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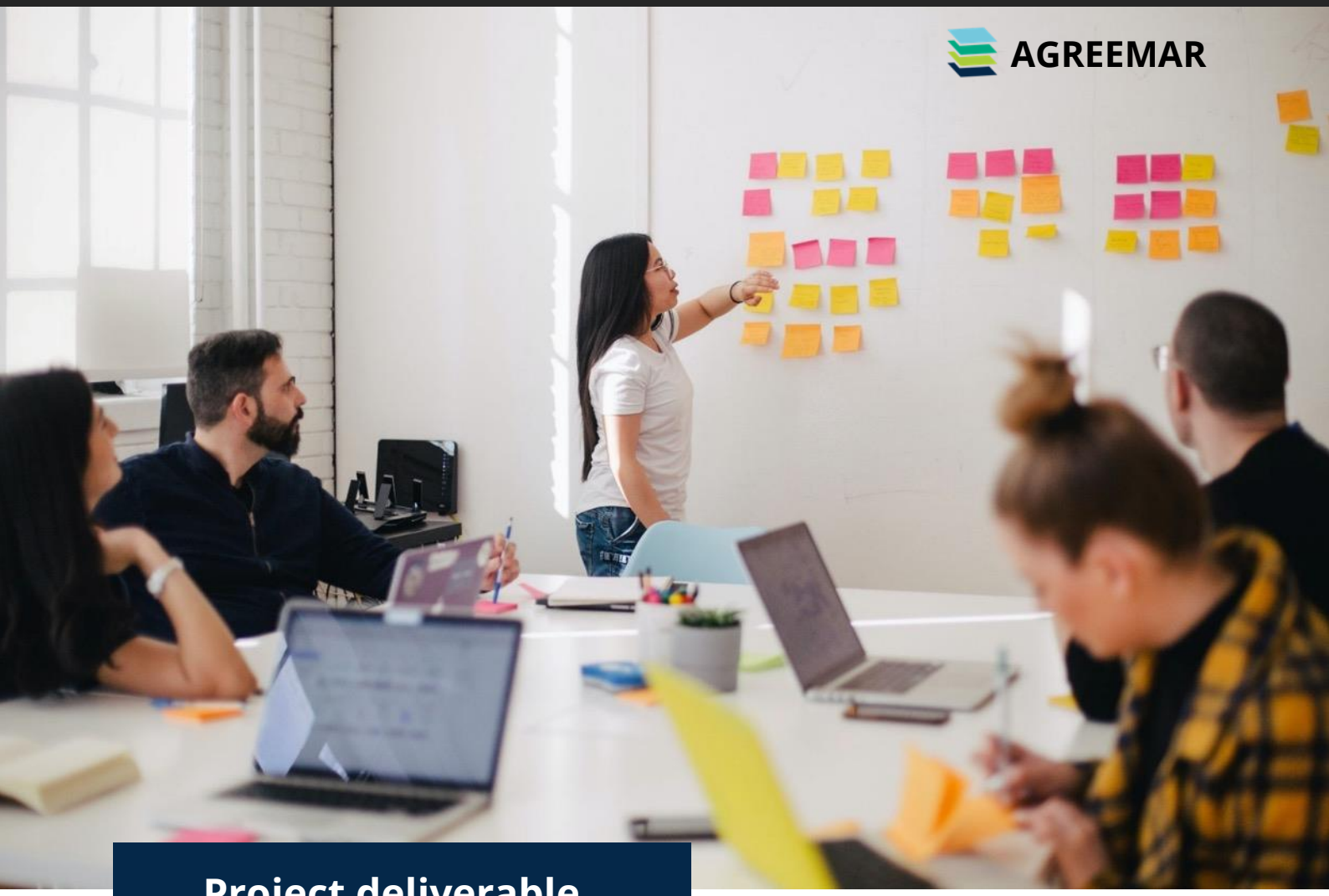

Project deliverable

Deliverable #D1.1a

Preliminary analysis of project-relevant stakeholders

Funded by

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AGREEMAR

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

Deliverable #D1.1a

Preliminary analysis of project-relevant stakeholders

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Executive summary

To pave the way for successful stakeholder engagement within the AGREEMAR project and beyond, Deliverable 1.1a (D1.1a) identifies for each project demo site the key stakeholders at three levels that are significant for the joint development of an overall governance agenda for MAR and its participatory implementation at the local level. In addition, initial assumptions are made about the needs and competences of the identified stakeholders in relation to MAR. D1.1a is the first step of a more detailed stakeholder analysis that will form the basis for a Dissemination and Communication Strategy and Plan (DCSP).

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1.0	23.08.2022	Anika Conrad	With contributions from project partners LNEC, UPV, INAT
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1.2	30.08.2022	Anika Conrad	With contributions from the project coordinator TUD

Abstract

PURPOSE Stakeholder engagement is an essential tool for achieving relevant outcomes in water management. It is preceded by a thorough identification of actors, enablers, knowledge brokers, affected parties, etc. and a clear understanding of their role, competences and needs in relation to the topic under discussion.

APPROACH Deliverable 1.1a (D1.1a) represents the first step towards successful stakeholder engagement. By means of secondary research and validation by the project partners in the field, specific stakeholder maps and initial assumptions of the needs, competences and spheres of influence related to a MAR project have been developed and identified for each project demo site. Throughout the course of the project, these preliminary findings will be further validated and refined through interviews and workshops with project partners and identified key stakeholders from the demo sites.

CONCLUSIONS The demo sites are similar in their institutional set-up and similar stakeholder groups appeared to be significant for engagement in a MAR project. At the general (national) level, water, environmental and land development authorities as well as geological and hydrological research institutes emerged as important stakeholders. At the regional level, the main stakeholders are water and wastewater utilities, municipalities, farmers and end-user organisations, and environmental NGOs. When examining the main interests of stakeholders regarding the design of MAR clustered into 3 feasibility actors' group: water demand, water availability and intrinsic site suitability, actors for water demand are more likely to be found at the local and regional level and for intrinsic site suitability at the general and regional level. Furthermore, as expected, water demand interests are more likely to be represented by civil society, while intrinsic site suitability and water availability are more likely to be shaped at the political and scientific level. On this basis, more specific needs categories have been identified.

OUTLOOK Based on this document, a more detailed stakeholder analysis will be carried out, which will form the basis for a customized dissemination and communication strategy and plan (DCSP) for stakeholder engagement within the AGREEMAR project and beyond. For instance, the identification of most of the local stakeholders (specific to the MAR system) is still pending at this stage and can only be finalized after the completion of the MAR feasibility maps (WP2) where the location of the MAR pilot sites is defined. Accordingly, the stakeholders analysis needs to be seen as a continuous exercise that will be validated and refined over the course of the project.

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1 Introduction

1.1 Motivation

Stakeholder involvement is widely recognized as an essential tool for achieving relevant outcomes in water management. First standards for stakeholder and public engagement in decision-making processes were introduced after the Eco Summit 1992 with the Rio Declaration on Environment and Development (Rio declaration 1992). This was taken up by the Dublin Declaration on Water and Sustainable Development (Dublin Principles 1992), which made stakeholder participation one of the guiding principles, followed by Agenda 21 (Agenda 21 1992), emphasizing public participation as a means of ensuring better compliance with measures to develop more effective environmental regulations.

Appropriate stakeholder engagement requires a thorough identification of the actors, enablers, knowledge brokers, affected parties, etc. and the understanding of their role, competences and needs in relation to the topic dealt with.

1.2 Purpose and scope

Deliverable 1.1a (D1.1a) presents the first step of the detailed stakeholder analysis (Task 1.1) with the aim of presenting specific stakeholder maps for each project demo site. These maps provide the bases of the overall task's objective to analyze the roles, responsibilities and needs of stakeholders who have an influence on and interest in the project implementation and resulting outcomes. D1.1a already makes initial assumptions about competences and needs of the different stakeholder groups. These and the stakeholders' maps will be continuously validated and refined in the further course of Task 1.1. The analysis conducted for D1.1a is therefore to be seen as a continuous exercise and cannot be considered complete and final.

Based on the stakeholder maps, a more detailed stakeholder analysis will be carried out, forming the ground for a dissemination and communication strategy and plan (DCSP) for stakeholder engagement within the AGREEMAR project and beyond.

1.3 Methodology

The following methods were used for the completion of D1.1a:

a) desk research: approach, stakeholder identification and analysis
b) expert judgement (based on contributions from consortium members): validation of results by project demo site partners
c) the preliminary results will be further validated and refined through interviews and workshops with identified key stakeholders of pilot sites

1.4 Definitions

The analysis considered the following spatial levels of stakeholder influence:

- GS general stakeholders to be involved in the co-design of the feasibility maps and the co-creation of the general governance framework for MAR at **national or basin level**;
- RS regional stakeholders for finalizing, approving and promoting the implementation of the agreements in their region (**catchment or sub-catchment scale**);
- LS local **MAR system** stakeholders responsible for adopting the location-specific agreements and potentially implementing the improved MAR system

2 Stakeholder maps for each project demo site

The stakeholder analysis explores the stakeholder landscape including the influence and interest of main stakeholders in MAR at four project demo sites in Europe on a general scale (national level), regional scale (watershed level) and local scale (MAR system). For each demo site, a brief general description of the site is presented followed by a stakeholder map and a more detailed stakeholder analyses provided in table form including additional information on the stakeholder competences and initial assessments of their needs in relation to MAR. More information on the AGREEMAR demo sites is provided on the project website: https://www.agreemar.inowas.com/demo-sites/.

