risk Management Plan [m6]

D1.3 Periodic technical and financial reports [m12, m24, m36, m48]

D3.3 Report on assessment and forecasting of water irrigation needs. [m24]

D6.4 Guidelines and policy recommendations for EIS development and application [m48]

D7.1 Communication and Dissemination Plan [m6]

D7.2 Communication materials [m9]

D7.3 Annual report on communication and dissemination activities [m12, m24, m36, m48]

WP2. ICATALIST S.L., ICA.

WP goal: Citizen Science and enhanced information systems for groundwater (EIS).

Deliverables led by ICA:

D2.1 Analysis of EIS and Card Deck of examples [m9]

D2.2 Paper on the DELPHI Study Findings [m21]

WP3: Bureau de Recherches Géologiques et Minières, BRGM.

WP goal: Enhanced information systems (EIS) of groundwater for the case studies.

Deliverables led by BRGM:

D2.3 Reference case stories [m24]

D3.2 Guidelines for participatory design of the EIS [m18]

D3.4 Prototype of the EIS developed in each case study, on-line presentation and video [m30]

D5.1: Bottom-up approaches to build future scenarios, management and governance strategies in groundwater bodies [m30]

D6.2 Training materials on the use of EIS in groundwater management [m45] (BRGM)

WP4. Universidade do Algarve, UAlg.

WP goal: Improvements in Groundwater Assessment and Modelling with EIS.

Deliverables led by UAlg:

D4.1 Report on groundwater conceptual models for case studies [m24].

D4.2 Report on conceptual uncertainty [m48]

D4.3 Report on parameter uncertainty and models [m48]

WP5: Centre de coopération internationale en recherche agronomique pour le développement , CIRAD.

WP goal: Improved groundwater management and governance with EIS.

Deliverables led by CIRAD:

D5.3 New groundwater management strategies enabled by EIS with citizen science [m48]

WP6: Instituto Superior de Economia e Gestão, ISEG

WP goal: Institutional transitions, upscaling and capacity building for sustainable management.

Deliverables led by ISEG:

D3.1 Report on stakeholder engagement and development of local stakeholder focus groups. [m12]

D6.1 EIS institutional readiness assessment framework [m42]

D6.3 Report on obstacles and enablers of upscaling eGROUNDWATER in PRIMA-PS [m48]

Université Ahmed Draia d'Adrar, UADA:

Deliverables led by UADA:

D5.2: Decision support tools for groundwater management [m36]

VisualNACert S.L., VNA:

Deliverables led by VNA:

D7.4 Exploitation Plan [m24, m36, m48]

3. Risk management procedure

The risk management procedure includes potential risks, risk detection protocols during the project life and mitigation/contingency measures. All these include the following steps: risk identification, analysis, response planning, and monitoring and control.

A Risk Management List for the project's management and dissemination risk and the ways these risks may begin to occur are detailed in Table 1. The Risk Management List identifies all possible risks together with the consequent measures or actions required and must be maintained and updated on the consortium website. The consortium members are responsible for implementing these measures.

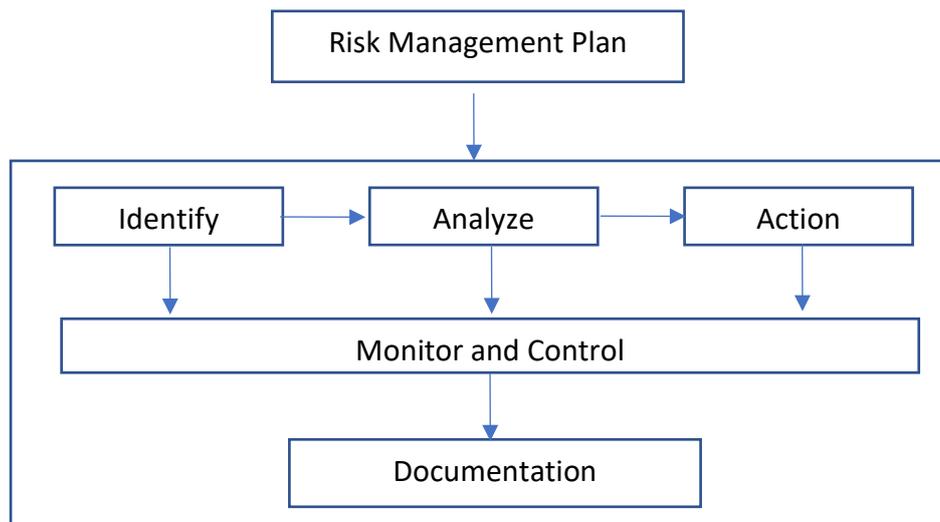


Fig 2. Risk Management Process

3.1. Risk Identification

Risk identification takes place at the beginning and throughout the eGROUNDWATER project, with the purpose to identify risks as early as possible so effective response planning and subsequent monitoring can take place.

