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Project deliverables

Deliverable #D5.2

Capacity development workshops and training courses in the AGREEMAR project

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AGREEMAR

Adaptive agreements on benefits sharing for managed aquifer recharge in the Mediterranean region

Deliverable #D5.2

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Executive summary

Deliverable D5.2 provides an overview of the capacity development formats conducted across the four case sites of the AGREEMAR project in Cyprus, Spain, Portugal and Tunisia. These formats play a vital role in enhancing the institutional and managerial capacities of stakeholders, ensuring the sustainability and long-term adoption of the project outcomes.

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Abstract

To achieve the primary goal of the AGREEMAR project - promoting adaptive and innovative water management strategies alongside integrated governance models - it is essential to enhance the institutional and managerial capacities of stakeholders. Strengthening these capacities ensures the effective adoption and long-term sustainability of the project's outcomes. To this end, capacity development formats must be needs-driven, participatory and aligned with the project's overarching strategy. The various formats are specifically designed to incorporate diverse perspectives, fostering inclusivity and collaboration among stakeholders. This approach ensures that the project's capacity building efforts are both impactful and highly relevant to local contexts.

Deliverable 5.2 marks a significant step in advancing capacity development within the AGREEMAR project. It provides an overview of the methodology and offers concrete examples from each country, summarizing the activities conducted across the four demonstration sites throughout the project's implementation.

This initial version of the deliverable will be updated to reflect additional capacity development formats planned for the remaining duration of the AGREEMAR project. For example, a training session is scheduled to take place in Tunisia in January 2025, further reinforcing the project's commitment to stakeholder engagement and capacity building.

Table of contents

List of figures

List of tables

Abbreviations

AGREEMAR	Adaptive Agreements on Benefits Sharing for Managed Aquifer Recharge in the Mediterranean Region
ATPNE	Association Tunisienne pour la Protection de la Nature et de l'Environnement (Tunisian Association of Nature and Environment Protection)
CA	Constellation Analysis
ECoE	ERATOSTHENES Centre of Excellence
INAT	Institut National Agronomique de Tunisie (National Agronomic Institute of Tunisia)
LNEC	Laboratório Nacional de Engenharia Civil (National Laboratory for Civil Engineering, Portugal)
MAR	Managed Aquifer Recharge
NGO	Non-Governmental Organization
PRIMA	Partnership for Research and Innovation in the Mediterranean Area
TUD	Technische Universität Dresden
UPV	Universitat Politècnica de València (Polytechnic University of Valencia)
WWTP	Wastewater Treatment Plant

Capacity development workshops and training courses in the AGREEMAR project

1 Introduction

The overarching objective of AGREEMAR is to assist stakeholders of the Mediterranean region in advancing MAR techniques as a strategy for climate adaptation. To archive this and to ensure the long-term adoption of project outcomes, one of the core foci of the project is on strengthening the institutional and managerial capacities of stakeholders. This is accomplished through different formats such as workshops and training sessions that are designed to be needs-driven, participatory, sustainable, aligned with the project's overall strategy, and inclusive of diverse perspectives.

1.1 Project context

The AGREEMAR project aims to assist decision-makers in the safe use, sustainable planning and management of Managed Aquifer Recharge (MAR) techniques. One example of a functioning MAR system is shown in Figure 1. This will be achieved through *"adaptive agreements on benefits sharing for MAR in the Mediterranean region"* facilitated by MAR feasibility maps and numerical groundwater models. In this way, the contribution of MAR to ensure water security in the Mediterranean region shall be strengthened. Although MAR is a globally recognised method for the sustainable management of water resources, inadequate planning tools and lack of incentive systems hinder its widespread implementation. AGREEMAR seeks to address and overcome these barriers. The project results will be tested at four demonstration sites in the Mediterranean region located in Cyprus, Spain, Portugal, and Tunisia.

Figure 1. Infiltration pond of the Akrotiri MAR scheme in Cyprus

1.2 Purpose, scope and outlook of D5.2

To achieve the key goal of the AGREEMAR project and to foster adaptive and innovative water management strategies and the adoption of integrated governance models, it is essential to strengthen the institutional and managerial capacities of stakeholders (objective 3 of the AGREEMAR project). This will ensure that the project results are effectively adopted and maintained.