The chosen structure of the **stakeholder maps** enables the viewer to see at a glance how the individual stakeholders shape the feasibility of MAR and which main interest or influence they have in the planning and management of MAR, presented in 3 thematic layers: intrinsic site suitability, water demand and water availability. An additional classification of stakeholders into societal sectors (policy/decision maker, practitioners/civil and science) and spheres of influence (general, regional and local) supports a quick analysis of the stakeholder landscape and their balance of power on a potential MAR facility in the demo site. Identifying power and interest imbalances in MAR planning is important for optimally designing the governance framework to balance these disproportions in turn.

However, gaps in these first stakeholder maps do not necessarily mean that no stakeholders are represented in this area, as this is a preliminary analysis. On the local scale, in particular, the project team was not yet able to identify specific stakeholders of the potential MAR system, as the selection of location is only finalized with the completion of the feasibility maps, in project month 15 (August 2023).

Figure 1. World map with AGREEMAR demo sites

2.1 Chiba watershed, Tunisia

In Tunisia, project activities will focus on the Chiba watershed belonging to the Cap Bon peninsula, which is one of the most productive agricultural areas in Tunisia (Figure 2, right). The lessons learned from an abandoned MAR site located in this watershed will be used to improve the planning of a new MAR site in this region safeguarding the scarce water resources of the Chiba dam (Figure 2, left).

Site specific objectives of the demo site include:

- To reduce groundwater exploitation and recover water levels
- To reduce and mitigate seawater intrusion
- To increase water availability for irrigation by storing irrigation surplus in the aquifer
- To valorize treated wastewater in MAR
- To increase MAR lifetime
- Increasing the acceptance of the population towards MAR and a better and just distribution of the benefits associated with it

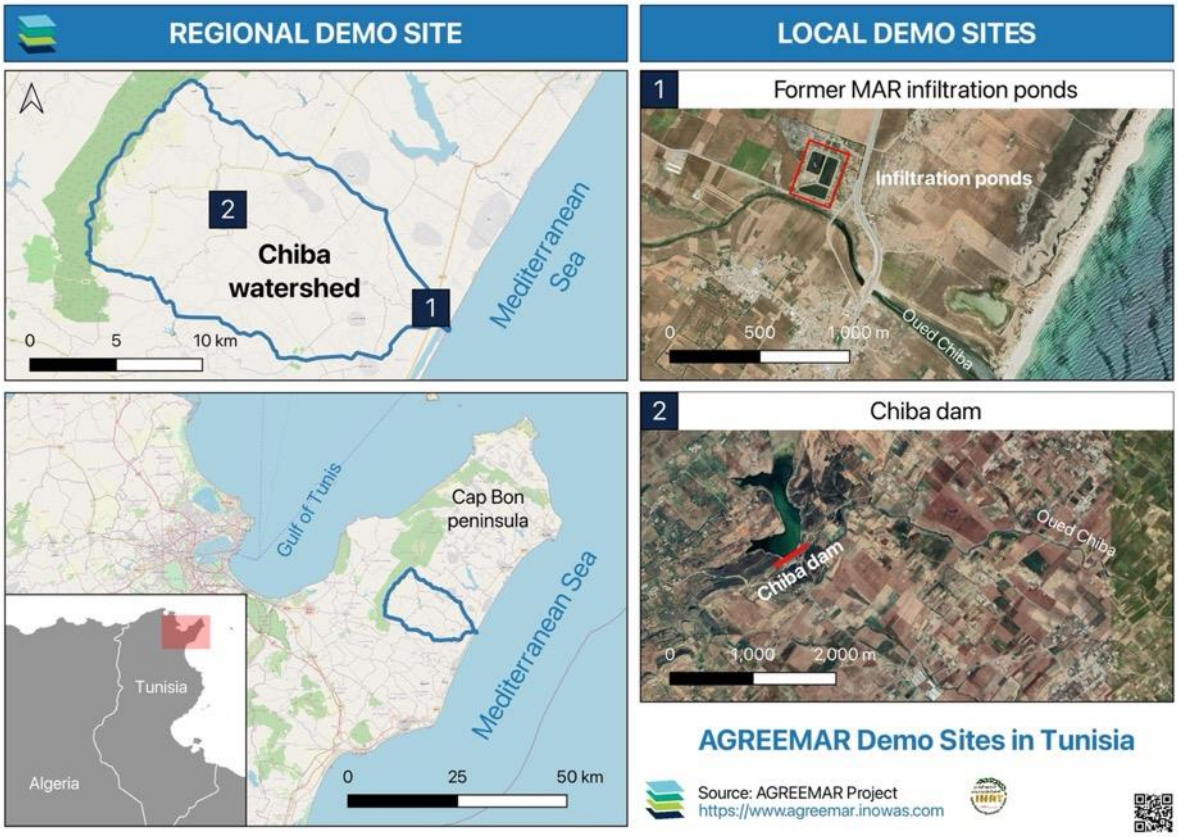

Figure 2. Spatial maps of the regional and local demo sites in Tunisia

Stakeholder map

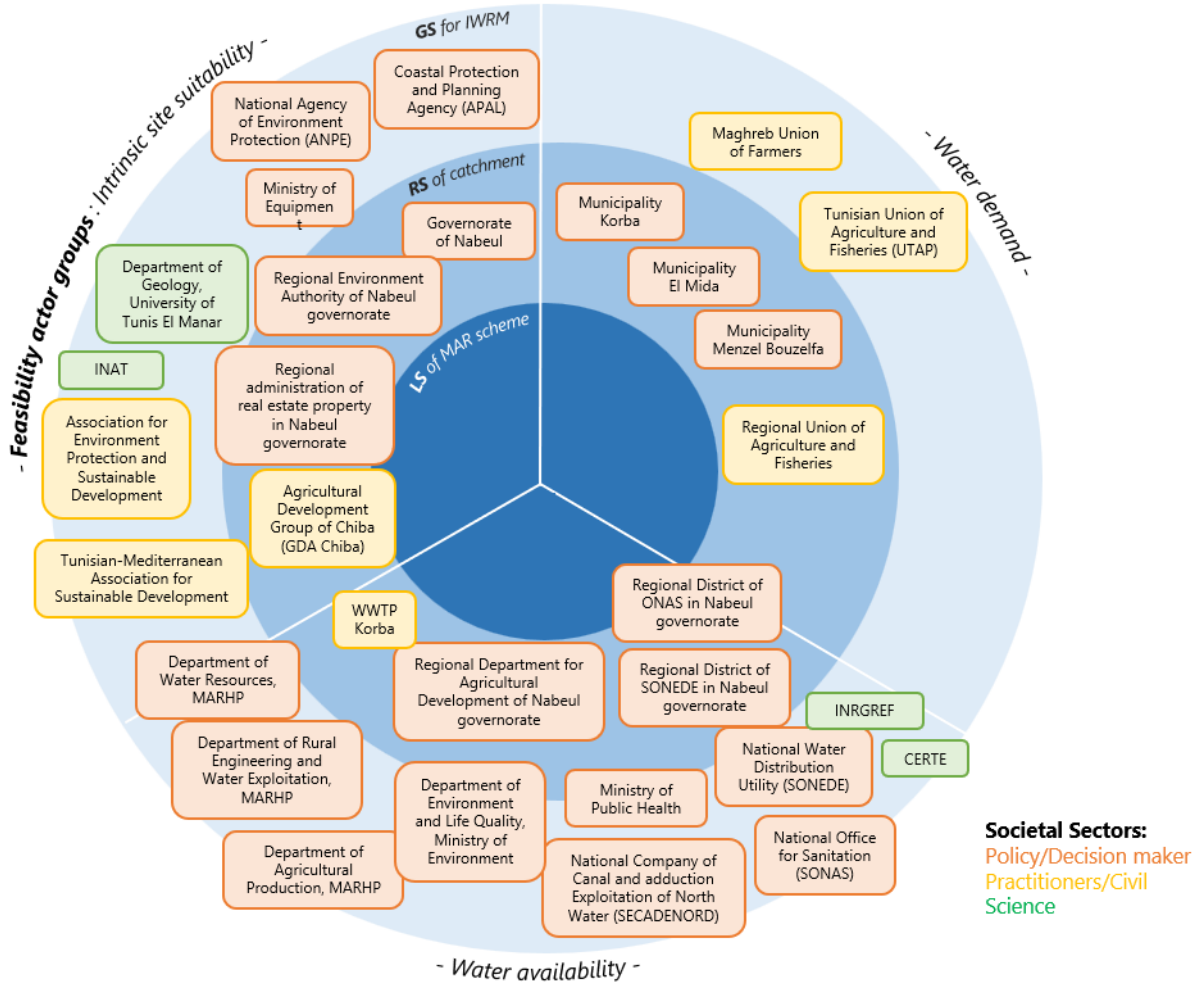

Figure 3. Specific stakeholder map for the demo site in Tunisia

Detailed overview of relevant stakeholders

Table 1: Specific demo site stakeholders of the Chiba watershed, Tunisia, grouped according to the scale of their influence and the topic of feasibility mapping they are interested in and first assumptions about their role and needs in relation to MAR