Each Work Package Leader is responsible for Risk Management within the corresponding Work Package. Each project partner must communicate and discuss any (possible) risk and response planning with its Work Package Leader. It is the responsibility of all eGROUNDWATER partners to communicate the Project Coordinator the status and effectiveness of each risk and the proposed mitigation plan in order to update the Risk Management List and assess the relevance of the tools defined to address it. The project coordinator, supported by the Steering Committee and by the Technical Committee, will evaluate the risk and the risk mitigation plan.

Identified risks will be included into the Section 4, Identified Risk and contingency measures. This document will be accessible to the consortium through the website.

3.2. Risk Analysis

Once a risk or group of risks has been identified and documented, they are examined and evaluated on a two-dimensional matrix 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 estimated using a risk rating, in which the risk is classified as Low, Medium or High according to its likelihood (how probable it is) and its impact (how challenging will it be if it happens).

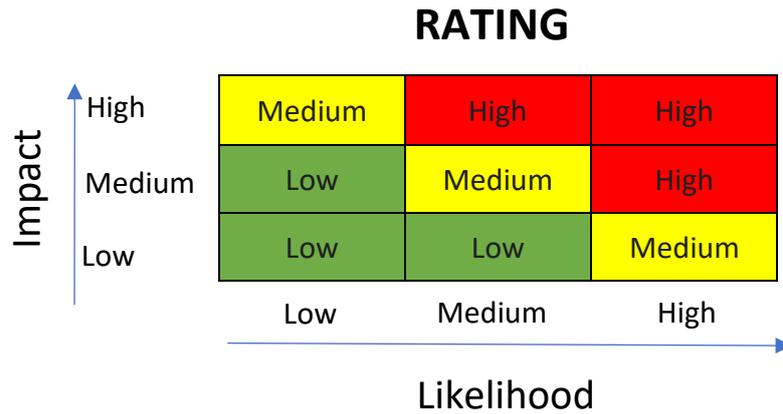


Fig 3. Risk rating.

The likelihood has the following meaning: Low (unlikely), Medium (possible), High (probable).

The impact has the following meaning: Low (the risk only affects one or few tasks of the same work packages, without threatening the workplan), Medium (the risk can impact more than one work package and challenge the workplan), High (the risk can potentially cause the failure of the project).

The Project Coordinator and the Steering Committee will estimate the risks that need to be addressed, the risks that are acceptable and the probability that risks could become a problem (Low, Medium, High). The Section 4 of this document includes the risks analysis of the risks perceived at present.

3.3. Risk mitigation strategy

Strategies and plans to minimize the impacts of a risk to a point where it can be controlled and managed during risk response planning will be set up on a non-stop basis. Higher priority risks will receive more attention than lower priority risks.

The following general principles and strategies for risk mitigation will be adopted depending on the risk rating.

- Risks rated as Low will be managed at WP level, being each WP leader responsible of monitoring their appearance and trigger the contingency measures if necessary. In case one risk reaches a point in which it may affect other WPs, it will be treated as if it were ranked as Medium.
- Risks rated as Medium will be jointly managed by the PC or the WP leaders of the related WPs. If one WP leader detects the appearance of one risk, he/she will inform the PC and the WP leaders involved in order to coordinate the contingency measures. In case one risk reaches a point in which it may compromise the project, it will be treated as if it were ranked as High.
- Risks rated as High will be managed by the PC and the Technical Committee (TM). The PC and the TM will regularly check that there is no chance that a risk ranked as High appears. If a risk is detected, the PC and the TM will coordinate the contingency measures to be applied and will inform the Steering Committee about its existence. In case one risk reaches a point in which the

original project scope is challenged, the Steering Committee will make the necessary arrangements to prevent or minimize the changes in the original scope of the project.

The results of response planning will be included into the Risk Management Plan in the following section.

4. Identified risks and contingency measures

The following list of identified risks and contingency measures is partially based on the plans outlined in the Grant Agreement (Section 3.2, Table 5). Early identified risks have been re-evaluated based on the recent developments occurring during the first months of the project, including non-considered impacts such as the health crisis unfolded by the COVID-19. The evaluation of risk likelihood and impact is based on current evaluation and is subjected to re-evaluation.