The project's capacity-building approach is firmly anchored in the needs and expectations of stakeholders. Building on the definition of the UN for capacity development:

"Capacity-building is defined as the process of developing and strengthening the skills, instincts, abilities, processes and resources that organizations and communities need to survive, adapt, and thrive in a fast-changing world." (United Nations 2024)

The different capacity development formats of the AGREEMAR project are tailored to specific objectives:

- Familiarize stakeholders with MAR technologies and associated benefits including ecological benefits;
- Develop technical skills as groundwater flow modelling, MAR feasibility mapping and enable them to apply the learned skills in local contexts;
- Promote knowledge on MAR governance and MAR-related legislations;
- Foster collaborative thinking, such as on governance mechanisms, MAR feasibility criteria, etc.;
- Encourage active participation, dialogue, and collaboration among stakeholders to co-create solutions and validate project outcomes, such as MAR feasibility maps;
- Provide participants with tools and resources for continued learning and application beyond the sessions, ensuring the sustainability of the project outcomes.

By this, the different capacity development formats of the AGREEMAR project are designed to engage all local stakeholders involved in MAR. Specific target groups for selected activities can be found in section 2.

1.3 Principles of the AGREEMAR capacity development workshop and trainings portfolio

The AGREEMAR project's capacity development workshops and training sessions are grounded in five core principles to ensure relevance, sustainability, and impact:

- **Needs-based and context-specific**: tailored to the specific needs of the participants and relevant to their local context. Understanding the participants' background, challenges, and objectives was crucial to ensure that the content is practical and applicable. All training materials are provided in English and the local language.
- **Participatory and interactive**: active participation is encouraged to foster engagement and learning. Interactive methods are used like group discussions, role-playing, and hands-on activities to facilitate knowledge sharing and skill development.
- **Sustainability and long-term impact**: for long-term results, participants were provided with tools, resources, and support to continue learning and applying skills after the workshop. Follow-up activities coordinated by the demo site leads further enhance this.
- **Integration of portfolio with project strategy and outreach**: workshops and trainings planning align with the overall project goals, dissemination, and exploitation strategies to ensure that training is not isolated but rather an integral part of the broader project, fostering greater engagement, knowledge transfer, and long-term sustainability.
- **Inclusive and culturally sensitive:** portfolio was set up in a way to ensure that divers perspectives (e.g., gender, cultural background) are respected and that all participants feel empowered to contribute.

By adhering to these principles, the AGREEMAR project's capacity development workshops and training sessions are positioned to foster a well-rounded, knowledgeable, and inclusive community of stakeholders capable of advancing MAR techniques across the Mediterranean region.

1.4 Methodology

1.4.1 Assessment of capacity and training needs

As part of the stakeholder mapping and analysis activities, the training and capacity needs were assessed through extensive interviews with the identified key stakeholders from the four demo regions. These interviews were conducted during the first year of the project. In addition to presenting the project concept and key outcomes, the opinions of the key stakeholders were gathered, along with their interest in applying the project outcomes and their prior experiences.

1.4.2 Capacity development formats used

Capacity development encompasses various formats designed to enhance individuals' or organizations' skills, knowledge, and capabilities. Below are the different formats listed that are used in the AGREEMAR project for capacity development:

Trainings: Structured courses designed to develop specific skills or knowledge areas, ranging from a few hours to several days. These programs are delivered in-person or online.

Workshops: Short and focused sessions that bring together participants to learn about specific topics. These include presentations, discussions, and interactive activities and can be in-person or online as Webinars.

Coaching and Mentoring: One-on-one support provided by a more experienced individual (coach or mentor) to help another person develop specific skills or achieve personal/professional goals.

Field Visits: Opportunities for individuals to visit other organizations or communities to learn from their practices. This format promotes knowledge sharing and inspiration.

Conferences and Symposia: Bringing together individuals from various organizations or sectors to share knowledge, research, and innovations. These events include keynote speakers, panel discussions, and interactive sessions.