Specific demo site stakeholders	**Role and competencies related to MAR**	**Needs related to MAR/project results** (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	**Stakeholder group**	**Scale**	**Thematic mapping**
Ministry of Agriculture, Hydraulic Resources and Fisheries (MARHP):	General water resources management: mobilization and development of water resources, water management projects and agricultural withdrawals as well as providing water resources for domestic and other uses	Improved protection and management of scarce water resources towards climate resilience and sustainability; increased water availability and environmental integrity; improved usage of non-conventional water sources; fair distribution of water resources and benefits associated with water management	Water authority	general	Water availability
Department of Water Resources (DGRE)	Monitors groundwater levels Prepares plans and programs for harnessing and using agricultural water resources				
Department of Agricultural Production (DGPA)	Improves water efficiency, controlling agricultural withdrawals				
Department of Rural Engineering and Water Exploitation (DGGREE)					
Department of Environment and Life Quality, Ministry of Environment	Environmental related aspects, urban sanitation	Increased level of protection, restoration and upgrading of ecosystems while ensuring the protection of people and property in face of extreme events; improved water resources management; maximise environmental benefits of MAR systems	Environment authority with water aspects	general	Water availability
Ministry of Public Health	Water control	Ensured sufficient water quality to maintain human health	Authority with water aspects	general	Water availability

Specific demo site stakeholders	Role and competencies related to MAR	Needs related to MAR/project results (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	Stakeholder group	Scale	Thematic mapping
Ministry of Equipment	Flood management	Reduced risks for floods and associated damages	Authority with water aspects	general	Water availability
Regional Department for Agricultural Development (CRDA) of Nabeul governorate	Collects water use charges, policing of water use, implements water resources consumption policies	Improved protection and management of scarce water resources towards climate resilience and sustainability; maintained long-term, safe and efficient water supply; fair distribution of water resources and benefits associated with water management	Water authority	regional	Water availability / intrinsic site suitability
Governorate of Nabeul	Responsible for political, economic and social development of the governorate	Sustainable development	Development and planning authority	regional	Water availability
Regional Environment Authority of Nabeul governorate	Implements water resources protection policies	Increased level of protection, restoration and upgrading of ecosystems while ensuring the protection of people and property in face of extreme events; improved water resources management; maximise environmental benefits of MAR systems	Environment authority	regional	Intrinsic site suitability
Regional administration of real estate property in Nabeul governorate	Manages land property and allocation	Clarify land ownership while elaborating MAR feasibility maps	Land authority	regional	Intrinsic site suitability
National Water Distribution Utility (SONEDE)	Maintains drinking water supply and distribution	Ensured and improved quality, continuity and efficiency of water services, considering economic and financial sustainability and the principles of social and environmental responsibility; improved use of alternative methods such as MAR to increase infrastructure efficiency and achieve environmental sustainability goals such as the increased use of treated wastewater; improved management of demand peaks and decreased stress in natural systems; fair distribution of water and its benefits	Water utility	general	Water availability
Regional District of SONEDE in Nabeul governorate	Implements drinking water supply policies in Nabeul governorate	Ensured and improved quality, continuity and efficiency of water services, considering economic and financial sustainability and the principles of social and environmental responsibility; improved use of alternative methods such as MAR to increase infrastructure efficiency and achieve environmental sustainability goals such as the increased use of treated wastewater; improved management of	Regional water utility	regional	Water availability

Specific demo site stakeholders	Role and competencies related to MAR	Needs related to MAR/project results (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	Stakeholder group	Scale	Thematic mapping
		demand peaks and decreased stress in natural systems; fair distribution of water and its benefits			
National Office for Sanitation (ONAS)	Water treatment and sanitation services	Increased and safe usage of treated WW; feasible requirements for water quality of effluents within the scope of technical purification options	Wastewater agency	general	Water availability
Regional District of ONAS in Nabeul governorate	Implements water treatment and sanitation strategies in Nabeul governorate	Increased and safe usage of treated WW; feasible requirements for water quality of effluents within the scope of technical purification options	Regional wastewater agency	regional	Water availability
Wastewater Treatment Plant of Korba	Collects and treats wastewater of Korba city and provides purified water (e.g. for managed aquifer recharge as done in Chiba watershed between 2008-2015	Purchase of purified water at a good price; Feasible requirements for water quality of effluents within the scope of technical purification options	Wastewater treatment utility	local	Water availability
Coastal Protection and Planning Agency (APAL)	Responsible for the rehabilitation and management natural coastal areas and sensitive areas	Improved restoration and management of natural and water resources	Coastal agency	general	Water availability
National Agency of Environment Protection (ANPE)	Protects surface and groundwater against any pollution kind	Increased level of protection, restoration and upgrading of ecosystems while ensuring the protection of people and property in face of extreme events; improved water resources management; maximise environmental benefits of MAR systems	Environment agency	general	Water availability / intrinsic site condition
National Company of Canal and adduction Exploitation of North Water (SECADENORD)	Responsible national company of transferred water from North to CapBon and Sahel of Tunisia	Improved infrastructure and management of transferred water in Chiba basin	Water engineering company	general	Water availability
Municipality Korba	Ensures water security and integrity of the environment on local level, collect water use charges	Climate resilient and sustainable water management; protected citizens and property under extreme weather events, particularly flash floods and prolonged droughts; maintained long-term, safe and efficient water supply by infrastructure maintenance	Municipality	regional	Water demand

Specific demo site stakeholders	Role and competencies related to MAR	Needs related to MAR/project results (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	Stakeholder group	Scale	Thematic mapping
Municipality El Mida	Ensures water security and integrity of the environment on local level, collect water use charges	Climate resilient and sustainable water management; protected citizens and property under extreme weather events, particularly flash floods and prolonged droughts; maintained long-term, safe and efficient water supply by infrastructure maintenance	Municipality	regional	Water demand
Municipality Menzel Bouzelfa	Ensures water security and integrity of the environment on local level, collect water use charges	Climate resilient and sustainable water management; protected citizens and property under extreme weather events, particularly flash floods and prolonged droughts; maintained long-term, safe and efficient water supply by infrastructure maintenance	Municipality	regional	Water demand
Tunisian Union of Agriculture and Fisheries (UTAP)	Feasibility studies, monitoring and evaluation, research and assessment for the agricultural sector	Increased water availability and efficiency for/in irrigation; improved water quality, equitable distribution of water and benefits between farmers	Farmer union	general	Water demand
Regional Union of Agriculture and Fisheries (URAP), Nabeul governorate	Settles disputes and conflicts related to water availability, represents farmers' interests through organization of national and international fairs, exhibitions, and promotion of partnerships	Increased water availability and efficiency for/in irrigation; improved water quality, equitable distribution of water and benefits between farmers	Farmer union	regional	Water demand
Maghreb Union of Farmers	Settles disputes and conflicts related to water availability	Increased water availability and efficiency for/in irrigation; improved water quality, equitable distribution of water and benefits between farmers	Farmer organisations	general	Water demand
Agricultural Development Group of Chiba (GDA Chiba)	Manages agricultural water consumption in Chiba basin, water end users	Increased water availability and efficiency for/in irrigation; improved water quality, equitable distribution of water and benefits between end-users	Community organization	local	Water demand / intrinsic site suitability
Water Research and Technology Center (CERTE), Borj Cedria Technopark	Provides expertise and useful data; experimental testing and evaluation of intrinsic site suitability	Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general	Water availability / intrinsic site suitability
National Research Institute of Rural	Provides knowledge, strategic advice and useful data	Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general	Water availability /

Specific demo site stakeholders	**Role and competencies related to MAR**	**Needs related to MAR/project results** (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	**Stakeholder group**	**Scale**	**Thematic mapping**
Engineering, Water and Forests (INRGREF)					intrinsic site suitability
Institut National Agronomique de Tunisie (INAT)	Provides knowledge, strategic advice and useful data	Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general	Water availability / intrinsic site suitability
Department of Geology, University of Tunis El Manar	Provides knowledge, strategic advice and useful data	Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general	Intrinsic site suitability
Association for Environment Protection and Sustainable Development	Strategic advice and studies on environmentally sustainable groundwater solutions and sustainable development	Support / Funds for environmental education in the field of sustainable water management practices and sustainable groundwater use	Environmental NGO	general	Intrinsic site suitability
Tunisian-Mediterranean Association for Sustainable Development	Strategic advice and studies on environmentally sustainable groundwater solutions and sustainable development	Exemplary projects to promote ecotourism, active citizenship, and sustainable development in the region	Environmental NGO	general	Intrinsic site suitability

2.2 Cyprus (entire island)

The project activities in Cyprus will consider the entire island of Cyprus (Figure 4, right) with a focus on two watersheds, which are considered by the local water authority to be the most suitable for MAR: Akrotiri basin and Yermasoyia basin (Figure 4, left).