4.1. Weak or inconsistent user engagement

eGROUNDWATER relies on user engagement and interaction for the improvement of groundwater knowledge and sustainable management. Inadequate user engagement may hinder the results of the project, as most citizen science methods are based on the user interaction with researchers for data and knowledge provision. The likelihood of this risk is low, because all case studies are located on areas where partners have experience with stakeholder interaction and previous relationships with key stakeholders have already been established. A list of the engaged stakeholders will be provided in Deliverable 3.1, and will be updated through the life of the project. In some case studies, resistance to engage may come from informal or illegal water uses that users would not want to be exposed and from supposed but controversial impacts that users would not want to be proven.

Contingency measures to correct the potential impact of this risk include intensifying user engagement through workshops and trainings organized within the project, engage users following alternative approaches (mail, direct calls, etc.) to guarantee their involvement. The involvement of regulatory water agencies as stakeholders will be key to provide counterparts and a regulatory framework for the user's participation in the sustainability objectives. Finally, the elaboration of the EIS will be co-designed with stakeholders to ensure their approval. In case all approaches to approach the users fail, alternative stakeholders and users relevant for the case study will be identified.

Work Packages involved: WP3, WP5 and WP6

Likelihood: Low

Impact: High

Risk rating: Medium

4.2. Challenging stakeholder interaction

Pedagogical and communicational challenges due to the diversity of education levels, language and cultural background of users and water managers could damage the projects' results. However, eGROUNDWATER researchers are experienced in communicating with stakeholders with very diverse social and educational background. Previous relationships with key stakeholders' groups in each region already exist. To ensure user engagement within the project, materials and tools used in the trainings will be translated to the relevant languages, tested and reformulated if needed.

Work Packages involved: WP2, WP3, WP5 and WP6

Likelihood: Low

Impact: Medium

Risk rating: Low

4.3. Limited user uptake of the platform and its mobile app

User engagement in eGROUNDWATER will be carried out through different channels. The main tool developed for data submission and results provisions is the ICT-based platform. Local users will be directly involved in the platform development and app adaptation through the Local Stakeholder Focus Group. Measures to ensure users engagement with the platform include translating the app interface to their local language, including information relevant for the local users' activities, and providing enhanced information to assist users into decision making.

Work Packages involved: WP3 and WP6

Likelihood: Low

Impact: Medium

Risk rating: Low

4.4. Lack of reliability of the data

Data provided by users and used in the project to enhance the knowledge and management of groundwater systems could lack consistency. To ensure the reliability of the provided data, cross-validation processes will be executed using data from different sources. This will allow to identify inconsistencies of the provided information. Furthermore, spatial variability will also be accounted to identify contradictory records and to correct errors. In all cases, data will be corrected to account for existing and verified biases. Finally, data may be discarded in case of verified wrong measurements.

Reasons for repeated low quality or reliability of the data provided will be analysed, and correcting measures will be designed when possible to correct systemic errors. Also, the models and the way data is used within the EIS will be adapted to each case study and to the quality of the produced and available data (that depends also of the groundwater system complexity). Furthermore, data quality will be evaluated through its consistency with the objectives of each case study.

Work Packages involved: WP3, WP4 and WP5

Likelihood: Medium

Impact: High

Risk rating: High

4.5. Regulatory constrains for monitoring

eGROUNDWATER depends on data collection for improving the knowledge and management of groundwater systems. Limitations for data collection and constant monitoring of relevant parameters in the field may hinder the project's outcomes. To mitigate this risk, regulation and possible constrains will be analysed during the first stages of the project for every case study and contingency plans will be developed if needed. No limitations regarding these issues have been identified in the proposed case studies.

Work Packages involved: WP3 and WP5

Likelihood: Low

Impact: High

Risk rating: Medium

4.6. Management issues or lack of consortium engagement

eGROUNDWATER is a collective project that greatly depends on the interaction of all the consortium members. Issues in the consortium, such as lack of collaboration, financial issues, administrative issues, etc. could put in danger the project success. To avoid this issues, sound management and intensive, flexible and open dialog among partners is promoted. Furthermore, several organizational structures have been defined at different levels of control and supervision: Project Coordinator (PC), supported by the Steering Committee and by the Technical Committee. Finally, the consortium has the required proficiency and experience to achieve the proposed objectives. Expectations and goals of the project were clearly expressed and agreed on during the proposal phase and supervision on the project development is been carried out by the PC.