2 Selection of capacity building examples in each AGREEMAR demo region

The AGREEMAR project includes a series of capacity development sessions conducted by the project team across the four demonstration regions. This chapter presents a selection of examples of these initiatives. For a more comprehensive overview of additional current activities, please visit the project website: AGREEMAR News.

2.1 Republic of Cyprus

2.1.1 Training: Groundwater Modelling for the Akrotiri Demo Site

Date: 22 - 23 May 2024

Organiser: TUD and ECoE

Target audience: Water Development Department (national water authority), Geological Survey Department (most participants involved in groundwater modelling for MAR)

Primary capacity development objective: familiarizing to the data and model concept, developing groundwater model scenarios, developing technical skills in groundwater flow modelling, applying an innovative, practical hands-on tool (the INOWAS platform), applying the learned knowledge, skills, and tools to the local context

Link to training materials: see Annex A1.1

Agenda: see Annex A1.2

In May 2024, TUD together with ECoE organised a training at the Water Development Department in Nicosia, Cyprus. The event was attended by representatives of Water Development Department and Geological Survey of Cyprus.

The first day was dedicated to stakeholder interactions aiming to present and discuss the groundwater flow model for the Akrotiri groundwater system, including the existing MAR scheme. It covered the presentation of available data, model concept and boundary conditions. The model assumptions were discussed in detail and the participants provided valuable feedback for further data acquisition and additional boundary conditions. Following the presentation of the preliminary flow model, all participants discussed and developed model scenarios, which were implemented as a further step after the simulation period was extended to assess future changes in the study area.

Figure 2. AGREEMAR groundwater modelling workshop and training course in Cyprus, 22-23 May 2024

The second day focussed on training the stakeholders on the use of the web-based numerical groundwater flow modelling platform INOWAS. The training included the step-by-step model setup of the present steady-state Akrotiri groundwater flow model on the web-based INOWAS platform. Despite the high complexity of the groundwater flow model due its manifold boundary conditions and layering, the participants succeeded in setting up and running their own model. The main intention to train the stakeholders is to provide them with a hands-on tool that they can further use for their own purposes also after the AGREEMAR project is finished.

2.1.2 Workshop: MAR Feasibility Maps

Date: 29 January 2024

Organiser: ECoE

Primary capacity development objective: raising awareness on MAR feasibility and relevant tools and approaches to map these in Cyprus, insights into groundwater modelling

Target audience: water authority

In January 2024, a workshop was held at the Water Development Department facilities, where Dr. Panagiotou, the Principal Investigator for the local partner (ECoE) of the AGREEMAR project, presented recent findings on identifying feasible regions within the Republic of Cyprus for MAR system installations.

The presentation included a brief overview of the main objectives and research approach of the AGREEMAR project, highlighting the role of water-related stakeholders in ensuring the validity and practical relevance of the results. A step-by-step outline of the project's implementation stages was shared, covering all information sources used to compile the findings as well as the key assumptions made.

Figure 3. Dr. Constantinos Panagiotou presented the MAR feasibility maps to representatives of Water Development Department of Cyprus on 29 January 2024

The discussion also focused on the development of the groundwater model for Akrotiri and the planned training activities to be held in Cyprus later this year.

2.1.3 Mentoring: Master thesis on MAR feasibility mapping

Date: 27 September 2023

Organiser: ECoE and TUD

Primary capacity development objective: supporting student in their professional career.

In September 2023, the first thesis defence within the master's programme in Hydrology at the Department of Hydro Sciences, TUD, was conducted under the framework of the AGREEMAR project. The thesis, titled "A participatory approach for MAR feasibility mapping considering physical and non-physical criteria applied to Cyprus", was supervised by Dr. Catalin Stefan and co-supervised by Dr. Konstantinos Panagiotou from the ECoE in Cyprus.

The research focused on utilizing a GIS-based multi-criteria decision analysis to develop feasibility maps for MAR. The study integrated both physical and non-physical criteria, emphasizing a participatory approach to enhance the mapping process. The outcomes of the thesis are published in the paper:

Panagiotou, C.F., Eisenreich, S., Barouta, O.T., Chekirbane, A., Martins, T., Neophytidesa, S., Khemiri, K., Stefan, C. (2024) Identification of feasible regions for managed aquifer recharge in the Republic of Cyprus using a co-participative multi-criteria decision analysis. Groundwater for Sustainable Development, 27, 101323. https://doi.org/10.1016/j.gsd.2024.101323.