Site specific objectives of the demo site include:

- To improve groundwater quality, particularly reduce nitrate pollution caused by agricultural practices
- To mitigate seawater intrusion
- To increase water availability and optimize the water allocation among the end-users
- To valorize treated wastewater in MAR
- To increase acceptance of the population towards MAR and a better and just distribution of the benefits associated with it

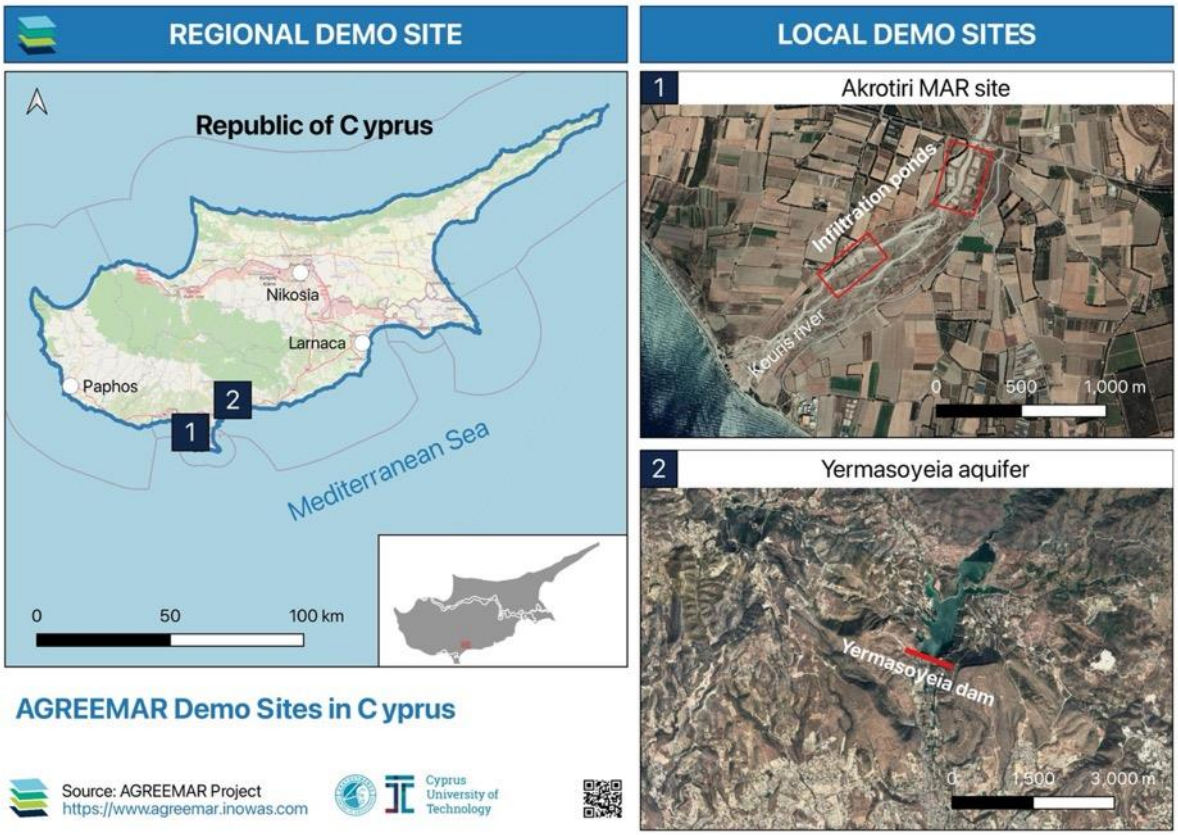

Figure 4. Spatial maps of the regional and local demo sites in Cyprus

Stakeholder map

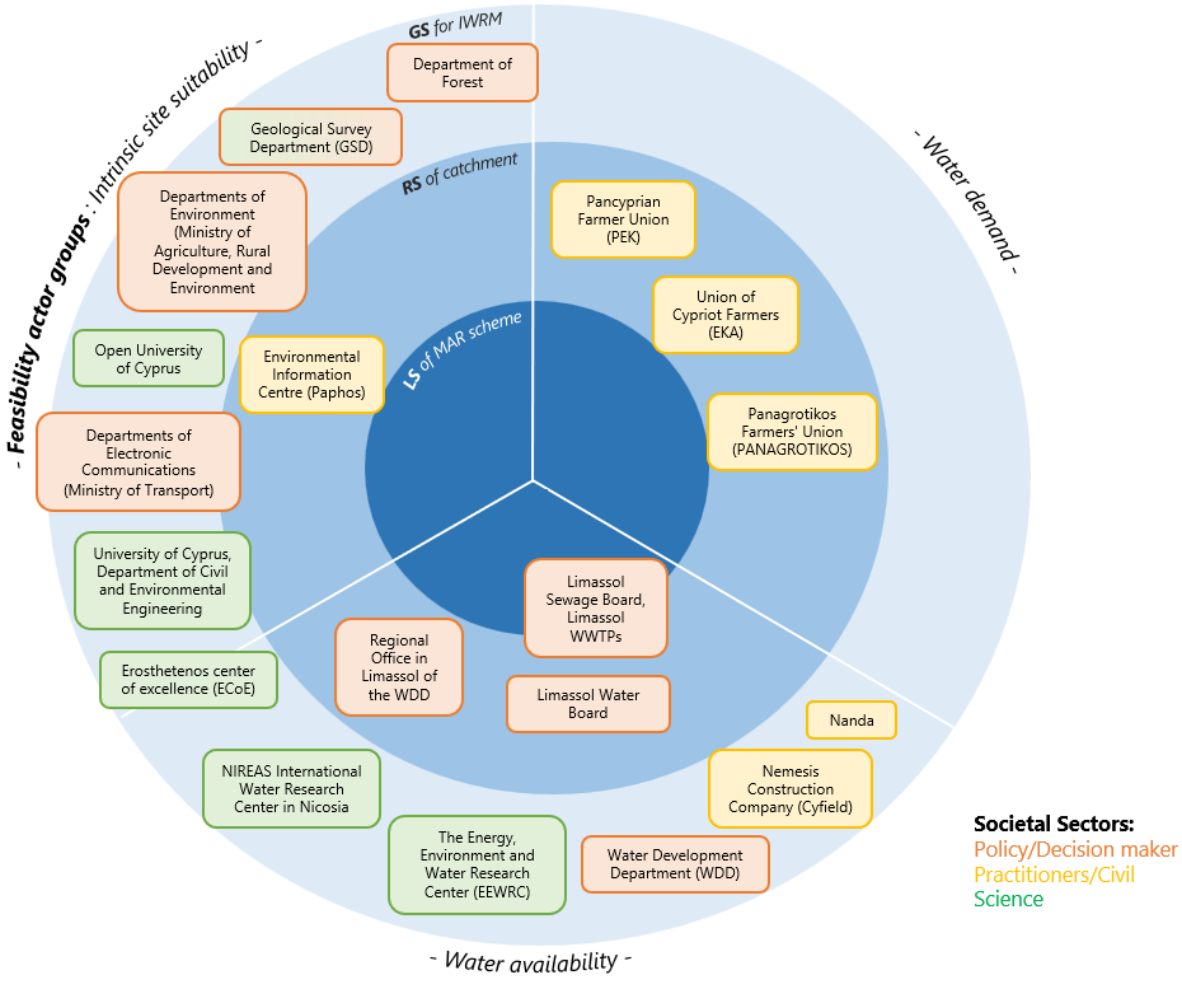

Figure 5. Specific stakeholder map for the demo site in Cyprus

Detailed overview of relevant stakeholders

Table 2: Specific demo site stakeholders in Cyprus, grouped according to the scale of their influence and the topic of feasibility mapping they are interested in and first assumptions about their role and needs in relation to MAR

Specific demo site stakeholders	**Role and competencies related to MAR**	**Needs related to MAR/project results** (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	**Stakeholder group**	**Scale** (general / regional / local)	**Thematic mapping** (water demand / water availability / intrinsic site suitability)
Water Development Department (WDD)	Responsible for the protection and sustainable development as well as the rational management and supply of the water resources of Cyprus; water sampling and monitoring the water status and the water balance; planning and construction of waterworks (dams, reservoirs, water conveyance projects, irrigation and water supply networks, relevant waste water collection and treatment works), design of water resources protection policies	Ensured protection and management of scarce water resources towards climate resilience and sustainability; maintained long-term, safe and efficient water supply; fair distribution of water resources and benefits associated with water management; improved maintenance and development of water conveyance infrastructure	Water authority and supplier	general	Water availability
WDD regional office in Limassol	Responsible for the protection and sustainable development as well as the rational management and supply of the regional water resources of Limassol; Monitoring the water status and the water balance of water bodies in Limassol region; assist General office on the implementation and/or revision of national policies and agendas	Ensure and improved quality, continuity and efficiency of water services; improved use of alternative methods such as MAR; increased and safe use of treated wastewater; improved management of demand peaks and decreased stress in natural systems; fair distribution of water and its benefits	Water authority and supplier	regional	Water availability
Geological Survey Department (GSD)	Responsible for the identification, the exploitation and protection of mineral and groundwater resources, the investigation and assessment of the geological	Access and to determine the impact of the MAR site on the dynamic evolution of groundwater resources of surrounding regions in terms of	National geological agency	general	Intrinsic site suitability / water availability

Specific demo site stakeholders	Role and competencies related to MAR	Needs related to MAR/project results (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	Stakeholder group	Scale (general / regional / local)	Thematic mapping (water demand / water availability / intrinsic site suitability)
	environment and geohazards, the monitoring and assessment of seismicity, the investigation of the foundation conditions, the protection and promotion of sites of geological and mining heritage and the production and dissemination of unbiased geo-information to society, collection of hydrogeological data of high temporal resolution for managing short-term events, existing reports relevant to the multi-criteria decision analysis process,	quantity and quality; protection of groundwater resources			
Department of Environment, Ministry of Agriculture, Rural Development and Environment	Assesses environmental impact of development projects, promote licensing of waste-water facilities, protection of areas included in NATURA 2000 network, designs environmental protection policies	Increased level of protection of NATURA areas, restoration and upgrading of ecosystems while ensuring the protection of people and property in face of extreme events; improved water resources management; maximise environmental benefits of MAR systems	Climate and environment authorities	general	Intrinsic site suitability
Department of Forests	Knowledge regarding the relevance of MAR implementation in Forest Policy and Legislation, protection of biodiversity, enhancement of forest	Mitigate adverse impacts of climate changes, enhancement of forest protection functions, protection of biodiversity, enhancement of forest recreation and production of forest products.	Public organisation	general	Intrinsic site suitability
Limassol Water Board	Maintain and expand the water supply network, planning and implementing technical projects with full respect to the environment, imposing water rates to ensure the financing of development	Ensured and improved quality, continuity and efficiency of water services; increase of water resources,	Water supply utility	regional	Water demand