Work Packages involved: all

Likelihood: Low

Impact: Medium

Risk rating: Low

4.7. COVID-19 impact on the work plan

The World Health Organization (WHO) declared the spread of COVID-19 as a pandemic on 11 March 2020. As a result, most European countries have enforced strict border shutdown and lockdown

measures to contain the virus spread. European projects which involve regular travels across Europe and the North Africa are deeply affected.

The COVID-19 crisis may affect eGROUNDWATER in different ways:

- Failure to prepare and submit due deliverables on time
- Failure to achieve milestones on time
- Delays on candidate selection and hiring processes
- Cancelled/postponed project meetings (general assemblies)
- Cancelled/postponed local workshops/events
- Social distancing and restrictions the number of people in meetings
- Not being able to conduct certain activities, such as pilots, demos, on-site trials, lab tests, etc.

Several scenarios were discussed during the remote Kick-off meeting of the project (April 2020) and afterwards. These scenarios included plans and estimations regarding the limitations imposed by the global health crisis. Some partners have experienced delays in the candidate selection and hiring processes due to the interruption of activities suffered during the months of March to June. These delays have required rescheduling the beginning of several tasks.

For activities that required the interaction between partners or stakeholders, measures for actively engaging the users while minimizing risks and guaranteeing a safe environment have been taken. These measures include: 1) organization of strictly online meetings; 2) to provide tools for the remote participation of users and researchers in mixed offline/online meetings; 3) to provide personal protective equipment (PPE) while enforcing the recommended physical distance during in-person meetings. Social distancing and restrictions of the number of people in meetings make necessary the use of online platforms (not always compatible with all stakeholders and collaborators).

All measures and protocols will be announced to the workshop participants with enough time to ensure safety and to promote confidence in the project. The worst-case scenario drafted in April 2020 implied no field work before the end of the first year of the project. However, this scenario has been mostly avoided, as some partners have been able to travel and make visits to the field by October 2020.

In the Moroccan case study, the main limitation imposed by the pandemic has been the delay to install data loggers. BRGM team has already suffered delays because of the current situation. Functioning data loggers are required to obtain enough data for the development of the planned models. All other case studies have also suffered delays regarding the local stakeholder engagement, the creation of the local focus groups and the internal processes for selecting and hiring candidates. The PC of eGROUNDWATER has been in contact with the PRIMA foundation since April 2020 to address the issues generated by the pandemic and to explore solutions and contingency measures.

Work Packages involved: all

Likelihood: High

Impact: Medium

Risk rating: High

5. Quality monitoring of deliverables

To ensure quality and timely release of the deliverables, an internal reviewing and monitoring process has been defined. The due date of deliverables is specified as a project month, with month 1 representing the first month of the project (March 2020). According to the GA, deliverables should be completed on time and submitted to the PRIMA Foundation.

Ultimately, the PC, with the support of the SC and TC is in charge of monitoring the timely submission and quality monitoring of the project deliverables. The PC will inform the Consortium of the upcoming deliverables that are due within 4 months from communication. The quality monitoring of deliverables has three phases:

- 1 In the first phase WP leaders oversee the development of the deliverables contained in their WP. Partners leading the tasks linked to the deliverables will be the main responsible of timing and organizing its delivery. The Deliverable Leading partners are identified in the GA (Annex 1, Page 31) and in the Section 2 of this document. WP leaders are responsible of overseeing the adequate and well-timed organization of activities. This includes organizing tasks, meetings and setting up deadlines for the different partners to fulfill. WP leaders will review the process and the resulting deliverables, and they will provide feedback to the involved partner(s) to guarantee the acceptability of the work. The status of upcoming deliverables should be monitored by the WP leaders and reported to the PC. Any issue or expected delay should be flagged immediately providing an explanation, any planned mitigation action and the expected completion date. In case any partner fails to fulfill the required work, WP leaders will contact the PC to address the situation.
- 2 In the second phase, the WP leader will report the reviewed deliverable to the PC. The PC will evaluate the resulting document and will contact the partners involved if required. The PC may suggest changes to the deliverables to the WP and the Tasks leaders. However, the PC cannot modify the content of the deliverable without prior approval of the Task and WP leader.
- 3 The third phase is the distribution of the deliverable to the PRIMA Foundation. Once the deliverable has been approved and finalized, the PC will submit the deliverable to the PRIMA Foundation. The PC will also upload a copy of the document to the project dedicated platform and will inform the consortium via email.

Each deliverable will have a versioning and contributing history, in which the steps of the internal review of each deliverable will be written down, so that it is possible to track who reviewed each deliverable and when.