2.1.4 Field Visit: Regional Agricultural Authorities of Nabeul Governorate and Korba MAR facility

Date: 28 February 2024

Organiser: ECoE and INAT

Primary capacity development objective: insights and exchange on the quality status of aquifer systems and risks with the use of treated wastewater

Target audience: consortium members of AGREEMAR

As part of the cooperation between Cyprus and Tunisia in the AGREEMAR project, Dr Panagiotou of the ECoE and Prof Chekirbane of INAT visited the headquarters of the Agricultural Authority in Nabeul Governorate in Tunisia in February 2024 to discuss the aquifer quality in Korba and the risks associated with the use of treated wastewater for MAR. This field visit provided an overview of the MAR components of the facility and the operational challenges. Groundwater samples and data from nearby monitoring wells were to be delivered to Dr Panagiotou to assess seawater intrusion near the site.

2.2 Júcar Water District, Spain

2.2.1 Workshop: Validation of MAR Feasibility Maps

Date: 17 November 2023

Organiser: UPV

Primary capacity development objective: enhancing stakeholders' understanding and ability to validate and interpret MAR feasibility maps, building knowledge around the potential application of a MAR governance framework in Spain, encouraging collaborative thinking on governance mechanisms, enhancing stakeholders' familiarity with existing and potential MAR-related legislation, fostering discussions for future policy development, facilitating collaborative discussions and brainstorming to improve shared understanding of MAR-related challenges and solutions

Target audience: Water Commissary and the Hydrological Planning Office of the Júcar Basin Authority

In November 2023, the UPV team of the AGREEMAR project held a workshop with the Water Commissary and the Hydrological Planning Office of the Júcar Basin Authority. The purpose of this meeting was to validate the MAR feasibility maps and their weighting coefficients.

The team presented a comprehensive overview of the proposed methodology, including different suitability maps for intrinsic suitability, water availability and water demand, all of which received general validation. Subsequently, a constructive discussion on the weighting coefficients for each element took place, leading to the validation of the final feasibility maps. The methodology was embraced as a practical tool to continue stakeholder engagement in MAR. Additionally, key advancements of the AGREEMAR project were presented, contributing to the comprehensive discussions. The meeting also covered diverse topics, including brainstorming on the potential application of a MAR governance framework in Spain and discussions on MAR legislation.

2.2.2 Field Visit: Algar Dam and Belcaire Pond

Date: 7-8 September 2023

Organiser: UPV

Primary capacity development objective: discussion and exchange

Target audience: consortium members of AGREEMAR and local stakeholders of the Spanish study areas

In conjunction with the mid-term meeting in Valencia, the project partner UPV organised a field visit on the second day to the two project case sites: the Algar Dam and the Belcaire Pond. The visit fostered open, constructive discussions between the project members and local stakeholders, enabling consortium members to gain valuable insights and deepen their understanding of local water resource management challenges in these areas. Also included in the field visit were the springs of Quart and San José, the first one benefited from the MAR activity by the Algar Dam, and the second one, providing excess flows to be incorporated to the Belcaire pond.

Figure 4. AGREEMAR consortium members and local stakeholders at Algar reservoir near Valencia, Spain

2.2.3 Symposia: AGREEMAR at the International Training Course on "Conjunctive Management of Surface and Groundwater in the Mediterranean"

Date: 17-19 May 2023

Organiser: UPV and UNESCO

Primary capacity development objective: increasing the understanding of the AGREEMAR project and its contributions to water governance and MAR systems; encouraging the development and adoption of innovative approaches to address water management challenges

Target audience: water managers and policy makers of Mediterranean countries

On 17-19 May 2023, the UPV taught the international training course on "Conjunctive Management of Surface and Groundwater in the Mediterranean," held at the Júcar River Basin Agency in Valencia (Spain), in which Prof. Joaquín Andreu also presented the AGREEMAR project. This training event, organized by UPV and UNESCO, brought together a diverse group of experts in water management, including researchers and policymakers from Mediterranean countries as Albania, Bosnia and Herzegovina, Lebanon, Libya, Mauritania, Montenegro, Morocco, Algeria, and Tunisia.to explore innovative solutions for water resource challenges in the Mediterranean.