Specific demo site stakeholders	Role and competencies related to MAR	Needs related to MAR/project results (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	Stakeholder group	Scale (general / regional / local)	Thematic mapping (water demand / water availability / intrinsic site suitability)
	projects and the operation of the Board, on a non-profit-making basis, upgrading the quality of the services provided, as well as by modernizing its procedures.	improved management of demand peaks;			
Limassol Sewerage Board; Limassol Wastewater Treatment Plants (Moni, etc.)	Monitoring and maintenance of the Treatment wastewater stations, ensure the quality of the effluents	Purchase of purified water at a good price; Feasible requirements for water quality of effluents within the scope of technical purification options	WWTP	regional	Water availability
Farmer associations: Pancyprian Farmer Union (PEK), Union of Cypriot Farmers (EKA), Panagrotikos Farmers' Union (PANAGROTIKOS)	Settles disputes and conflicts related to water availability, represent farmers' interests	Increased water availability and efficiency for/in irrigation; improved water quality, equitable distribution of water and benefits between end-users / farmers, increased social awareness regarding the MAR benefits	Farmer organisation	regional	Water demand
Eratosthenes Center of Excellence (ECoE)	Provides scientific knowledge on monitoring surface water management based on earth observation data, integration of skills for assessing the groundwater sustainability, expertise on implementing multi-decision analysis to identify suitable regions for MAR, strategic advice and knowledge transfer to relevant stakeholders	Increase the scientific capacity regarding the Integrated Water Management, expand the scientific and social networking, explore new collaborations for research ideas and opportunities for putting research results into practice	Research institute	general	Intrinsic site suitability / water availability
Cyprus Institute (The Energy, Environment and Water Research Center (EEWRC))	Provides scientific knowledge on monitoring soil properties based on in-situ equipment, integration of skills for assessing the groundwater sustainability and the socio-economic impacts, strategic	Increase the scientific capacity regarding the Integrated Water Management, expand the scientific and social networking, explore new collaborations	Research institute	general	Intrinsic site suitability / water availability

Specific demo site stakeholders	Role and competencies related to MAR	Needs related to MAR/project results (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	Stakeholder group	Scale (general / regional / local)	Thematic mapping (water demand / water availability / intrinsic site suitability)
	advice and knowledge dissemination to relevant stakeholders	for research ideas and opportunities for putting research results into practice			
Cyprus University of Technology	Provides scientific knowledge on water management based on earth observation data, integration of skills for assessing the groundwater sustainability, expertise on implementing multi-decision analysis to identify suitable regions for MAR, strategic advice and knowledge dissemination to relevant stakeholders	Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general	Intrinsic site suitability / water availability
Open University of Cyprus					
University of Cyprus, Department of Civil and Environmental Engineering					
Agricultural Research Institute	Develops and/or adapts scientific findings and technologies for enhancing the agricultural development to achieve secure supply of safe, good quality products, strategic advice	Enhance secure supply of safe, good quality products produced by methods financially, environmentally and socially sustainable. Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general	Intrinsic site suitability
Environmental Information Centre (Paphos)	Provide knowledge on local ecosystems, flora and fauna, promote social awareness	Ensured integrity and protection of nature and quality of life; improved data and knowledge on environmental impacts and monitoring of MAR systems	Environmental and community NGOs	regional	Intrinsic site suitability
Nemesis Construction Company (Cyfield)	Provides civil and environmental engineering services	Improved water infrastructure	Group of construction companies	general	Intrinsic site suitability / water availability
Nanda	Provides civil and environmental engineering services	Improved water infrastructure	Engineering company	general	Intrinsic site suitability / water availability

2.3 Alentejo and Algarve regions, Portugal

In Portugal, project activities will focus on the Alentejo and Algarve administrative regions consisting of three hydrographic sub-regions: Sado-Mira, Guadiana, and Ribeiras do Algarve (Figure 6, left). Two specific MAR sites (one existing and one potential) could be selected for further investigations and validation of feasibility maps to be developed within the AGREEMAR project (Figure 6, right).

Site specific objectives of the demo site include:

- To increase water availability and quality by making use of non-conventional water sources for MAR (e.g. flash floods, treated wastewater)
- To valorize treated wastewater in MAR
- To ensure sustainable irrigation making use of alternative sources
- To increase acceptance and engagement of the population towards MAR and a better and just distribution of the benefits associated with it
- To increase the implementation of Nature Based Solutions (NBS) coupled with MAR to protect or restore ecosystems, improve natural services and increase the population well-being

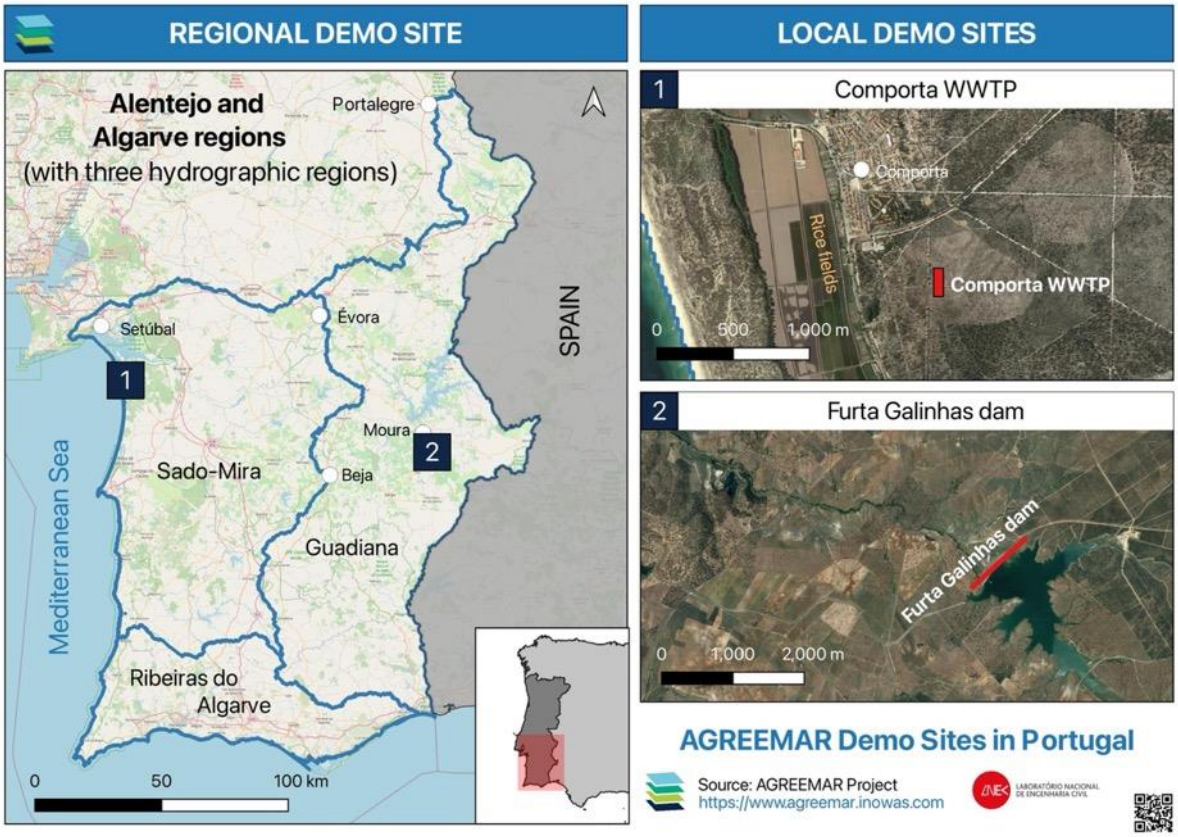

Figure 6. Spatial maps of the regional and local demo sites in Portugal

Stakeholder map

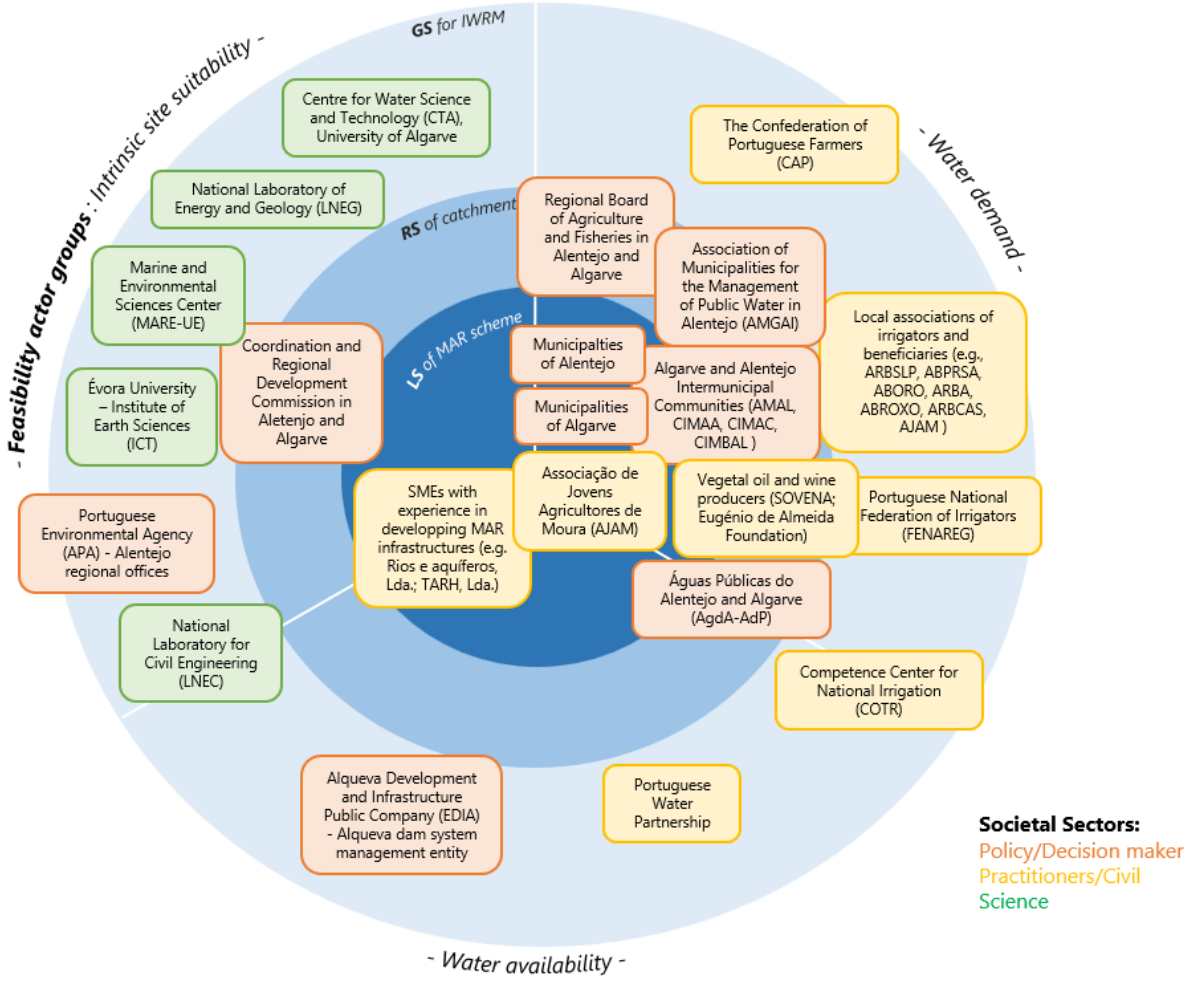

Figure 7. Specific stakeholder map for the demo site in Portugal

Detailed overview of relevant stakeholders

Table 3: Specific demo site stakeholders of the Alentejo and Algarve regions, Portugal, grouped according to the scale of their influence and the topic of feasibility mapping they are interested in and first assumptions about their role and needs in relation to MAR

Specific demo site stakeholders	**Role and competencies related to MAR**	**Needs related to MAR/project results** (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	**Stakeholder group**	**Scale** (general / regional / local)	**Thematic mapping** (water demand / water availability / intrinsic site suitability)
Portuguese Environmental Agency (APA) - Alentejo and Algarve regional offices	Monitors public policies for the environment and sustainable development. At the regional scale, through River Basin Administration Offices, plans monitoring and licensing of water resources and its usage; manages infrastructure, etc.	Increased level of protection, restoration and upgrading of ecosystems while ensuring the protection of people and property in face of extreme events; improved water resources management; maximise environmental benefits of MAR systems	National environmental agency and River Basin District Administration	general / regional	Intrinsic site suitability / water availability / water demand
Coordination and Regional Development Commission (CCDR Alentejo and CCDR Algarve)	Coordinates various sectoral policies of a regional scope and implements environmental, territorial and city planning policies, technically supporting local authorities and their associations	Implement, evaluate and monitor, at regional level, environmental and spatial planning policies; benefits from efficient water management policies	Regional Administration Offices	regional	Intrinsic site suitability / water availability / water demand
Alqueva Development and Infrastructure Public Company (EDIA) - Alqueva dam system management entity	Designs, executes, builds and operates the Alqueva Multipurpose Project (EFMA) to extend the irrigation network in Alentejo; fosters agricultural and agro-industrial development in Alqueva and neighbouring regions; monitors and assists new agricultural projects with in-depth knowledge of all the region's agricultural holdings and its beneficiaries and their expectations and intentions in terms of irrigation; collects water use charges from irrigation users (farmers or irrigation associations)	Increased water availability; improved protection of water quality and irrigation area; alternative methods to increase the efficiency of water storage and distribution	Infrastructure development and management public company	regional / local	Intrinsic site suitability / water availability / water demand

Specific demo site stakeholders	**Role and competencies related to MAR**	**Needs related to MAR/project results** (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	**Stakeholder group**	**Scale** (general / regional / local)	**Thematic mapping** (water demand / water availability / intrinsic site suitability)
Águas do Vale do Tejo (AdVT) - Alentejo	Carries out the operation and management of water services related to the Public Supply and Sanitation System of North and Center Alentejo; collects water use charges from public supply (municipalities and local entities/ industrial users)	Ensured and improved quality, continuity and efficiency of water services, considering economic and financial sustainability and the principles of social and environmental responsibility; improved use of alternative methods such as MAR to increase infrastructure efficiency and achieve environmental sustainability goals such as the increased use of treated wastewater to increase availability to keep up with demand peaks and decreased stress in natural systems; ensured fair distribution of water	Water supply and sanitation company	regional	Water demand / water availability
Águas Públicas do Alentejo (AgdA-AdP)	Carries out the operation and management of water services related to the Public System of Integrated Partnership of Alentejo Waters (SPIAAlentejo), under a public partnership regime; collects water use charges from public supply (municipalities and local entities/ industrial users)	Ensured and improved quality, continuity and efficiency of water services, considering economic and financial sustainability and the principles of social and environmental responsibility; improved use of alternative methods such as MAR to increase infrastructure efficiency and achieve environmental sustainability goals such as the increased use of treated wastewater to increase availability to keep up with demand peaks and decreased stress in natural systems; ensured fair distribution of water	Water supply and sanitation company	regional	Water demand / water availability
Águas Públicas do Algarve (AdA-AdP)	Carries out the operation and management of water services related to the Multi-Municipal Water Supply and Wastewater Systems in the Algarve, collects water use charges from public supply (municipalities and local entities/ industrial users)	Ensured and improved quality, continuity and efficiency of water services, considering economic and financial sustainability and the principles of social and environmental responsibility; improved use of alternative methods such as MAR to increase infrastructure efficiency and achieve environmental sustainability goals such as the increased use of treated wastewater to increase availability to keep up with demand peaks and	Water supply and sanitation company	regional	Water demand / water availability

Specific demo site stakeholders	**Role and competencies related to MAR**	**Needs related to MAR/project results** (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	**Stakeholder group**	**Scale** (general / regional / local)	**Thematic mapping** (water demand / water availability / intrinsic site suitability)
		decreased stress in natural systems; ensured fair distribution of water			
Regional Board of Agriculture and Fisheries (DRAP-Alentejo & DRAP-Algarve)	Participates in the formulation and execution sustainable policies in the areas of agriculture, forests, rural development and fisheries, as well as collaborates in food safety and farming activities policies; provides guidelines in improved water usage techniques for farmers	Safer and affordable strategies and policies to secure availability of water for irrigation; improved and safe usage methods of non-conventional water sources	Regional agricultural authority	regional	Water demand
Portuguese Water Partnership	Encourages an effective link between professionals, institutions and companies in order to project the knowledge and skills of the Portuguese water sector in the world, and to catalyze opportunities in international markets and in the area of cooperation within the framework of the development of sustainable projects in line with the Sustainable Development Goals	Promotes innovation in the water sector, facilitating cooperation between companies and research centers; takes an important role in making knowledge in the subject of water resources management available to all possible interested water companies and institutions, both at national and international scales (e.g. Portuguese speaking countries)	Network of water related organizations	general	Water availability
The Confederation of Portuguese Farmers (CAP)	Promotes the development of technical analysis, specialized studies or strategies to be adopted by the irrigation sector, promotes water efficiency, better economy, energy use, and sustainable development; brings together the interests of stakeholders related to water management and the agriculture and rural communities; cooperates with official bodies in planning, developing, implementing irrigation projects; represents around 250 farmers' organizations from all over the country	Increased water availability and efficiency for/in irrigation; equitable distribution of water and benefits for farmers	Partnership of farmer associations and landowners	general	Water demand / water availability

Specific demo site stakeholders	**Role and competencies related to MAR**	**Needs related to MAR/project results** (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	**Stakeholder group**	**Scale** (general / regional / local)	**Thematic mapping** (water demand / water availability / intrinsic site suitability)
Portuguese National Federation of Irrigators (FENAREG)	Aggregates entities dedicated to water management for irrigation, from both surface and groundwater sources, to promote sustainable development and irrigation activities competitiveness	Increased water availability and efficiency for/in irrigation; equitable distribution of water and benefits for farmers; modernization of irrigation activities to increase efficiency.	Irrigators association	general	Water demand / water availability
Competence Center for National Irrigation (COTR)	Contributes to increasing the profitability of irrigators, promoting the economic and environmental sustainability of their farms; Supports the implementation of systems aimed at the efficient use of water and energy in current and new irrigation areas throughout the national territory, encouraging the use of economically and environmentally sustainable agricultural practices	Foster experimentation and dissemination of knowledge; Promote the rational and more efficient use of production factors, namely water and energy	Non-profit association	general	Water demand / water availability
Local associations of irrigators and beneficiaries (e.g., ARBSLP, ABPRSA, ABORO, ARBA, ABROXO, ARBCAS, AJAM[1])	Settles disputes and conflicts related to water availability, representing farmers' interests; builds and provides access to water irrigation structures	Improved water availability and quality; water supply security	End users	local	Water demand / water availability
Municipalities of Alentejo (e.g., Câmara Municipal de Moura (CMM) and Câmara	Ensures water security and integrity of the environment on local level; increases services efficiency, including water supply and environmental services; increases users'	Climate resilient and sustainable water management; protected citizens and property under extreme weather events, particularly flash floods and prolonged droughts; maintained long-	Municipalities / intermunicipal associations	regional / local	Water demand