Prof. Andreu introduced the main objectives of the AGREEMAR project, focusing on its potential contributions to conjunctive water management and managed aquifer recharge systems. Following the presentation, an in-depth discussion took place, where participants actively engaged with the project's concepts and shared insights on potential outcomes.

The high level of engagement from the attendees highlighted a growing interest in conjunctive management methodologies. This interest further emphasizes the recognition of diverse water sources as key to enhancing water management strategies. The discussions also demonstrated a shared commitment to developing innovative approaches that address sustainability and the region's pressing water issues.

Through this training session, the AGREEMAR project successfully raised awareness about its goals and potential impact. Feedback from participants validated the importance of adopting comprehensive and integrated approaches in water governance, reinforcing the project's relevance to current and future water management challenges.

Figure 5. Prof. Joaquín Andreu (UPV) highlighted the project's main objectives during the international Training Course on "Conjunctive Management of Surface and Groundwater in the Mediterranean" in Valencia, Spain

2.3 Alentejo, Portugal

2.3.1 Workshop: Integrated Water Resources Management and Aquifer Recharge

Date: 18 April 2024

Organiser: LNEC

Primary capacity development objective: increased awareness and familiarizing with the technologies and tools developed in the project, including feasibility maps, regional and local numerical models, and Constellation Analysis (CA), to enhance the stakeholders understanding of the resources available for improved water management. Capacity building through interactive learning, joint identification of implementation barriers and alternative water management strategies, and by visiting ongoing physical models.

Target audience: all stakeholders dealing with MAR at national, legal, and local level

In April 2024, the AGREEMAR partner LNEC organised a stakeholder interaction workshop, attended by 20 representatives from national, regional, and local institutions. During the workshop, the tools developed to date in the AGREEMAR project, such as feasibility maps, regional and local numerical model, and CA, were presented. Stakeholders were invited to participate in collaborative, interactive exercises, using real-time tools like word cloud and criteria weighting for dynamic discussion of the results.

A participatory approach was taken to construct new CA, focused on addressing the key question: "Since MAR is a successful technology in so many countries, what do you still consider to be the main factors that condition its implementation in Portugal?". The five participatory exercises, carried out individually, in small groups, and in a plenary session, sparked lively debates. These discussions explored new alternatives for water use and management in the Alentejo region, including MAR, with the aim of reaching future agreements.

Figure 6. AGREEMAR stakeholder workshop organised by LNEC on 18 April 2024 in Lisbon, Portugal

2.3.2 Workshop: MAR Feasibility Maps and Constellation Analysis

Date: 18 October 2023

Organiser: LNEC

Primary capacity development objective: Introducing and educating stakeholders about the constellation analysis method and its relevance to stakeholder interaction, facilitating a deeper understanding of the project's purpose and objectives, understanding how to leverage and maintain the MAR feasibility maps developed for the region, enhancing practical understanding of the groundwater models and concepts and applications relevant to the project, fostering a collaborative environment where stakeholders can engage with the AGREEMAR team, promoting dialogue and feedback during the Q&A session, strengthening institutional relationships

Target audience: water authorities and policy makers of the Alentejo region, technical experts and engineers dealing with MAR, environmental agencies, Academics and Researchers, NGOs and interest groups

In October 2023, the final MAR feasibility maps developed by the AGREEMAR team at LNEC were presented to the main regional stakeholder at the demo region in Portugal, the Water Authority of Alentejo (APA/ARH-Alentejo).

The meeting audience was welcomed by the LNEC's Hydraulics Department Head and APA/ARH-Alentejo Director. A first introduction to constellation analysis method was also presented showing its potential to set up the scene concerning stakeholder's interaction within AGREEMAR purpose. The Q&A session that followed allowed for the AGREEMAR team to clarify the potential uses of the project outcomes. Finally, a short visit to the ongoing physical models, within APA/ARH-Alentejo's overall interest, was conducted in LNECs Hydraulics Department pavilion. A more detailed program is shown below.