[1] ARBSLP - Associação de Regantes e Beneficiáros de Silves Lagoa e Portimão; ABPRSA - Associação de Beneficiários do Plano de Rega do Sotavento do Algarve; ABORO - Associação de Beneficiários da Obra de Rega de Odivelas; ARBA – Associação de Regantes e Beneficiários do Alvor; ABROXO - Associação de Beneficiários do Roxo; ARBCAS - Associação de Regantes e Beneficiários de Campilhas e Alto Sado; AJAM - Associação de Jovens Agricultores de Moura

Specific demo site stakeholders	**Role and competencies related to MAR**	**Needs related to MAR/project results** (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	**Stakeholder group**	**Scale** (general / regional / local)	**Thematic mapping** (water demand / water availability / intrinsic site suitability)
Municipal de Grândola (CMG))	awareness to water related issues and implements local strategies to save water	term, safe and efficient water supply by infrastructure maintenance			
Municipalities of Algarve					
Algarve and Alentejo Intermunicipal Communities (AMAL, CIMAA, CIMAC, CIMBAL[2])					
Association of Municipalities for the Management of Public Water in Alentejo (AMGAI)	Ensures the integrated management of water supply services for public consumption and wastewater sanitation	Provides continuity, security and resources to the Public Integrated Water Partnership System for Alentejo (SPPIA Alentejo) at municipal scale, the largest integrated territorial water management system at the national level	Municipal partnership for water management	regional	Water demand

[2] CIMAA - Upper Alentejo Intermunicipal Community (IC); CIMAC - Central Alentejo IC; CIMAL - Coastal Alentejo IC; CIMBAL – Lower Alentejo IC

2.4 Jucar Water District, Spain

In Spain, project activities will focus on the Júcar Water District (Figure 8, left). Two specific MAR sites using two different MAR techniques (infiltration pond and surface dam) could be selected for further investigations and validation of feasibility maps to be developed within the AGREEMAR project: the Belcaire pond (1) and the Algar reservoir (2) Figure 8, right).

Site specific objectives of the demo site include:

- To increase water availability and recovery for irrigation
- To mitigate sea water intrusion
- To improve efficiency of MAR implementation
- To valorize treated wastewater in MAR
- To enable and improve conjunctive use of groundwater and surface water
- To increase acceptance of the population towards MAR and a better and just distribution of the benefits associated with it

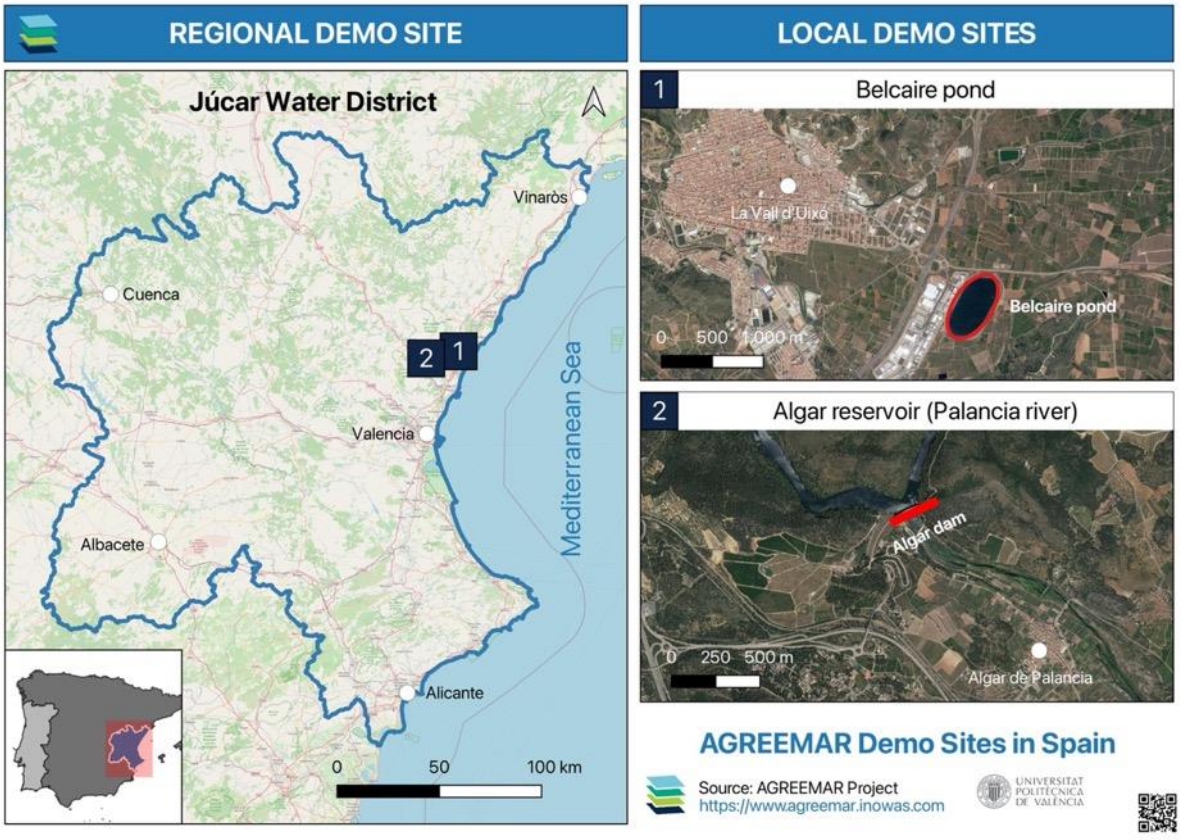

Figure 8. Spatial maps of the regional and local demo sites in Spain

Stakeholder map

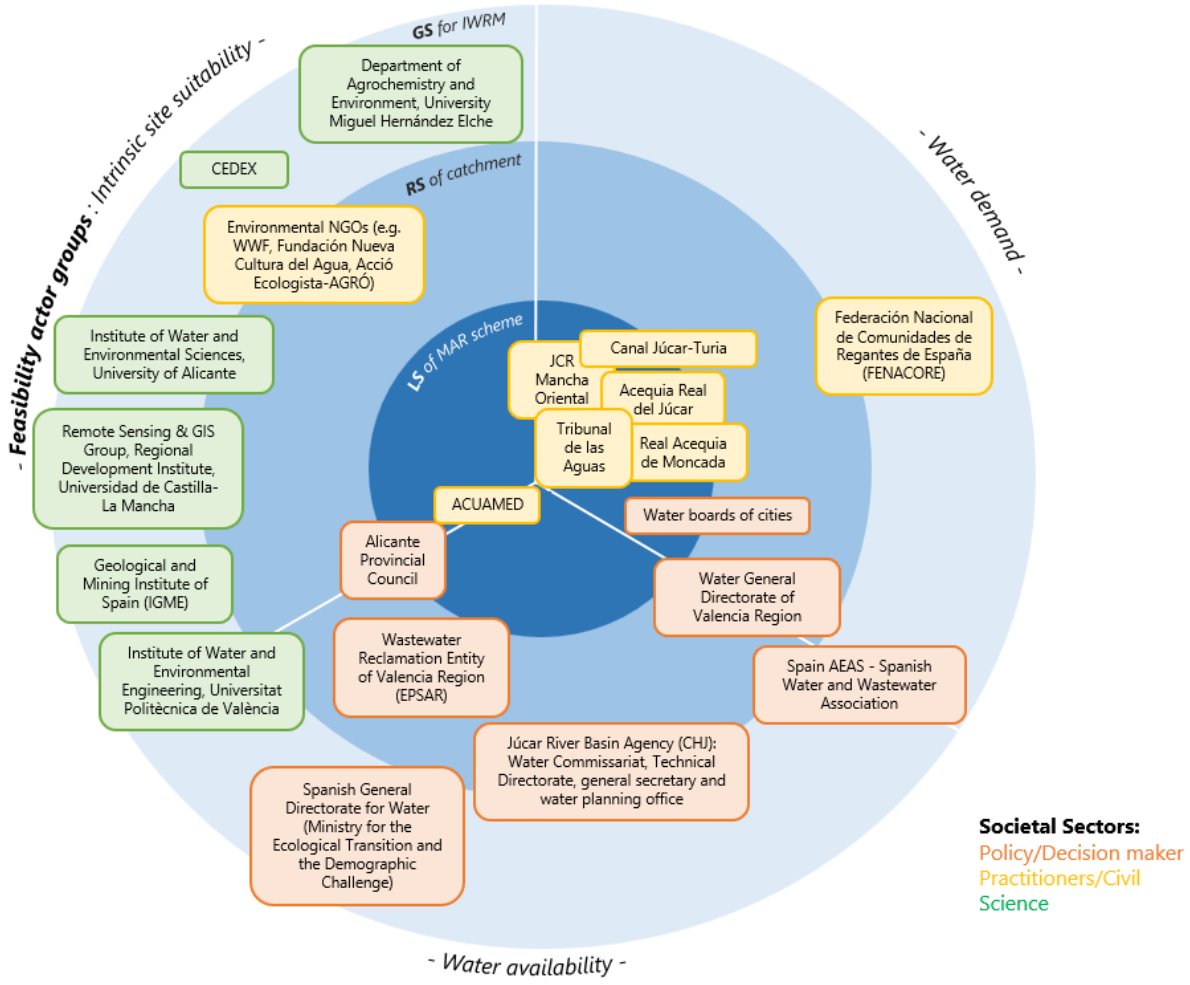

Figure 9. Specific stakeholder map for the demo site in Spain

Detailed overview of relevant stakeholders

Table 4: Specific demo site stakeholders of the Jucar Water District, Spain, grouped according to the scale of their influence and the topic of feasibility mapping they are interested in and first assumptions about their role and needs in relation to MAR