Figure 7. Presentation of MAR feasibility maps in Portugal to the Water Authority of Alentejo on 18 October 2023

2.3.3 Field Visit: Comporta Study Area

Date: 10 March 2023

Organiser: LNEC

Primary capacity development objective: collection of information to feed the numeric model

Target audience: project partner

In March 2023, LNEC conducted a field visit to the study area Comporta as part of the AGREEMAR project. The primary objective of this visit was to gather additional data to feed the numerical. Additionally, the visit provided valuable insights into the local dynamics of water use and demand, the availability of primary water sources, and the potential benefits of MAR implementation. The findings highlighted how MAR could positively impact not only the involved stakeholders but also the broader community, including farmers and tourism-related businesses.

2.3.4 Conference: 8th European Congress of the International Association for Hydro-Environment Engineering and Research (IAHR)

Date: 3-7 June 2024

Organiser: LNEC

Primary capacity development objective: collection of information to feed the numeric model

Target audience: researchers and stakeholders

In June 2024, the AGREEMAR team participated in the European Congress IAHR with this year's theme "Water – Across Boundaries" in Lisbon, Portugal. The congress began with side-events, including a course on "Web-based numerical modelling of managed aquifer recharge applications", given by Dr. Jana Glass from TU Dresden. This course provided participants with hands-on experience in setting up, calculating and visualising numerical groundwater flow models. The attendees explored various simulation scenarios focused on implementing technical solutions for MAR. The course also featured presentations by AGREEMAR project partners demonstrating the optimization of MAR sites in Cyprus and Portugal. Dr. Constantinos F. Panagiotou from the ERATOSTHENES Centre of Excellence (Cyprus) and Marcel Horovitz from the National Laboratory for Civil Engineering (LNEC, Portugal) highlighted real-world applications of the modelling platform.

Figure 8. *Training course on web-based modelling of MAR applications as a side event to the 8th European Congress of the 8th IAHR in Lisbon, Portugal*

The AGREEMAR partners contributed with nine presentations across the themes "Aquifers, rivers, reservoirs and dams" and "Governance and water resources management". Additionally, Dr. Teresa E. Leitão (LNEC) and Dr. Catalin Stefan (TU Dresden) co-moderated one the session.

2.4 Chiba watershed, Tunisia

2.4.1 Workshop: Between INAT and the Tunisian Association of Nature and Environment Protection (ATPNE) in Korba

Date: 13 November 2023

Organiser: INAT

Primary capacity development objective: enhancing the understanding of MAR benefits, especially ecological benefits; introducing local stakeholder to the new MAR feasibility mapping methodology and demand for MAR agreements

Target audience: environmental NGOs (those involved in biodiversity monitoring, environmental protection, and lagoon management in the Korba region, decision-makers involved in water resources management in the Korba region, local communities and environmental enthusiasts

In November 2023, the INAT team met the representatives of the Tunisian Association of Nature and Environment Protection (ATPNE). The NGO has the objective of contributing to nature and environment protection in CapBon peninsula in general and specifically in the Korba region. ATPNE Korba is active in dealing with the biodiversity of Korba lagoon and it is one of the most relevant stakeholders of the AGREEMAR project in Chiba demo site.

During the meeting, INAT team introduced the AGREEMAR project and highlighted the importance of ecological demand in MAR feasibility mapping in Chiba basin. The ATPNE team reported that they have an ongoing investigation of the lagoon, and they noticed some fauna change due to the received amount of treated

wastewater from Korba WWTP. However, they can't specify for the moment the exact ecological demand of the lagoon because of the lack of hydrological and biological data. ATPNE team showed a high interest in agreements and proposed to be a part of it.

The two teams agreed to pursue collaboration and the involvement of ATPNE in the future events that will be organised by AGREEMAR in Tunisia.