Specific demo site stakeholders	**Role and competencies related to MAR**	**Needs related to MAR/project results** (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	**Stakeholder group**	**Scale** (general / regional / local)	**Thematic mapping** (water demand / water availability / intrinsic site suitability)
Spanish General Directorate for Water (Ministry for the Ecological Transition and the Demographic Challenge)	Supervises and coordinates the hydrological plans of the river basins	Improved protection and management of scarce water resources; increased water availability and environmental integrity; equitable sharing of water resources and benefits associated with water management	Water authority	general	Water availability
Júcar River Basin Agency (CHJ): Water Commissariat, Technical Directorate, general secretary and water planning office	Elaborates the hydrological river basin plan and its reviews and follow-up; manages and control of the public hydraulic domain; constructs water infrastructures, allocates water resources to urban (cities of Valencia, Albacete and Sagunto), agricultural (users' associations) and industrial (energy company Iberdrola) users;	Improved protection and management of river water resources towards climate resilience and sustainability; increased water availability and environmental integrity	River basin agency	general / regional	Water availability
Water General Directorate of Valencia Region	Directs and coordinates the execution of policies on environmental quality and pollution prevention, climate change, environmental assessment, promoting the use of clean technologies and habits for cleaner and more sustainable consumption	Improved protection and management of scarce water resources towards climate resilience and sustainability; maintained long-term, safe and efficient water supply; equitable distribution of water resources and benefits associated with water management	Regional water authority	regional	Water demand / water availability
Alicante Provincial Council	Services and technical support to Alicante Province municipalities	Improved protection and management of scarce water resources towards climate resilience and sustainability; maintained long-term, safe and	Provincial institution	regional / local	Intrinsic site suitability / water availability

Specific demo site stakeholders	Role and competencies related to MAR	Needs related to MAR/project results (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	Stakeholder group	Scale (general / regional / local)	Thematic mapping (water demand / water availability / intrinsic site suitability)
		efficient water supply; equitable distribution of water resources and benefits associated with water management			
ACUAMED	Promotes of water infrastructures in Spanish Mediterranean regions (MAR sites); in charge of a project for MAR in Vall d' Uxó (Belcaire Catchment)	Improved water infrastructure	Public company	local	Intrinsic site suitability / water availability
Wastewater Reclamation Entity of Valencia Region (EPSAR)	Operates WWTPs; collects, manages and distributes the Sanitation Canon (tax);	Purchase of purified water at a good price; feasible requirements for water quality of effluents within the scope of technical purification options	Sewage Board	regional	Water availability
Geological and Mining Institute of Spain (IGME)	Provides knowledge, strategic advice and useful data	Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general	Intrinsic site suitability
Institute of Water and Environmental Engineering, Universitat Politècnica de València	Provides knowledge, strategic advice and useful data	Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general	Intrinsic site suitability
Institute of Water and Environmental Sciences, University of Alicante	Provides knowledge, strategic advice and useful data	Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general	Intrinsic site suitability
Department of Agrochemistry and Environment, University Miguel Hernández Elche	Provides knowledge, strategic advice and useful data	Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general / regional / local	Intrinsic site suitability
Remote Sensing & GIS Group, Regional Development Institute, Universidad de Castilla-La Mancha	Provides knowledge, strategic advice and useful data	Access to funds for research ideas and opportunities for putting research results into practice	Public research organisation	general	Intrinsic site suitability
CEDEX (Spanish National Public Works Research Centre), Centre	Provides high-level technical assistance, applied research and technological development in the areas characteristic	Access to funds for research ideas and opportunities for putting research results into practice	Research institute	general	Intrinsic site suitability

Specific demo site stakeholders	Role and competencies related to MAR	Needs related to MAR/project results (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	Stakeholder group	Scale (general / regional / local)	Thematic mapping (water demand / water availability / intrinsic site suitability)
for Hydrographic Studies dedicated to freshwater	of the civil engineering sector to various administrations, public institutions and private companies				
Irrigation Associations (e.g., JCR Mancha Oriental, Acequia Real del Júcar, Canal Júcar-Turia, Real Acequia de Moncada, Tribunal de las Aguas)	Represents the interests of irrigators (e.g., JCR in the large aquifer "Mancha Oriental"); ensure the sustainable management of the water resources - including groundwater- for irrigation and other purposes; carry out functions of police, distribution and administration of the waters that they have been granted	Increased water availability and efficiency for/in irrigation; improved water quality, equitable distribution of water and benefits between farmers	Farmer association	regional / local	Water demand
Federación Nacional de Comunidades de Regantes de España (FENACORE)	Defends and promotes the development of the irrigation sector and the rights to use water, develops the national economy, efficient water and energy use, and sustainable development, collects fees per hectare benefitting from irrigation	Increased water availability and efficiency for/in irrigation; improved water quality, equitable distribution of water and benefits between farmers	Partnership of farmer associations and land owners	general	Water demand
Spain AEAS - Spanish Water and Wastewater Association	Technical and professional association of entities, institutions, operators and corporate partners and individual experts who provide operation, maintenance, operation and management of urban water supply and sanitation, whether of public private or mixed legal nature	Ensured and improved quality, continuity and efficiency of water services, considering economic and financial sustainability and the principles of social and environmental responsibility; improved use of alternative methods such as MAR to increase infrastructure efficiency and achieve environmental sustainability goals such as the increased use of treated wastewater; improved management of demand peaks and decreased stress in natural systems; fair distribution of water	Water and wastewater association	general	Water demand / water availability

Specific demo site stakeholders	**Role and competencies related to MAR**	**Needs related to MAR/project results** (first assumptions, to be validated during stakeholder dialogues planned for Nov 2022)	**Stakeholder group**	**Scale** (general / regional / local)	**Thematic mapping** (water demand / water availability / intrinsic site suitability)
Water boards of cities (e.g., for Valencia: EMIVASA commissioned by Global Omnium and Valencia City Council to manage the public water supply service of the City of Valencia, Global Omnium, Aguas de Valencia (parent company of Global Omnium group of companies))	Collects, treats and distributes drinking water in the respective city, operates wastewater treatment stations	Ensured and improved quality, continuity and efficiency of water services, considering economic and financial sustainability and the principles of social and environmental responsibility; improved use of alternative methods such as MAR to increase infrastructure efficiency and achieve environmental sustainability goals such as the increased use of treated wastewater; improved management of demand peaks and decreased stress in natural systems; fair distribution of water	Water utility	regional	Water demand
National, regional and Local NGOs (e.g., WWF, Fundación Nueva Cultura del Agua, Xúquer Viu, Acció Ecologista-AGRÓ)	Represents public concern for environmental issues related to water management	Ensured integrity and protection of nature and quality of life; improved data and knowledge on environmental impacts and monitoring of MAR systems	Environmental NGO	general / regional / local	Intrinsic site suitability

3 Conclusion

The demo sites are similar in their institutional set-up and similar stakeholder groups appeared to be significant for engagement in a MAR project. Feasibility actor groups are evenly distributed, with actors for water demand being found more at the local and regional level and for intrinsic site suitability at the general and regional level. Furthermore, as could be expected, water demand interests are more likely to be represented by civil society and intrinsic site suitability and water availability are more likely to be represented at the policy and science level. Whether there is a power and interest imbalance here that has an influence on sustainable and equitable planning and management of MAR and whether there is a need for balancing via an appropriate governance framework will be further explored in the course of the detailed stakeholder analysis through direct stakeholder dialogues (planned for Nov 2022).

At the general (national) level, water, environmental and land development authorities as well as geological and hydrological research institutes emerged as important stakeholders. At the regional level, the main stakeholders are water and wastewater utilities, municipalities, farmers and end-user organisations, and environmental NGOs. The identification of most of the local stakeholders (specific to the MAR system) is still pending at this stage and can only be finalised after the completion of the MAR feasibility maps (WP2) where the location of the MAR pilot sites is defined.

Relevant categories of needs related to water resources management and MAR at the demo sites include: increased water availability through water reuse, improved protection and equitable management of scarce water resources, improved water quality, ecological integrity including maximised environmental benefits of MAR sites, efficient water supply taking into account economic sustainability including increased efficiency of water storage and equitable distribution.

Based on this document, a more detailed stakeholder analysis will be carried out, which will form the basis for a dissemination and communication strategy and plan (DCSP) for stakeholder engagement within the AGREEMAR project and beyond. These initial insights into stakeholder competencies, needs and sphere of influence will help to derive tailored engagement activities for each stakeholder group to achieve effective engagement in the production of sustainable project outcomes. Throughout the course of the project, these preliminary findings will be further validated and refined through interviews and workshops with project partners and identified key stakeholders from the demo sites. Additional questions such as: which stakeholder needs in particular will be addressed by the project, and how can the project outputs be better designed to meet their needs, will be part of the discussions during a workshop at the project kick-off in the project team. Accordingly, the stakeholders analysis needs to be seen as a continuous exercise that will be validated and refined over the course of the project.

4 References

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