Figure 9. On 13 November 2023, INAT team met with representatives of Meeting between INAT and the Tunisian Association of Nature and Environment Protection (ATPNE) in Korba, Tunisia

2.4.2 Workshop: Validation of MAR Feasibility Maps

Date: 13 July 2023

Organiser: INAT

Primary capacity development objective: understanding the MAR feasibility mapping process; enable stakeholders to actively engage in the validation and discussion of the MAR feasibility maps by applying participative techniques like the pairwise matrix method for weighting thematic layers; strengthen stakeholders' ability to critically evaluate and validate the thematic maps; fostering Interdisciplinary collaboration and networking; equipping stakeholders with practical tools and skills to contribute to decision-making processes regarding sustainable water resource management and the development of MAR systems

Target audience: water authorities at national, regional, and local level, Socio-Economic Institutions, academic and research institutions, particularly those specializing in hydrology, water management, and rural engineering

In July 2023, the AGREEMAR team at INAT organized a participatory workshop at the Department of Rural Engineering, Water, and Forests at the Agronomic National Institute of Tunisia (INAT) to validate the MAR feasibility maps and the WP2 results with key stakeholders from national, regional, and local institutions.

The team presented the MAR feasibility mapping process, including thematic maps for intrinsic site suitability, water availability and water demand. These maps were reviewed, discussed and validated by the attendees. For the Chiba watershed demo region, the MAR feasibility maps were developed by applying different weights to the three thematic layers. The final maps were generated through a participatory approach, with stakeholders engaging in the weighting process using pairwise matrix method.

Figure 10. Participants of the AGREEMAR validation workshop organised by INAT on 13 July 2023 in Tunisia

2.4.3 Field Visit: National Agronomic Institute of Tunisia

Date: 27 February to 13 March 2023

Organiser: INAT

Primary capacity development objective: understanding components of the Chiba basin, gather necessary data for the elaboration of a model

Target audience: Researcher from UPV

Between February and March 2023, Syrine Ghannem, a member of the AGREEMAR project from the UPV in Spain, visited the National Agronomic Institute of Tunisia to undertake a stay as part of work package 3. During her stay, she visited various Tunisian institutions to gain a deeper understanding of the Chiba basin's components and collect essential data for developing a model of the basin in the AQUATOOL Decision Support System. This model is being used to simulate different management strategies and support water governance related to aquifer recharge.

3 Conclusion

As part of the AGREEMAR project, various capacity building formats have been implemented across all four demonstration sites. These primarily included training sessions, workshops and field visits, which have already been conducted in all four countries.

Additionally, mentoring activities were carried out within the Cypriot case site and as part of a master's thesis. The AGREEMAR project was also represented at a symposium in Valencia, Spain, and at an international conference in Lisbon, Portugal, where it was presented to experts.

Overall, all planned formats have been successfully tested for the implementation of capacity development activities. Further training activities are scheduled for the rest of the project duration, including an additional training session in Tunisia in January 2025. This deliverable will be updated accordingly, with additional examples to be included in the future.

4 References

United Nations (2024): Academic Impact. Capacity-Building. Available online at https://www.un.org/en/academic-impact/capacity-building

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Annex 1.

As an example, the annexes below provide both a link to the training materials and the agenda from the training on groundwater modelling for the Akrotiri Demo Site held in Cyprus in May 2023.

A1.1 Example of training materials

Link to the materials of the training on groundwater modelling for the Akrotiri Demo Site (Cyprus):

AGREEMAR Training course on numerical model build-up on INOWAS platform

A1.2 Example of agenda

Table 1. Agenda of the training on groundwater modelling for the Akrotiri Demo Site (Cyprus)

DAY 1: 22 MAY 2024 9:00-13:00 Training Course Part 1: Numerical Modelling of Akrotiri MAR Site
Introduction to the AGREEMAR project
Model description: study area, model objectives, general concept, boundary conditions, first results, web-based implementation on the INOWAS platform
Scenarios development and further steps
Outlook and close-up

DAY 2: 23 MAY 2024 9:00-13:00 Training Course Part 1: Setup of Akrotiri Numerical Model on INOWAS platform
Introduction and objectives of training course, expectations
Introduction to the INOWAS platform and the numerical modelling tools
Hands-on-exercise to setup the Akrotiri groundwater flow model on the INOWAS platform
Discussion and close-up